International specification for training analysis and design

S6000T-B6865-01000-00

Issue No. 1.0

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Highlights

This is the initial issue of the specification so there are no changes to highlight.

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Chapter 1

Introduction to the specification

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Chapter 1.1

Purpose

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Chap No./Document No.	Title
S3000L	International procedure specification for Logistics Support Analysis (LSA)

1 Purpose

Successful training support is based on detailed, comprehensive analysis and solid design definition data. This data provides a firm foundation for planning, decision making, and execution and support of Product training. Therefore, the purpose of the S6000T is to define all levels of analysis and design in order to deliver relevant and effective Product training.

2 Background

The concept of this specification was originated in the Aerospace Industries Association of America (AIA) and the AeroSpace and Defence Industries Association of Europe (ASD). Prior to that, procedures for producing training information was planned to be a chapter in S3000L. However, the importance of Product training needs analysis using, amongst other things, outputs from S3000L was deemed to warrant a separate specification.

Note

The term Integrated Logistics Support (ILS) has been replaced throughout this specification with Integrated Product Support (IPS).

Chapter 1.2

Scope

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Chap No./Document No.	Title
S1000D	International specification for technical publications using a common source database

1 General

This initial issue of S6000T is based on the Analysis, Design, Development, Implementation and Evaluation (ADDIE) model.

2 Scope

The scope of S6000T will include aspects of the ADDIE model and other models harmonized as a single model. However, for this initial issue, the scope is limited to information gathering, analysis, and design.

Note

S6000T is in the field of Integrated Product Support (IPS) as is the rest of the S-Series IPS specifications.

The S-Series IPS specifications have adopted a concept of a Product, which is defined as:

– A Product is a representation of a family of items which share the same underlying design purpose. For example:

- Airbus A340
- Aegis class destroyer

- Stryker
- Ford fusion
- Pegasus engine
- iPhone 7

S6000T also uses this concept in its processes in order to deliver its training support products.

S6000T adheres to the Instructional Systems Design (ISD) process. The ISD systematic process involves the assessment and development of training solutions, designed specifically for the purpose of formal training delivery, using primarily the ADDIE model, which is the most widely recognized ISD. The ADDIE model is made up of the five phases depicted in its name. Refer to Fig 1.

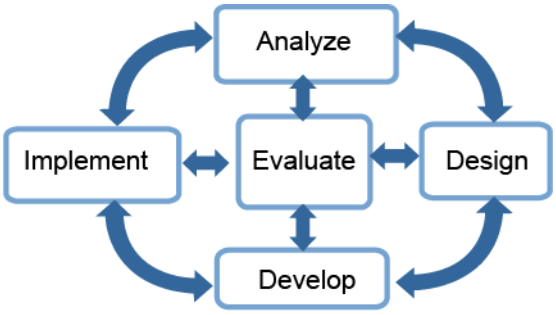

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Fig 1 ADDIE model

ADDIE is an acronym for the five phases of this approach to courseware development:

- Analysis Phase - The analysis phase determines what must be trained. The first step is to determine whether a training problem exists and then to identify possible solutions. A sequence of processes and analytical models are then used to identify critical human tasks and to identify the standards, conditions, performance measures, and other criteria needed to perform each task.
- Design phase - The instructional design is based on the analysis phase results. In this phase, the instructional designers also develop Learning Objectives (LO), a test strategy, and test items, as well as design the instruction. The instructional strategies are also developed in this phase and instructional methods and media are selected. The output of the design phase is the Training curriculum.
- Development phase - Instructional development is based on the design phase results. During the development phase, lesson materials, unit exercises, drills, and other instructional materials for both the student and the instructor are developed. Media, selected in the design phase, is produced during this phase.
- Implementation phase - After the instructional system has been designed and developed, and the validation activities of formative and summative evaluation have been completed, the instructional system is implemented. In this phase, the instructional system is fielded.
- Evaluation Phase - Evaluation is a continuous process that starts during the analysis phase and continues throughout the development and life cycle of the instructional system. To ensure continuing quality of the fielded instructional system, internal and external operational evaluations, provide the necessary periodic feedback for the life cycle of the operating system using the concept of In-Service Training Optimization (ISTO). Refer to Chap 5.

The goal of the ISD process is to optimize the training Return on Investment (ROI) by increasing the effectiveness of education and training. Examples of the products of ISD are:

- Instructional systems based on mission, job and performance requirements
- Courses consisting of relevant knowledge and skills instruction

– Graduates having the necessary Knowledge, Skills, and Attitudes (KSA) to perform the mission, job and/or task

S6000T follows a process-based architecture approach which is a systematic process whereby a process is decomposed into lower level tiers in order to identify a series of actions or operations. It begins with a Tier 0 process flow which is a high-level flow as provided in Fig 1.

A Tier 0 process flow is decomposed into a Tier 1 which indicates a series of actions or operations. Refer to Fig 2. Chap 3 and Chap 4 further decompose each of the analysis and design actions into Tier 2 process steps with identified inputs and outputs of each step. The outputs represent a high-level look at the data that results from these steps. These objects form the basis for the Data Model that is provided in Chap 7.

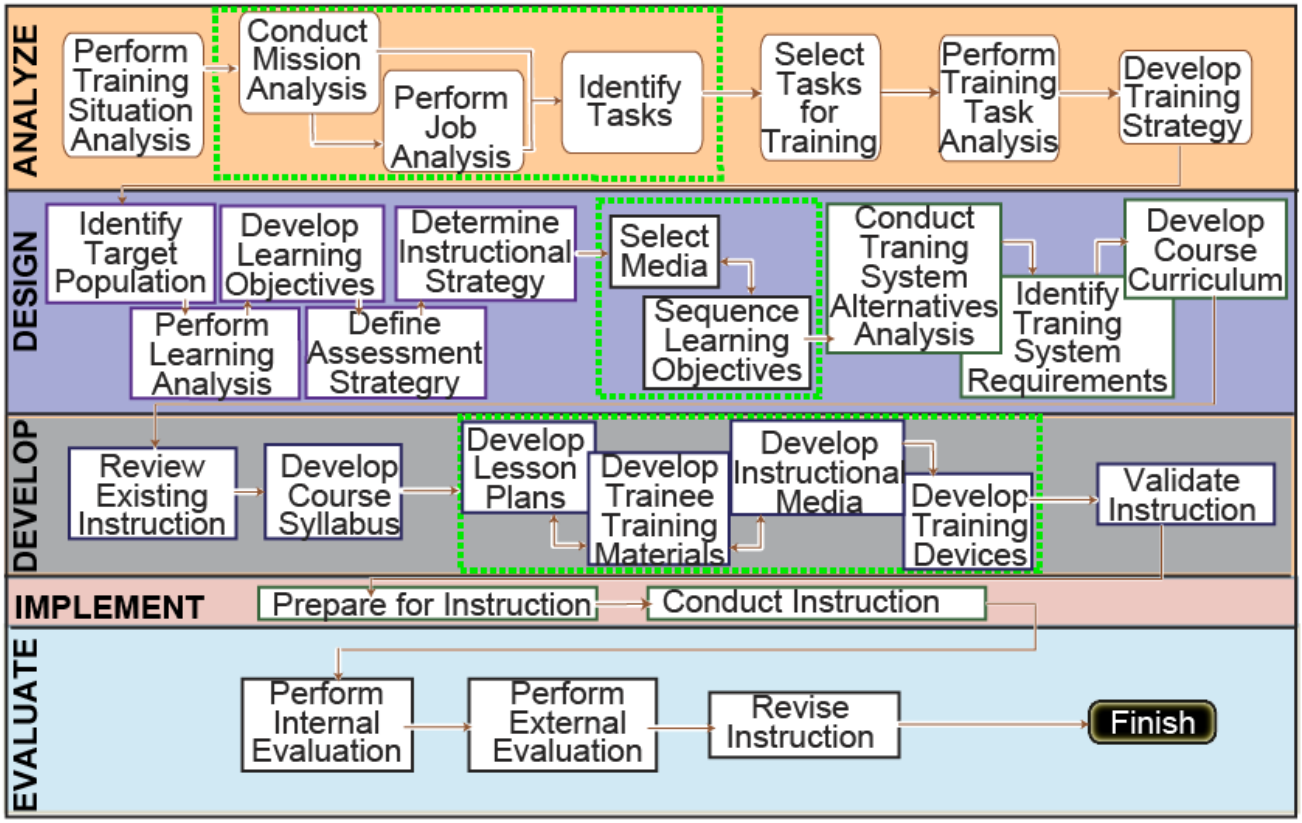

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Fig 2 ISD Tier 1 Process

Chapter 1.3

How to use the specification

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1 General

In order to assist the reader in navigating this specification, each of the S6000T chapters are described in this chapter.

2 Field of application

S6000T is an international specification that is designed to cover the processes and procedures for delivering training information is support of any Product. The aspects of training information that are covered are:

- Information gathering
- Analysis
- Design

Note

A later issue of S6000T will cover:

- Development
- Implementation
- Evaluation

3 Reading conventions

3.1 General

Throughout S6000T specific conventions are used to aid common understanding and to minimize duplication. These conventions are:

Mandatory	Required by S6000T or any other of the S-Series IPS specifications
Optional	Aspects of by S6000T or any other of the S-Series IPS specifications used at the discretion of the user
training support products	The results of the activities described in S6000T (eg, gap analysis report, training strategy, etc)

4 Organization of S6000T

S6000T is organized into 8 main chapters.

4.1 Chapter 1

Chap 1 introduces S6000T, and gives:

- The purpose. Refer to Chap 1.1.
- The scope. Refer to Chap 1.2.
- Information on how S6000T should be used and the organization of the specification
- How to request a change to the specification. Refer to Chap 1.5.

4.2 Chapter 2

The procedures for gathering information in general are given in Chap 2 together with:

- General information on gathering Refer to Chap 2.1.
- Gathering information by interviewing. Refer to Chap 2.2.
- Gathering information by using existing information. Refer to Chap 2.3.
- Gathering information by using knowledge and experience. Refer to Chap 2.4.
- Gathering information from in-service feedback. Refer to Chap 2.5.
- Gathering information from other S-Series specifications using the Data Model. Refer to Chap 2.6.

4.3 Chapter 3

Chap 3 gives the procedures for analysis, and gives:

- General introduction to the analysis procedures and processes used in S6000T Refer to Chap 3.1.
- Training situation analysis - identify the need for training and possible solutions. Refer to Chap 3.2.
- Mission, job analysis - identifying a unit's mission, all the specified, implied, and supporting missions and all the collective tasks that must be performed to accomplish each of these missions. Decomposing, structuring, and describing jobs to establish training requirements. Identifying all the collective and individual tasks that support these jobs. Refer to Chap 3.3.
- Task selection - analysis of the identified tasks to determine which need training. Refer to Chap 3.4.
- Task analysis - breaking a task down into smaller, more manageable components to determine the required knowledge, skills and attitudes. Refer to Chap 3.5.
- Training strategies - identify the strategy for achieving the required knowledge, skills and attitudes. Refer to Chap 3.6.
- Business objects - Listings of the most important business objects related to the analysis phase of S60000T. Refer to Chap 3.7.

4.4 Chapter 4

Chap 4 gives details of the procedures and process for designing new training courses and lessons.

- General introduction to the design process used in S6000T. Refer to Chap 4.1.
- Identify target audience - collecting and analyzing information on a target audience to design a plan of instruction. Refer to Chap 4.2.
- Perform learning analysis - gap analyses to actual performance with desired performance in terms of knowledge, skills and attitudes. Refer to Chap 4.3.
- Develop learning objectives - identifying what students should know as a result of the training. Refer to Chap 4.4.
- Develop assessment strategy - determining the methods used to measure a trainee's ability to meet the requirements stated in the Learning Objectives (LO). Refer to Chap 4.5.
- Determine instructional strategy and methods. Refer to Chap 4.6.
- Media selection - selection of ways to deliver training content. Refer to Chap 4.7
- Sequence learning objectives - collecting LOs together and then ordering them in an effective learning sequence. Refer to Chap 4.8.
- Training system alternative analysis - a structured process for analyzing alternative training solutions to determine the best training solution for the situation. Refer to Chap 4.9.
- Design media - the most suitable and cost-effective types of media.
- Training system functional requirements - identifying the operations and activities that a training system must be able to perform. Refer to Chap 4.10.
- Develop curriculum outline and plan of instruction. Refer to Chap 4.11.

- Business objects - List of the most important business objects related to the design phase of S60000T. Refer to Chap 4.12.

4.5 Chapter 5

Chap 5 describes the process for improving in-service training.

- The In-service Training Support Optimization (ITSO) - a general description of the feedback process. Refer to Chap 5.1.
- ITSO preparation for optimizing training support - determines whether the analytical basis for the valid training support is still relevant, correct and up to date, following in-service feedback. Refer to Chap 5.2.
- ITSO analysis for optimizing training support - detailed analysis of delivered training products to confirm that they are still relevant, correct and up to date, following in-service feedback. Refer to Chap 5.3.

4.6 Chapter 6

Chap 6 describes the relationships between S6000T and other specifications.

- General relationship with the other S-Series IPS specifications - A brief description of what is to come in a future issue of. Refer to Chap 6.1.

4.7 Chapter 7

Chap 7 and its subchapters describe the S6000T data model.

4.8 Chapter 8

Chap 8 is the glossary of terms and list of abbreviations.

Chapter 1.4

How to tailor S6000T for a specific project

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Table 1 References

Chapter	Data module title
Chap 1.4.1	How to tailor S6000T for a specific project - Tailoring introduction
Chap 1.4.2	How to tailor S6000T for a specific project - Conformance and compliance

1 General

An implementation of S6000T should be tailored to produce the deliverable for a specific project. For contracting purposes, the data produced using S6000T must conform to the rules for the S-Series data model and the processes should comply with the processes described in S6000T.

Chap 1.4.1 introduces tailoring of S6000T and summarizes where to find information pertinent to tailoring. Chap 1.4.2 defines the requirements necessary to fulfill in order to stay in adherence with the specification, in terms of conformance and compliance.

Chapter 1.4.1

How to tailor S6000T for a specific project - Tailoring introduction

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Chap 3.3	Analysis - Mission, job, and task analysis
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Chap 3.3.2	Mission, job, task analysis - Job analysis
Chap 3.3.3	Mission, job, task analysis - Identify tasks
Chap 3.5	Analysis - Task analysis
Chap 3.6	Analysis - Training strategy
Chap 3.7	Analysis - Business objects
Chap 4.2	Design - Identify target audience
Chap 4.3	Design - Perform learning analysis
Chap 4.4	Design - Develop learning objectives
Chap 4.5	Design - Develop assessment strategy
Chap 4.6	Design - Determine instructional strategy/method
Chap 4.7	Design - Define and select media
Chap 4.8	Design - Sequence learning objectives
Chap 4.9	Design - Training system alternative analysis

Chap No./Document No.	Title
Chap 4.10	Design - Training system functional requirements
Chap 4.11	Design - Develop curriculum outline
Chap 4.12	Design - Business objects
SX002D	Common data model for the S-Series IPS specifications

1 General

S6000T has been produced to cater for many different types of Products. Therefore, to make it suitable for a given project, some aspects of tailoring will be required. It is recommended that the tailored version of this specification is referred to in the project's contractual documentation.

1.1 Common data model

Any tailoring must not affect the Common Data Model (CDM) data types declared and described in SX002D, which are:

- Primitives
- Compound attributes
- Base objects
- Classes and attributes included in the S6000T Units of Functionality (UoF)

1.2 S6000T data model

Depending on the required deliverable, select only the business objects and data elements that serve as inputs to the production of the deliverable. for the respective analysis defined in Chap 3.2 thru Chap 3.6 and Chap 4.2 thru Chap 4.11. The relationship between the respective analysis and the data model is defined in Chap 3.7 and Chap 4.12.

2 Project business rules

Project business rules give the rules and guidance for the use of the optional data elements and UoFs that are needed to produce the tailored deliverable. These business rules must be agreed between parties to document the details of the agreed tailoring of this specification. These rules must cover the requirements for optional elements, their population from specific data sources, and the use of specific values.

3 Units of functionality

The UoFs used by S6000T are:

- UoF Aggregated element
- UoF Applicability statement
- UoF Breakdown structure
- UoF Course
- UoF Change information
- UoF Curriculum and course plan
- UoF Document
- UoF Digital file
- UoF Hardware element
- UoF Instructional strategy
- UoF Job duty
- UoF Learning analysis
- UoF Learning assessment strategy
- UoF Learning objective

- UoF Learning resource
- UoF Message
- UoF Mission definition
- UoF Organization
- UoF Part definition
- UoF Performance parameter
- UoF Product
- UoF Product usage context
- UoF Product usage phase
- UoF Product support task usage
- UoF Remark
- UoF Security classification
- UoF Software element
- UoF Subtask train prioritization
- UoF Target audience
- UoF Task
- UoF Task competence definition
- UoF Task knowledge skill and attitude
- UoF Task performance objective
- UoF Task resource
- UoF Task train prioritization
- UoF Train task target audience
- UoF Training analysis and design message content
- UoF Warning caution train prioritization
- UoF Zone element

Chapter 1.4.2

How to tailor S6000T for a specific project - Conformance and compliance

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Chap 3	Analysis
Chap 4	Design
Chap 5	In-service training support optimization
SX002D	Common data model for the S-Series ILS specifications

1 General

Implementing S6000T for a project involves tailoring of the specification. In making such tailoring it is necessary to know the type and degree of tailoring that is allowable and acceptable without leaving the S6000T concept. The criteria described in this chapter do not necessarily extend into future issues.

2 Conformance and compliance

2.1 Background and basics

The degree of adherence to the data, process and tools specified by S6000T is expressed in terms of compliance and conformance to the specification.

2.2 Certification

It should be noted that, even though this specification defines what S6000T conformance and compliance means, there is no official certification of any kind of S6000T training support products, processes, software, or implementations.

2.3 Definitions

2.3.1 Data

Data, or a set of related data, are conformant to S6000T if and only if it fulfills the form requirements of such data, as specified by S6000T.

2.3.2 Process

A process and/or a procedure is compliant with S6000T if, and only if, it is carried out in accordance with the processes and procedures specified by S6000T and does not violate the criterion in Para 2.3.3.

2.3.3 Conformant/conformance

Conformant and conformance refer to the data specified in S6000T. The rules for the data are fixed. Refer to SX002D. Therefore, conformance does not depend on any tailoring.

2.3.4 Compliant/compliance

Compliant and compliance refer to the adherence to one or another process or procedure as defined by S6000T. Compliance depends on the required deliverable. If a deliverable (refer to Chap 1.4.1) is tailored out, then the process that would have produced that deliverable is not required and therefore cannot be adhered to.

2.4 Criteria

There are two forms of S6000T criteria:

- Core criteria
- Optional criteria

The S6000T features, for which conformance/compliance criteria can be defined, are:

- General, overall properties
- The analysis processes
- The Common Data Model (CDM) and the S6000T specific data model and the elements they contain

2.4.1 Core criteria

S6000T provides rules, processes and procedures covering various aspects of the training needs analysis process.

Some requirements concerning these aspects can be crucial in obtaining commonly comprehensible S6000T information. These requirements form a core of criteria for S6000T conformance and compliance.

All aspects that the specification declare as mandatory and all aspects that have a "must" statement are core criteria.

Core criteria is defined as criteria must be fulfilled to achieve S6000T conformance and compliance. Refer to Para 2.3.

2.4.2 General core criteria

S6000T features are S6000T Core conformant and related processes are S6000T Core compliant if and only if they meet the following criteria.

2.4.2.1 Data model

To be S6000T conformant with regards to the data model, all mandatory elements in the CDM must be used in accordance with SX002D.

2.4.2.2 Analysis processes

To be S6000T analysis process compliant an analysis process must, at a minimum, fulfill the requirements described in Chap 3, Chap 4 and Chap 5 (including subchapters) in accordance with the layered business rules and the rules given at Para 2.4.1.

2.4.3 Optional criteria

In addition to the core criteria, there are optional aspects that users of the specification can apply at their discretion. Optional criteria are defined as criteria that are set by a project using the optional features in S6000T. The criteria below all relate to functional aspects of S6000T which are optional.

2.4.3.1 Optional features

It is possible to be S6000T compliant/conformant while choosing not to be compliant/conformant regarding optional features described in the specification. However, in order to reach S6000T conformance and/or compliance in any of the listed aspects the criteria for the chosen feature must be fulfilled.

Aspects not explicitly covered by the specification do not influence the degree of conformance and compliance. Further, where there is a decision point identified in the specification, projects can do whatever is within the bounds of the decision point and still be compliant/conformant.

2.4.3.2 Optional processes

A project can decide whether to use all or part of an optional process. However, the project must take into account the conformance/compliance aspects of all inputs to the whole or part process.

Chapter 1.5

Maintenance of the specification

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None	

1 Maintenance of the specification

S6000T is maintained by the S6000T Steering Committee (SC) operating under the supervision of the Integrated Product Support specifications Council. Both the Council and this WG include representatives from AeroSpace and Defense Industries Association of Europe (ASD) and Aerospace Industries Association (AIA) member companies and nations.

Note

The term Integrated Logistics Support (ILS) has been replaced throughout this specification with Integrated Product Support (IPS).

Issues related to S6000T can be raised using the change request tool found at www.SX000i.org/CPF/login_page.php. Change requests are submitted with the understanding that any revisions to S6000T can affect the other specifications in the S-Series IPS specifications, and that proposed changes are subject to international agreement between ASD and AIA member companies and nations.

Upon receipt of a change request, the S6000T SC will follow the change management process described in ILSC-2018-001, to gain consensus agreement from the participating organizations prior to the publication of changes. The S6000T SC considers change proposals and ratifies them for incorporation into S6000T.

Chapter 2

Information gathering

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Chapter 2.1

Information gathering - General

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Chap 2.2	Information gathering - Interviewing
Chap 2.3	Information gathering - Existing source material
Chap 2.4	Information gathering - Knowledge and experience

1 General

In order to determine the gap, information must be gathered. Ideally, the information obtained will enable a well-defined, accurate, and complete description of the current situation regarding competencies of the workforce. This chapter provides guidance to be used in Information gathering throughout the Instructional System Design (ISD) process.

2 Description

Several sources of information can be used in the ISD process. Availability of data will most likely vary for each training project. The sources of information will be different when developing initial training requirements for a new Product, or when identifying training requirements to accommodate a major modification to an existing Product compared to updating a training system due to changes in mission or operational requirements or if an existing training system will be evaluated and analyzed. For example, in the early stage of a new Product development, final technical documentation is not always available, so other sources are required.

Rarely will all information be available especially early on in a project for that reason. For that reason, many techniques could be required to gather the necessary training requirements. The key is to be able to focus on the information needed to determine training requirements quickly and not have to mine significant amounts of information. Training analysts must plan their information requirements and techniques before beginning data collection. The training analyst should decide what information and which sources will be necessary for the project. The analyst should then design a data collection sheet for use during data collection to ensure that all necessary data is collected. The data collection sheets should be agreed by all stakeholders

involved in collecting the data to ensure that the data is collected in the same manner. More than one method should be used since each method has its inherent strengths and weaknesses.

There are three traditional methods of gaining information:

- Interviewing key stakeholders including SME's. Refer to Chap 2.2.
- Observation of existing material and information. Refer to Chap 2.3.
- Reports from previous knowledge and experience. Refer to Chap 2.4.

Chapter 2.2

Information gathering - Interviewing

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1 General

Interviewing is a useful tool for gathering in-depth information from stakeholders. Semi-structured interviews are particularly valuable because they allow for follow-up questions of interviewees when clarification about a response is needed.

2 Description

An interview is a versatile method due its many various techniques for data gathering. It is a basic method to gather information regarding how, for example, the SMEs or students feel, think, what they want, etc. An interview can be both qualitative and quantitative depending on the interview layout. It is important to be aware that the data collected can be subjective and not necessarily based on facts. However, it is essential in order to receive information about possible interviewees' knowledge, expectations, behavior, etc.

The interview is a primary technique for information gathering during the training requirements phase of a project. It is a skill which must be mastered by every analyst. The interviewing skills of the analyst determine what information is gathered, and the quality and depth of that information. Interviewing, observation, and research are the primary tools of the analyst.

The interview is a specific form of a coming together (eg, meeting or conference), and is usually limited to two persons, the interviewer and the interviewee. In special circumstances there can

be more than one interviewer or more than one interviewee in attendance. In these cases, there should still be one primary interviewer and one primary interviewee.

3 Method

There are several methods of interviews each having their own advantages. The training analysts should look closely at the information they are trying to collect, and the people they are interviewing when choosing the most appropriate method.

3.1 Unstructured interview

An unstructured interview consists of open and random questions. The interviewee can speak freely about his/her opinions and can thereby lead the interview in desired direction. Furthermore, unstructured interviews allow questions based on the interviewee's responses. This will give qualitative data and is best suited when the interviewer has only a vague perception of what information is relevant. However, because each interviewee can be asked a different series of questions, this style lacks the reliability and precision of a structured interview. Notwithstanding that, the interviewer can have some key questions formulated in advance.

3.2 Structured interview

A structured interview is the opposite of the unstructured layout and has a fixed format. When conducting a structured interview, the interviewer uses a predefined template in which all questions are prepared beforehand and are put in the same order to each interviewee. The questions and answers can still be open or based on predetermined answer options as, for example, based on a scale or yes/no. Although this style lacks the free flow of a friendly conversation (as in an unstructured Interview), it provides the precision and reliability required in certain situations. This will give quantitative data that is easier to analyze than the answers from an unstructured interview. A structured interview will require that the interviewer has good insight in the subject and a clear picture of what to investigate.

3.3 Semi-structured interview

A semi-structured interview is a mixture of unstructured and structured interviews that takes a flexible approach and permits questions to arise in response to the dialog. It is also the most commonly used option. In this case, the format consists of a predefined structure of which subjects to be addressed. The interviewer can decide the order of the questions and ask supplementary questions, also known as probing. Probing is a method where supplementary questions are used to get deeper knowledge of the answer. For example, “Can you develop that?”, “What do you mean by that?”, etc. It enables a more relaxed interview environment and deeper understanding of the subject matters.

3.4 Group interviews

In the group interview, interviewees are assembled to give information relative to their job. The training analyst asks questions about job performance and can ask the group to list particular data on tasks that cannot easily be demonstrated or observed. Because the group interview involves recall rather than recognition it can provide inaccurate or incomplete data.

4 Conducting the interview

When the type of interview is deemed as appropriate, an interview template is created (for structured or semi-structured interviews). For the unstructured interview, the key questions must be defined beforehand. When the observation is conducted, the Product on which the training will be carried out must be known by the observer. However, based on the questions in Table 2, the observer can use these questions to examine the right places.

A good interview starts with simple and non-specific questions. Begin by explaining the purpose of the interview. Explain how the interviewee’s data and any data collected will be used from the interview. Keep leading questions to a minimum.

When collecting data, focus on getting the necessary information for training analysis. This can be achieved by asking the right question during information gathering. Examples are given in Table 2.

Table 2 Asking the right question

To identify	Ask the question
Procedures, activities, steps	What does the person do first? Next?
Tools, materials	What is used to perform the task?
Product information	What systems are used to perform the task?
Cues	How does the person know when to perform what?
Work environment or conditions	Under what conditions is the task performed
Performance standards	What is the standard of acceptable performance?
Use of technology	What technology or equipment is needed to perform this task?
Goals or objectives	What is the goal of the task?
Examples of workarounds	When a problem arises, what sort of workarounds are normally performed to complete the task?
Regulations	Which regulations and/or specific law must be followed?
Prerequisite	What must be available to start the task?

Chapter 2.3

Information gathering - Existing source material

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Table 1 References

Chap No./Document No.	Title
Chap 2.4	Information Gathering - Knowledge
S3000L	International procedure specification for Logistic Support Analysis
S4000P	International specification for developing and continuously improving preventive maintenance
SX000i	International guide for the use of the S-Series of Integrated Product Support specifications

1 General

Existing source material is a critical means of gathering information regarding the training needs of a Product. Available material will vary depending on the nature of a Product. For a new Product, or a major change to a Product, the availability of source material can be limited. Training analysis should use multiple sources identified here to get accurate information in order to determine training requirements.

2 Description

There are many sources of material that can help in the establishment of training requirements, and the development of a training curriculum outline for a Product. These sources can be in various states of maturity based on the life cycle of the Product. Training analysts should work with the customer as well as with other product domains such as engineering, manufacturing, and Product support disciplines to ensure the latest documents are available.

For the information to be useful, there must be confidence in its reliability. This enables the collection of repeatable results with subsequent measurements of the same thing. With reliable measurements, confidence can be gained in what is being observed is the true situation.

Validity is another important attribute of an indication that the information is useful. Validation proves that the information is what it is supposed to be. Testing validity can be a complex process especially when looking at variables that can differ from person to person.

3 Sources

There are multiple sources of material that can provide valuable information when conducting a Training Needs Analysis. These sources are illustrated in Fig 1.

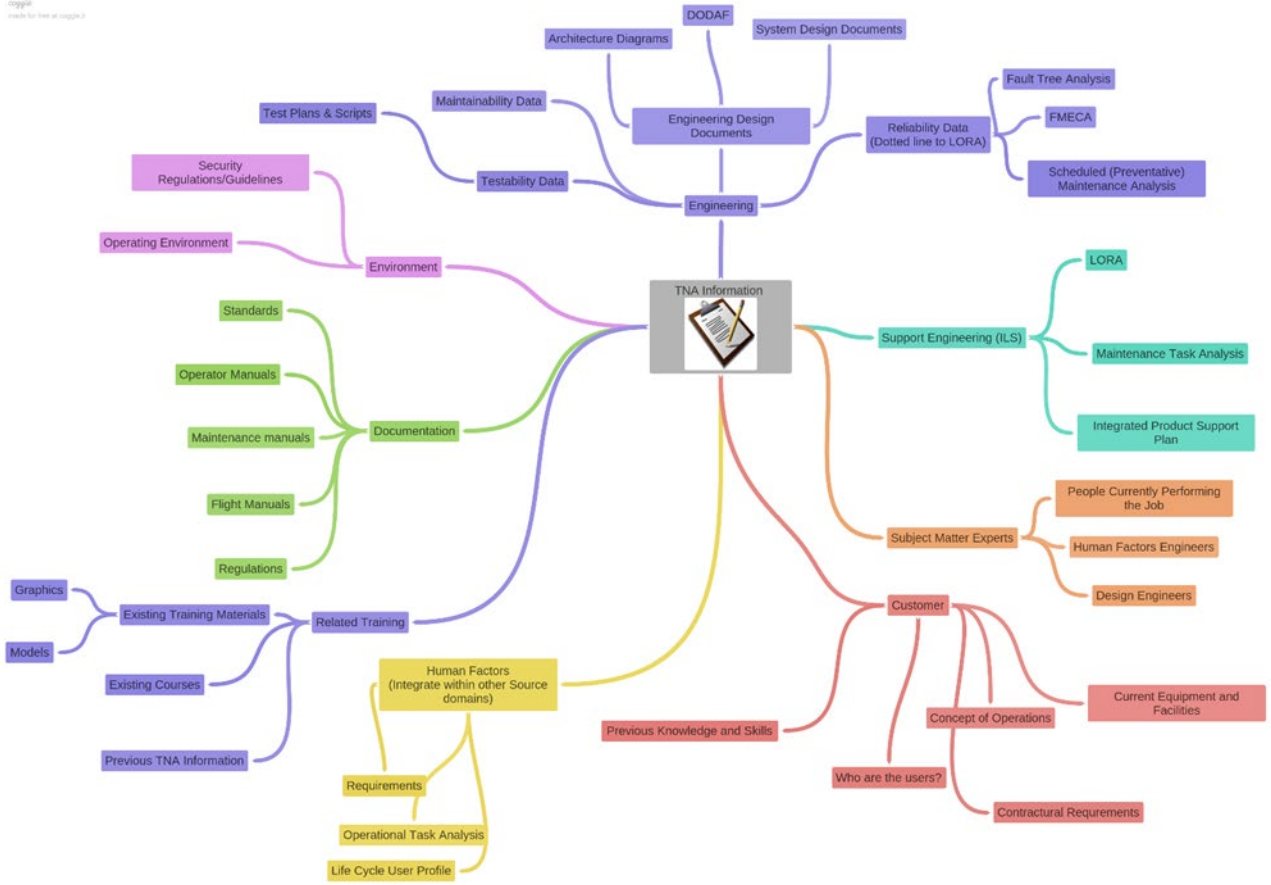

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Fig 1 Multiple sources of material

Training analysts should use as many of these sources as possible to ensure accurate information is obtained.

3.1 Engineering design documents

Engineering design documents are a critical source of information for Training Needs Analysis (TNA). In the case of new Product development or a major Product change these documents can be one of the few sources of information. There are numerous engineering documents that can be used. The most frequently used include:

- Architecture diagrams
- Product design documents
- Test plans and scripts
- Maintainability data
- Testability data
- Reliability data including; Failure Mode, Effects and Criticality Analysis (FMECA) data and other fault tree data

3.2 Program environment

Environmental data, including operating environment information, and security regulations guidelines should be reviewed carefully for TNA related information. This information can provide critical information for conditions in which a Product is operated and maintained.

3.3 Technical documentation

Technical documentation, including operating, maintenance, and flight manuals, as well as regulations and standards, provide critical operator and maintenance task, task condition and standard information. Technical documentation for new Product development can be sparse, so training analysts should coordinate closely with their technical data departments to ensure information can be made available as quickly as possible.

3.4 Similar training programs

Similar training programs, including any Product similar to the new environment, should be reviewed for training requirements relevant to the current Product. This information can include training material information (eg, course, and TNA), student population and training equipment, and other training environment information. This information is critical especially when conducting a Training Situation Analysis.

3.5 Human factor engineering

Human factor engineering focuses on the human's role in operating and maintaining the Product. Human factors engineering focus their analyses on two major categories:

- User analysis. User analysis focuses on the usage objective of the Product, the environment where the Product will be used and variables such as the user roles, user characteristics, and user interface requirements
- Usability analysis. Usability analysis focuses on the complexity of the Product, and the improvements that can be made to the design to improve its usability

This information is critical especially when determining operator tasks.

3.6 Customer

Training analysts should work closely with the customer when conducting a TNA. Customer information including performance requirements, contractual requirements, training goals, equipment, facilities and organizations, as well as user information provide important information for determining training requirements.

3.7 Subject matter experts

Subject Matter Experts (SME) are a valuable source of information for determining training requirements. For more information regarding the collection of information from SME's, refer to Chap 2.4.

3.8 Product support engineering

Training analysts should coordinate closely with other product support disciplines when determining training requirements. Level of Repair Analysis (LORA) and Maintenance Task Analysis (MTA) in particular are a critical source of information, refer to S3000L. In addition, preventive maintenance requirements and the Integrated Product Support (ISP) plan are additional critical sources. Refer to S4000P and SX000i.

4 Collecting information

When collecting data, focus on getting the necessary information for training analysis. As indicated there can be numerous sources of information available, especially for a mature Product, so identifying the right source is critical for gathering the information quickly. This can be achieved by mapping the source to the information required. Refer to Table 2.

Table 2 Finding the right source

To identify	Information sources
Procedures, activities, steps	Engineering, Technical Documentation, SME, Human Factor Engineering, and Product Support Engineering
Tools, materials	Customer, Environment, Engineering, Human Factors Engineering, Product Support Engineering
Product information	Engineering, Technical Documentation, Customer
Cues	Human Factors Engineering, Environment, Technical Documentation, SME
Work environment or conditions	SME, Customer, Environment
Performance standards	Customer, SME, Support Engineering
Use of technology	Engineering, Customer, related training, Human Factors Engineering
Goals or objectives	Customer, Related Training Product Support Engineering
Examples of workarounds	SME, Human Factors Engineering, Technical Documentation, Product Support Engineering
Regulations	Customer, Product Support Engineering
Prerequisite	Customer, Related Training, SME

Chapter 2.4

Information gathering - Knowledge and experience

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Chap No./Document No.	Title
Chap 2.2	Information gathering - Interviewing

1 General

Information that is already known and that drawn from previous experiences can be very useful tools for gathering information. Individuals who have this knowledge are identified as Subject Matter Experts (SME). A SME is any individual who has:

- Experience performing the job or task being analyzed
- Knowledge of the subject matter
- Experience with current or similar training systems
- Knowledge/experience mastering the performance requirements of a job/task

These individuals can provide critical information and insight when determining the training requirements of a new or revised Product.

2 Description

There are different methods that can be used to obtain information from SME's. Each of these methods have advantages and disadvantages and, therefore, they should be used in different ways, based on the current environment. As with other information sources, it is often advantageous to use multiple methods depending on the requirements.

3 Method

3.1 Interview

Interviewing SME's is a critical method for collecting information. There are several different types of interviews. Refer to Chap 2.2.

3.2 Observation

The observation/interview method involves sending the instructional analyst to observe and interview SME's and their supervisors on the job. Observing the SME's at work during their interactions with Product and/or services in their natural surroundings allows flexibility in gathering the required data by providing the training analyst opportunities to continually evaluate the information obtained. Direct observation of personnel as they perform their job, combined with interviews, provides the most useful source of task information. The training analyst should have a thorough understanding of any Product literature and functional relationships of the job to correctly interpret and describe the behaviors observed.

Observations can be direct and unobtrusive:

- Direct observation is an observation where the SME knows that someone is watching and evaluating the SMEs performance. There are two types of direct observations:
  - Continuous monitoring. This requires continuous monitoring through behavior or body language of the individual.
  - Time allocation. This allows a researcher to randomly allocate selecting a place and certain time of observation.
- Unobtrusive observation is an observation where the SME does not know that someone is watching during the interview. The bias of a SME stating what he/she thinks is wanted to be heard is avoided and real-time specific insights from SMEs behavior can also be gained although these types of observations are limited to a point in time.

However, even though observations don't always suit every project, it is insightful to witness how users perform their tasks.

3.3 Jury-of-experts

In the jury-of-experts method, experienced and knowledgeable personnel from various activities are brought together to record and analyze the data on jobs for which many critical behaviors are not directly observable. This method can effectively supplement on-site observation/job analysis and written surveys to gain a perspective from other people in the organization and occasionally those outside the organization.

Chapter 3

Analysis

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Chapter 3.1

Analysis - General

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Chap 3.3.2	Mission, job, task analysis - Job analysis
Chap 3.3.3	Mission, job, task analysis - Identify tasks
Chap 3.4	Analysis - Task selection
Chap 3.5	Analysis - Task analysis
Chap 3.6	Analysis - Training strategy
Chap 3.7	Analysis - Business objects
S3000L	International procedure specification for Logistic Support Analysis (LSA)

1 General

The analyze phase determines what must be trained. A result of the analyze phase is the identification of Knowledge, Skills and Abilities (KSA) required for mission/job/task performance.

2 Description

Training needs analysis is a systemic process of understanding training requirements. It is required in order to determine whether a need for training actually exists and whether an

intervention will contribute to the achievement of the project's support requirements. The steps of the analysis phase are illustrated in Fig 1.

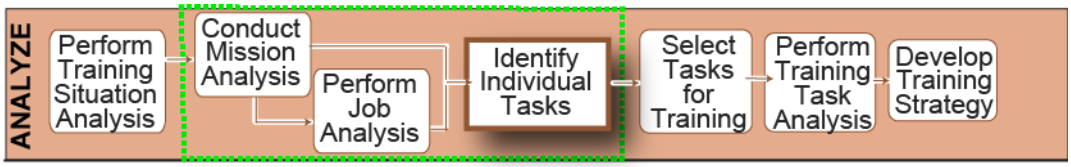

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Fig 1 Analysis phase

The first step in this phase is to perform a Training Situation Analysis (TSA) to determine if a training problem exists and to identify possible solutions. Refer to Chap 3.2.

A sequence of processes and analytical models are then used to identify critical human tasks and to identify the standards, conditions, performance measures, and other criteria needed to perform each task. For training that ties its content directly to preparing students for the performance of a mission or job, the mission/job performance requirements are analyzed and a set of task inventories are developed if they are not available from other sources, (eg, S3000L).These processes are described in:

- Mission analysis. Refer to Chap 3.3.1.
- Job analysis. Refer to Chap 3.3.2.
- Identify tasks. Refer to Chap 3.3.3.

These task Inventories are then analyzed in order to determine training prioritization. This process is task selection. Refer to Chap 3.4.

Once tasks are identified as to whether they require training, and their associated training priority, KSA required for task performance are determined. This is referred to as task analysis. Refer to Chap 3.5.

Having conducted the analysis, a training strategy can be established. Refer to Chap 3.6.

The S-Series IPS specifications uses a database, described by a data model, to capture the results of the analysis and the training strategy in business objects. Refer to Chap 3.7.

Chapter 3.2

Analysis - Training situation analysis

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Table 1 References

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Chap 3.2.1	Training situation analysis - Example TSAR outline
Chap 5.1	In-service training support optimization - General

1 General

Training Situation Analysis (TSA) is performed to define the need for training and to identify and evaluate possible alternative solutions and is normally performed very early on in a Product's lifecycle. It is often performed as part of Product support analysis activities.

2 Description

The TSA takes a broad look at all aspects of an existing or emerging training situation or program to determine if there is a training need or other human performance solutions required. The TSA analyzes system performance and supportability requirements and defines the training or other human performance needs to meet these requirements. The TSA results in a recommended strategy for meeting all identified needs, including rough order of magnitude cost estimates, milestones and schedule. If the recommended strategy includes a training system, then concept exploration activities are initiated in order to define the desired training system.

The initiation of a TSA can originate from a variety of sources generally, they will consist of:

- A perceived need for new or additional training due to a new design or new Product
- A perceived need to influence a Product design change
- A perceived need to resolve performance deficiencies in a current design

The TSA should be completed as early as possible and prior to any other analysis, design or development activity. If performed effectively, a TSA will:

- Identify assumptions, constraints, opportunities and risks within a training requirement
- Identify programming, resourcing or operating issues of existing or proposed training systems, within the boundaries of policy
- Identify any non-training issues within a requirement
- Provide options to resolve the requirement to meet stakeholder needs and expectations

An effective TSA is the structured, logical and diligent analysis of the source requirement, using a range of relevant supporting data. This requires the identification and collation of relevant documents, as well as the identification of appropriate stakeholders and subsequent data collation, through properly structured interview questions.

The output of the analysis will be a Training Situation Analysis Report (TSAR), which will provide a range of appropriate options to resolve the source requirement. The results of the TSAR should be clearly evidenced, with reasoned arguments and recommendations and be fully auditable from the source requirement, supporting data and TSA results.

A TSAR can provide evidence that the source requirement is not a training issue; for example, it can indicate the need for:

- A revision of procedures
- Re-allocation of tasks
- Procurement of equipment
- Improvements to management and supervision

If a training solution is not recommended, further analysis, design and development need not proceed. However, where a training solution is selected, an outline recommendation and rationale for further analysis and design and development should be included.

To meet the scope and complexity of a TSA, it is highly recommended that an appropriately qualified and experienced Training Analyst conducts the TSA. TSAs require experience in data collection and interviewing, analysis and reporting, as well as a thorough understanding of training.

3 Process

Fig 1 illustrates the TSA process.

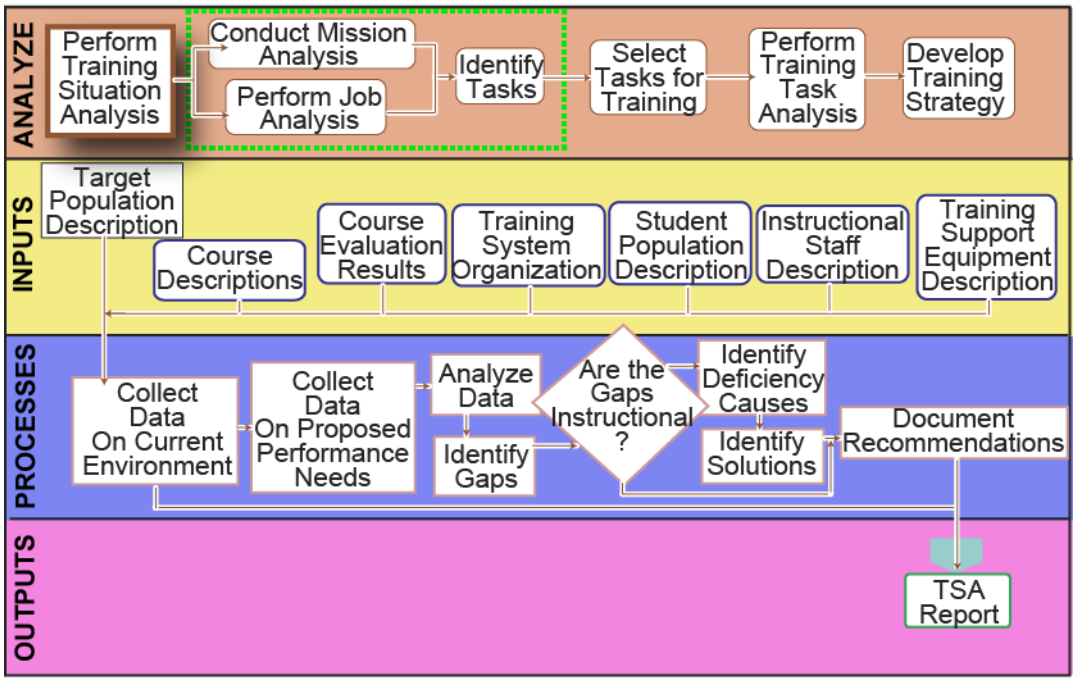

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Fig 1 Training situation analysis

3.1 Inputs

3.1.1 Target audience description

This includes description of the background, education level, job and skill description, etc, of the audience who will be operating and maintaining the new system. This includes how students will be chosen for the new training system.

3.1.2 Course descriptions

This includes a description of existing similar relevant training courses for similar systems, or earlier versions of the same system. It also includes a description of training equipment (simulators, Interactive Courseware (ICW), etc) used for each lesson or module of the current system.

3.1.3 Course evaluation results

This includes any course evaluations, student surveys, etc, used as part of the existing similar relevant training system. These will be used to inform the TSAR of lessons learned.

3.1.4 Training system organization

Identifying the training organization and their roles and responsibilities is important for determining who has important existing training situation information and providing essential contact information for performing subsequent training development activities. The training system organization should include operational and training doctrines and practices that will used.

3.1.5 Student audience description

A description of the anticipated student audience is critical for determining the breadth and depth of training requirements. This description should include a description of their anticipated training background, as well their current job experiences. Anticipated training roadmap(s) for all potential students should be identified if possible.

3.1.6 Instructional staff description

Understanding the breadth and detail of training staff that will be available to support and maintain the proposed training solution is critical to help refine training recommendations. Support staff includes, but is not limited to:

- Instructors
- Training equipment
- Engineers
- Program managers
- Administrators
- Courseware support personnel

This description should include an organizational structure of the training staff, so roles and responsibilities are clearly identified. This description should also include initial training staff requirements, as well as recurrent training staffing requirements throughout the lifecycle of the training.

3.1.7 Training support equipment description

A description of anticipated training equipment is also critical for determining training requirements. Training equipment includes, but is not limited to:

- Simulators
- Trainers
- Classrooms
- Computers
- Support equipment

It is important to provide as much detail about this equipment as possible including, numbers, availability, etc.

3.2 Process steps

3.2.1 Collect data on current environment

The current environment includes anything that is similar to the new environment. For example, if the new Product is a replacement, a modification, or an upgrade to an existing Product, then data is gathered for the Product. Similarly, any Product that is similar in performance or mission requirements to the new Product, is worthy of having information gathered about it for comparison. This data includes all the data inputs mentioned in Para 3.1.

3.2.2 Collect data on proposed performance needs

Performance needs of the new system, including mission/business goals, maintenance plans, operating parameters, logistical requirements, and high-level training goals, etc, of the new system, are gathered during this step in the process.

3.2.3 Analyze data

The data collected from the current Product, as well as the performance needs of the new Product should be analyzed. First, what is working from the current Product should be documented. Also, areas of improvement needed in the current Product should also be identified Refer to Chap 5.1. Also, the performance requirements should be analyzed. Similarities and differences between the requirements of the new Product compared to the old Product should be documented.

3.2.4 Identify gaps

During this step, the data about current systems is compared with the information on the new systems. Gaps between these two systems are identified and documented. These gaps are documented in terms of situational statements. Situational statements describe single or multiple situations/events/occurrences which are having either positive or negative effects upon the ability of the organization to perform its mission.

3.2.5 Identify deficiency causes

During this step, deficiencies are identified in terms of human performance on the current training system. These deficiencies are written as impact statements that must include a full description of the specific resource deficiencies, excesses caused by the situation and their impacts on mission performance. The impact statements must identify those resource areas that have been affected by the situation and must include the following:

- Personnel
- Instructors
- Administrative personnel
- Support personnel
- Students
- Training simulators and other support equipment
- Facilities
- Training material, etc

3.2.6 Identify solutions for gaps and deficiencies

During this step, solutions and alternative approaches are identified that can address these gaps and these deficiencies. These solutions and alternatives must describe how to realistically reduce or resolve the impact upon the ability of an organization to perform its mission. Each alternative should be described in terms of what will be done to reduce or resolve the deficiencies. These solutions should identify resources, including cost estimates required to complete these implementations. These solutions must cover all human performance solutions, not just training solutions. Solutions such as better documentation should also be considered.

3.2.7 Document recommendations

The results of this analysis are documented in a TSAR. The TSAR should clearly articulate the objectives and the scope of the analysis as well as any assumptions identified in starting the analysis. A high-level description of the approach taken to conduct the analysis should be included.

The current situation, including similar programs should be described in detail, as well as the methodology used to identify these similar programs. Training equipment, including classrooms, simulators, etc, of the current or similar systems, should be clearly described. An architectural representation of how all the training equipment ties together is also recommended. A detailed description of the current trainee audience, including how they are chosen for this training, should be described. Attrition rates, including reasons for the attrition, should be identified. If available, the latest curriculum of the current or similar systems should be included for reference purposes.

The new or planned system should be described in as much detail as possible, including any assumptions of the planned user audience, (eg, skills, background, etc). The findings and recommendations, including human performance recommendations and cost estimates, should be clearly identified.

3.3 Outputs

The output of the TSA is documented in the TSAR. This report is intended for program managers to help assess the high-level training requirements for a new or revised program as well as set the stage for a program guidance conference. The report sections should include, but are not limited to:

- Identified recommendations and prioritization of recommendations
- Alternatives as applicable
- Cost estimates
- Major milestones and schedules
- Identified gap alternatives, including non-training alternatives
- Recommended intervals of recurrent or refresher training

The results of the TSA should be discussed in a guidance conference with the customer to review documented gaps, the possible solutions to those gaps and to identify high level training requirements.

3.4 TSAR data outline

An example TSAR data outline is given at Chap 3.2.1.

Chapter 3.2.1

Training situation analysis - Example TSAR outline

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Table 1 References

Chap No./Document No.	Title
None	

Note

The Training Situation Analysis Report (TSAR) documents the findings of the Training Situation Analysis (TSA). It evaluates existing training system and assesses the impact of the training system on the current training. Another part of the TSA provides the means to identify relevant new training technology and to examine the applicability of new technology that meet the training requirements of the new system. This chapter identifies a recommended outline for the TSAR. This outline is a recommendation only and can be modified as required.

1 General

The TSA data will provide a description of the analysis performed to verify the efficiency of the training system to meet existing training needs. It will also survey other similar training programs for applicability to new training needs and shall include:

1.1 Introduction

The introduction will contain an overview of the purpose and expected application of the data and the results compiled from this analysis. It should describe how training capabilities and system requirements, identified from this analysis, will influence the eventual design, development and operation of the training system.

1.2 Scope

The scope of the study.

1.3 Assumptions

Any assumptions that the study is based on and any restrictions of the study.

1.4 Methodology

The methodology should be a high-level description of the approach the training analyst will use. It is important to define and document all processes before beginning analysis and development. The methodology should include the analyst's description of taking a task thread through the entire model.

1.5 Data sources

A list of major data sources used in conducting the study.

2 Existing situation

2.1 Training program mission

Document the mission statement(s) of the training programs that comprise the existing training system.

2.2 Historical background

A description of the historical background of the existing training situation.

2.3 Training program organization

Identifying the training organization, together with its roles and responsibilities, is important for determining who has relevant existing training situation information and providing essential contact information for performing subsequent training development.

2.4 Curriculum

A general description of existing curriculum for each training phase or course, to include, but not be limited to:

- Major goals, content, length and integration into curriculum

- Each phase, with sub-sections describing academic, synthetic, operational equipment and practical job training instructional aids
- Performance measurement methods and applications
- Feedback and evaluation procedures

2.5 Student audience

Data relating to student audience in terms of:

- Entry level requirements and noted exceptions
- Personnel qualification standard(s)
- Student audience source(s)
- Attrition rates
- Current class size and range of anticipated size
- Prerequisite deficiencies, to include learning deficiencies or problem levels including reading readiness, academic background and aptitude

2.6 Training equipment materials and documents

A description of training equipment and materials presently used in the program of instruction. The description should include:

- Training simulators, to include types, locations, numbers, capability assessment, deficiencies and planned modifications and procurement
- Operational equipment, to include types, number available, utilization rates and availability
- Major weapon systems, to include availability in terms of training requirements and schedules
- Instructional media, to include types, count, capability, configuration, reliability and maintainability
- Instructional materials, to include types, subject content, authoring language, capability, authoring systems, version and adequacy in terms of curriculum requirements
- Media support capabilities, to include facilities and maintenance in terms of specific categories of media
- Command support, to include photography, printing, graphics, quality, timeliness, coordination requirements and funding requirements

2.7 Training facilities

A brief description of each facility presently used for the conduct of training programs at all sites. For each facility, the description should contain:

- The demand (use) for a specific facility
- The condition of that facility. Illustrations, both interior and exterior, shall be included if available.
- The optimal condition of the facility, in order to adequately accommodate the current and anticipated demand (eg, human factors and adherence to safety, fire, and environmental regulations, etc)
- Facility improvements required to meet the optimal condition
- Training ranges, to include types, capabilities, utilization and planned modifications
- A description of financial support, including the sources, types of money and authorizations used in the operation of the organization
- Facility limitations including environmental conditions, power requirements etc

3 Situation analysis

The situational analysis will provide a detailed description of those situation(s) which affect the ability of the organization to perform its mission. The situation analysis should include:

3.1 Analytical methods and procedures

The analytical methods and procedures data will provide a description of the methods, procedures, data compilation and analytical tools used to accomplish this analysis and derive the system requirements for the training system. It should contain detailed flow diagrams of the process and describe each discrete event step of the process. Any assumptions made during the analytical process should be described and rationale provided.

3.2 Situational statement

The situational statement will describe single or multiple situations/events/occurrences which are having either positive or negative effects upon the ability of the organization to perform its mission. The situational statement should also include a description of any lessons learned.

3.3 Impact statements

The impact statements will include a full description of the specific resource deficiencies, excesses caused by the situation and their impacts on mission performance (it is possible that one situation can impact one or more of the following resources or that multiple situations can affect only one of the following resources). The impact statements should identify those resource areas that have been affected by the situation and shall include, but not be limited to:

- Personnel (eg, military, civilian, contractor, etc) including, but not limited to:
  - Instructors
  - Administrative personnel
  - Support personnel (eg, operation, maintenance, etc)
  - Students
- Training equipment
- Facilities to include:
  - Instructional
  - Support
- Training material
- Specific mission impacts

3.4 Literature review

The literature review will include the findings of any documents related to the situation, impacts, alternatives and recommendations.

3.5 Information sources and data collection

The information sources and data will include a description of all information sources and data collected during this analysis. It should include all locations, organizations and personnel contacted and used as information sources. It should also describe the objective, utilization and expected result for each informational event.

3.6 Solutions and alternatives

The solutions and alternatives data will describe those alternatives which can realistically reduce or resolve the impact upon the ability of an organization to perform its mission. Each alternative should be described in terms of:

- What must be done to reduce or resolve the deficiency
- What resources are needed
- Predicted effectiveness
- Associated life cycle costs
- Time to complete implementation of the alternative

The alternative should consider those instances where a resource is affected by more than one situation (eg, if there are two distinct situations which affect the organization's instructor

personnel, it is possible that one alternative can resolve both situations). The solutions and alternatives should include functional diagrams, plus descriptions of the hierarchy of requirements and show the relationship between program, system and training requirements at all levels.

3.7 Recommendations

The recommendations should identify the alternative selected as being most efficient and cost-effective. Cost data should include any savings in resources that will result from adopting the recommendations. Each recommendation should include, but not be limited to:

- A description and depiction of the organizational support and training concept recommended for the training system under consideration
- A description of the relationships among:
  - Concepts
  - Functional capabilities
  - Characteristics of training devices
  - Media and system requirements
- For clarification, a block and flow relationships among:
  - Concepts
  - Functional capabilities
  - Characteristics of training diagrams for clarification
- A description of the system level requirements for the chosen training system conceptual design
- Justification for selecting that recommendation
- A description of resources required to implement the recommendation, including, but not limited to:
  - Personnel quantity and type
  - Funding amount and type
  - Other applicable resources
  - Return on Investment (ROI)
  - Milestones for implementing the recommendations
  - The name of the principal action agency responsible for the recommendation
  - The names of the agencies responsible for providing support to the principal action agency
- A description of the ramifications of not implementing the recommended alternative

3.8 Summary

The summary will include a synopsis of all recommendations. It should include brief statements highlighting each of the items described in the recommendations. A plan of action and milestones for the recommendations should also be included. This plan of action and milestones should include initial training as well as the sustainment of training system.

4 Training technology assessment

The training technology assessment data contains information on technology used to provide training for existing systems, which are similar to the emerging system for which training must be developed. It also provides an assessment of the training technologies that are used in areas relevant to the training requirements of the emerging system.

4.1 Similar system analysis

The similar systems analysis will include the results, assessments and recommendations made from this analysis for each training program under consideration. It should also include a matrix

and description that compares training programs and depicts similarities and differences among programs for selected training features (eg, simulators, computer-based instruction, etc).

4.2 Associated training

The associated training data will identify all major training programs similar to the training program under development.

4.3 Commonality analysis

The commonality analysis data will contain a description of the results of the commonality analysis performed on the training equipment identified and characterized in the associated training equipment listed above. This information should include, but not be limited to:

- The optimal number and mix of training equipment required to support the training under study
- A description of the optimal simulation features for each type of equipment
- A description of the optimal instructional features for each type of equipment
- A description of common features that fail to support training, as well as common causes for failure
- An estimate of criticality for each feature, for each type of equipment

4.4 State-of-the-art assessment

The state-of-the-art assessment data addresses the training program under consideration. It should include separate descriptions for results, assessments and recommendations in the areas of training concepts, methods, techniques, technology and system evaluation. It should address the instructional and evaluative attributes of each area. It should describe alternative and optimum combinations of training concepts, methods, techniques and technologies with rationale for the training system under consideration. Results of the assessment presented should include, but not be limited to:

- Identification of technology which will be upgraded
- Identification of relevant technologies which could be applicable to the training program
- An estimate of criticality for each identified technology
- A Return on Investment of each identified technology

4.5 Simulation and instructional features

The simulation and instructional features data will provide summary information on the simulation and instructional features identified in commonality and state-of-the-art assessment data. Refer to Para 4.4.

Chapter 3.3

Analysis - Mission, job, and task analysis

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Chap No./Document No.	Title
Chap 3.3.1	Mission, job, task analysis - Mission analysis
Chap 3.3.2	Mission, job, task analysis - Job analysis
Chap 3.3.3	Mission, job, task analysis - Identify tasks
S3000L	International procedure specification for Logistics Support Analysis (LSA)

1 General

The mission, job and task analysis define human performance requirements and facilitates their achievement with a system design process. This process integrates traditional training analysis with human systems integration, systems engineering, and Product support analysis to ensure the operator and maintainer's needs are aligned and traced to mission and system design requirements.

2 Description

Analysis is the foundation that determines the requirements of any new or major change to a Product. The goal of mission, job, and task analysis is to identify a set of task inventories per job/role that detail the technical tasks that are used to operate or maintain a Product. It is emphasized that training is only one of several disciplines to conduct similar analysis to determine task inventories per job/role. Product support analysis, and human factors engineering employ similar processes in order to detail similar task inventories. It is recommended that training analysts coordinate with these other disciplines to identify a single set of task inventories. The processes outlined herein should only be used if training analysis is being performed as a standalone support element. Refer to S3000L.

Mission analysis utilizes a Top Down Functional Analysis (TDFA) to identify human system integration requirement methodology to develop an audit trail that ties mission (operational) requirements to training requirements. Refer to Chap 3.3.1.

Job analysis provides a methodology to detail a list of tasks required to perform a specific job or duty in support of a set of mission requirements. Refer to Chap 3.3.2.

Task analysis provides a methodology to identify and document collective and team tasks required to support mission or operational requirements. Refer to Chapter 3.3.3.

Chapter 3.3.1

Analysis - Mission analysis

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Table 1 References

Chap No./Document No.	Title
Chap 3.7	Analysis - Business objects
S3000L	International procedure specification for Logistic Support Analysis (LSA)

1 General

A mission is a pre-established objective or purpose for a military or business unit.

2 Description

A mission (or operational) analysis is systematic study to identify:

- A unit's mission
- All the specified, implied, and supporting missions that the unit and its subordinate units should perform as part of that overall mission
- All the mission tasks that must be performed to accomplish each of these missions

Mission analysis is conducted on new and existing Products and normally result from the following conditions:

- Creation of new end-item
- Significant changes in the operational concept and or usage of an existing end-item
- Changes in the mission or operational capability of a Product

First the Product is analyzed into mission or operational objectives, goals and activities in a logical sequence. Next, it is necessary to identify the functions needed to satisfy the mission or operational objectives. Functions are described as activities performed by a Product to satisfy the requirements of the mission. Finally, tasks describe what humans do to functionally operate and maintain the Product to support all aspects of a mission.

3 Process

The mission analysis process is shown at Fig 1.

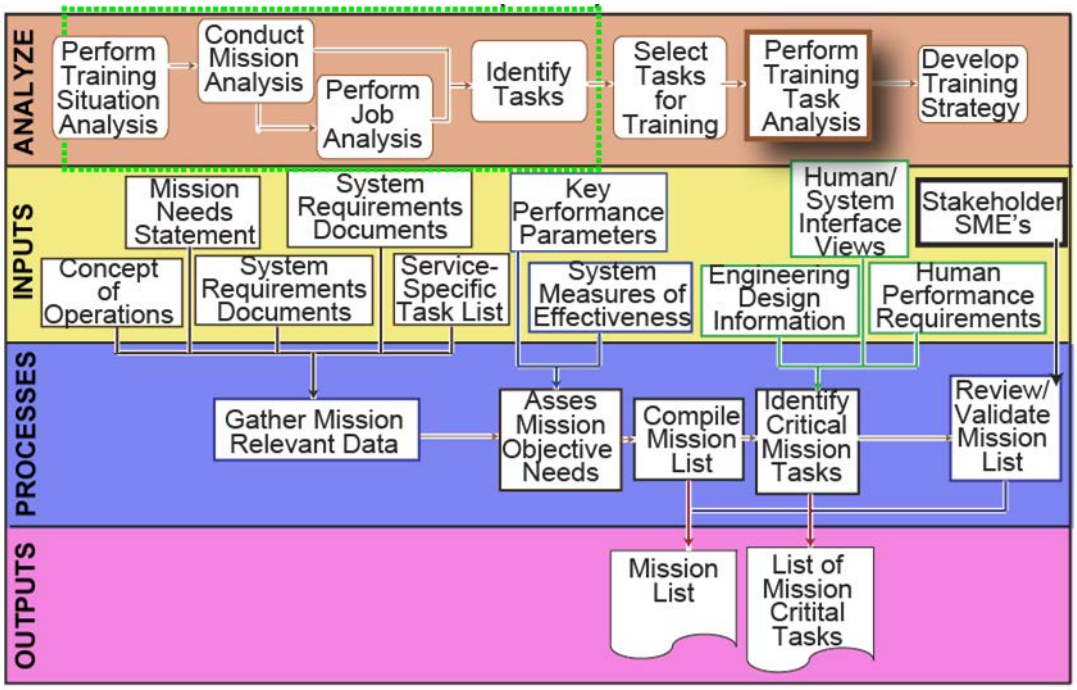

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Fig 1 Mission analysis process

3.1 Inputs

3.1.1 Concept of operations

Concept of operations are defined in a series of documents that define the scope of the Product and its boundaries. They define the overall objectives of the Product as well as supporting descriptions and requirements. Examples of these documents are Initial Capabilities Documents (ICD) and Performance Based Specification (PBS).

3.1.2 Mission (operational) needs statement

The operational need statement identifies the overall purpose of the Product. It declares the need that the Product going to fulfill in an overall operational environment.

3.1.3 System requirements documents

The system requirements documents identify the overall requirements of the Product. These documents identify any Product constraints that can affect human performance and thus identify a training impact. These requirements documents identify crew size as well as facility or environmental constraints.

3.1.4 Service specific task lists

Service specific task lists, also known as organizational task lists, identify jobs or roles that operate or maintain sections of the overall Product, or the Product itself. They can also identify and job or role restrictions in terms of required qualifications.

3.1.5 Key performance parameters

Key Performance Parameters (KPP) specify what the critical performance goals and performance measures are for a Product. KPPs indicate critical performance success measures for a Product and help determine critical training goals. Examples of KPPs critical to mission analysis include survivability KPPs such as speed and maneuverability, material availability, operational availability, and training readiness.

3.1.6 System measures of effectiveness

In addition to KPP's additional measures of effectiveness are also critical in determining mission or operational performance. These Measures of Effectiveness (MOEs) are a measure of a Product's ability to support the achievement of an operation mission. They are defined in terms of operational results and will drive the performance measurement in the overall training curriculum.

3.1.7 Engineering design information

Engineering design information is used to provide functional views of a Product. This information includes architectural views, conceptual views, and preliminary and detailed design drawings of individual parts the Product. This information represents design requirements of the Product and helps identify human/system interface views.

3.1.8 Human/system interface views

Human system interface views provide information on the human's role in the operation and maintenance of a Product. This includes information on user analysis as well as user ability analysis. User analysis focusses on the usage objective of the Product, the environment where the Product will be used and variables such as the user roles, user characteristics, and any user interface requirements. Usability analysis focusses on the complexity of the Product, and the Product design to identify opportunities to improve its usability.

3.1.9 Human performance requirements

Human performance requirements document the measures of the performance of tasks on a Product. Human performance is defined as the ability of an operator or maintainer to accomplish a task requirement. These performance measures are used to determine the training performance requirements required in a task.

3.1.10 Stakeholder subject matter experts

Subject Matter Experts (SME), who are performing the same or similar jobs on similar equipment, are a good source of information for determining operational or mission requirements and for detailing human interaction requirements of a Product.

3.2 Process steps

3.2.1 Gather mission-relevant data

The first step in the process is to gather all relevant data regarding the mission or operational performance. This includes the documentation and resources that guide, direct, or explain the activities of the target organization. KPPs as well as other system MOEs should be identified during this step.

3.2.2 Assess mission objective needs

During this step, mission relevant data and the other inputs identified at Para 3.1, are analyzed to determine the overall purposes, objective, or capabilities of the Product and to identify and document the mission or operational requirements. Training analysts must first determine the operational need for the Product by reviewing the information gathered at Para 3.2.1. Training analysis must also document any constraints that could affect human performance and have an impact on training. The training analyst must consider the infrastructure and all associated logistics associated with the Product. This includes identifying minimum or maximum crew size, and facility or environment constrains that could impact the training system.

3.2.3 Compile a mission list

During this step, the Products primary and secondary mission or operational requirements are analyzed, and the results are documented. This includes interviewing individuals who are familiar with high-level operational requirements of the Product and the type of anticipated/planned operational scenarios in which the Product will be involved. MOE and Measures of Performance (MOP) are reviewed so that student performance requirements can be determined.

Functional analysis is also performed during this step. The function analysis involves determining what the Product is designed to do in order to satisfy the mission requirements. For example, if an operational requirement of the Product is to be able to stop within ten feet, then it is up to the Product engineer to ensure the Product has a braking system. The training analyst must concentrate on the activities required for successful operation and maintenance of this braking system. Functional analysis involves an identification and analysis of:

- The identification of all the necessary functions required to satisfy the primary and secondary mission or operational scenarios of the Product
- The enumeration of the performance measures for each function
- The operational relationships between the functions. For example, relationships between the wheel system, and braking system on the Product must be analyzed to ensure performance requirements can be met.

3.2.4 Identify the critical mission tasks

Task analysis is performed to obtain information that is used to develop tasks that describe how humans will perform Product functions. Use of Product requirement documents, such as architectural views and system functional traceability matrices, can help identify the initial task list for the Product. It is important for training analysts to work with SMEs and human system interface experts to identify these tasks from a human perspective.

3.2.5 Review and validate the mission tasks

The final step in this process is to review and validate the identified mission critical tasks with SMEs and training program personnel. These SME's can include system engineers, logistics specialists, human system interface personnel, and users. This review is performed during a user's conference.

3.3 Outputs

A documented list of missions (operational scenarios) of all specified, implied, and supporting missions for a Product, must be identified. A list of functions and critical tasks for each function should be included. The list of mission critical tasks should be recorded consistent with other

task analysis activities including Product support analysis activities. Refer to in S3000L. The business objects associated with this analysis are described in Chap 3.7.

Chapter 3.3.2

Mission, job, task analysis - Job analysis

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Chap No./Document No.	Title
Chap 3.3.1	Analysis - Mission, job, task analysis - Mission analysis
Chap 3.7	Analysis - Business objects
S3000L	International procedure specification for Logistic Support Analysis (LSA)

1 General

A job is a collection of unique, specific, related activities that fulfill a specific role or function critical to achievement of an organization’s mission or operational objective.

2 Description

A job or role analysis is a systematic study to decompose, structure, and comprehensively describe a job for the purpose of establishing training requirements. It involves identifying all the individual critical tasks job holders perform to accomplish their missions and duties.

Whether developing a new training course or updating an existing course, data must be collected that will allow a job analysis to be conducted. Job analysis is a method used to obtain a detailed listing of tasks necessary to perform a specific job or duty. Job related data should include its purpose, functional responsibility of personnel, required support equipment and materials, and information on how the Product works, is maintained, or is used.

Collecting this data can involve observing personnel in the work environment, interviewing job incumbents and supervisors, questionnaire surveys, jury-of-experts, and the study of applicable occupational field descriptions, related training documents, and engineering data and specifications. The primary purpose for conducting a job analysis is to develop individual task lists.

Job analysis is undertaken to identify the human performance requirements of a Product or organization and to group these requirements into activities that are assigned to an individual. These human activities when organized into logical sets are called a job.

In a job analysis, a process is followed that breaks the job into duties and tasks, refer to Fig 1. A job is a group of major activities assigned to one individual. A job can be divided into functional units called duties. A duty is a distinct major division of work in a job. Each duty is composed of a group of related tasks within a given job (eg, bicycle repair). Duties have no specific start or finish and tend to be general in nature. Although identifying duties is not required, duty areas are a convenience in organizing tasks. A task represents a series of actions that leads to a meaningful outcome.

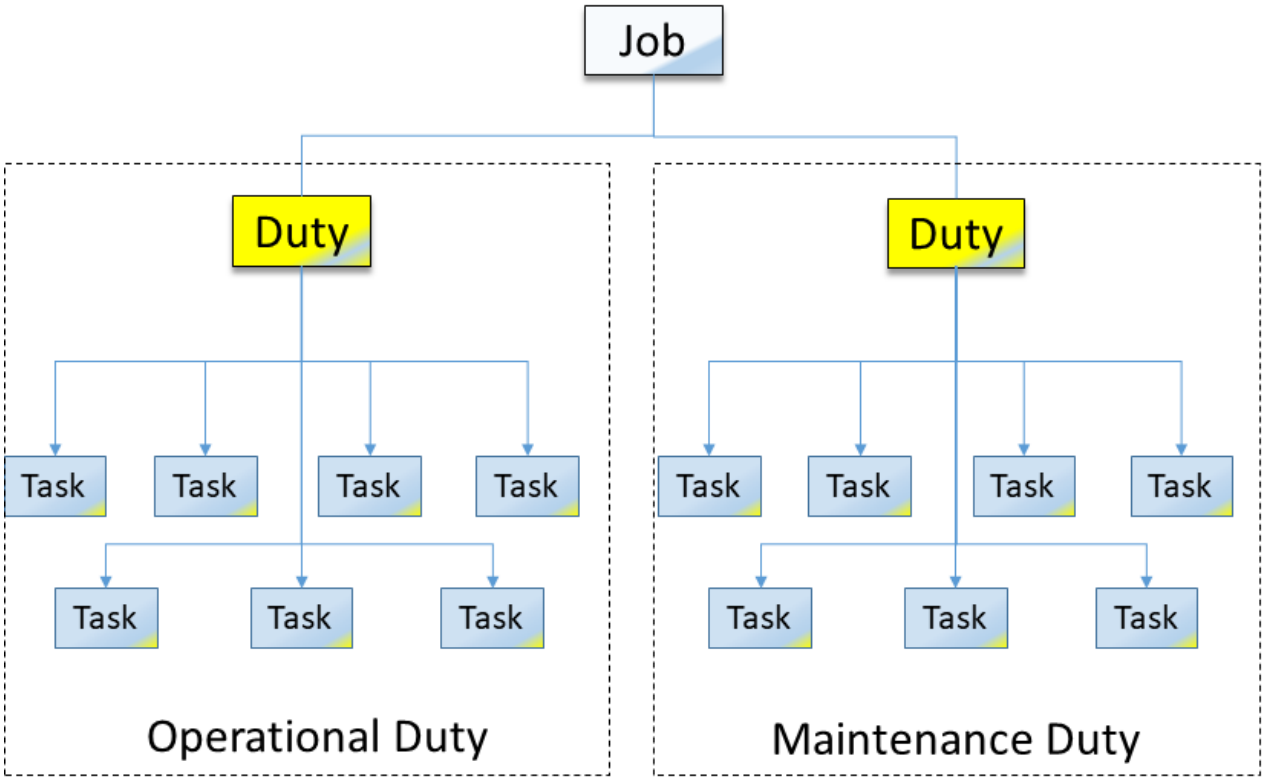

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Fig 1 Job, duty, task breakdown

3 Process

The job analysis process is shown at Fig 2.

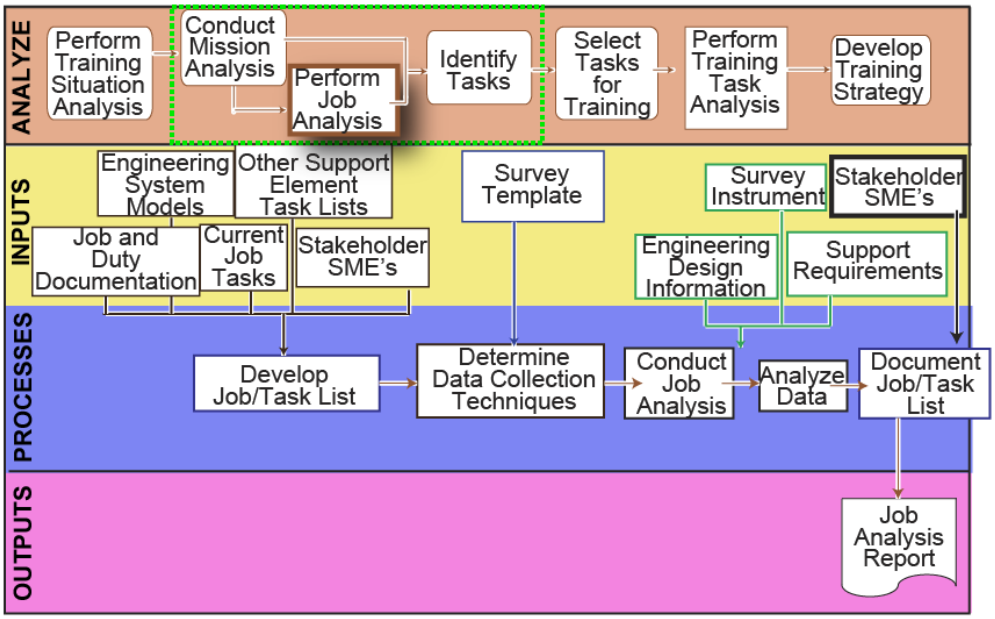

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Fig 2 Perform job analysis

3.1 Inputs

3.1.1 Mission tasks

The list of missions and mission critical tasks identified during mission analysis is a critical starting point for job analysis, refer to Chap 3.3.1. During this phase these mission critical tasks are grouped together by role.

3.1.2 Job and duty documentation

The identification of existing job and duty documentation including manpower appointments applicable to the Product are key aspects for performing a job analysis. These documents will provide information regarding additional duties and tasks that a job or role must perform in support of the Product.

3.1.3 Engineering Product models

Engineering Product models, including architectural and conceptual views, show the design of the Product. These views provide important human performance requirements and human interaction information as to how a Product will be used in support of mission.

3.1.4 Current job/task

Job/task information on similar jobs or roles, or for the same role on similar equipment, is important input data for a job analysis. Job analyses are performed for several reasons in addition to training development, so the results of similar job analysis should be considered when perform a job analysis for training purposes.

3.1.5 Other support element task list

Task lists from other support elements should be considered in performing a job/task analysis. These support elements include systems engineering, human factors engineering, and analyses detailed in S3000L.

3.1.6 Stakeholder subject matter experts

Subject Matter Experts (SME), who are performing the same or similar jobs on similar equipment, are a good source of information for determining operational or mission requirements and for detailing job and duty requirements of a Product.

3.1.7 Data collection sources

Data collection sources and techniques will be different when developing training for a new Product or developing training to accommodate a major modification to an existing Product, than when updating a training program to a mission or operational change. For example, in the early life of a new Product final technical documentation is not always available. Therefore, data collection sources and techniques will vary based on the situation. Typical data collection sources will include:

- Interviews with engineers and SME
- Surveys
- Checklists
- Occupational surveys
- Small group panels
- Similar job analysis reports

3.1.8 Support requirements

Support requirements developed by other Product support elements should also be considered. In addition to S3000L, other sources include:

- Integrated Support Plan (ISP)
- Product Support Requirements Specification (PSRS)
- Support System Design Description (SSDD)
- Integrated master plan

3.2 Process steps

3.2.1 Develop job/task list

The first step in the process is to gather and review all relevant data regarding job analysis and document an initial job/duty and task list. The input sources identified in Para 3.1 should be reviewed while creating the job/task list and a job (role), duty, task breakdown as shown in Fig 1 should be created. During this step the job should be examined in order to determine all of component duties and tasks, the conditions under which the job is performed, and the standards to be achieved when performing the job. The person in the job should also be considered. This will permit the identification of Knowledge, Skills, and Attitudes (KSA) necessary for effective performance. The job/duty/task breakdown should examine:

- Job objective and responsibilities
- Levels of supervision
- The conditions which the job or duty are performed
- Job standards
- Frequency of task performance
- Consequences of inadequate task performance
- Task criticality indication

3.2.2 Determine data collection techniques

Training analysts must plan their data collection requirements and techniques before beginning data collection. The training analyst should decide what data will be necessary for the project and should then develop a checklist for use during the data collection to ensure that all necessary data is collected. The data collection sheets should be discussed between all personnel that are carrying out the data collection to ensure that the data is collected consistently. More than one method should be used since each method has its inherent strengths and weaknesses.

Depending on the project requirements, the contents of the checklist include, but are not limited to:

- Product information:
  - How it works
  - How it is maintained
  - How it is used
- Personnel functional responsibilities:
  - Job Information:
    - Job title
    - Job purpose
    - Duty title
    - Job steps/procedures
    - Location of performance
    - Environment conditions
  - Task information:
    - Task titles
    - Subtask titles
    - Proper action verb assigned
    - Supervision required
    - Assistance required
    - Physical demands
    - Safety precautions
    - Safety procedures

3.2.3 Conduct job analysis

Using the draft job/task lists and the appropriate data collection techniques the training analyst conducts the job analysis. The process for conducting the job analysis depends largely on the data collection methodology chosen, however the draft job/task list developed should be used as a starting point for each job/role.

The interview/survey method involves interviewing personnel currently serving in (or having recently served in) the job or role who have experience relevant to the subject area. Conduct this data collection method through face-to-face interviews and/or through a survey.

In the group interview, job incumbents are assembled to give information relative to their job. The training analyst asks questions about job performance and can ask the group to list data on tasks that cannot easily be demonstrated or observed. Because the group interview involves recall, rather than recognition, this method can provide inaccurate or incomplete data.

The observation/interview method involves sending the instructional analyst to observe end interview job incumbents and their supervisors on the job. Observing the job incumbents at work allows flexibility in gathering the required data by providing the training analyst opportunities to continually evaluate the information obtained. Direct observation of personnel as they perform their job, combined with interviews, provides the most useful source of task information. The training analyst should have a thorough understanding of the literature and functional relationships of the job to correctly interpret and describe the behaviors observed.

In the jury-of-experts method, experienced and knowledgeable personnel from various activities are brought together to record and analyze the data on jobs for which many critical behaviors are not directly apparent. This method can effectively supplement on-site observation/job analysis and written surveys. The experts are selected for their experience and knowledge of the job.

3.2.4 Analyze data

It is expected that the job analysis will produce a job/duty/task breakdown for each job that will operate or maintain a Product. The data collected from job incumbents in should be compared to the initial job/duty/task breakdown identified. A job should consist of a main objective of the role phrased in terms of the performance expected. Duties are the principal activities of the job holder and directly relatable to a job. They have no specific start or finish and are general in nature. Tasks are concise statements, beginning with a verb that specifically identifies major components of the role that result in a measurable outcome.

To ensure validity and assurance of the process, the job analysis activity should be governed by a dedicated steering group representing all stakeholders as well as subject matter experts. This steering group will ensure that the data is analyzed correctly and completely, and all referenced data is available and reviewed. This steering group will vary in size and make-up based on the training requirement, the number of jobs to be analyzed, and the complexity of the Product.

3.2.5 Document job/task list.

The final step in this process is to document the job/task list for each job/role. This job/task list should include the information provided in Chap 3.7.

3.3 Outputs

A documented job analysis report of all identified jobs required to operate or maintain a Product is the critical output from this phase. The list of jobs should be recorded consistent with other job/task analysis activities including Product support analysis activities. Refer to S3000L. The business objects associated with this analysis are identified in Chap 3.7.

Chapter 3.3.3

Mission, job, task analysis - Identify tasks

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Table 1 References

Chap No./Document No.	Title
Chap 3.3.2	Mission, job, task analysis - Job analysis
Chap 3.7	Analysis - Business objects
S3000L	International procedure specification for Logistic Support Analysis (LSA)
S4000P	International specification for developing and continuously improving preventive maintenance

1 General

This chapter highlights the Instructional Systems Development (ISD) process for task analysis, however it is recommended that training analysts work closely with other disciplines in order to develop a comprehensive set of task inventories.

2 Description

The objective of the task identification is to develop task inventories that describe how humans will perform assigned Product functions. Human tasks include tasks that humans perform and that involve interaction with other parts of the Product. Human tasks are a critical foundation for the support of all Products. Many disciplines employ some sort of Front-End Analysis (FEA) in order to determine task inventories. Systems engineering, Product support analysis, human factors engineering, and ISD, all have detailed processes necessary to determine the requirements of that discipline.

Once a set of tasks inventories have been identified, important task attributes or characteristics are defined, task interactions and sequences are identified, and an optimal task design is developed. Tasks are further defined as collective tasks, or individual tasks.

2.1 Tasks

2.1.1 Collective tasks

Collective tasks are tasks that:

- Require more than one individual to complete, with each individual performing a discrete part of the task
- Require simultaneous performance of task steps in different locations or requires many skills, that one person cannot perform the task in a timely or effective manner. When deciding timeliness and/or effectiveness, maintain objectivity

2.1.2 Individual tasks

Individual tasks are tasks that:

- Is a group of related activities (subtasks) directed toward a goal
- Has a definite beginning and end
- Involves people interacting with equipment, media, data and other people
- Is directly observable or otherwise measurable
- Is not dependent on other tasks
- Results in a meaningful output
- Includes a mixture of decisions, perceptions, and/or physical activities required of an individual

– Can be any size or degree of complexity

2.1.3 Task statements

As tasks are identified, a task statement is prepared that clearly describes the intended action and shows that the action is specific and measurable. Task statements should be clear, complete, concise and relevant to the performance action. Refer to S3000L.

3 Process

The task identification process for individual tasks is shown at Fig 1.

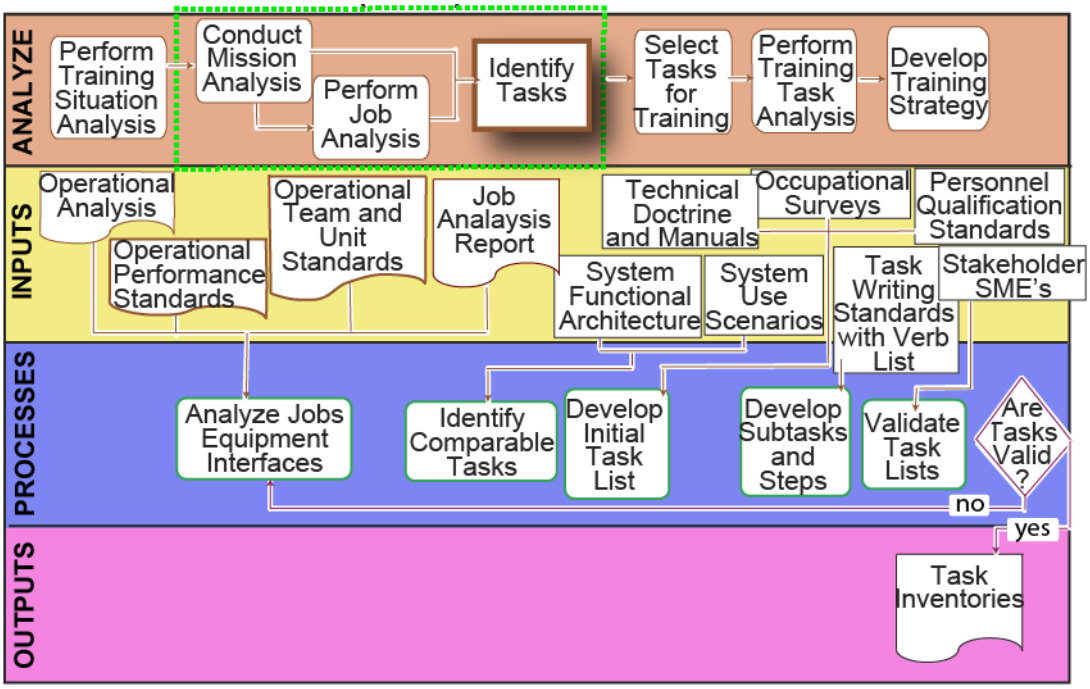

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Fig 1 Identify tasks process

3.1 Inputs

3.1.1 Operational analysis

Operational analysis identifies what the Product is designed to accomplish (eg, combat reconnaissance). Scenario/conditions, categories of factors or constraints under which the Product is expected to operate and be maintained (eg, time of day, all weather, all terrain operation). Operational activities are analyzed to identify characteristics using operations templates, available requirements documents, Universal Joint Task List (UJTL) and in-service tactical level task lists, and inputs from Subject Matter Experts (SME).

3.1.2 Operational performance standards

Performance standards describe how well the individual(s) must perform the task to meet the criteria of the operational activity. For example, must fly ten sorties to support the mission, means 10 takeoffs.

3.1.3 Operational team and unit standards

Team and unit standards identify how well a team of individuals must perform in support of an operational performance environment. These are particularly critical in assessing collective tasks. For example, a team or unit standard is its readiness rate for a fleet of aircraft.

3.1.4 Job analysis reports

Job analysis is a method used to obtain a detailed listing of tasks required to perform a specific job or duty. Job related data should include its purpose, functional responsibility of personnel, required support equipment and materials, and information on how the system works, is maintained, or is used. Collecting this data can involve observing personnel in the work environment, interviewing job incumbents and supervisors, questionnaire surveys, jury-of-experts, and the study of applicable occupational field descriptions, related training documents, and engineering data and specifications. The primary purpose for conducting a job analysis is to develop individual task lists. Refer to Chap 3.3.2.

3.1.5 System functional architecture

Functional architecture identifies the full range of activities the Product is designed to perform. The functional architecture includes a function hierarchy that is produced using a top-down approach decomposing missions to, for example, flight phases, flight phases to functions, and functions to function steps.

3.1.6 Technical doctrine and manuals

Any technical doctrines and technical manuals are a valuable source for identifying tasks. Technical doctrine included, but are not limited to, any concepts, principles, tactics, techniques, policies, procedures etc, which guide the technical operations and support of a Product.

3.1.7 Product use scenarios

Product use scenarios define the external objectives of Product performance. This information is extracted from system acquisition documentation (eg, capabilities design document, operational requirements document, Concept of Operations (CONOPS), performance-based specification, etc) that describe Product capabilities. Product capabilities are employed to satisfy user needs or to support mission achievement. Mission achievement is measured by effectiveness and is described in terms of the conditions and the standards to which each mission must be performed.

3.1.8 Occupational surveys

Occupational surveys provide any job-related information regarding:

- Physical demands
- Environmental conditions
- Education
- Training and experience
- Cognitive and mental requirements

3.1.9 Task writing standards with verb list

Task statements are prepared in a standard format to ensure intended action is clearly described and the action is specific and measurable. Task writing standards and verb lists help to ensure that task statements are clear, complete, concise, and relevant to the performance action.

3.1.10 Personnel qualification standards

Personnel qualification standards is a qualification system of basic performance designed to establish the minimum level of competency required for a member to successfully perform in their grade.

3.1.11 Stakeholder subject matter experts

SME who are performing the same or similar jobs on similar equipment are a good source of information of task requirements.

3.1.12 Organizational descriptions and diagrams

Organizational descriptions and diagrams including organization charts, and reporting descriptions are a valuable input for identifying collective tasks.

3.2 Process steps

3.2.1 Analyze jobs equipment interfaces

The first step in the process is to analyze all inputs identified in Para 3.1 identifying any that meet the criteria for collective tasks. This analysis should also identify any dependencies, including required tools and prerequisites. Successful task completion standards should also be identified. Tasks should be broken into their component behaviors or performances, representing actions, decisions, and paths as a sequence of behaviors.

3.2.2 Identify comparable tasks

Comparable tasks are tasks that have many of the same task steps or use similar or the same equipment performed in different physical locations of a Product. For example, calibrating the front bicycle brake and calibrating the rear bicycle brake. It is possible that comparable tasks only need to be analyzed once with reference to other tasks.

3.2.3 Develop tasks list

As tasks are identified, a task statement is prepared in a standard format. Using a standard format ensures that the intended action is clearly described, and the action is specific and measurable. The wording of the task statement consists of an action verb, an object, and possible qualifiers (optional). Task statements should be clear, complete, concise, and relevant to the performance action. Generally, when selecting action verbs for task statements, standardized lists of skill and knowledge verbs are used. The analysis should identify job roles, and skills required of the individuals so that a collective task can be performed and completed. Dependencies between job roles during collective task performance, as well as coordination requirements between job roles should also be determined.

3.2.4 Develop subtasks and steps

In order to determine the effective training requirements, tasks should be further decomposed into subtasks and steps. A subtask is collection of steps that comprise a major task activity, but are not done for their own sake, for example, Open aircraft panel. A step is a required unit/individual action that must be performed to accomplish the task/sub-task. Steps must be specific and detailed and contain only one action or unit of work, for example, Remove bolt. Refer to Fig 2.

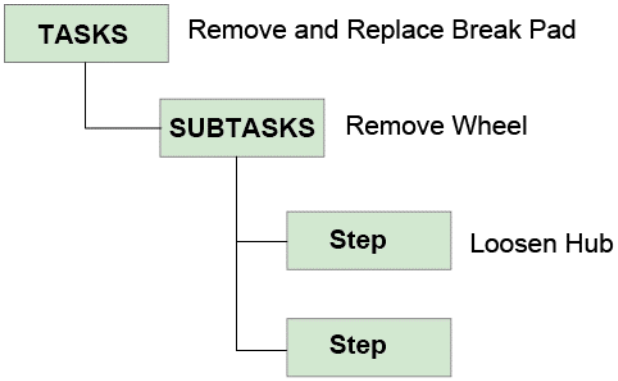

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Fig 2 Task analysis decomposition

3.2.5 Validate the task list

Task validation is conducted by a panel of SME who review each task statement, task conditions and task standards. All supporting information, including identified roles, skills, supporting equipment and task dependencies should be reviewed.

3.3 Outputs

A documented list of task inventories, collective and individual tasks including subtasks, steps, roles, performance requirements and other required collective task attributes. Task information should be common across other disciplines and must not be interpreted as defined for S6000T alone. Preventive maintenance analysis should be recorded (refer to S4000P), and Product support analysis (refer to S3000L). The output is normally displayed in a task analysis worksheet with the required business objects. Refer to Chap 3.7.

Chapter 3.4

Analysis - Task selection

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References

Table 1 References

Chap No./Document No.	Title
Chap 3.2	Analysis - Training situation analysis

Chap No./Document No.	Title
Chap 3.7	Analysis - Business objects
S3000L	International procedure specification for Logistic Support Analysis (LSA)
S4000P	International specification or developing and continuously improving preventive maintenance
DIF models	ADVISOR Enterprise Difficulty-Importance-Frequency (DIF) Model Fact Sheet Canadian Forces Individual Training & Education System 2003
JSP 822	Defence Systems Approach to Training - Direction and Guidance for Individual and Collective Training

1 General

Once the task inventories have been identified to the required level of detail and the tasks have been determined to be individual or collective, they are then analyzed to select those tasks that require training. It is often not necessary or practical to train every task that is required to perform a particular job. Financial constraints, time available and other constraints make it impractical to train every task.

2 Description

Based on the criteria established, training analysts categorize the tasks according to those requiring initial training, those that can be performed using alternate methods, such as job aides, and those tasks that require no training. Identifying the tasks that need to be trained is the first critical step in training analysis, and this process should be followed carefully to ensure that the appropriate training level is identified for all tasks. Wherever possible, appropriate information from the task inventory source(s) should be considered during this process.

2.1 Existing task selection models

Many critical task selection models are available for use in performing task selection analysis, however most of them are based on a similar model that examines a task's Difficulty, Importance and Frequency (DIF).

2.1.1 Florida State University (DIF) model

This model is created by Florida State University and published in military regulations and standards (United States Department of Defense 2001) over the past 30 years. Based on a task's DIF, the model indicates whether the task should be trained, over trained, or not trained.

2.1.2 Criterion model

Published in the Canadian Forces Individual Training & Education System 2003. When making recommendations, in addition to a task's DIF, this model considers:

- The requirement for immediate action
- The percentage of individuals performing the task
- The consequences of inadequate performance

2.1.3 Ohio State Systematic Curriculum and Instructional Development DIF task model

The Systematic Curriculum and Instructional Development (SCID) model is similar to the Florida State DIF model but classifies training priorities into five levels ranging from a very high training priority (Level 1) to formal training not required (Level 5). These levels are based on the task's DIF using the algorithm. Refer to Fig 1.

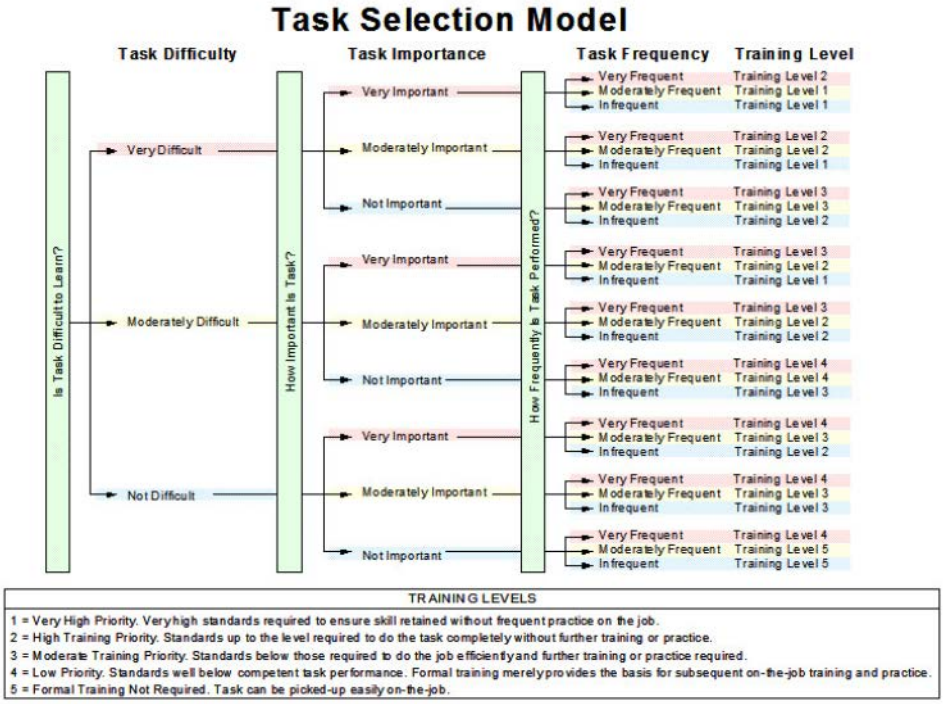

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Fig 1 Ohio State SCID algorithm

2.1.4 Joint Service Publication (JSP) 822

The United Kingdom Ministry of Defense direction and guidance for training education (refer to JSP 822) model aligns closely to the Ohio State SCID model and uses a similar model to identify six training categories (levels). Refer to Table 2.

Table 2 JSP 822 definitions

Training category	Definition
1	By the end of the formal training course the trainees will have performed the whole task several times, to the full job standard, and under realistic scenarios and conditions in which the operational physical, functional and environmental fidelities were accurately reproduced. The trainee will be able to perform the task competently immediately on arrival in the operational workplace.
2	By the end of the formal training course the trainee will have performed the whole task at least once to full job standards, under realistic physical, functional and environmental conditions and in a realistic scenario. The trainee should be able to perform the task on arrival in the operational workplace.
3	By the end of the formal training course the trainee will have performed the whole task in a training environment to a lesser standard than required in the job (safety standards to be met in full).

Training category	Definition
4	By the end of the formal training course the trainee will have demonstrated an adequate level of underpinning knowledge and principles required but will not have applied it to develop the skills required to perform the task.
5	All formal training delivered in, or under the auspices of, the workplace.
6	Trainees do not require any formal training.

2.2 S6000T task selection model

The S6000T recommended model is based on the Ohio State SCID algorithm and JSP 822 algorithm and results in five training categories. Refer to Table 3.

Table 3 S6000T training levels and description

Level	Title	Description
1	Very high priority	Very high standards required to ensure skill retained without frequent practice on the job. By the end of the formal training course the trainees will have performed the whole task several times, to the full job standard, and under realistic scenarios and conditions in which the operational physical, functional and environmental fidelities were accurately reproduced.
2	High training priority	Standards up to the level required to do the task completely. By the end of the formal training course the trainee will have performed the whole task at least once to full job standards, under realistic physical, functional and environmental conditions and in a realistic scenario.
3	Moderate training priority	Standards below those required to do the job efficiently and further training or practice required. By the end of the formal training course the trainee will have performed the whole task in a training environment to a lesser standard than required in the job (safety standards to be met in full).
4	Low priority	Formal training merely provides the basis for subsequent on-the-job training and practice. By the end of the formal training course the trainee will have demonstrated an adequate level of underpinning knowledge and principles required but will not have applied it to develop the skills required to perform the task
5	Formal training not required	Tasks can be picked-up easily on-the-job. Trainees do not require any formal training.

In addition to determining training levels and assisting in establishing training priorities, DIF analysis results should be fed back to design engineers. Tasks that are identified as difficult can be examined to determine whether automation, or some design changes can be made to the Product to make the tasks less difficult to perform. The results should also be fed back to the Product support analysis for additional support consideration or options.

3 Process

3.1 Select task for training

The task selection process starts with the stakeholder recommendations in order to identify a list of tasks that require training. Refer to Fig 2.

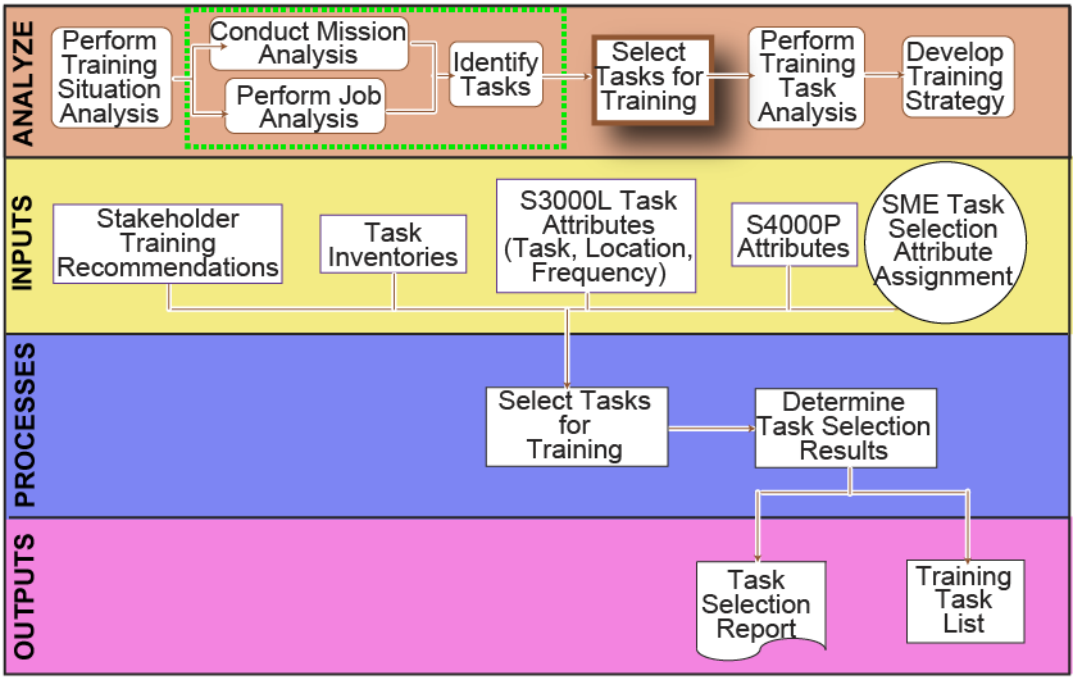

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Fig 2 Task selection process

3.2 Inputs

3.2.1 Stakeholder training recommendations

In addition to task selection models, training recommendations of the stakeholder or customer must be considered. For example, some programs identify certain types of tasks (eg, remove and replace tasks) do not need to be trained. Other programs indicate that all tasks must be trained to some degree. In addition, stakeholders will help indicate if there are other performance support alternatives that can be considered instead of formal training. The training strategy of the stakeholder should also be examined. Some organizations try to minimize the amount of formal training, and stress on-the-job training. Some organizations have specific time allocated for formal training, which will impact the number of tasks that can be trained. Working with the stakeholder to determine these factors will help determine specific training strategy. Refer to the Training Situation Analysis Report (TSAR) and (refer to Chap 3.2).

3.2.2 Task inventories

Task inventories are critical to get a complete picture of all the tasks that are required to operate or maintain the Product. These task inventories are a result of task analysis activities. There are multiple sources that perform these task analysis activities, including, but not limited to, product support analysis, program system engineering and human factor engineers. Training analysts should coordinate closely with these teams to ensure that a complete task inventory is compiled.

3.2.3 S3000L task attributes

Several S3000L attributes should be considered when determining DIF levels. These attributes include, but are not limited to, task personnel safety criticality, warnings and cautions, task total labor time, task duration, task personnel resource, maintenance level, maintenance location, task Product integrity criticality, task operability impact, and task frequency. Training analysts should coordinate with Product support analysts to ensure these attributes are available.

3.2.4 S4000P attributes

Product support analysts normally identify task frequencies during their task analysis activities. For example, S4000P identifies the Preventative Maintenance Task Requirements (PMTR) that

are used by S3000L in its Maintenance Task Analysis (MTA), and also apply to S6000T. These task frequencies for preventive maintenance tasks determine how often a task needs to be performed and in conjunction with similar S3000L attributes are a critical attribute in performing a DIF analysis.

3.2.5 Subject matter experts task selection attribute assignments

Subject Matter Experts (SME) who are performing similar tasks or performing these new tasks should also provide input. They will provide input on how difficult the task is to train, as well as provide additional information not available from the other sources.

3.3 Process Steps

3.3.1 Identify DIF attributes per task

The training analyst should work with SME, as well as data from Product support analysis activities to answer the following questions regarding each task on the task list.

3.3.1.1 Difficulty

There are two possible difficulty attributes to measure; how difficult is it to perform the task, or how difficult is it to train the task. Different target organizations prefer different measures, however the S6000T DIF model uses difficult to perform. Difficulty is normally ranked as a low, medium, or high difficulty. A task that could cause harm or loss of life to a person if performed incorrectly should be considered difficult and would, for example, be identified as a highly difficult task.

3.3.1.2 Importance

In comparison to other tasks, it is essential to determine the importance of completing the task successfully in the operation of the Product (eg, if the task is not performed, will performance of the Product be degraded, or will it not work at all?). Depending on the task model utilized, this factor can be a binary (yes or no), or can be a ranking (eg, low, medium, or high). Tasks that could damage equipment if performed incorrectly should be considered important and highly important task.

3.3.1.3 Frequency

The frequency is a measure of how often a task normally performed. The scale can be in a fixed period (eg, how many times in a month, etc), or the scale can be during a typical operation of the Product (eg, how often this task is performed during each flight). This scale is normally very frequent, moderately frequent, or infrequent. Task groupings should be considered when determining task frequency. (eg, if a task is to replace a flat tire on bicycle then the frequency should consider two tires on the bicycle).

3.3.2 Run the model

Each task should be run through the S6000T model described at Para 2.2. This model will recommend a training level of one through five to determine whether training is required and to what level.

3.3.3 Determine task selection results

The chosen model will result in a recommended training priority for each task in the inventory. The training analyst along with an SME should review the results and adjust accordingly, based on additional factors such as difficulty to train as well as other stakeholder training recommendations and guidelines. A final training priority level as well as training level rationale should be indicated. Rationale should be identified for all training levels but must be identified for level six (No formal training required). Appropriate rationale includes, but is not limited to:

- Difficulty to train
- Limited time
- Automation eliminates need for training
- Adequate help functions available
- Low level of complexity

- Excessive cost
- Safety concerns
- Use of hazardous material or environment required
- Adequate performance support available
- Security classification decision

4 Outputs

There are two outputs resulting from this process:

- Task selection report indicating model results. The model results should clearly indicate the recommended training category for each task.
- List of tasks requiring training. A complete list of all the tasks that require training should be identified. These tasks will continue through the rest of the analysis process.

5 Data model

Each task in the task inventory should have an attribute identified with it, indicating the final training decision associated for that task, as well as a rationale for tasks that do not require training. Refer to Chap 3.7.

Chapter 3.5

Analysis - Task analysis

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References

Table 1 References

Chap No./Document No.	Title
Chap 3.4	Analysis - Task selection
Chap 3.7	Analysis - Business objects
ASD-STE100	Simplified Technical English
S3000L	International Procedure Specification for Logistic Support Analysis (LSA)

1 General

Once all the tasks that require training having been selected (refer to Chap 3.4), further, analysis is conducted to detail task performance attributes.

2 Description

The task performance details should describe how the task is performed (performance steps), under what conditions it is performed and to what standard the task must be. The Knowledge, Skills and Attitudes (KSA) required to perform the tasks and subtasks, as well as additional task attribute data, help the training analyst establish the individual training strategy and to design and develop the training programs and products.

3 Process

The training task analysis process is shown at Fig 1.

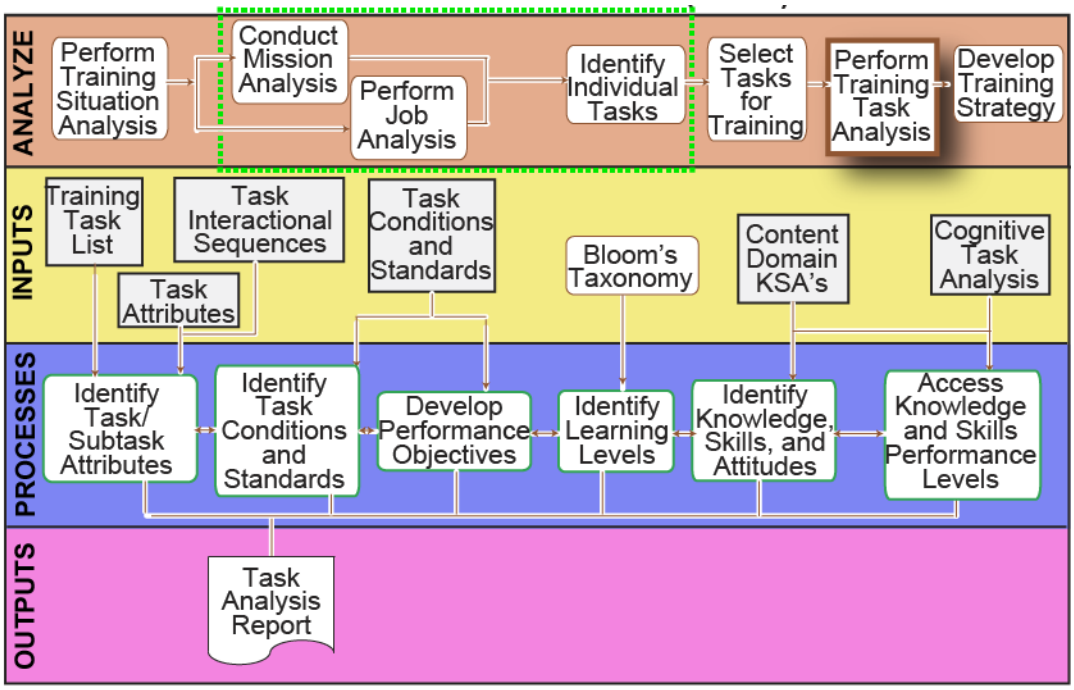

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Fig 1 Training task analysis - Tier 2

3.1 Inputs

3.1.1 Training task list

The training task list contains all the tasks that are identified as requiring training from the task selection process. All tasks that are identified as requiring some level of formal training are labelled as requiring additional training analysis.

3.1.2 Task attributes

Task attributes are all additional information regarding a task, including task frequency, task difficulty, task resources, type of task, etc. These attributes help identify the overall training strategy for the task, as well as identify additional training resources required. These attributes often come from other sources including human factors engineering, as well as the Operational Task Analysis (OTA) and Maintenance Task Analysis (MTA) activities. Refer to S3000L.

3.1.3 Task interactional sequences

Task interactional sequences are any dependencies between tasks. This could be where certain tasks must be performed before other tasks can be started or where certain tasks are dependent on the resulting data from another task (eg, a task to investigate a bird strike can result in a task to shut down the engine in flight).

3.1.4 Task conditions and standards

Task conditions are any special circumstances and environmental factors in which a task is to be performed. Task standards are the minimum acceptable proficiency required in the performance of the training task, under a specific set of conditions. Task conditions and standards play an important role in determining the overall training strategy and identifying any specific training aides to be utilized.

3.1.5 Education taxonomies

KSA taxonomies are used to define the verbs used in each training objective. Appropriate cognitive (knowledge), affective (attitude) and psychomotor (skill) taxonomies should be chosen prior to beginning the training task analysis process.

Note

There are many taxonomies available, but the most used, and recommended, is Bloom's taxonomy.

3.1.6 Content domain KSA

For maintenance tasks, the MTA activities can provide information on personnel resources required to conduct a task and any skill information, including skill codes, required to support a task, (refer to S3000L). Similar attributes should be available from the OTA.

3.1.7 Cognitive task analysis

Cognitive task analysis is a type of task analysis aimed at understanding tasks that require cognitive activity from the user, such as decision-making, problem-solving, memory, attention and judgment.

3.1.8 Cognitive taxonomy

The cognitive domain relates to knowledge and includes the recall or recognition of specific facts, patterns and concepts that serve in and the development of intellectual abilities. In Bloom's taxonomy there are six major categories. Refer to Table 2.

Table 2 Bloom's cognitive (knowledge) taxonomy

Category	Definition
Remembering	Recalling or retrieving previously learned data and information (facts, rules, concepts, and principles).
Understanding	Comprehending the meaning, translation, interpolation, and interpretation of instructions and problems. State a problem in one's own words.
Applying	Attaining and applying knowledge. Understanding data and information (facts, rules, concepts and principles) in the context of work.
Analyzing	Separating material or concepts into component parts so that their organizational structure can be understood. Distinguishing between facts and inferences.
Evaluating	Making a judgment about the value of ideas or materials. It is the evaluation of reasoning, using specific criteria to evaluate and then decide. Using a set of criteria and responding effectively to unexpected experiences, present and defend opinions by making judgments about information, the validity of ideas and the quality of work.
Creating	Building a structure or pattern from diverse elements. Putting parts together to form a whole, with emphasis on creating a new meaning or structure.

3.1.9 Affective taxonomy

The affective domain relates to the way individuals deal with things emotionally, such as feelings, values, appreciation, enthusiasm, motivations, and attitudes. In Bloom's taxonomy there are five major categories. Refer to Table 3.

Table 3 Bloom's affective (attitude) taxonomy

Category	Definition
Receiving	The ability to perceive the normal, abnormal and emergency cues associated with the performance of an operational procedure. Situational awareness of operational cues.
Responding	The mental preparedness to encode operational cues as indicators of normal, abnormal and emergency conditions associated with the performance of an operational procedure.
Valuing	The ability to judge the worth or quality of normal, abnormal and emergency cues associated with the performance of an operational procedure.
Competence	The mental preparedness to make decisions, by using prioritized strategies and tactics in response to normal, abnormal and emergency condition cues associated with the performance of an operational procedure.
Innovation	The mental preparedness to make decisions by generating the results expected upon completion of prioritized strategies or tactics. It includes the response to normal, abnormal and emergency cues associated with the performance of an operational procedure, and the ability to generate new prioritized strategies and tactics.

3.1.10 Psychomotor taxonomy

The psychomotor domain relates to the development of physical movement, coordination and skills which are normally achieved through repetitive practice (eg, the ability to manipulate a tool or piece of equipment). In a modified Bloom's taxonomy, there are eight major categories. Refer to Table 4.

Table 4 Bloom's psychomotor domain

Category	Definition
Perception (awareness)	The ability to use sensory cues to guide motor activity. This ranges from sensory stimulation, through cue selection, to translation.
Set	The readiness to act, to include mental, physical, and emotional sets. These three sets are dispositions that predetermine a person's response to different situations (sometimes called mindsets).
Guided response	The early stages in learning a complex skill that includes imitation and trial and error. Adequacy of performance is achieved by practicing.
Mechanism (basic proficiency)	The intermediate stage in learning a complex skill. Learned responses have become habitual and the movements can be performed with some confidence and proficiency.
Complex over response (expert)	The skillful performance of motor acts that involve complex movement patterns. Proficiency is indicated by a quick, accurate and highly coordinated performance, requiring a minimum of energy. This category includes performing without hesitation and automatic performance.
Precision	The ability to reproduce a skill with accuracy, proportion, and

Category	Definition
	exactness
Adaptation	This category includes skills that are well developed, and the individual can modify movement patterns to fit special requirements.
Origination	Creating new movement patterns to fit a particular situation or specific problem. Learning outcomes emphasize creativity based upon highly developed skills.

3.2 Process steps

3.2.1 Identify task/subtask attributes

The first step in the process is to identify the subtasks and steps required to perform a task. A subtask is similar to a task, in that it is a collection of steps required to perform a task; however, it is not completed for its own sake (eg, Remove a wheel). There are several steps performed to remove a bicycle wheel; however, a bicycle wheel is not typically removed for its own sake, but rather part of larger task (eg, Repair flat tire). Steps are the lowest level behaviors that are required to perform a task. These subtasks/steps are likely to come from an external source, such as S3000L for maintenance tasks, or human factors engineering for operator tasks.

3.2.2 Identify task conditions and standards

Task conditions are circumstances and environmental factors in which the task is to be performed. Task standards are the minimum acceptable proficiency required in the performance of the task, under a specific set of conditions. These should be identified for every task that is to be trained. Task conditions and standards are likely to come from external sources such as S3000L for maintenance tasks, or human factors engineering for operator tasks.

3.2.3 Develop performance objective

A performance objective is a precise statement of the performance requirement expected in the execution of a task, expressed in terms of the conditions and standards to which it will be performed or demonstrated. A performance objective identifying appropriate task conditions and standards should be developed for each task and/or subtask.

3.2.4 Identify learning level

Performance objectives should be analyzed against the cognitive, psychomotor, and affective taxonomies, and categorized against the requirements of the task. The conditions and standards of the performance objectives should be considered in making these assessments. Each task and subtask must be given a learning level against each of the taxonomies. Verbs for the performance objectives should then be chosen from the identified learning level. Table 5, through Table 23, and simplified technical English should be used when assigning verbs. Refer to ASD-STE100.

Table 5 Knowledge (comprehension) - Knowledge

Knowledge verbs		
Answer	Arrange	Apply
Calculate	Categorize	Collect
Coach	Compare	Complete
Confirm	Contrast	Describe
Designate	Differentiate	Discriminate
Distinguish	Divide	Duplicate

Knowledge verbs		
Elaborate	Eliminate	Exchange
Express	Extract	Finalize
Find	Follow directions	Gather
Group	Identify	Instruct
Label	List	Locate
Match	Memorize	Notify
Order	Organize	Outline
Quote	Rank	Read
Realign	Rebuild	Recite
Recognize	Recommend	Record
Recreate	Repeat	Reproduce
Respond	Restate	Schedule
Select	Tell	Train
Tune		

Table 6 Knowledge (comprehension) - Comprehension

Comprehension verbs		
Appraise	Change	Classify
Compile	Compose	Correct
Define	Depict	Describe
Discriminate	Discuss	Estimate
Explain	Express	Extend
Find (locate)	Find the difference	Format
Forward	Give example	Identify
Illustrate	Indicate	Infer
Locate	Measure	Obtain
Outline	Paraphrase	Predict
Put in order	Recognize	Record
Report	Restate	Review
Rewrite	Select	Simplify
Subtract	Summarize	Transcribe
Translate		

Table 7 Knowledge (comprehension) - Application

Application verbs		
Advise	Allocate	Assume
Call	Clear	Condense
Convert	Deliver	Demonstrate
Determine	Develop	Differentiate
Discover	Discuss	Dispense
Distinguish	Draw	Edit
End	Estimate	Execute
Facilitate	Finish	Gauge
Host	Illustrate	Implement
Interpret	Investigate	Keep records
Locate	Log	Manipulate
Map	Modify	Organize
Participate	Pause	Perform
Persuade	Plan	Practice
Predict	Present	Prioritize
Process	Produce	Proof
Prove	Provide	Reclaim
Relate	Resume	Retrieve
Scan	Set up	Ship
Show	Sign on	Situate
Sketch	Solve	Store
Submit	Supply	Terminate
Trace	Transfer	Translate
Train	Teach	

Table 8 Knowledge (comprehension) - Analysis

Analysis verbs		
Analyze	Arrange	Categorize
Challenge	Classify	Contrast
Criticize	Debate	Deduce
Detect	Derive	Determine

Analysis verbs		
Diagnose	Diagram	Differentiate
Discriminate	Experiment	Formulate
Generalize	Illustrate	Infer
Inspect	Interview	Organize
Outline	Probe	Process
Question	Relate	Select
Separate	Solve	Survey
Test	Troubleshoot	Verify

Table 9 Knowledge (comprehension) - Synthesize

Synthesize verbs		
Analyze	Annotate	Assume
Categorize	Collect	Combine
Compile	Compose	Conceive
Conclude	Construct	Convert
Create	Criticize	Decide
Defend	Derive	Design
Determine	Develop	Devise
Diagram	Direct	Discover
Document	Draft	Effect
Establish	Explain	Formulate
Generalize	Generate	Guide
Hypothesize	Illustrate	Infer
Integrate	Invent	Investigate
Locate	Manage	Maneuver
Manipulate	Mediate	Mitigate
Model	Modify	Observe
Organize	Originate	Oversee
Perform	Plan	Predict
Prescribe	Present	Produce
Project	Propose	Rearrange
Reason	Reconstruct	Relate

Synthesize verbs		
Reorganize	Resolve	Revise
Rewrite	Search	Solve
Set up	Summarize	Synthesize
Triage	Use	

Table 10 Knowledge (comprehension) - Evaluate

Evaluate verbs		
Appraise	Argue	Ascertain
Assess	Attach	Avert
Conclude	Consult	Contrast
Criticize	Critique	Decide
Defend	Describe	Discriminate
Edit	Enlist	Estimate
Evaluate	Explain	Interpret
Judge	Justify	Lead
Make a decision	Measure	Negotiate
Offer	Predict	Rate
Recruit	Relate	Resolve
Revise	Score	Summarize
Support	Validate	Value
Write (a review)		

Table 11 Attitude (affective) - Receiving

Receiving verbs		
Acknowledge	Ask	Attend
Be aware	Choose	Describe
Directing attention	Follow	Getting attention
Give	Hold	Holding attention
Locate	Reply	Show alertness
Tolerate	View	Watch

Table 12 Attitude (affective) - Responding

Responding verbs

Responding verbs		
Accomplish	Achieve	Acknowledge
Advise	Aid	Allow
Announce	Answer	Anticipate
Apologize	Ask	Assist
Communicate	Complete	Comply
Conform	Consent	Contact
Contribute	Cooperate	Demonstrate
Describe	Discipline	Discuss
Follow-up	Greet	Indicate
Interpret	Label	Notify
Participate	Question	Permit
Praise	Pursue	React
Refuse	Reply	Request
Respond	Resume	Seek
Visit	Volunteer	Welcome
Entertain	Enquire	

Table 13 Attitude (affective) - Valuing

Valuing verbs		
Adopt	Appreciate	Choose
Commit	Contemplate	Desire
Differentiate	Display	Dispute
Endorse	Enjoy	Ensure
Exhibit	Explain	Express
Form	Initiate	Invite
Judge	Justify	Participate
Prefer	Propose	Report
Sanction	Share	Study

Table 14 Attitude (affective) - Organize

Organize verbs		
Adhere	Alter	Approve
Arrange	Care	Categorize

Organize verbs		
Characterize	Classify	Combine
Coordinate	Defend	Establish
Explain	Formulate	Generalize
Group	Integrate	Modify
Observe	Order	

Table 15 Attitude (affective) - Characterizing

Characterizing verbs		
Perceive	Rank	Rate
Recognize	Reconnoiter	Relate
Synthesize	Systemize	Organize
Act	Advocate	Alert
Alter	Approve	Assess
Assume	Authenticate	Behave
Believe	Characterize	Choose
Command	Conceive	Conform
Conjecture	Conserve	Constitute
Continue	Coordinate	Defend
Develop	Devise	Devote
Disclose	Discriminate	Display
Encourage	Endure	Enforce
Ensure	Exemplify	Exonerate
Favor	Formulate	Function
Imagine	Incorporate	Influence
Innovate	Judge	Justify
Maintain	Modify	Perform
Practice	Prescribe	Preserve
Prioritize	Promote	Propose
Qualify	Question	Rally
Rationalize	Reassess	Reserve
Respect	Retain	Review
Revise	Sell	Serve
Share	Support	Study

Characterizing verbs		
Uphold	Use	Validate
Verify	Vindicate	

Table 16 Skill (psychomotor) - Perception (awareness)

Perception (awareness) verbs		
Choose	Describe	Detect
Differentiate	Distinguish	Isolate
Relates	Attempt	Delineate
Detect	Diagram	Follow
Draw	Enlarge	Fall
Feel	Hear	Jump
Listen	look	Organize
Pierce	Sketch	Scan
See	Separate	Smell
Stay	Strengthen	Stretch
Taste	Throw	Touch
Try	Twist	Visualize
Wear		

Table 17 Skill (psychomotor) - Set

Set verbs		
Begin	Carry	Creep
Depart	Define	Display
Explain	Outline	Perform
Proceed	React	Respond
Shift	State	Run
Volunteer		

Table 18 Skill (psychomotor) - Guided response

Guided response verbs		
Begin	Blueprint	Break up
Construct	Copy	Depict
Dissect	Disturb	Discompose

Guided response verbs		
Disjoin	Divide	Draft
Duplicate	Follow	Imitate
Mimic	Mock	Practice
React	Reinforce	Replicate
Represent	Reproduce	Respond
Scatter	Shorten	Split
Trace	Follow	Respond
React		

Table 19 Skill (psychomotor) - Mechanism (basic proficiency)

Mechanism (basic proficiency) verbs			
Acquire	Advance	Assault	
Break up	Carry	Conduct	
Dismantle	Disperse	Display	
Distribute	Do	Drive	
Execute	Fasten	Fit (parts together)	
Fix	Follow	Guide	
Handle	Hover	Improve	
Insert	Join	Land	
Load	Maintain	Maneuver	
Manipulate	Pace	Perform	
Produce	Progress	Raise	
Regulate	Sketch	Steer	
Stoop	Take off	Track	
Transfer	Transport	Traverse	Use
Wire			

Table 20 Skill (psychomotor) - Complex overt response (expert)

Complex overt response (expert) verbs		
Acquire	Advance	Assault
Break up	Carry	Conduct
Dismantle	Disperse	Display
Distribute	Do	Drive

Complex overt response (expert) verbs		
Execute	Fasten	Fit (parts together)
Fix	Follow	Guide
Handle	Hover	Improve
Insert	Join	Land
Load	Maintain	Maneuver
Manipulate	Pace	Perform
Produce	Progress	Raise
Regulate	Sketch	Steer
Stoop	Take off	Track
Transfer	Transport	Traverse
Use	Wire	

Note

The complex overt response (expert) verbs are the same as the mechanism verbs, but will have adverbs or adjectives that indicate that the performance is quicker, better, more accurate, etc.

Table 21 Skill (psychomotor) - Precision

Precision verbs		
Access	Accomplish	Achieve
Activate	Actuate	Administer
Advance	Archive	Assault
Attain	Automatize	Beat
Breach	Camouflage	Carve
Center	Clear	Climb
Cover	Debrief	Debug
Decontaminate	Deliver	Destroy
Diagnose	Dig	Disassemble
Dismantle	Dispatch	Displace
Display	Dispose	Disseminate
Drive	Egress	Elevate
Emplace	Employ	Establish
Evacuate	Exceed	Excel
Exchange	File	Fill out
Fit	Fortify	Fuel

Precision verbs		
Harden	Hoist	Initialize
Input	Insert	Inspect
Integrate	Intercept	Issue
Jack	Key	Launch
Load	Log	Make safe
Maneuver	Maintain	Manage
Master	Mount	Move
Navigate	Obtain	Order
Outdo	Outmatch	Outperform
Outrank	Outweigh	Overcome
Overhaul	Pass	Perform
Perforate	Place	Plot
Police	Position	Post
Press	Pressurize	Process
Procure	Provide	Publish
Qualify	Raise	Range
Rank	Reach	Receive
Record	Reestablish	Refine
Refuel	Regulate	Release
Relocate	Remove	Repair
Replace	Replenish	Reset
Return	Rise	Rotate
Sanitize	Save	Scale
Score	Secure	Service
Set up	Shut down	Sight
Signal	Splint	Squeeze
Stockpile	Store	Strike
Submit	Succeed	Supervise
Support	Surpass	Sweep
Take	Take charge	Test
Trace	Transcend	Transfer
Transmit	Transport	Treat

Precision verbs		
Troubleshoot	Type	Unload
Update	Utilize	Zero

Table 22 Skill (psychomotor) - Adaptation

Adaptation verbs		
Acclimatize	Accommodate	Adjust
Alter	Ambush	Attack
Bypass	Conduct	Deploy
Direct	Draw	Evade
Fit	Fix	Flip
Grasp	Infiltrate	Invert
Lay	Lead	Map
Modify	Modulate	Mutate
Navigate	Neutralize	Occupy
Orient	Oscillate	Pack
Patrol	Prevent	Program
Protect	Queue	Readjust
Rearrange	Reconcile	Reconstitute
Reconstruct	Recover	Reduce
Regulate	Relieve	Reorder
Reorganize	Reorient	Reshuffle
Retool	Revert	Revise
Rig	Spin	Square
Suppress	Surpass	Swing
Swirl	Tailor	Temper
Train	Transcend	Transpose
Twirl	Vary	

Table 23 Skill (psychomotor) - Origination

Origination verbs		
Acquire	Arrange	Assemble
Blend	Break up	Build
Carry out	Cause	Combine

Origination verbs		
Complement	Complete	Compose
Conduct	Connect	Constitute
Construct	Contrive	Create
Design	Dismantle	Disperse
Distribute	Drive	Enact
Encircle	Enclose	Establish
Evolve	Execute	Handle
Improve	Incorporate	Initiate
Insert	Invent	Involve
Link	Load	Manipulate
Merge	Originate	Perform
Produce	Progress	Raise
Refine	Rewire	Stoop
Transcend	Transfer	Transform
Transport	Unite	

3.2.5 Identify KSA required

The task conditions and standards, plus the appropriate Bloom's taxonomy should be used to determine the relevant KSA required to complete each task. KSA can be assigned at all levels, including tasks, subtasks, and steps. Lower level KSA are associated with steps and subtasks and higher levels are associated at the task level. Verbs contained within the relevant taxonomies should be used to facilitate Training Objective (TO) and Learning Objective (LO) development during the design phase.

3.3 Output

3.3.1 Task analysis report

All information from this phase should be recorded on the task analysis worksheet and should include the appropriate business objects. Refer to Chap 3.7.

Chapter 3.6

Analysis - Training strategy

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References

Table 1 References

Chap No./Document No.	Title
Chap 3.2	Analysis - Training situation analysis
S3000L	International procedure specification for Logistic Support Analysis
S4000P	International specification for developing and continuously improving preventive maintenance

1 General

Once the Knowledge, Skills, and Attitudes (KSA) have been identified for the tasks that require training it is time to identify the strategy for achieving them.

2 Description

A training strategy is a blueprint for training development to meet the training needs of the organization and support mission accomplishment. It must be aligned to the overall strategy of the Product so that the Product can be operated and maintained upon delivery.

3 Process

There are many inputs available to help develop an effective training strategy. Refer to Fig 1.

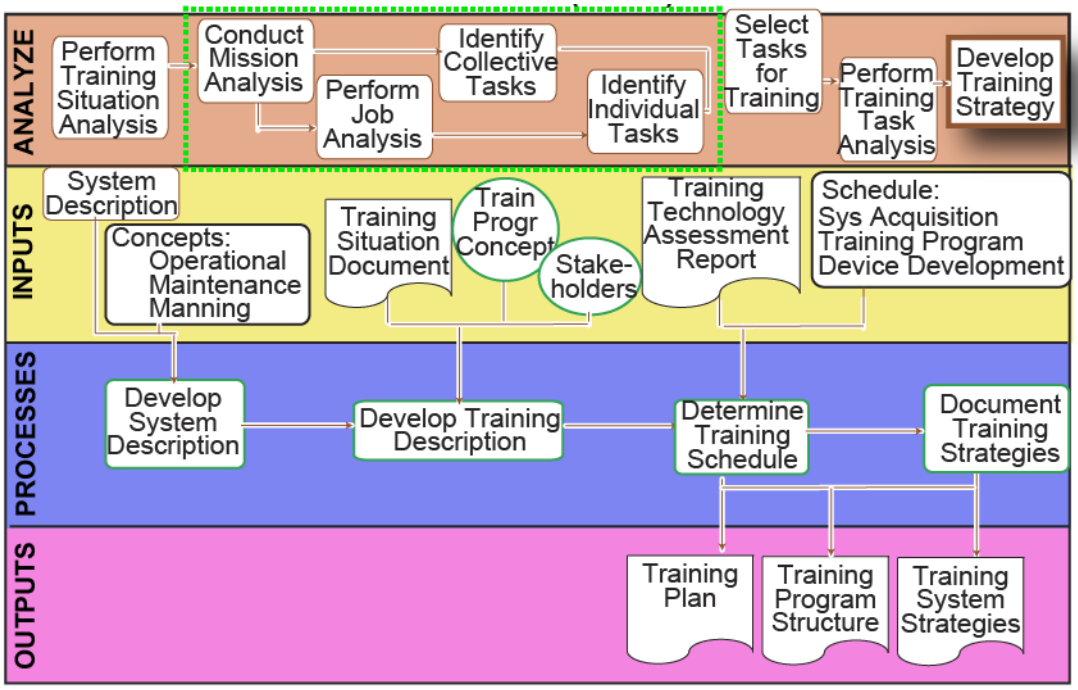

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Fig 1 Develop training strategy

3.1 Inputs

An effective training strategy requires:

- A system description. Refer to Para 3.1.1.
- An operational maintenance concepts. Refer to Para 3.1.2.
- A training situation document. Refer to Para 3.1.3.
- A training program concept. Refer to Para 3.1.4.
- A list of training program stakeholders. Refer to Para 3.1.5.
- A training technology assessment report. Refer to Para 3.1.6.
- A system program acquisition schedule. Refer to Para 3.1.7.

3.1.1 System description

It is essential that the training strategy supports the Product. A description of the Product including system requirements, operating environment, system and subsystem architecture, human machine interfaces as well as detailed design should be used in developing an effective training strategy.

3.1.2 Operational and maintenance concept

Operational and maintenance concept is a critical input for developing an effective training strategy. Operational concepts including environmental conditions in which the Product will operate, as well as manpower operational requirements should be included. Maintenance concepts, including maintenance levels, and type of maintenance actions to be performed for the overall Product as well as individual systems should also be included.

3.1.3 Training situation document

The training situation document, which is the result of the Training Situation Analysis (TSA) (refer to Chap 3.2) is also a critical input for this phase. The training situation document records the gaps in the current or similar Products and identifies how the current Product will help fill these gaps.

3.1.4 Training program concept

The training program concept is the conceptual plan for the training. This includes:

- Identifying how much formal training will be available
- A decision on whether the training be done at a formal training location, or performed at operational sights, etc
- A decision on what is the planned level of training the students will be at the conclusion of training will they be experts, or merely exposed to key concepts, with practice occurring on the job

This gap should be clearly documented and agreed to by all senior leadership.

3.1.5 Training program stakeholders

The input of the stakeholders of the planned training program are critical for determining the appropriate training strategy. Stakeholders include program management, senior training leadership, current training subject matter experts as well as the intended training audience.

3.1.6 Training technology assessment report

The training technology assessment is part of the training situation document detailed as part of the training situation analysis (refer to Chap 3.2). The training technology assessment data contains information on technology used to provide training for existing systems, which are similar to the emerging system for which training must be developed. It also provides an assessment of the training technologies that are used in areas relevant to the training requirements of the emerging system.

3.1.7 System program acquisition schedule

The system program acquisition schedule is part of the program's integrated master schedule and details the delivery schedule for all portions of the Product including the support system. The acquisition schedule should also indicate when the training system needs to be complete and ready for implementation.

3.2 Process steps

3.2.1 Develop system description

The system description provides an overview of the Product and describes the system requirement, operating and maintenance environments of the Product, the system and subsystem architecture, and a detailed design description.

3.2.2 Develop training system description

The training system description provides an overview of the complete training system used to support the Product and documents the detailed training requirements. It should include but limited to:

- Purpose the training system
- Goals and constraints of the training

- Number of categories of skill levels requiring training
- Identification and description of training equipment
- Facility requirements
- Personnel resources required to develop, implement, and maintain the training system

3.2.3 Determine training system schedule

A detailed schedule should be identified for the entire training program. It should identify when any formal training will begin, as well as the acquisition schedule for training assets such as training equipment, curriculum, as well as support equipment.

3.2.4 Document training system strategies

The training strategy should be clearly documented. The training strategy should:

- Define the goals and constraints for training
- List the location(s) of instruction
- List the anticipated student load
- Describe the training approach based on the tasks to be trained and the availability of appropriate training media
- The identified training schedule including plans of action and milestones
- Describe personnel resources required to develop, implement and maintain the training system
- List all training facility requirements
- Describe how the training will be evaluated and how the student performance will be assessed
- Describe quality management to include process and Product compliance with approved plans, procedures, and processes
- Identify the funding requirements, including Life Cycle Costs (LCC), total ownerships costs and whole life costs of the training program. Refer to S3000L.

A training system is a critical element of Product support. As such process for Logistics Support Analysis, as well as improving preventative maintenance apply to the training system as well as the overall Product being supported. Refer to S4000P.

3.3 Outputs

3.3.1 Detailed training strategy

The output of this phase is a formal training strategy including a management plan with detailed schedule and milestones, as well as identification of the appropriate strategies that will be used to provide the trainees with the required KSA’s.

Chapter 3.7

Analysis - Business objects

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Chap 3.3.2	Mission, job, task analysis - Job analysis
Chap 3.3.3	Mission, job, task analysis - Identify tasks
Chap 3.4	Analysis - Task selection
Chap 3.5	Analysis - Task analysis
Chap 3.6	Analysis - Training strategy
Chap 7	Data model
Chap 7.3	Data model - Units of functionality
Chap 7.3.1	Units of functionality - UoF Product
Chap 7.3.3	Units of functionality - UoF Breakdown structure
Chap 7.3.4	Units of functionality - UoF Hardware element
Chap 7.3.8	Units of functionality - UoF Part definition
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Chap 7.3.15	Units of functionality - UoF Job duty
Chap 7.3.17	Units of functionality - UoF Task Train Prioritization
Chap 7.3.18	Units of functionality - UoF Subtask Train Prioritization
Chap 7.3.19	Units of functionality - UoF Warning Caution Train Prioritization
Chap 7.3.20	Units of functionality - UoF Task knowledge skill and attitude
S1000D	International specification for technical publications using a common source database
S3000L	International procedure specification for Logistics Support Analysis (LSA)
SX001G	Glossary for the S-Series IPS specifications

1 General

1.1 Introduction

This chapter defines the most important business objects and data elements captured during the training analysis activities described in Chap 3.1 through Chap 3.6.

Business objects and data elements common to other S-Series IPS specifications are defined with by reference to SX001G, which is the S-Series IPS specifications glossary that enables harmonization and interoperability across all S-Series IPS specifications.

1.2 Scope

The following types of data elements are within scope for the S6000T training analysis activities. Data elements that:

- identify the Product to be supported
- identify elements within the Product that requires training
- identify missions and human interaction with the operated Product
- identify performance parameters for human interaction
- identify jobs, duties and duty tasks
- identify and describe tasks, subtasks and subtask steps to be considered for training
- define performance requirements for a task, subtask and/or subtask step, respectively
- define Knowledge, Skill and Attitude (KSA) requirements associated with the defined tasks in order to meet its defined performance requirements

1.3 Out of scope

This chapter does not give all the details that are defined in the data model (refer to Chap 7) but highlights the most important business objects and data elements that needs to be documented as part of the training analysis activities.

2 Business objects and data elements

Business objects supporting the S6000T training analysis process are organized in accordance with the respective training analysis chapter. The purpose for defining business objects is to either reflect something that exists in the real world, or just define a placeholder for information that belongs together from a logical standpoint. Data elements then define the type of data that can be captured for the respective business object.

Each business object has a reference to the Unit of Functionality (UoF) in Chap 7 where complete definitions of its data elements (characteristics) are defined in the context of the S6000T data model.

2.1 Product information

The starting point for all Integrated Logistics Support analysis activities is to identify the Product to be supported along with its most important characteristics eg, its:

- Required performance parameters
- Systems, functions, hardware, etc

Note

Most of this data should be defined during eg, an overall IPS Guidance Conference and/or as part of the Logistics Support Analysis (LSA).

Data that documents these aspects are described in Para 2.1.1, Para 2.1.2.

2.1.1 Business objects - Product

Business objects and data elements which define the Product in scope are listed in Table 2.

Table 2 General business objects and data elements

Term	Definition
Product *(Business object)*	Product represents a family of items which share the same underlying design purpose (SX001G). **Examples** – Airbus 340 – Pegasus engine **Reference** – Chap 7.3.1 UoF Product
Product identifier *(Data element)*	Product identifier is an identifier that establishes a unique designator for a Product and to differentiate it from other instances of Product (SX001G).
Product name *(Data element)*	Product name is a name by which the Product is known and can be easily referenced (SX001G).
Product variant *(Business object)*	Product variant defines a member of a Product which is configured for a specific purpose and is made available to the market (SX001G). **Examples** – Boeing 787-800 vs. 787-900 – Ford Fusion S vs. SE vs. SEL **Reference** – Chap 7.3.1 UoF Product
Product variant identifier *(Data element)*	Product variant identifier is an identifier that establishes a unique designator for a Product variant and to differentiate it from other instances of Product variant (SX001G).
Product variant name *(Data element)*	Product variant name is a name by which the Product variant is known and can be easily referenced (SX001G).

2.1.2 Business objects - Product breakdown structure

Business objects and data elements which define the Product breakdown in scope are listed in Table 3.

Table 3 Product breakdown structure business objects and data elements

Term	Definition
Breakdown *(Business object)*	Breakdown identifies a specific partitioning of a Product to form a parent-child structure of related instances of Breakdown element (SX001G). **Reference** – Chap 7.3.3 UoF Breakdown structure
Breakdown type *(Data element)*	Breakdown type is a classification that identifies the perspective from which the breakdown is defined (SX001G). **Examples** – Physical breakdown – System breakdown – Functional breakdown – Zonal breakdown

Term	Definition
Breakdown element *(Business object)*	Breakdown element defines a partition of a Product (SX001G). **Reference** – Chap 7.3.3 UoF Breakdown structure
Breakdown element identifier *(Data element)*	Breakdown element identifier is an identifier that establishes a unique designator for a Breakdown element and to differentiate it from other instances of Breakdown element (SX001G).
Breakdown element name *(Data element)*	Breakdown element name is a name by which the Breakdown element is known and can be easily referenced (SX001G).
Hardware element part realization *(Business object)*	Hardware element part realization is a relationship where a Hardware breakdown element relates to an instance of Hardware Part (as designed) which fulfills the Hardware breakdown element specification (SX001G). **Reference** – Chap 7.3.4 UoF Hardware element
Part as designed *(Business object)*	Part as designed represents the definitional information for an artifact fulfilling a set of requirements, which can be produced or realized (SX001G). **Reference** – Chap 7.3.8 UoF Part definition
Part identifier *(Data element)*	Part identifier is an identifier that establishes a unique designator for a Part (as designed) and to differentiate it from other instances of Part (as designed) (SX001G).
Part name *(Data element)*	Part name is a name by which the Part (as designed) is known and can be easily referenced (SX001G)

2.2 Training situational analysis

The objective for the Training Situational Analysis (TSA) is to take a broad look at the need for training and to identify and evaluate possible alternative training solutions (refer to Chap 3.2).

2.2.1 Business objects - Training situation analysis

There are currently no business objects in the S6000T data model that directly documents the results from the TSA.

2.3 Mission analysis

The objective for the mission analysis (Chap 3.3.1) is to document specified, implied, and supporting missions (operational scenarios) for a Product and to identify mission critical tasks that are to be carried out by operating personnel which involves interaction with the Product.

The list of mission (operator) critical tasks should be consistent with task analysis resulting from an LSA, eg, performed in accordance with S3000L (refer to Para 2.5).

2.3.1 Business objects - Mission analysis

Business objects and data elements which are defined during mission analysis are listed in Table 4.

Table 4 Mission analysis business objects and data elements

Term	Definition
Mission definition *(Business object)*	Mission definition represents the definitional information for an operational scenario where a person, or body of persons, can be tasked to perform a service or carry on an activity. **Reference** – Chap 7.3.13 UoF Mission definition
Mission definition name *(Data element)*	Mission definition name is a name by which the mission definition is known and can be easily referenced
Mission definition Product usage *(Business object)*	Mission definition Product usage represents the need for a person, or group of persons, to interact with a defined Product interface. **Reference** – Chap 7.3.13 UoF Mission definition
Performance parameter	Performance parameter represents a metric that if changed will have a major impact on the system performance, schedule, cost and/or risk. **Reference** – Chap 7.3.14 UoF Performance parameter

2.4 Job analysis

The objective for the job analysis (Chap 3.3.2) is to identify tasks which are associated with a specific job/role and which are critical to achievement of an organization's mission or objective.

The list of job and its duty tasks should be consistent with task analysis resulting from an LSA, eg, performed in accordance with S3000L (refer to Para 2.5).

2.4.1 Business objects - Job analysis

Business objects and data elements which are defined during job analysis are listed in Table 5.

Table 5 Job analysis business objects and data elements

Term	Definition
Job definition *(Business object)*	Job definition represents a position of regular employment. **Reference** – Chap 7.3.15 UoF Job duty
Job definition name *(Data element)*	Job definition name is a name by which the job is known and can be easily referenced.
Duty definition *(Business object)*	Duty definition defines a responsibility within a defined position of regular employment. **Reference** – Chap 7.3.15 UoF Job duty
Duty definition name *(Data element)*	Duty definition name is a name by which the duty is known and can be easily referenced.

Term	Definition
Duty definition task *(Business object)*	Duty definition task is an association between the defined duty and explicit task definitions that provides detailed information on how the duty, or portions of the duty, is to be carried out. **Reference** – Chap 7.3.15 UoF Job duty

2.5 Identify tasks

The objective for Chap 3.3.3 is to establish a baseline of tasks which are to be analyzed from a training need perspective. Operator tasks identified during mission and job duty analysis activities needs to be documented as part of the training analysis process. However, tasks needed for product support should have been be documented during preceding analysis activities like S3000L.

Note

Tasks originating from LSA (S3000L) are always defined in the context where requirement for the task has been identified eg, a system, a function or a part (refer to Para 2.1).

2.5.1 Business objects - Task identification

The most central business objects and data elements captured during task identification (Chap 3.3.3) are listed in Table 6.

Table 6 Task business objects and data elements

Term	Definition
Task *(Business object)*	Task represents the specification of work to be done or undertaken (SX001G). **Reference** – Chap 7.3.9 UoF Task
Task identifier *(Data element)*	Task identifier is an identifier that establishes a unique designator for a task and to differentiate it from other instances of task (SX001G).
Task name *(Data element)*	Task name is a name by which the task is known and can be easily referenced (SX001G).
Task information code *(Data element)*	Task information code is a classification that identifies the main purpose for the task (SX001G).
Task target audience *(Data element)*	Task target audience is a classification that identifies the kind of personnel that is to be trained to perform the task.
Task human interaction requirement *(Data element)*	Task human interaction requirement is a classification that identifies the type of human coordination that needs to take place when performing the task. **Valid values** – Individual task – Collective task
Task material resource *(Business object)*	Task material resource identifies parts which are required as a resource. **Note** Task material resource includes support equipment.

Term	Definition
	Support equipment is distinguished by the task material resource category attribute. **Reference** – Chap 7.3.10 UoF Task resource
Task personnel resource *(Business object)*	Task personnel resource specifies the manpower required as a resource (SX001G). **Reference** – Chap 7.3.10 UoF Task resource
Task personnel resource competence *(Business object)*	Task personnel resource competence identifies the proficiency required for a task personnel resource (SX001G). **Reference** – Chap 7.3.10 UoF Task resource
Skill *(Business object)*	Skill represents an ability required to perform a task (SX001G). **Reference** – Chap 7.3.11 UoF Task resource competence definition
Trade *(Business object)*	Trade represents a craft or profession (SX001G). **Reference** – Chap 7.3.11 UoF Task resource competence definition
Skill level *(Business object)*	Skill level represents a defined proficiency of a trade (SX001G). **Reference** – Chap 7.3.11 UoF Task resource competence definition
Subtask *(Business object)*	Subtask represents the specification of a work step that is to be performed as part of a task (SX001G). **Reference** – Chap 7.3.9 UoF Task
Subtask identifier *(Data element)*	Subtask identifier is an identifier that establishes a unique designator for a subtask and to differentiate it from other instances of subtask (SX001G).
Subtask name *(Data element)*	Subtask name is a name by which the subtask is known and can be easily referenced (SX001G).
Subtask train step *(Business object)*	Subtask train step represents a specific action within a subtask that should be addressed from training perspective. **Reference** – Chap 7.3.18 UoF UoF Subtask train prioritization
Warning and caution *(Business object)*	Warning and caution defines advice concerning safety, legal and health aspects (SX001G). **Reference** – Chap 7.3.19 UoF Warning caution train prioritization

2.6 Task selection

The objective for the task selection activity (Chap 3.4) is to select those tasks that require training and identify a training prioritization.

2.6.1 Business objects - Task selection

Business objects and data elements used to document the results from the task selection activity (Chap 3.4) are listed in Table 7.

Note

Similar elements which are used for subtask selection are not repeated in Table 7. Those are only defined in Chap 7.3.

Table 7 Task selection business objects and data elements

Term	Definition
Task performance objective *(Business object)*	Task performance objective defines the precise statement of the performance expected in the execution of a task expressed in terms of the task conditions, task performance and task standard. **Reference** Chap 7.3.9 UoF Task
Task behavior condition *(Data element)*	Task behavior condition is a description that expresses the environmental, physical and psychological circumstances under which the task is to be performed.
Task behavior action *(Data element)*	Task behavior action is a description that expresses the main purpose for the task
Task behavior standard *(Data element)*	Task behavior standard is a description that expresses the expected quality and/or time constraints that must be met in the performance of the task.
Task train decision *(Business object)*	Task train decision defines how a task is to be managed from a training perspective. **Reference** – Chap 7.3.17 UoF Task train prioritization
Task difficulty category *(Data element)*	Task difficulty category is a classification that identifies the complexity of a task from a human performance perspective.
Task importance category *(Data element)*	Task importance category is a classification that identifies possible adverse effects that the performance of the task can have with respect to cost (damage) and availability for the item under analysis.
Task frequency category *(Data element)*	Task frequency category is a classification that identifies how often a task is performed
Task training level *(Data element)*	Task training level is a classification that identifies the priority for training in order for the performer to be able to carry out the task within its defined performance standard. **Note** Training level is often referred to as training priority.
Task training difficulty *(Data element)*	Task training difficulty is a classification that identifies the complexity involved in actually training for the task.
Task training level decision	Task training decision is a classification that identifies the final decision on task training level based on the task difficulty, importance and frequency analysis as well as additional

Term	Definition
(Data element)	considerations such as task training difficulty, customer stipulations and regulations.

2.6.2 S1000D learning data module - Task selection

There is no S1000D data module that directly supports the task selection analysis activity.

2.7 Training task analysis

The objective for the training task analysis activity (Chap 3.5) is to define task performance details and to identify KSA required to perform the selected tasks and their sub-tasks.

2.7.1 Business objects - Training task analysis

Business objects and data elements used to document the results from the training task analysis activity (Chap 3.5) are listed in Table 8.

Table 8 Training task analysis business objects and data elements

Term	Definition
Task level of learning *(Business object)*	Task level of learning defines the level of sophistication of the action that must be trained and motivated, in order to be able to meet a defined performance objective or manage a certain safety aspect. **Reference** – Chap 7.3.20 UoF Task knowledge skill and attitude
Task affective level of learning *(Business object)*	Task affective level of learning defines the task's level of sophistication with respect to emotional, motivational and/or social aspects. **Reference** – Chap 7.3.20 UoF Task knowledge skill and attitude
Task cognitive level of learning *(Business object)*	Task cognitive level of learning defines the task's level of sophistication with respect to mental, cognitive, and/or logical aspects. **Reference** – Chap 7.3.20 UoF Task knowledge skill and attitude
Task psychomotor level of learning *(Business object)*	Task psychomotor level of learning defines the task's level of sophistication with respect to physical, mechanical, and/or movement-based aspects. **Reference** – Chap 7.3.20 UoF Task knowledge skill and attitude

2.8 Training strategy

The objective for the training strategy activity (Chap 3.6) is to identify a high-level strategy for achieving the knowledge, skills, and attitudes which have been identified for the tasks that require training.

2.8.1 Business objects - Training strategy

There are currently no business objects in the S6000T data model that directly documents the results from training strategy activity.

Chapter 4

Design

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Chapter 4.1

Design - Introduction

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Chap 4.3	Design - Perform learning analysis
Chap 4.4	Design - Develop learning objectives
Chap 4.5	Design - Develop assessment strategy
Chap 4.6	Design - Determine instructional strategy/method
Chap 4.7	Design - Define and select media
Chap 4.8	Design - Sequence learning objectives
Chap 4.9	Design - Training system alternative analysis
Chap 4.10	Design - Training system functional requirements
Chap 4.11	Design - Develop curriculum outline
Chap 4.12	Design - Business objects

1 General

In the design phase, a series of processes and models are used to build the framework for the training by developing Learning Objectives (LO) and designing the instruction.

2 Description

The instructional design is based on the results of the analysis phase. The instructional designers develop the LO, test strategy and design the instruction. They also determine the instructional strategies that will be used and selects the instructional methods and media that will be used. Refer to Fig 1.

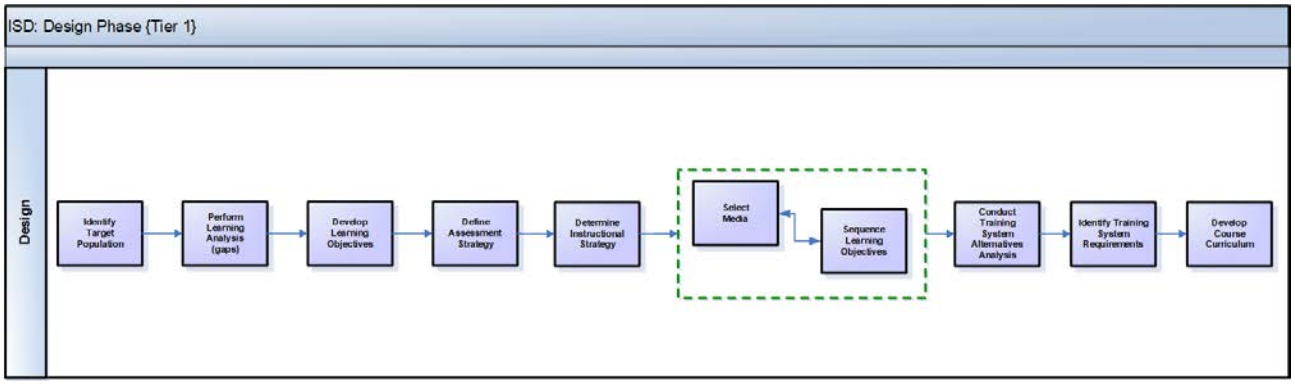

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Fig 1 Design phase

The events are listed in a sequence provided to aid in a better understanding of the design process. In practice, the events can be performed sequentially as shown, some can be skipped, iteration among some events can be required, or a different sequence can be used. Various factors can affect the sequence or scope of the events used, such as customer needs, scope or complexity of the training project, or other factors. The events to be applied and their sequence should be documented in the specific project management plan.

Initially, the target audience is determined and student characteristics pertinent to the instructional design and development are identified. Refer to Chap 4.2.

A learning analysis then uses the mission/job/task knowledge and skills data from the analyze phase to identify the gaps between the target audience, and the requirements of the mission/job/task knowledge, skills and attitudes. Refer to Chap 4.3.

LOs are then written to address these gaps. Refer to Chap 4.4.

Formative and summative assessment strategies are determined, and initial test items are developed for each LO. Refer to Chap 4.5.

Using inputs from the target audience information, the learning analysis, and the test items, an appropriate instructional strategy is determined. Refer to Chap 4.6.

Appropriate instructional methods and media for the lesson designs are selected. Refer to Chap 4.7.

The LOs are grouped and sequenced based on the selected media to determine the most effective delivery based on the instructional strategy to be used. Refer to Chap 4.8.

Resource requirements/constraints are then analyzed in order to identify training system alternatives. Refer to Chap 4.9.

The training system requirements are then documented and reviewed with the customer and end users. Refer to Chap 4.10.

The design phase concludes with the development of a course outline that can be used to develop the content for the entire course curriculum. Refer to Chap 4.11.

The S-Series IPS specifications identify data that results from analysis activities described in the respective specification. This resulting data is described documented by a data model. An overview of data that results of from the training design phase in are summarized as business objects and data elements in. Refer to Chap 4.12.

Chapter 4.2

Design - Identify target audience

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Table 1 References

Chap No./Document No.	Title
None	

1 General

The target audience identifies and describes the characteristics of the individuals who will receive the training and will ensure the most effective strategies will be utilized during the design of the training.

2 Description

The target audience is the group of people that are to be trained. Identifying and describing the target audience provides critical data that informs subsequent processes. For example, identifying the Knowledge, Skill, and Attitude (KSA) levels of the target audience enables training developers to tailor the scope and complexity of learning objectives, building on learners' current skills and challenging them to reach new levels of achievement. Target audience data also contribute to development of effective learning strategies and course design as well as appropriate planning and scheduling decisions.

3 Process

Fig 1 illustrates the process for identifying the target audience.

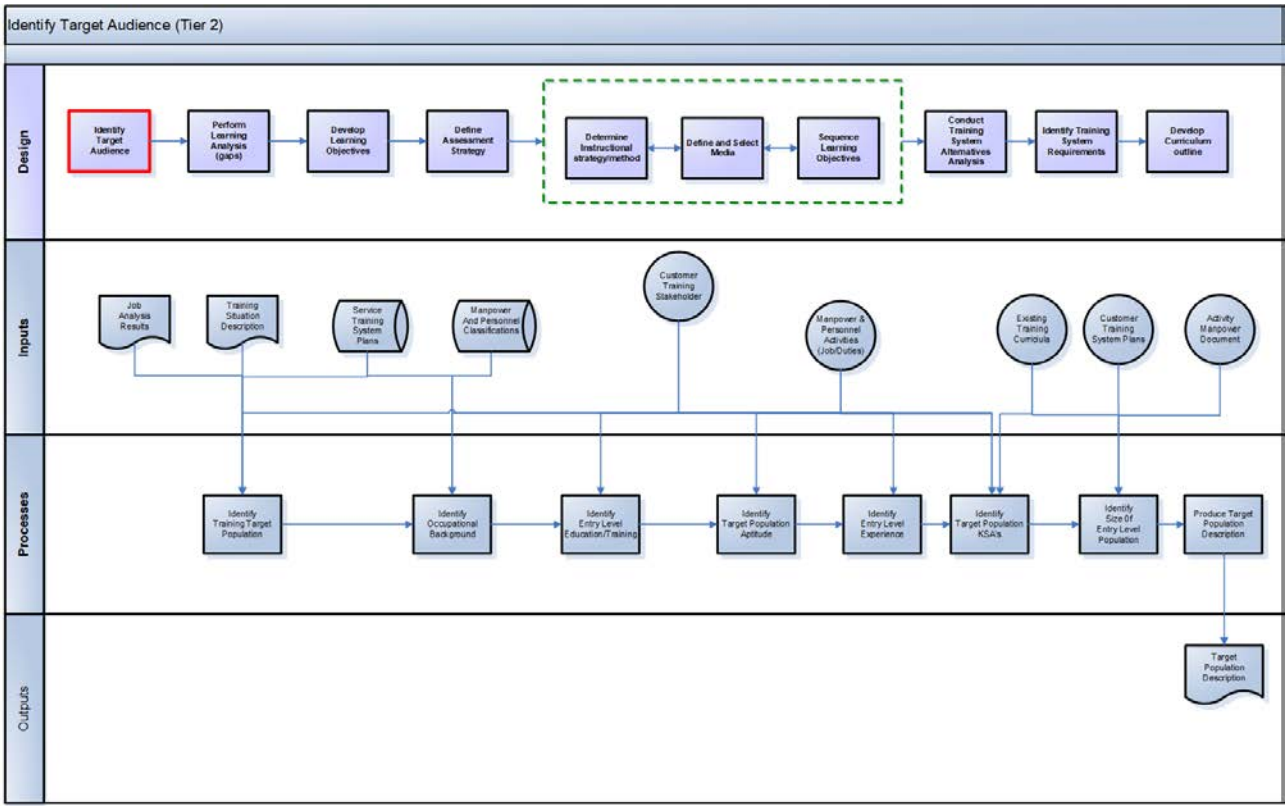

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Fig 1 Identify target audience process

3.1 Inputs

The inputs to this process are:

- Customer stakeholders
- Existing training curricula
- Job analysis report
- Manpower and personnel activities
- Manpower and personnel classifications
- Training situation description
- Training system plans

3.2 Process Steps

The process steps are:

1 Identify the training target audience.

2 Identify the occupational background.

3 Identify the target audience aptitude.

4 Identify the entry level experience.

5 Identify the target audience KSA's.

6 Identify the size of the entry level audience.

7 Develop a target audience document.

3.3 Output

The output of this process is a detailed target audience document.

Chapter 4.3

Design - Perform learning analysis

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Table 1 References

Chap No./Document No.	Title
None	

1 General

Learning analysis or gap analysis involves the comparison of actual performance with potential or desired performance in terms of Knowledge, Skills, and Attitude (KSA). Analyzing the learners who are going to be taking the training is an important step for the instructional designer.

2 Description

Learning analysis involves the identification of deficiencies in knowledge, skill, and/or attitude which must be bridged for the identified target audience.

3 Process

Fig 1 illustrates the process for perform the learning analysis.

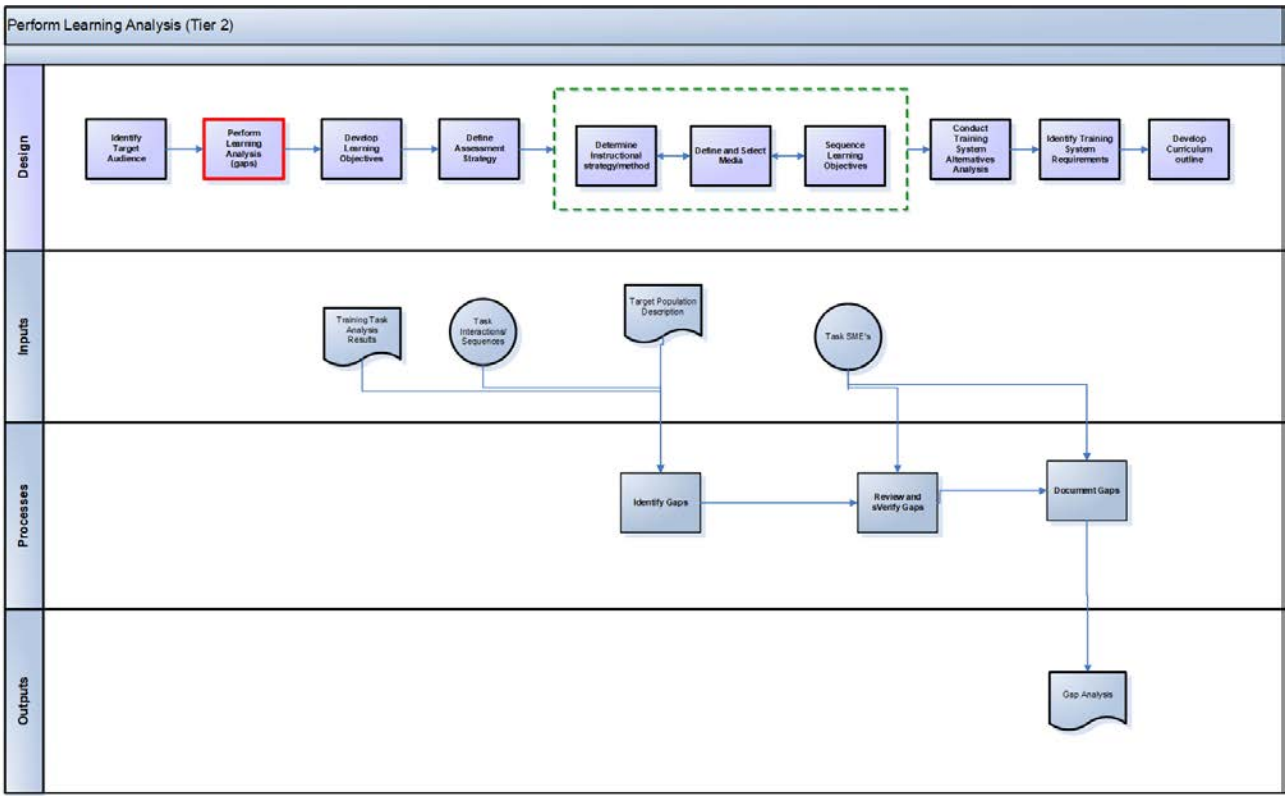

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Fig 1 Perform learning analysis process

3.1 Inputs

The inputs to this process are:

- Task interaction sequences
- Task population documentation
- Task subject matter experts
- Training task analysis results

3.2 Process Steps

The process steps are:

1 Identify gaps.

2 Review and verify gaps.

3 Develop logical task groupings.

4 Document gaps.

3.3 Output

The output of this process is the gap analysis results.

Chapter 4.4

Design - Develop learning objectives

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Table 1 References

Chap No./Document No.	Title
None	

1 General

Learning objectives (LO) are statements that define the expected goal of a learning activity in terms of demonstrable Knowledge, Skill, and/or Attitude (KSA). They represent the training requirements required for a particular training audience to operate and maintain a product.

2 Description

Objectives express the goals of training. They are statements that define what learners should know or be able to do as a result of training, the conditions under which they will demonstrate this proficiency, and the standard by which their performance will be measured. There are three types of objectives:

- Cognitive, which are objectives that involve recall or demonstration of comprehension as well as the application of knowledge to perform higher-level thinking, such as analysis, synthesis, and evaluation.
- Psychomotor, which are objectives that involve the use of motor-skills to perform simple manual tasks as well more complex task such as operating complex equipment.

– Affective, which are objectives that define the level of emotional, motivational, and social sophistication required to correctly perform the task.

3 Process

Fig 1 illustrates the develop learning objectives process.

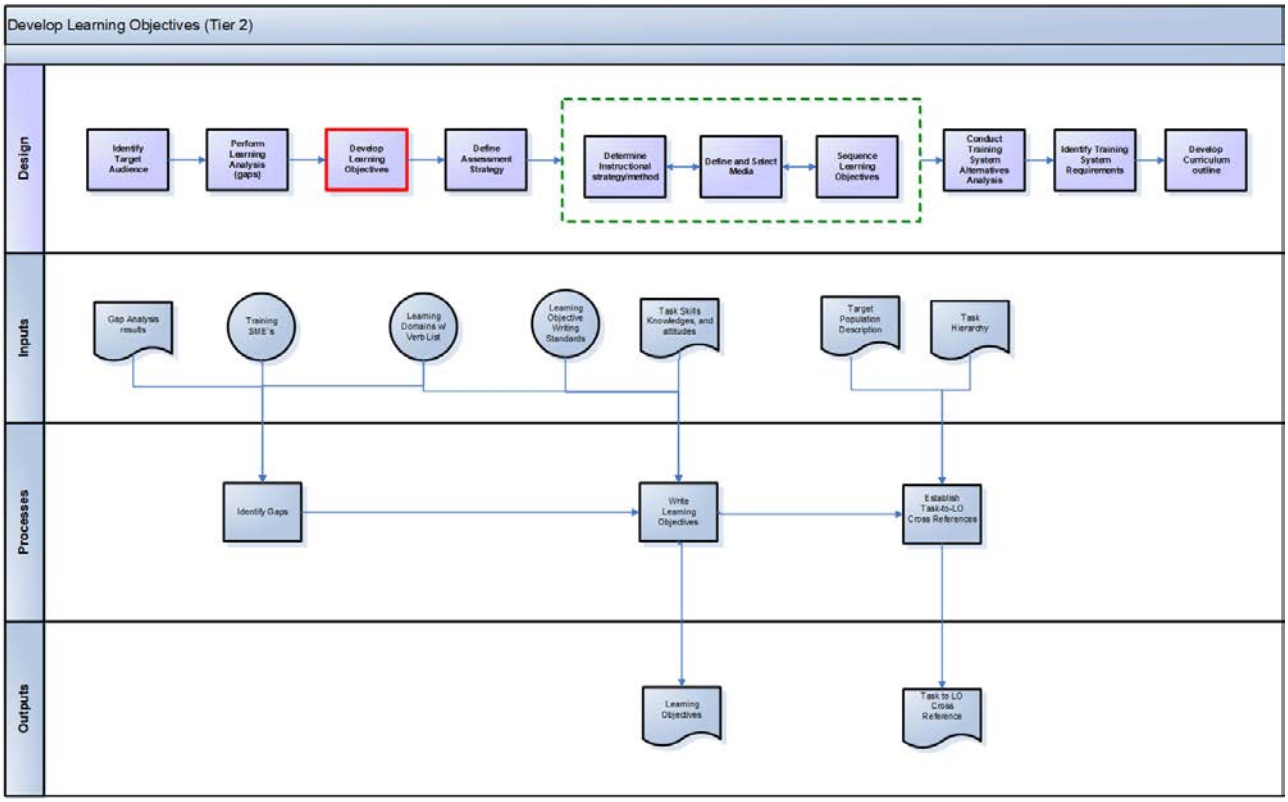

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Fig 1 Develop learning objectives

3.1 Inputs

The inputs to this process are:

– Gap analysis results
– Learning domains with verb list
– LO writing standards
– Target audience description
– Task KSA
– Task hierarchy
– Training SMEs

3.2 Process steps

The process steps are:

1 Identify the gaps.

2 Write the LOs.

3 Establish a task-to-LO cross reference.

3.3 Outputs

The outputs of this process are:

- Cross reference matrix
- List of LOs

Chapter 4.5

Design - Develop assessment strategy

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Table 1 References

Chap No./Document No.	Title
None	

1 General

Assessments are used to determine if a trainee met the performance requirements of an objective. The strategy for how and when to assess a trainee's performance is a critical part of the overall training design. An assessment strategy along with instructional strategies form the basis for the most effective means for teaching and assessing student performance.

2 Description

Assessment strategy identifies the method(s) used to evaluate how well trainees are learning the materials presented to them. Assessments refer to how the Learning Objectives (LO) will be evaluated. There can be different types of assessment strategies that can be used to assess performance on LOs. Formative assessment is conducted during the learning process, while summative assessments are undertaken only at the end of the course or unit of instruction. Assessment strategies should be identified in support of the developed LOs.

Assessment tests are typically tailored to determine:

- Level of knowledge
- Formation of skills

– Formation of attitude

3 Process

Fig 1 illustrates the process for developing an assessment strategy.

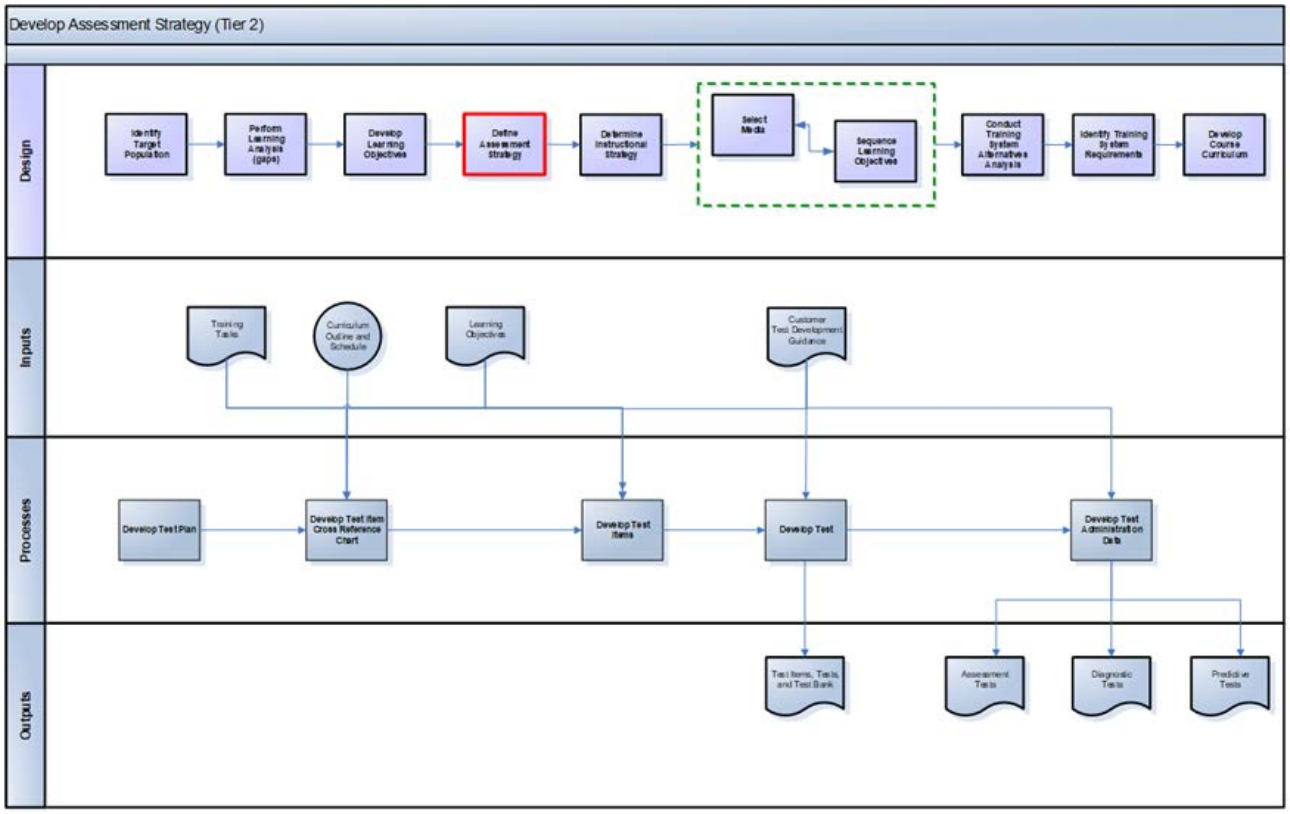

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Fig 1 Developing an assessment strategy process

3.1 Inputs

The inputs for the test formation are:

– Customer test development guidance
– LOs
– Performance objectives
– Target audience description
– Training stakeholder SMEs
– Training strategy

3.2 Process steps

The process steps are:

1 Develop a test plan.

2 Verify the LO criteria.

3 Develop the assessment strategy.

4 Validate the assessment strategy.

3.3 Output

The output of this process is the document assessment strategy.

Chapter 4.6

Design - Determine instructional strategy/method

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Table 1 References

Chap No./Document No.	Title
None	

1 General

Instructional strategies are techniques that teachers and trainers use to help students become independent, strategic learners.

2 Description

Instructional strategies/methods are techniques that will be used to help trainees become independent, motivated learners. These strategies become learning strategies when potential learners independently select the applicable courses and use them effectively to accomplish tasks or meet goals.

Instructional strategies must meet the following criteria:

- Monitor and evaluate the Learning Objectives (LO)
- Motivate students and help them focus
- Organize information for understanding and comprehension

To optimize success the instructional strategies are developed with the following in mind:

- Appropriate support including modelling and guided practice
- Encouragement for self-monitoring and self-correcting
- Environment in which the training will be conducted
- Meaningful connections between skills and ideas with real-life situations
- Opportunities to transfer skills and ideas from one situation to another
- Step-by-step instructions
- Student experience and knowledge
- Tools for assessment of their own learning
- Variety of learning approaches and materials

3 Process

Fig 1 illustrates the process for determining the instructional strategy

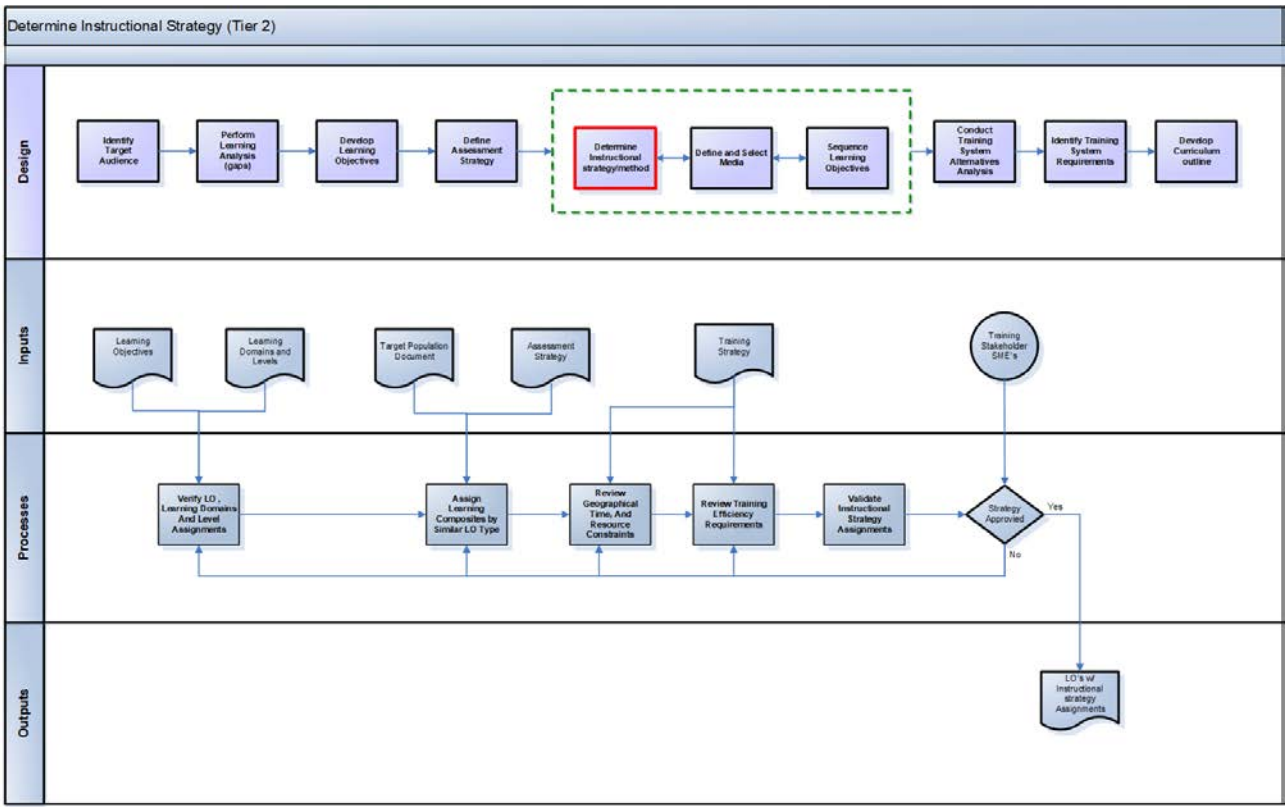

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Fig 1 Determining the instructional strategy process

3.1 Inputs

The inputs for the determining the instructional strategy are:

- Assessment strategy
- Learning domains and levels
- LOs
- Target audience description
- Training stakeholder SMEs
- Training strategy

3.2 Process steps

The process steps are:

1 Verify LO learning domains and level assignment.

2 Assign learning composes by similar LO type.

3 Review geographical time, resource and other constraints.

4 Review training efficiency requirements.

5 Validate instructional strategy.

3.3 Output

The output from determining an instructional strategy is a documented instructional strategy.

Chapter 4.7

Design - Define and select media

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Table 1 References

Chap No./Document No.	Title
None	

1 General

Media selection determines the most effective methods for delivery learning content to students. The purpose of the process is defining most suitable method for learning and the most cost-effective types of media.

2 Description

This chapter contains the guidance for determining the best way for delivering learning content to students. The purpose of this process is defining the suitable media for learning as well as most cost-effective means for delivering content. The process of selecting training media requires a good understanding of Learning Objectives (LO) to be taught, the resources available to support the learning environment, and a clear definition of the potential media that can be considered, and their advantageous and disadvantageous in terms of instruction. Probably no other part of the Instructional Systems Development (ISD) process has been the focus of as much research and development as the media selection process. This has led to many attempts to develop workable models to manage this selection process. Determining which model is the best becomes the subject of much debate among instructional designers and researchers. This chapter will review these models and processes.

3 Process

Fig 1 illustrates the process for selecting media.

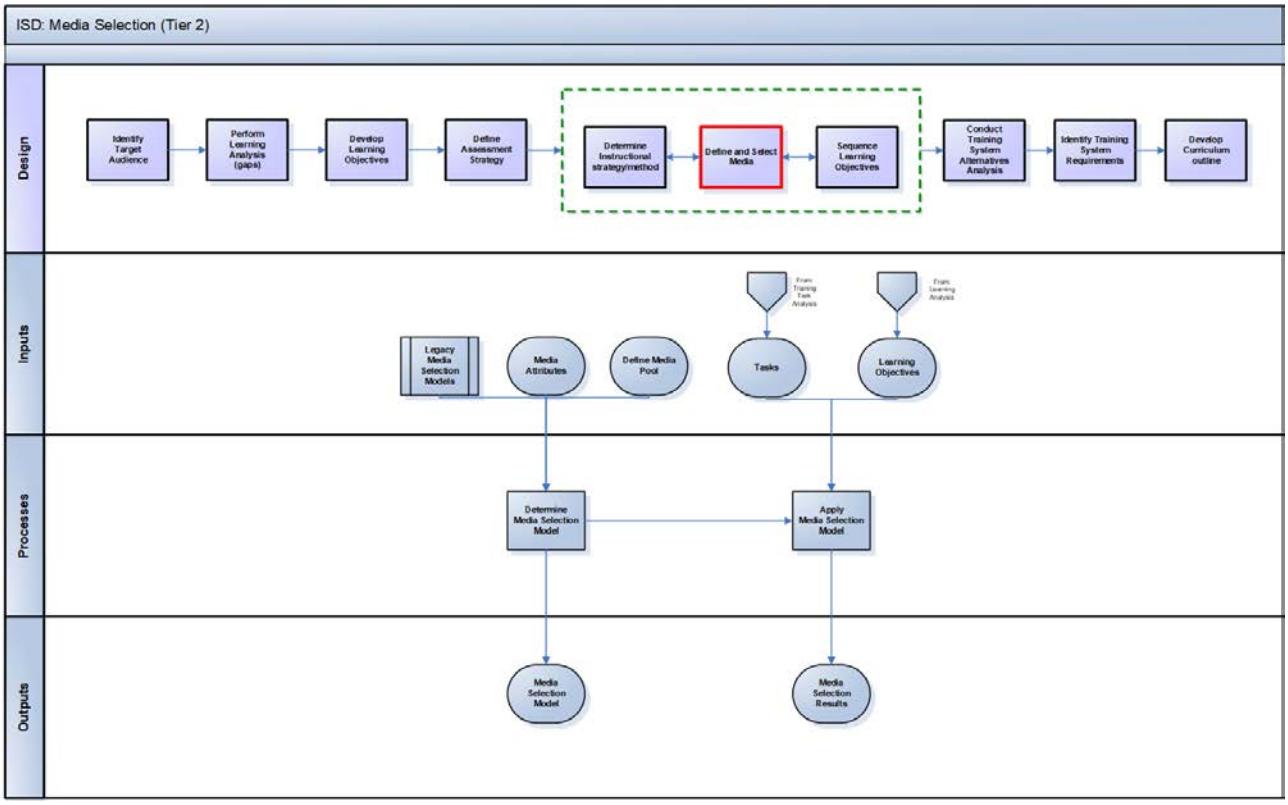

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Fig 1 Media selection process

3.1 Inputs

The inputs for the media selection are:

- Legacy media selection model
- LOs
- Media attributes
- Media pool
- Performance objectives
- Tasks

3.2 Process steps

The process steps are:

1 Determine the media selection model.

2 Apply a media selection model.

3.3 Outputs

The outputs from the media selection process are:

- Media selection model
- Media selection results

Chapter 4.8

Design - Sequence learning objectives

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Table 1 References

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None	

1 General

The effectiveness and cost-efficiency of training depends heavily on how Learning Objectives (LO) are prioritized, clustered and sequenced.

2 Description

This chapter contains the guidance for sequencing LOs. Sequencing LOs involves first clustering them and then ordering them in an effective learning sequence. This sequence will determine the course of instruction and will identify the structure and nomenclature of the course curriculum outline. As LOs are sequenced into a curriculum, instruction terminal and enabling objectives will be identified. Terminal objectives address the principle activities of a job and are essential parts of job and task performance. Generally, each terminal objective will be associated with a lesson of instruction. Enabling objectives support achievement of terminal objectives and will guide content development of lesson sections.

3 Process

Fig 1 illustrates the process for sequencing learning objectives.

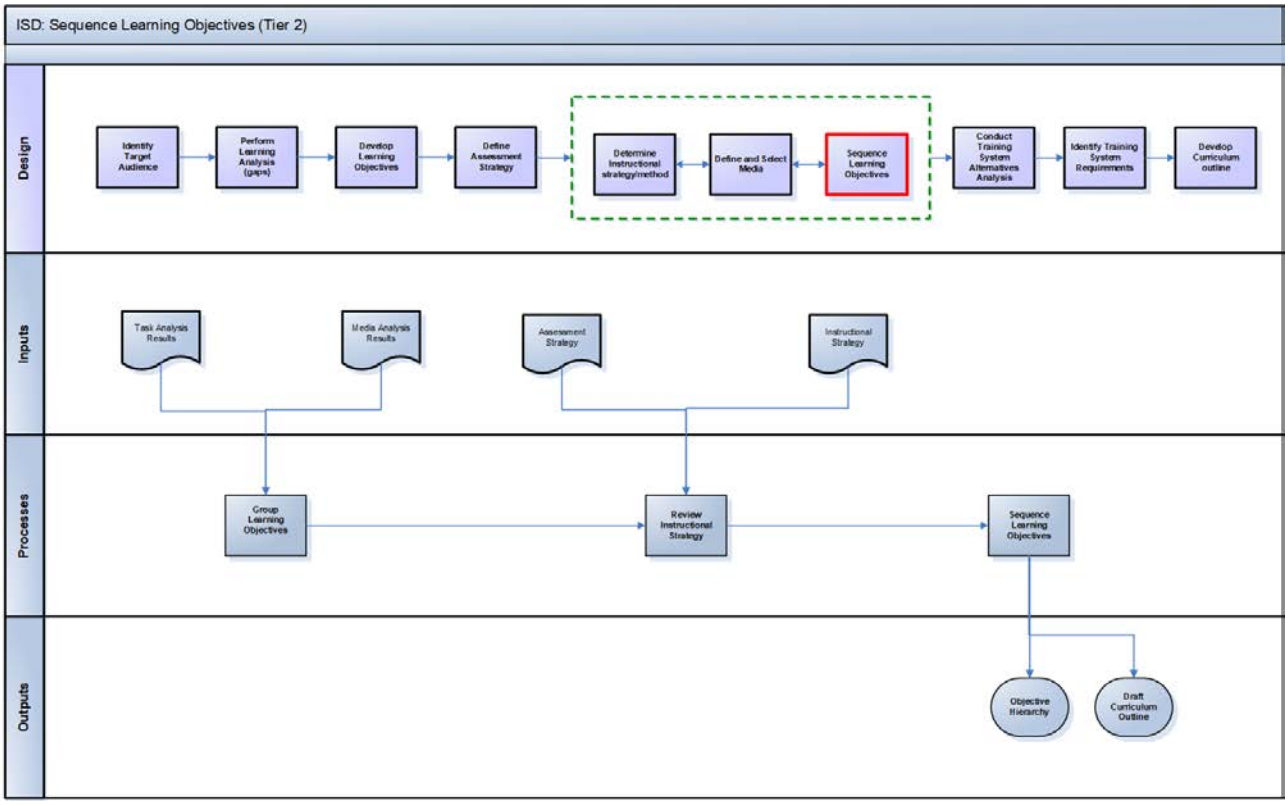

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Fig 1 Sequencing learning objectives process

3.1 Inputs

The inputs for the sequence enabling objectives are:

- Assessment strategy
- Instructional strategy
- Media analysis results
- Training analysis report

3.2 Process steps

The process steps are:

1 Develop group learning objectives.

2 Review the instructional strategy.

3 Sequence the learning objectives.

3.3 Output

The output of this process is an objective hierarchy and a draft curriculum outline.

Chapter 4.9

Design - Training system alternative analysis

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Table 1 References

Chap No./Document No.	Title
None	

1 General

In an ideal world, the various analysis and design processes would yield a single, optimal solution for training development. However inevitably the availability of training resources will impact the design of a training solution. Training resources include; equipment, facilities, funding, human resources and time.

2 Description

In an ideal world, the various analysis and design processes would yield a single, optimal solution for training development. However, the complexities of a training system rarely suggest a single solution, and the added concerns of limited time and budgets can further complicate decision making. This chapter describes a process for analyzing alternatives to determine the best training solution for the situation.

3 Process

Fig 1 illustrates the process for conducting the training system alternative analysis.

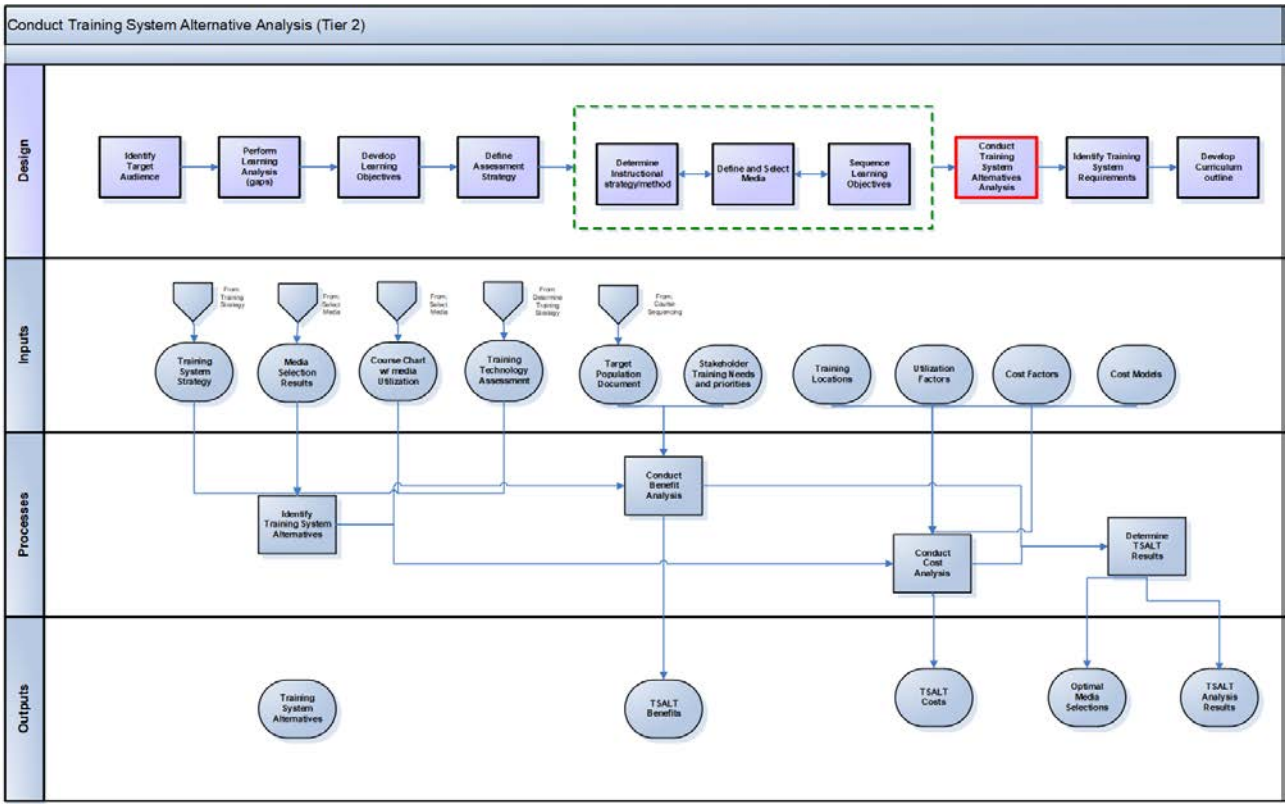

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Fig 1 Training system alternative analysis process

3.1 Inputs

The inputs for the training system alternative analysis are:

- Cost factors
- Cost models
- Course chart with media utilization
- Media selection results
- Stakeholder training needs and priorities
- Target audience documentation
- Training locations
- Training system strategy
- Training technology assessment
- Utilization factors

3.2 Process steps

The process steps are:

1 Identify the training system alternatives.

2 Conduct a benefit analysis.

3 Conduct a cost analysis.

4 Determine the Training System Analysis aLternative (TSALT) results.

3.3 Outputs

The outputs from the sequence enabling objectives process is:

- A documented training alternative decision that is valid and defensible
- Optimal media selections
- Training situation costs
- Training system alternative results

Chapter 4.10

Design - Training system functional requirements

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Table 1 References

Chap No./Document No.	Title
None	

1 General

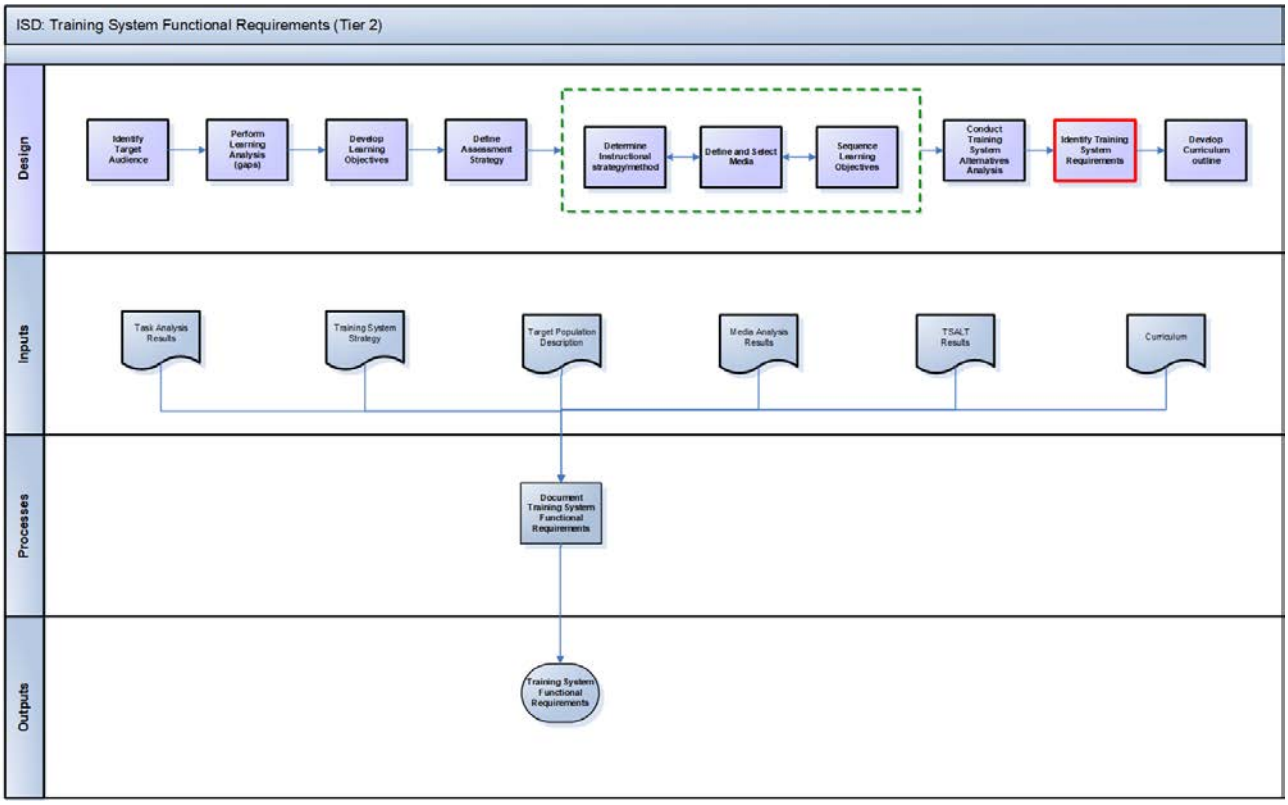
A complete set of thoroughly documented training system requirements is critical to ensure that training system equipment, including simulators, are designed to optimize the training solutions.

2 Description

This chapter describes the development of the training system functional requirements. A training system is an integrated group of resources that work together to ensure the training requirements of a Product are achieved, and training goals are met. The functional requirements for a training system, document the operations and activities that the training system must be able to perform. Functional requirements document describes in detail the training product's proposed capabilities, appearance, and user interactions, providing guidance for developers as they write the programming code for the training product. It is a series of statements that describe process flows, process logic, process performance, process access, data relationships, data attributes, data performance, and data history.

3 Process

Fig 1 illustrates the process for determining the training system functional requirements.



ICN-S6000T-B6865-00024-001-01

Fig 1 Training system functional requirements

3.1 Inputs

The inputs to this process are:

- Media analysis results
- Target audience description
- Task analysis results
- Training curriculum
- Training system alternative analysis results
- Training system strategy

3.2 Process step

The process step is to document the training system functional requirements.

3.3 Output

The output from this process is the training system functional requirements.

Chapter 4.11

Design - Develop curriculum outline

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References

Table 1 References

Chap No./Document No.	Title
Chap 4.10	Design - Identify training system functional requirements

1 General

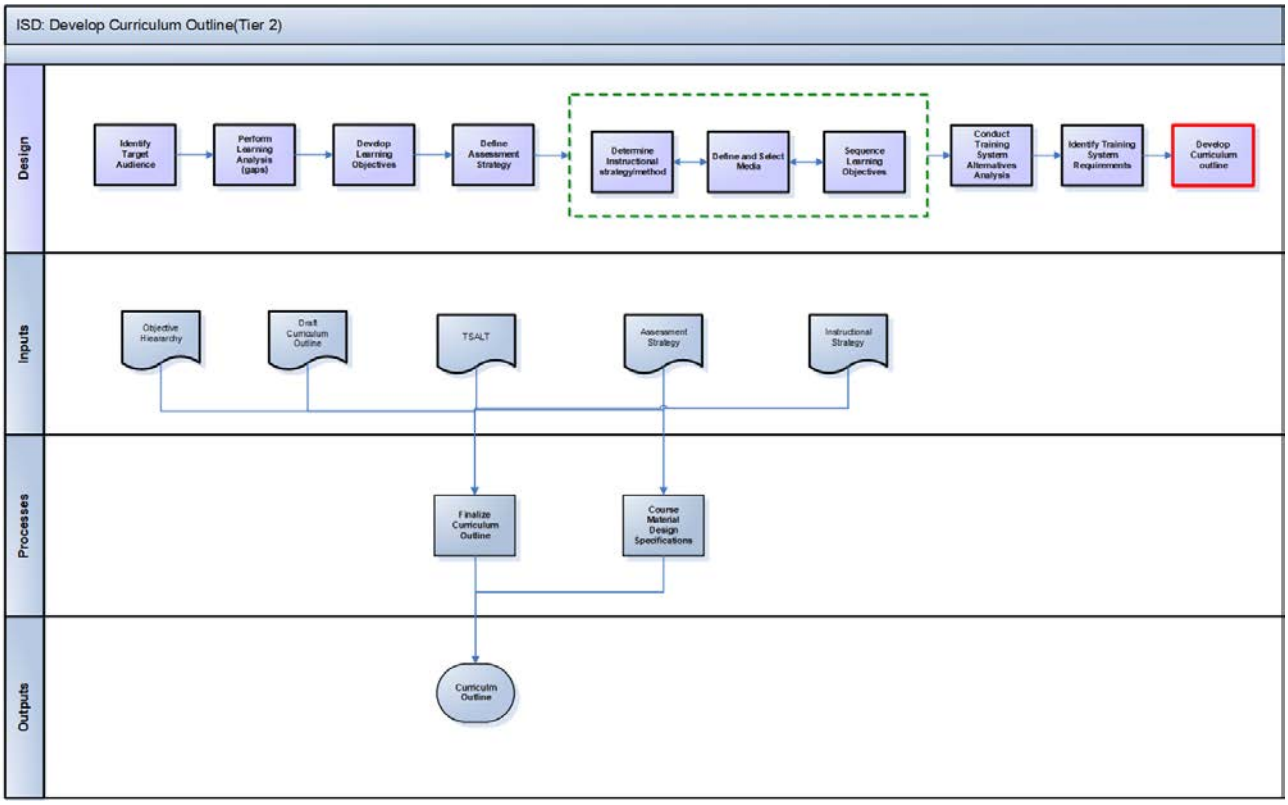
A curriculum is a collection of lessons, assessments, and other training content required to train an individual to operate or maintain a Product. A curriculum outline is a map that will provide a user with everything they must complete in order to meet their job requirements.

2 Description

This chapter contains the guidance for developing a course curriculum or a plan of instruction that will enable a trainee to acquire the specific knowledge, skills, and attitudes (KSA) necessary to operate and maintain a Product. A curriculum outline provides a brief summary of all the courses to support a Product. It includes course descriptions, number, title, topics and course requirements.

3 Process

Fig 1 illustrates the process for developing a curriculum outline.



ICN-S6000T-B6865-00025-001-01

Fig 1 Developing a curriculum outline

3.1 Inputs

The inputs to this process are:

- Assessment strategy
- Draft curriculum outline
- Instructional strategy
- Objective hierarchy
- Training situation analysis results

3.2 Process step

The process steps are to develop the final curriculum outline and to develop course material design specifications.

3.2.1 Finalize curriculum outline

This final curriculum outline will serve as a roadmap for all courses and lessons required to support the operation and maintenance of a Product. The curriculum outline provides necessary details for a curriculum developer to develop specific lesson material. Although the curriculum outline can be in different formats, it is normally organized by units or modules of instruction with each unit containing information such as:

- Appropriate LOs
- Audiovisual equipment
- Course description
- Course title

- Instructional guidance
- Student instructional materials
- Time allocations for each block or unit
- Training equipment
- Training method(s) and time
- Unit or block title

3.2.2 Develop course material design specifications

In Chap 4.10, the requirements for training hardware such as simulators, were identified. Similar design specifications must be developed for other training material. During this step, design specifications for each item of instructional materials, (eg, lesson plans, student guides, instructor guides, Computer Based Training (CBT) lessons, etc), should be prepared. The layout for these various training materials should also be provided. These requirements should be detailed enough to provide all the information that a curriculum developer will need to develop training materials.

3.3 Outputs

The outputs of this process are:

- A course curriculum outline
- Design specifications for all training media

Chapter 4.12

Design - Business objects

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References

Table 1 References

Chap No./Document No.	Title
Chap 4.1	Design - Introduction
Chap 4.2	Design - Identify target audience
Chap 4.3	Design - Perform Learning Analysis
Chap 4.4	Design - Develop learning objectives

Chap No./Document No.	Title
Chap 4.5	Design - Develop assessment strategy
Chap 4.6	Design - Determine instructional strategy/method
Chap 4.7	Design - Define and select media
Chap 4.8	Design - Sequence learning objectives
Chap 4.9	Design - Training system alternative analysis
Chap 4.10	Design - Training system functional requirements
Chap 4.11	Design - Develop curriculum outline
Chap 7	Data model
Chap 7.3.13	Units of functionality - UoF Mission definition
Chap 7.3.20	Units of functionality - UoF Learning Analysis
Chap 7.3.21	Units of functionality - UoF Target audience
Chap 7.3.24	Units of functionality - UoF Learning objective
Chap 7.3.25	Units of functionality - UoF Learning assessment strategy
Chap 7.3.26	Units of functionality - UoF Instructional strategy
SX001G	Glossary for the S-Series ILS specifications

1 General

This chapter defines the most important business objects and data elements captured during the design phase activities described in Chap 4.2 through Chap 4.11.

Business objects and data elements common to other S-Series IPS specifications are defined with a reference to the SX001G specification, which enables harmonization and interoperability across all S-Series IPS specifications.

1.1 Scope

The following types of data elements are within scope for the S6000T training analysis activities. Data elements that:

- identify and describes the target audience
- define gaps in Knowledge, Skills and/or Attitudes (KSA) for the target audience
- define learning objectives to bridge identified gaps in KSA
- identify assessment strategies and instructional strategies for the respective learning objective
- define curriculums for the target audience
- define courses and course structures that tie curriculums to the identified learning objectives

1.2 Out of scope

This chapter does not give all the details that are defined in the data model (refer to Chap 7) but highlights the most important business objects and data elements that need to be documented as part of the training design phase activities.

2 Business objects and data elements

Business objects and data elements supporting the S6000T training design process are organized in accordance with the respective training design chapter. The purpose for defining business objects is to either reflect something that exists in the real world, or just define a placeholder for information that belongs together from a logical standpoint. Data elements then define the type of data that can be captured for the respective business object.

Each business object has a reference to the Units of Functionality (UoF) in Chap 7 where a complete definitions of its data elements (characteristics) are defined in the context of the S6000T data model.

2.1 Target audience

The objective for the target audience analysis is to take a broad look at the occupational backgrounds including their KSA ratings for persons that are to operate and maintain the Product in focus (Refer to Chap 4.2).

2.1.1 Business objects - Target audience analysis

Business objects and data elements which are defined during mission analysis are listed in Table 2.

Table 2 Target audience analysis business objects and data elements

Term	Definition
Occupational background *(Business object)*	Occupational background defines the perceived KSA common to a set of persons within the target audience designated to perform a certain job, or act based on trade or skill code. Reference Chap 7.3.21 UoF Target audience
Occupational background name *(Data element)*	Occupational background name is a name by which the occupational background is known and can be easily referenced.
Occupational background domain *(Business object)*	Occupational background domain defines the perceived KSA in a specific field which is important to evaluate and highlight in the context of KSA ratings. Reference Chap 7.3.21 UoF Target audience
Affective level rating *(Data element)*	Affective level rating is a classification of a person's expected level of sophistication with respect to emotional, motivational and/or social abilities in the context of the defined occupational background.
Cognitive level rating *(Data element)*	Cognitive level rating is a classification of a person's expected level of sophistication with respect to mental, cognitive, and/or logical aspects in the context of the defined occupational background.
Psychomotor level rating *(Data element)*	Psychomotor level rating is a classification of a person's expected level of sophistication with respect to physical, mechanical, and/or movement-based aspects in the context of the defined occupational background.

Term	Definition
Competency definition	Competency definition represents measurable or observable KSA necessary for successful performance by a person in a given context. Reference Chap 7.3.21 UoF Target audience

2.2 Learning analysis

The objective for the learning analysis (refer to Chap 4.3) is to document the KSA gaps that identified between the requirements of the tasks to be trained and the target audience.

2.2.1 Business objects - Learning analysis

Business objects and data elements which are defined during learning analysis are listed in Table 3.

Table 3 Learning analysis business objects and data elements

Term	Definition
KSA gap definition *(Business object)*	KSA gap definition defines a deficiency in KSA that must be addressed for the identified target audience. Reference Chap 7.3.20 UoF Learning analysis
Qualification dimension *(Data element)*	Qualification dimension is a classification that determines the learning domain for which the KSA gap is written (affective, cognitive or psychomotor)
Task KSA gap *(Business object)*	Task KSA gap identifies the Task context where the deficiency in qualification is identified. Reference Chap 7.3.13 UoF Mission definition

2.3 Learning objective

The purpose for defining learning objectives (refer to Chap 4.4) is to express the goals of training. Each learning objective is a statement that defines what learners should know or be able to do as a result of training, the conditions under which they will demonstrate this proficiency, and the standard by which their performance will be measured.

2.3.1 Business objects - Learning objectives

Business objects and data elements which are defined during learning objective analysis are listed in Table 4.

Table 4 Learning objective business objects and data elements

Term	Definition
Learning objective *(Business object)*	Learning objective is a statement that defines the expected outcome of a learning activity in terms of assessable KSA that will be acquired by a student as a result of instruction. Reference

Term	Definition
	Chap 7.3.24 UoF Learning objective
Learning domain *(Data element)*	Learning domain is a classification that determines the learning aspect from which the learning objective is written (affective, cognitive or psychomotor).
Learning objective entry level requirement description *(Data element)*	Learning objective entry level requirement description gives more information on the KSA that is a prerequisite for how the learning objective is written.
Learning performance objective condition *(Data element)*	Learning performance objective condition is a description that expresses the environmental, physical and psychological circumstances under which the acquired proficiency can be demonstrated.
Learning performance objective behavior *(Data element)*	Learning performance objective behavior is a description that expresses the main purpose for the learning objective.
Learning performance objective standard *(Data element)*	Learning performance objective standard is a statement that identifies what a trainee will do to demonstrate that they learned a specific KSA.
Learning objective relationship *(Business object)*	Learning objective relationship is a relationship where one learning objective relates to another learning objective. **Reference** Chap 7.3.24 UoF Learning objective
Learning objective relationship type *(Data element)*	Learning objective relationship type is a classification that identifies the meaning of the established relationship. **Example** – Prerequisite learning objective which defines a sequential dependency Enabling learning objective which defines a hierarchical dependency.

2.4 Assessment strategy

The objective of the assessment strategy (refer to Chap 4.5) is to identify the methods used to evaluate how well the trainee's masters the desired learning outcomes or learning objectives. These methods should be observable, measurable, and repeatable.

2.4.1 Business objects - Assessment strategy

The most central data elements captured during the assessment strategy analysis are listed in Table 5.

Table 5 Assessment strategy business objects and data elements

Term	Definition
Learning assessment strategy *(Business object)*	Learning assessment strategy represents the definition of method, and other solutions needed, which are to be used to evaluate how well the trainee's meet the learning objective performance requirements.

Term	Definition
	Reference Chap 7.3.25 UoF Learning assessment strategy
Learning assessment strategy learning domain *(Data element)*	Learning assessment strategy learning domain is a classification that determines the learning aspect for which the learning assessment strategy is defined (affective, cognitive or psychomotor)
Learning assessment method *(Data element)*	Learning assessment method is a classification that identifies the way in which learning is to be assessed.
Learning assessment media *(Data element)*	Learning assessment media is a classification that identifies the delivery vehicles used to present assessment material or basic sensory stimulus presented to a student to conduct assessment.
Learning objective assessment strategy *(Business object)*	Learning objective assessment strategy defines a relationship between a learning objective and a learning assessment strategy. **Reference** Chap 7.3.24 UoF Learning objective
Learning objective assessment strategy selection status	Learning objective assessment strategy selection status identifies the stage in the decision-making process in which the decision for the associated assessment strategy is.
Learning objective assessment strategy rationale	Learning objective assessment strategy rationale is a description that gives more information on the justification for selecting the associated learning assessment strategy.

2.5 Instructional strategy

The objective of the instructional strategy (refer to Chap 4.6) is to select the methodology that most effectively conveys the instructional content while motivating the trainee to become an active and independent learner.

2.5.1 Business objects - Instructional strategy

Data elements used to document the results from the instructional strategy analysis are listed in Table 6.

Table 6 Instructional strategy business objects and data elements

Term	Definition
Instructional strategy *(Business object)*	Instructional strategy represents techniques used to support the acquisition of new knowledge, skills and attitudes. Reference Chap 7.3.26 UoF Instructional strategy
Instructional strategy learning domain *(Data element)*	Instructional strategy learning domain is a classification that determines the learning aspect for which the instructional strategy is defined (affective, cognitive or psychomotor).

Term	Definition
Instructional strategy method *(Data element)*	Instructional strategy method is a classification that identifies the way in which the learning is to be conducted.
Learning objective instructional strategy *(Business object)*	Learning objective instructional strategy defines a relationship between a learning objective and an instructional strategy. Reference Chap 7.3.24 UoF Learning objective
Learning objective instructional strategy selection status	Learning objective instructional strategy selection status identifies the stage in the decision-making process in which the decision for the associated instructional strategy is.
Learning objective instructional strategy rationale	Learning objective instructional strategy rationale is a description that gives more information on the justification for selecting the associated instructional strategy.

2.6 Media selection

The objective of the media analysis activities (refer to Chap 4.7) is to identify the most effective training media to deliver training content to the trainees.

2.6.1 Business objects - Media selection

Data elements used to document the results from the media analysis activity are listed in Table 7.

Table 7 Media analysis business objects and data elements

Term	Definition
Instructional strategy *(Business object)*	Refer to Para 2.5
Instructional strategy media *(Data Element)*	Instructional strategy media is a classification that identifies the delivery vehicles used to present instructional material or basic sensory stimulus presented to a student to induce learning.
Instructional strategy learning assessment strategy relationship *(Business object)*	Instructional strategy learning assessment strategy relationship is a relationship that identifies the dependency between the defined instructional strategy and a given assessment strategy. **Reference** Chap 7.3.26 UoF Instructional strategy
Learning objective instructional strategy *(Business object)*	Learning objective instructional strategy defines a relationship between a learning objective and an instructional strategy. **Reference** Chap 7.3.24 UoF Learning objective
Learning objective instructional strategy selection status	Learning objective instructional strategy selection status identifies the stage in the decision-making process in which the decision for the associated instructional strategy is.

Term	Definition
Learning objective instructional strategy rationale	Learning objective instructional strategy rationale is a description that gives more information on the justification for selecting the associated instructional strategy.

2.7 Sequence learning objectives

The objective for the sequence learning objectives activity (refer to Chap 4.8) is to identify the optimum cluster and order of the learning objectives into an effective instructional sequence.

2.7.1 Business objects - Sequence learning objectives

Data elements used to document the results from the sequence learning objectives activity are listed in Table 8.

Table 8 Sequence learning objectives business objects and data elements

Term	Definition
Course definition *(Business object)*	Course definition defines a combination of course elements with the objective that a trainee is to learn knowledge, skills and attitude to meet performance requirements for a particular aspect of a job or duty.
Course element definition *(Business object)*	Course element definition defines a partition of knowledge, skills and attitude that a trainee is to learn to meet requirements for a particular subject.
Course element learning objective *(Business object)*	Course element learning objective is a relationship where a course element definition relates to a learning objective that is to be covered by the course element.

Chapter 5

In-service training support optimization

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Chapter 5.1

In-service training support optimization - General

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References

Table 1 References

Chap No./Document No.	Title
Chap 5.2	In-service training support optimization - Preparation phase
Chap 5.3	In-service training support optimization - Analysis phase

1 General

The content of the chapters in Chap 5 are planned for a later issue of S6000T. However, brief introductions to the aspects of In-service Training Support Optimization (ITSO) are included.

2 Planned content

The planned content for these ITSO chapters includes, but is currently not limited to the ITSO:

- Preparation phase. Refer to Chap 5.2.
- Analysis phase. Refer to Chap 5.3.

Chapter 5.2

In-service training support optimization - Preparation phase

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References

Table 1 References

Chap No./Document No.	Title
None	

1 General

The process of the In-service Training Support Optimization (ITSO) preparation determines whether previous analyses and their results are still relevant, accurate and up to date.

Any deficits identified in the analytical Training Support Products (TSP) development process lead to the determination of subsequent analysis activities where needed. Where parts of the analytical TSP development process do not exist or cannot be verified, subsequent analysis activities must be examined for areas of potential compensation. This can be supported by utilizing extensive operating experience with the Product under analysis.

Chapter 5.3

In-service training support optimization - Analysis phase

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References

Table 1 References

Chap No./Document No.	Title
None	

1 General

The In-service Training Support Optimization (ITSO) analysis phase contains a detailed analysis for Training Support Products (TSP) based on a valid Product in-service feedback. These TSP must be identified with information completed during the ITSO preparation phase.

Chapter 6

Relationship to other specifications

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Chapter 6.1

Relationship to other specifications - General

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References

Table 1 References

Chap No./Document No.	Title
None	

1 General

The content of the chapters in chapter 6 are planned for a later issue of S6000T.

2 Planned content

The planned content for these chapters includes, but is currently not limited to the relationships of S6000T with:

- S-Series IPS specifications
- Instructional systems design
- UK MOD JSP 822
- Modified Ohio State SCID DIF Task Model

Chapter 7

Data model

Table of contents

Chapter	Data module title	Data module code	Applic
Chap 7.3.17	Units of functionality - UoF Task train prioritization	S6000T-A-07-03-1700-00A-040A-A	All
Chap 7.3.18	Units of functionality - UoF Subtask train prioritization	S6000T-A-07-03-1800-00A-040A-A	All
Chap 7.3.19	Units of functionality - UoF Warning caution train prioritization	S6000T-A-07-03-1900-00A-040A-A	All
Chap 7.3.20	Units of functionality - UoF Task knowledge skill and attitude	S6000T-A-07-03-2000-00A-040A-A	All
Chap 7.3.21	Units of functionality - UoF Target audience	S6000T-A-07-03-2100-00A-040A-A	All
Chap 7.3.22	Units of functionality - UoF Train task target audience	S6000T-A-07-03-2200-00A-040A-A	All
Chap 7.3.23	Units of functionality - UoF Learning analysis	S6000T-A-07-03-2300-00A-040A-A	All
Chap 7.3.24	Units of functionality - UoF Learning objective	S6000T-A-07-03-2400-00A-040A-A	All
Chap 7.3.25	Units of functionality - UoF Learning assessment strategy	S6000T-A-07-03-2500-00A-040A-A	All
Chap 7.3.26	Units of functionality - UoF Instructional strategy	S6000T-A-07-03-2600-00A-040A-A	All
Chap 7.3.27	Units of functionality - UoF Learning resource	S6000T-A-07-03-2700-00A-040A-A	All
Chap 7.3.28	Units of functionality - UoF Curriculum and course plan	S6000T-A-07-03-2800-00A-040A-A	All
Chap 7.3.29	Units of functionality - UoF Course	S6000T-A-07-03-2900-00A-040A-A	All
Chap 7.3.30	Units of functionality - UoF Product usage context	S6000T-A-07-03-3000-00A-040A-A	All
Chap 7.3.31	Units of functionality - UoF Change information	S6000T-A-07-03-3100-00A-040A-A	All
Chap 7.3.32	Units of functionality - UoF Document	S6000T-A-07-03-3200-00A-040A-A	All
Chap 7.3.33	Units of functionality - UoF Digital file	S6000T-A-07-03-3300-00A-040A-A	All
Chap 7.3.34	Units of functionality - UoF Organization	S6000T-A-07-03-3400-00A-040A-A	All
Chap 7.3.35	Units of functionality - UoF Security classification	S6000T-A-07-03-3500-00A-040A-A	All
Chap 7.3.36	Units of functionality - UoF Remark	S6000T-A-07-03-3600-00A-040A-A	All
Chap 7.3.37	Units of functionality - UoF Applicability statement	S6000T-A-07-03-3700-00A-040A-A	All
Chap 7.3.38	Units of functionality - UoF Message	S6000T-A-07-03-3800-00A-040A-A	All

Chapter	Data module title	Data module code	Applic
Chap 7.3.39	Units of functionality - UoF Training analysis and design message content	S6000T-A-07-03-3900-00A-040A-A	All

Chapter 7.1

Data model - General

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References

Table 1 References

Chap No./Document No.	Title
Chap 3	Analysis
Chap 4	Design
S3000L	International procedure specification for Logistics Support Analysis (LSA)
SX002D	Common data model for the S-Series IPS specifications
SX004G	Unified Modeling Language (UML) model readers' guidance
www.uml.org	Unified Modeling Language (UML 2.0™)

1 General

1.1 Introduction

This chapter defines the data that is identified during the training analysis and design activities as described in Chap 3 and Chap 4.

The S6000T data model is described using the UML 2.0™ (Unified Modeling Language) class model diagrams (www.uml.org). For guidance on how to read a UML class model refer to SX004G.

The S6000T data model is an extension of the Data Model and Exchange Working Group (DMEWG) Common Data Model issue 2.0 (refer to SX002D). This means that the S6000T data model is based on the same underlying data model as S3000L, which is an important aspect in order to enable a fully integrated Product support process.

Each class and attribute defined in the S6000T data model is defined as part of the Unit of Functionality (UoF) where it is first encountered.

1.2 Scope

The following areas are within scope of the S6000T issue 1.0 data model:

- Product structure to be supported
- Tasks including tasks where preceding Logistics Support Analysis (LSA) activities are the authoritative source for tasks to be considered for training
- Identification of missions to be carried out by the Product and its need for human interaction
- Identification of jobs, duties and tasks
- Definition of performance objectives
- Prioritization of tasks, subtasks and subtask steps to be trained
- Definition of required Knowledge, Skills and Attitudes (KSA) for the respective task, subtask and subtask step that has been prioritized for training
- Description of the training target audience and their occupational backgrounds
- Identification of KSA gaps for the training target audience
- Definition of learning objectives, learning assessment strategies and instructional strategies
- Layout for curriculums, courses and course content

1.3 Out of scope

The data model for S6000T does not cover all the aspects that need to be documented as part of a detailed task analysis but only those aspects that are important for making decisions related to training. Refer to S3000L.

Chapter 7.2

Data model - Overview

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References

Table 1 References

Chap No./Document No.	Title
Chap 7.3	Data model - Units of functionality
Chap 7.3.1	Units of functionality - UoF Product
Chap 7.3.2	Units of functionality - UoF Product usage phase
Chap 7.3.3	Units of functionality - UoF Breakdown structure
Chap 7.3.4	Units of functionality - UoF Hardware element
Chap 7.3.5	Units of functionality - UoF Software element
Chap 7.3.6	Units of functionality - UoF Aggregated element
Chap 7.3.7	Units of functionality - UoF Zone element
Chap 7.3.8	Units of functionality - UoF Part definition
Chap 7.3.9	Units of functionality - UoF Task
Chap 7.3.10	Units of functionality - UoF Task resource
Chap 7.3.11	Units of functionality - UoF Task resource competence definition
Chap 7.3.12	Units of functionality - UoF Product support task usage
Chap 7.3.13	Units of functionality - UoF Mission definition
Chap 7.3.14	Units of functionality - UoF Performance parameter

Chap No./Document No.	Title
Chap 7.3.15	Units of functionality - UoF Job duty
Chap 7.3.16	Units of functionality - UoF Task performance objective
Chap 7.3.17	Units of functionality - UoF Task train prioritization
Chap 7.3.18	Units of functionality - UoF Subtask train prioritization
Chap 7.3.19	Units of functionality - UoF Warning caution train prioritization
Chap 7.3.20	Units of functionality - UoF Task knowledge skill and attitude
Chap 7.3.21	Units of functionality - UoF Target audience
Chap 7.3.22	Units of functionality - UoF Train task target audience
Chap 7.3.23	Units of functionality - UoF Learning analysis
Chap 7.3.24	Units of functionality - UoF Learning objective
Chap 7.3.25	Units of functionality - UoF Learning assessment strategy
Chap 7.3.26	Units of functionality - UoF Instructional strategy
Chap 7.3.27	Units of functionality - UoF Learning resource
Chap 7.3.28	Units of functionality - UoF Curriculum and course plan
Chap 7.3.29	Units of functionality - UoF Course
Chap 7.3.30	Units of functionality - UoF Product usage context
Chap 7.3.31	Units of functionality - UoF Change information
Chap 7.3.32	Units of functionality - UoF Document
Chap 7.3.33	Units of functionality - UoF Digital file
Chap 7.3.34	Units of functionality - UoF Organization
Chap 7.3.35	Units of functionality - UoF Security classification
Chap 7.3.36	Units of functionality - UoF Remark
Chap 7.3.37	Units of functionality - UoF Applicability statement
Chap 7.3.38	Units of functionality - UoF Message
Chap 7.3.39	Units of functionality - UoF Training analysis and design message content
S3000L	International procedure specification for Logistics Support Analysis (LSA)

1 Data model overview

1.1 S6000T UoF overview

The S6000T data model is organized into a set of UoF which splits the overall data model into a set of smaller data models. The purpose of this is to present small and coherent portions of the data model and to gradually give the reader an understanding of the complete data model.

The first set of UoF, documents the Product to be supported including its breakdown structure and parts. This is data that must be common to all Product support activities and is only data that is defined for S6000T alone. This includes:

- UoF Product (refer to Chap 7.3.1)
- UoF Product usage phase (refer to Chap 7.3.2)
- UoF Breakdown structure (refer to Chap 7.3.3) and its specializations for:
  - UoF Hardware element (refer to Chap 7.3.4)
  - UoF Software element (refer to Chap 7.3.5)
  - UoF Aggregated element (refer to Chap 7.3.6)
  - UoF Zone element (refer to Chap 7.3.7)
- UoF Part definition (refer to Chap 7.3.8)

The second set of UoF, documents task information independent of whether a task has been identified as part of a Logistic Support Analysis (LSA) (eg, S3000L) or if it has been identified during the initial training analysis activities. Specifically, tasks coming out from LSA must be common to all Product support activities and is only data that is defined for S6000T alone. This includes:

- UoF Task (refer to Chap 7.3.9)
- UoF Task resource (refer to Chap 7.3.10)
- UoF Task resource competence definition (refer to Chap 7.3.11)
- UoF Product support Task usage (refer to Chap 7.3.12)

The third set of UoF, defines data which are unique to training analysis. This includes:

- UoF Mission definition (refer to Chap 7.3.13)
- UoF Performance parameter (refer to Chap 7.3.14)
- UoF Job duty (refer to Chap 7.3.15)
- UoF Task performance objective (refer to Chap 7.3.16)
- UoF Task train prioritization (refer to Chap 7.3.17)
- UoF Subtask train prioritization (refer to Chap 7.3.18)
- UoF Warning caution train prioritization (refer to Chap 7.3.19)
- UoF Task knowledge skill and attitude (refer to Chap 7.3.20)

The fourth set of UoF, defines data which are unique to training design. This includes:

- UoF Target audience (refer to Chap 7.3.21)
- UoF Train task target audience (refer to Chap 7.3.22)
- UoF Learning analysis (refer to Chap 7.3.23)
- UoF Learning objective (refer to Chap 7.3.24)
- UoF Learning assessment strategy (refer to Chap 7.3.25)
- UoF Instructional strategy (refer to Chap 7.3.26)
- UoF Learning resource (refer to Chap 7.3.27)
- UoF Curriculum and course plan (refer to Chap 7.3.28)
- UoF Course (refer to Chap 7.3.29)

There is also a set of supporting UoF which allows for additional information to be associated with business objects (UML classes) defined in the UoF defined above. This includes:

- UoF Applicability statement (refer to Chap 7.3.37)
- UoF Change information (refer to Chap 7.3.31)

- UoF Digital file (refer to Chap 7.3.33)
- UoF Document (refer to Chap 7.3.32)
- UoF Organization (refer to Chap 7.3.34)
- UoF Remark (refer to Chap 7.3.36)
- UoF Security classification (refer to Chap 7.3.35)
- UoF Product usage context (refer to Chap 7.3.30)

The last two UoF defines the constructs needed to exchange data between stakeholders of data resulting from the training analysis and design activities. This includes:

- UoF Message (refer to Chap 7.3.38)
- UoF Training analysis and design message content (refer to Chap 7.3.39)

2 S6000T Business objects overview

The S6000T data model in total is made up from a set of UML classes which are a set of business objects, each representing an important set of information which identifies and characterizes the respective business object.

A high-level business object model is illustrated in Fig 1.

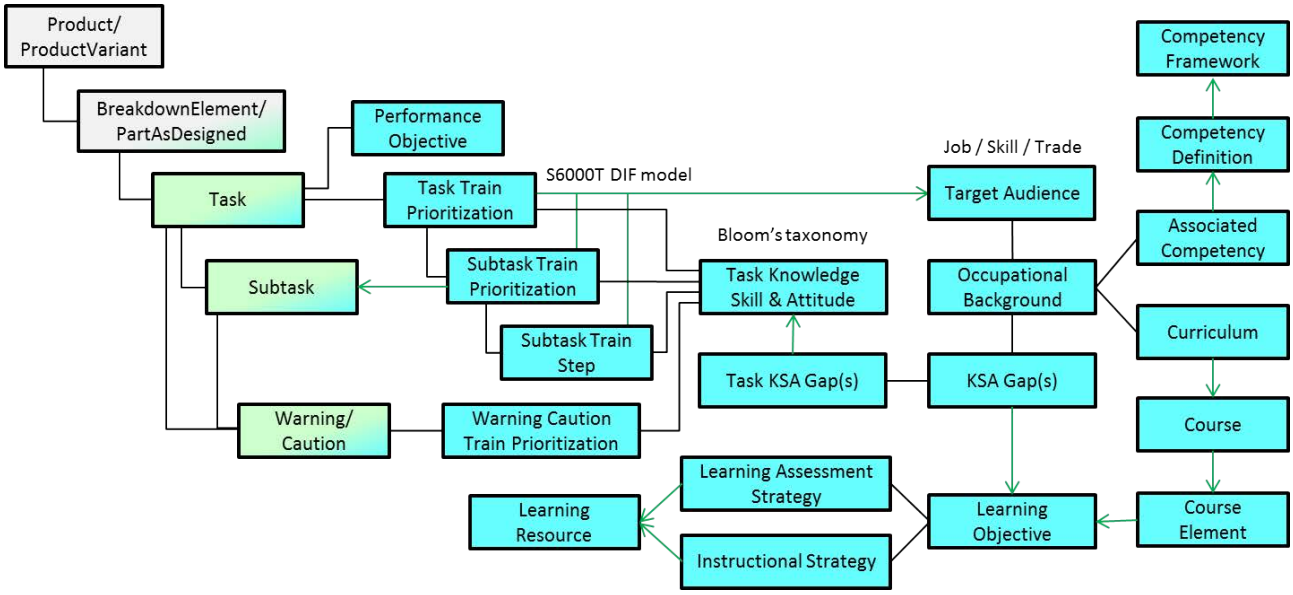

Fig 1 S6000T business objects overview

Business objects marked in grey represent information that typically originates from the Product design and development process and which may have been further refined during the initial Product support analysis activities (eg, LSA). The types of business objects that originate from Product design and development includes information about the Product itself and its variants, hardware and software parts and allowed configurations.

Business objects marked in green represent information that typically originates from the initial Product support analysis activities and primarily LSA. This includes information about product support tasks and its subtasks, warnings, cautions, and resource requirements.

Business objects marked in blue represent information that is developed during training analysis and training design and is the authoritative source for further development of training material and training intervention.

Chapter 7.3

Data model - Units of functionality

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Table 1 References

Chap No./Document No.	Title
None	

1 General

The S6000T Data Model is organized into a set of Units of Functionality (UoF). Each UoF defines a set of business objects and data elements that together support the definition of data for a particular subject.

A UoF can refer to business objects in other UoF to bring the referred data into larger contexts.

Splitting the S6000T data model into a set of UoF provides small and coherent portions of the data model to help the reader understand the complete data model.

2 Units of functionality - Definitions

The definitions of the UoF are given in the chapters listed in Table 2.

Table 2 Units of Functionality - Definitions

Chap No.	Title
Chap 7.3.1	Units of functionality - UoF Product
Chap 7.3.2	Units of functionality - UoF Product usage phase
Chap 7.3.3	Units of functionality - UoF Breakdown structure
Chap 7.3.4	Units of functionality - UoF Hardware element
Chap 7.3.5	Units of functionality - UoF Software element
Chap 7.3.6	Units of functionality - UoF Aggregated element

Chap No.	Title
Chap 7.3.39	Units of functionality - UoF Training analysis and design message content

Chapter 7.3.1

Units of functionality - UoF Product

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The first data elements defined during Product support analysis, including training, are those required to define the Product in focus for the analysis activities (often referred to as the end item).

2 UoF Product

The Product defines the product(s) which are in focus for the Integrated Product Support (IPS) program. Once defined, a Product will then come in one or many Product variants. Refer to Fig 1.

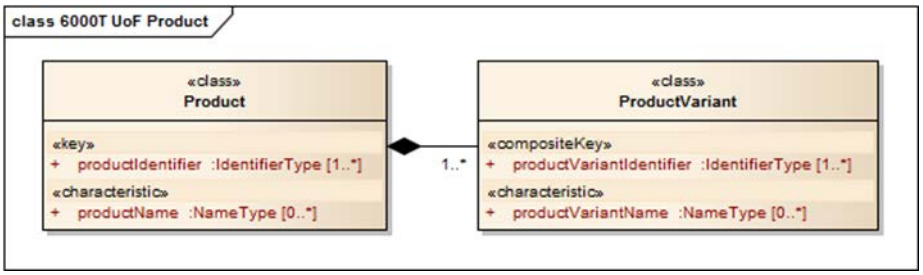

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Fig 1 UoF Product

2.1 Product

Definition:

Product represents a family of items which share the same underlying design purpose.

Examples:

- Aegis Class Destroyer
- Airbus A340
- Ford Fusion
- iPhone 7
- Pegasus engine
- Stryker

Reference:

- SX001G

2.2 Product identifier

Definition:

Product identifier (productIdentifier) is an identifier that establishes a unique designator for a Product and to differentiate it from other instances of Product.

Examples:

- End Item Acronym Code
- Model Identification Code

Reference:

- SX001G

2.3 Product name

Definition:

Product name (productName) is a name by which the Product is known and can be easily referenced.

2.4 Product variant

Definition:

Product variant (productVariant) defines a member of a Product family which is configured for a specific purpose and is made available to the market.

Examples:

- Boeing 787-800 vs 787-900
- Ford Fusion S vs. SE vs. SEL

Reference:

- SX001G

2.4.1 Product variant identifier

Definition:

Product variant identifier (productVariantIdentifier) is an identifier that establishes a unique designator for a Product variant and to differentiate it from other instances of Product variant.

Examples:

- Model Identification Code
- Usable On Code

Reference:

- SX001G

2.4.2 Product variant name

Definition:

Product variant name (productVariantName) is a name by which the Product variant is known and can be easily referenced.

Reference:

- SX001G

Chapter 7.3.2

Units of functionality - UoF Product usage phase

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The product usage phase UoF provides the capability to define any number of product usage phases for a specific Product or Product variant.

2 UoF product usage phase data

Key features of the UoF Product usage phase data model, (refer to Fig 1), are:

- Product usage phases can be defined either for the overall Product or per specific Product variant
- Product usage phases can be organized eg, hierarchically or sequentially using the product usage phase relationship class and its type attribute

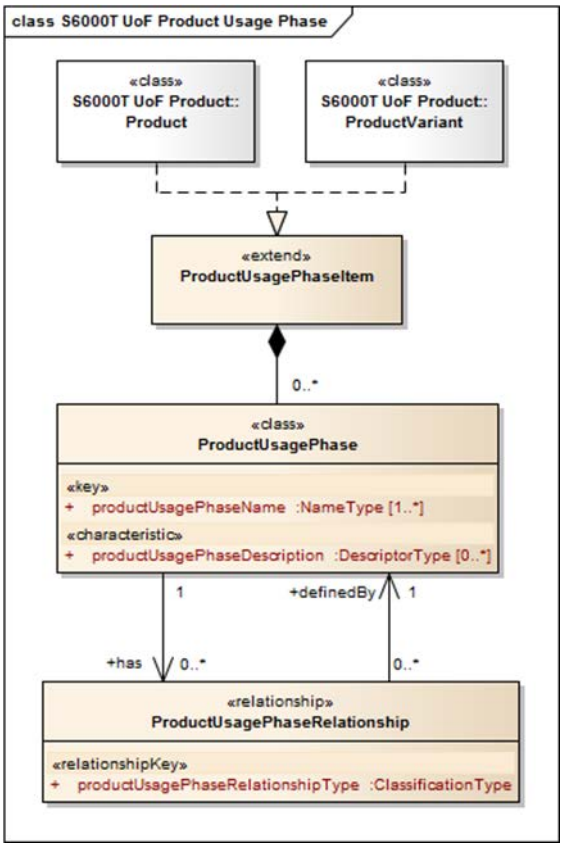

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Fig 1 UoF Product usage phase

2.1 Product usage phase

Definition:

Product usage phase (productUsagePhase) represents an operational stage in which a Product can be for a period of time.

Examples:

- Take off
- Landing
- Transport
- Storage
- Sailing

Reference:

- SX001G

2.1.1 Product usage phase name

Definition:

Product usage phase name (productUsagePhaseName) is a name by which the Product usage phase is known and can be easily Referenced.

Reference:

- SX001G

2.1.2 Product usage phase description

Definition:

Product usage phase description (productUsagePhaseDescription) is a description that provides further information on the defined Product usage phase.

Reference:

- SX001G

2.2 Product usage phase item

Definition:

Product usage phase item (productUsagePhaseItem) provides its associated data model to those classes that implement it.

Reference:

- SX001G

2.3 Product usage phase relationship

Definition:

Product usage phase relationship (productUsagePhaseRelationship) is a relationship where one Product usage phase relates to another Product usage phase.

Reference:

- SX001G

2.3.1 Product usage phase relationship type

Definition:

Product usage phase relationship type (productUsagePhaseRelationshipType) is a classification that identifies the meaning of the established relationship.

Reference:

- SX001G

Chapter 7.3.3

Units of functionality - UoF Breakdown structure

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Table 1 References

Chap No./Document No.	Title
S1000D	International specification for technical publications using a common source database
SX001G	Glossary for the S-Series ILS specifications
GEIA-STD-0007	Logistics Product Data

1 General

The breakdown structure UoF provides the capability to define any number of hierarchical structures for a specific Product or Product variant.

Examples:

- Functional
- System
- Physical
- Zonal

2 UoF Breakdown structure

Key features of the UoF breakdown structure data model, (refer to Fig 1), are:

- Breakdowns can be defined either for the overall Product or per specific Product variant
- Each breakdown can have one or many breakdown revisions, where each breakdown revision References the breakdown element revisions that are included in the specific revision of the breakdown
- References between a breakdown revision and its constituent breakdown elements are established using the breakdownElementUsageInBreakdown class
- Breakdown element included in a breakdown revision can be organized hierarchically into a breakdown structure by associating the breakdownElementStructure class to instances of breakdownElementUsageInBreakdown

Note

There must be one instance of breakdownElementUsageInBreakdown that has no parent element. This instance of breakdownElementUsageInBreakdown is often referred to as the root node.

The breakdown structure UoF allows for a defined breakdown element and its revisions to be part of many breakdowns and/or revisions thereof. A breakdown element (revision) can be positioned differently in the respective breakdown and/or revision thereof.

Note

Each instance of breakdownElementUsageInBreakdown and breakdownElementStructure is uniquely defined in the context of a specific breakdown revision.

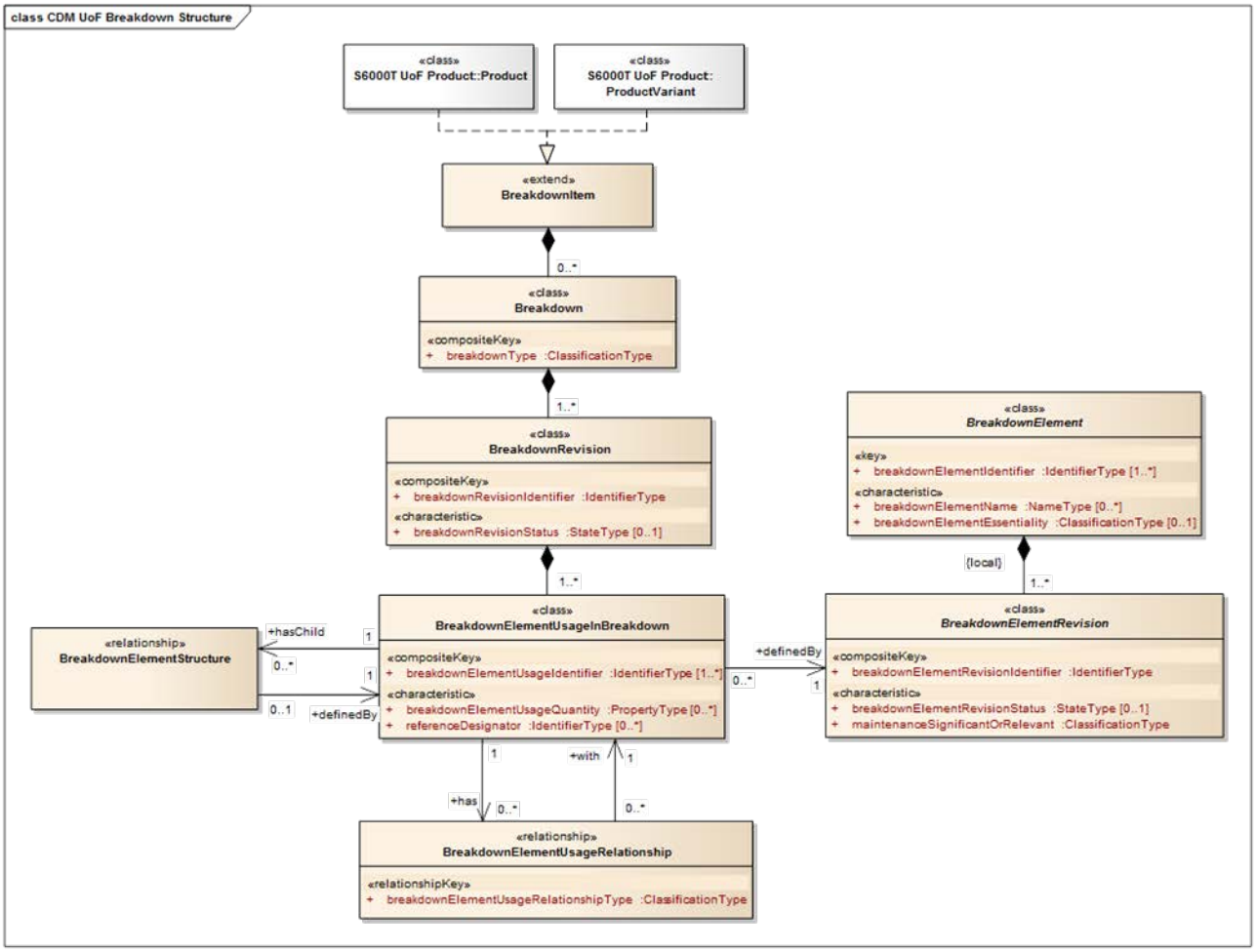

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Fig 1 UoF Breakdown structure

2.1 Breakdown

Definition:

Breakdown identifies a specific partitioning of a Product to form a parent-child structure of related instances of breakdown element.

Reference:

– SX001G

2.1.1 Breakdown type

Definition:

Breakdown type (breakdownType) is a classification that identifies the perspective from which the breakdown is defined.

Examples:

– ASD system hardware breakdown
– Family breakdown
– Physical breakdown
– Functional breakdown

- Provisioning breakdown
- System breakdown
- Zonal breakdown

Reference:

- SX001G

2.2 Breakdown element

Definition:

Breakdown element (breakdownElement) defines a partition of a Product that is used in one or many instances of breakdown.

Reference:

- SX001G

2.2.1 Breakdown element identifier

Definition:

Breakdown element identifier (breakdownElementIdentifier) is an identifier that establishes a unique designator for a breakdown element and to differentiate it from other instances of breakdown element.

Examples:

- The Standard Numbering System (SNS) defined by S1000D
- The combination of logistics support analysis control number and alternate logistics support analysis control number within GEIA-STD-0007

Reference:

- SX001G

2.2.2 Breakdown element name

Definition:

Breakdown element name (breakdownElementName) is a name by which the Breakdown element is known and can be easily Referenced.

Reference:

- SX001G

2.2.3 Breakdown element essentiality

Definition:

Breakdown element essentiality (breakdownElementEssentiality) is a classification that identifies the operational importance of the breakdown element at the Product level.

Note

Breakdown element essentiality is often based on the criticality as defined during the Failure Mode Effects and Criticality Analysis (FMECA).

Reference:

- SX001G

2.3 Breakdown element revision

Definition:

Breakdown element revision (breakdownElementRevision) represents an iteration applied to a breakdown element.

Reference:

– SX001G

2.3.1 Breakdown element revision identifier

Definition:

Breakdown element revision identifier (breakdownElementRevisionIdentifier) is an identifier that establishes a unique designator for a Breakdown element revision and to differentiate it from other instances of breakdown element revision.

Reference:

– SX001G

2.3.2 Breakdown element revision status

Definition:

Breakdown element revision status (breakdownElementRevisionStatus) is a state that identifies the maturity of a breakdown element revision.

Reference:

– SX001G

2.3.3 Breakdown element description

Definition:

Breakdown element description (breakdownElementDescription) is a description that provides information on the intent and capabilities provided by the breakdown element.

Reference:

– S6000T

2.4 Breakdown element structure

Definition:

Breakdown element structure (breakdownElementStructure) is a relationship that establishes a hierarchical structure between two usages of breakdown element that belong to the same Bbeakdown revision.

Reference:

– SX001G

2.5 Breakdown element usage in breakdown

Definition:

Breakdown element usage in breakdown (breakdownElementUsageInBreakdown) represents a member of a breakdown revision.

Note
A Breakdown element revision can belong to multiple breakdown revisions.

Reference:

– SX001G

2.5.1 Breakdown element usage identifier
Definition:

Breakdown element usage identifier (breakdownElementUsageIdentifier) is an identifier that establishes a unique designator for a breakdown element usage in breakdown and to differentiate it from other instances of breakdown element usage in breakdown.

Reference:

– SX001G

2.5.2 Breakdown element usage quantity
Definition:

Breakdown element usage quantity (breakdownElementUsageQuantity) is a property that specifies the amount of the breakdown element used in its parent.

Note
If no value is given, it must be interpreted as value "1" with a unit of "each". For as required amounts, the text property is used with "As required" or other text as appropriate.

Reference:

– SX001G

2.5.3 Reference designator
Definition:

Reference designator (referenceDesignator) is an identifier that establishes a unique designator for a location within the overall Product, and to differentiate it from other locations.

Example
Reference designators serve as a cross-reference between parts contained in wiring diagrams, hydraulic systems etc. and the Illustrated Parts Data (IPD).

Reference:

– SX001G

2.6 Breakdown element usage relationship
Definition:

Breakdown element usage relationship (breakdownElementUsageRelationship) is a relationship where one usage of a breakdown element relates to the usage of another breakdown element.

Note
Both related instances of breakdown element usage in breakdown must reside within the same breakdown revision.

Example:

– Version C of a radio is restricted to the use of Software version B in breakdown revision 2.

Reference:

– SX001G

2.6.1 Breakdown element usage relationship type

Definition:

Breakdown element usage relationship type (breakdownElementUsageRelationshipType) is a classification that identifies the meaning of the established relationship.

Reference:

– SX001G

2.7 Breakdown item

Definition:

Breakdown item (breakdownItem) provides its associated data model to those classes that implement it.

Reference:

– SX001G

2.8 Breakdown revision

Definition:

Breakdown revision (breakdownRevision) represents an iteration applied to a breakdown.

Note

Breakdown revision is used to document design iterations and not breakdown variants.

Reference:

– SX001G

2.8.1 Breakdown revision identifier

Definition:

Breakdown revision identifier (breakdownRevisionIdentifier) is an identifier that establishes a unique designator for a breakdown revision and to differentiate it from other instances of breakdown revision.

Reference:

– SX001G

2.8.2 Breakdown revision status
Definition:

Breakdown revision status (breakdownRevisionStatus) is a state that identifies the maturity of a breakdown revision.

Reference:

– SX001G

Chapter 7.3.4

Units of functionality - UoF Hardware element

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The hardware element UoF provides the capability to specify that an element within a breakdown is hardware and can be associated with the hardware part(s) that fulfill the requirement.

2 UoF Hardware element

Key features of the UoF hardware element data model, (refer to Fig 1), are:

- Hardware element is a specialization of breakdown element which means that, wherever breakdown element is being used in the data model, hardware element can be used instead
- Hardware element revision is a specialization of breakdown element revision which means that, wherever breakdown element revision is being used in the data model, hardware element revision can be used instead
- An instance of hardware element revision can be associated with one or many instances of hardware part as designed that meet the requirements and specification for the hardware element

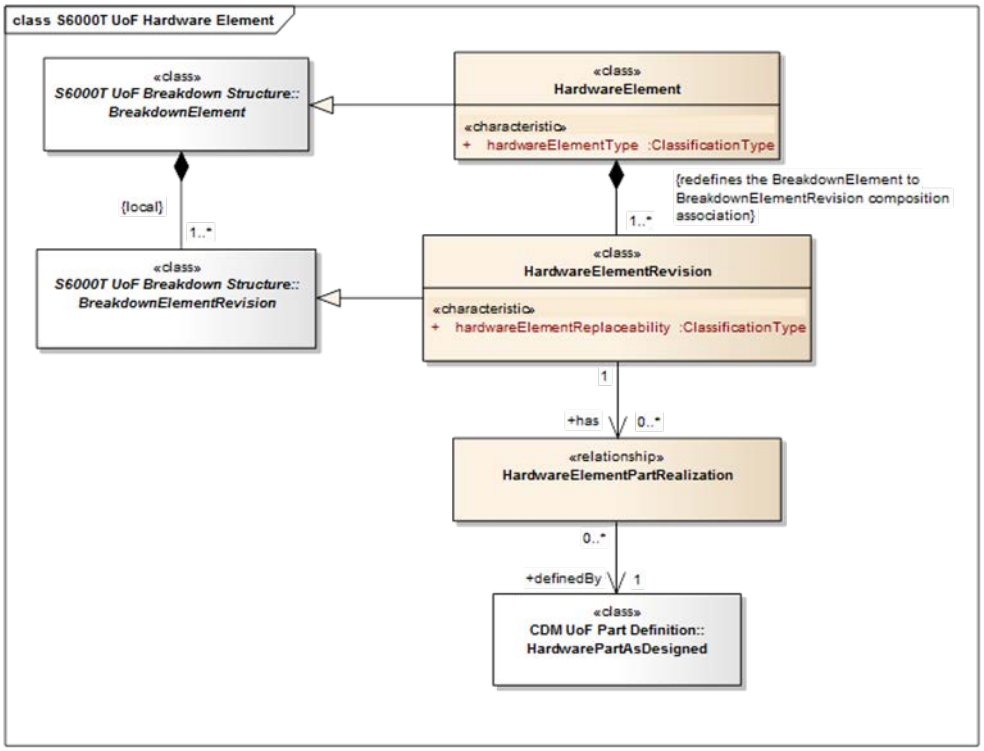

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Fig 1 UoF Hardware element

2.1 Hardware element

Definition:

Hardware element (hardwareElement) is a breakdown element that is realized as a hardware part.

Reference:

– SX001G

2.1.1 Hardware element type

Definition:

Hardware element type (hardwareElementType) is a classification that identifies further specialization for a hardware element.

Examples:

– Access point
– Door
– Panel
– Slot
– Equipment

Reference:

– SX001G

2.2 Hardware element part realization

Definition:

Hardware element part realization (hardwareElementPartRealization) is a relationship where a hardware element revision relates to an instance of hardware part as designed which fulfills the hardware element specification.

Reference:

- SX001G

2.3 Hardware element revision

Definition:

Hardware element revision (hardwareElementRevision) is a breakdown element revision representing an iteration applied to a hardware element.

Reference:

- SX001G

2.3.1 Hardware element replaceability

Definition:

Hardware element replaceability (hardwareElementReplaceability) is a classification that identifies whether its realization is expected to be replaceable from a technical standpoint, independent of customer maintenance concepts.

Examples:

- Replaceable
- Non replaceable

Reference:

- SX001G

Chapter 7.3.5

Units of functionality - UoF Software element

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The software element UoF provides the capability to specify that an element within a breakdown is software and can be associated with the software part(s) that fulfill the requirement.

2 UoF Software element

Key features of the UoF software element data model, (refer to Fig 1), are:

- Software element is a specialization of breakdown element which means that, wherever breakdown element is being used in the data model, software element can be used instead
- Software element revision is a specialization of Breakdown element revision which means that, wherever breakdown element revision is being used in the data model, software element revision can be used instead
- An instance of software element revision can be associated with one or many instances of software part as designed that meet the requirements and specification for the software element

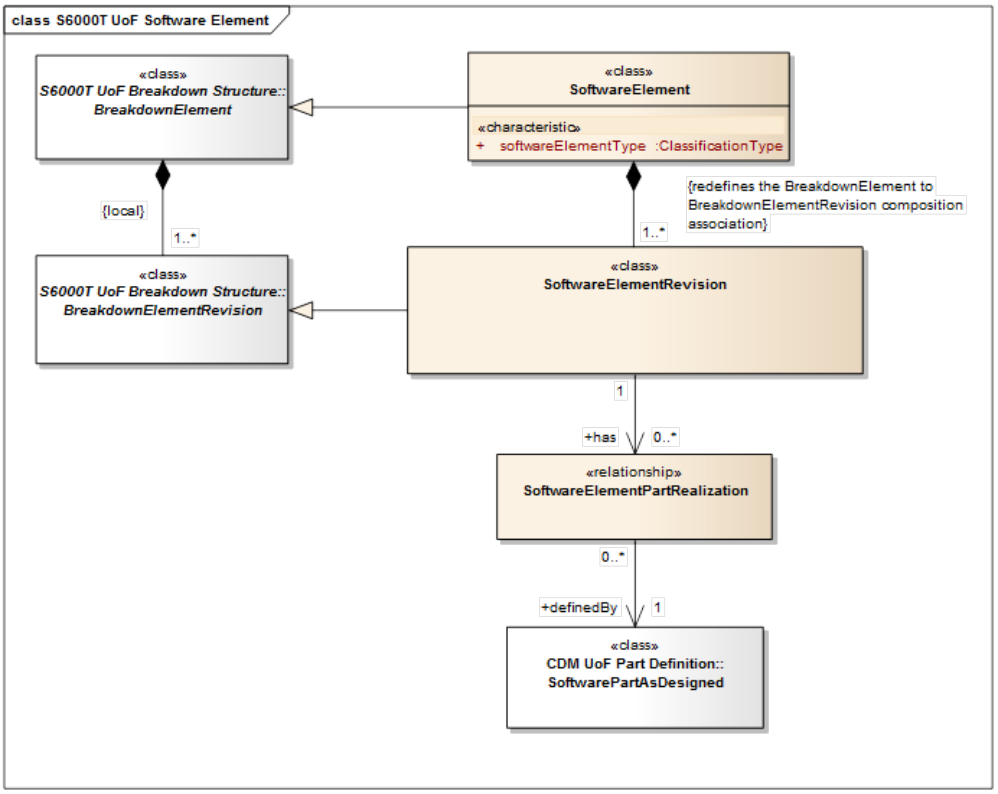

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Fig 1 UoF Software element

2.1 Software element

Definition:

Software element (softwareElement) is a breakdown element that is realized as a software part.

Reference:

– SX001G

2.1.1 Software element type

Definition:

Software element type (softwareElementType) is a classification that identifies further specialization for a software element.

Examples:

– Loadable
– Embedded

Reference:

– SX001G

2.2 Software element part realization

Definition:

Software element part realization (softwareElementPartRealization) is a relationship where a software element revision relates to an instance of software part as designed which fulfills the software element specification.

Reference:

- SX001G

2.3 Software element revision

Definition:

Software element revision (softwareElementRevision) is a breakdown element revision representing an iteration applied to a software element.

Reference:

- SX001G

Chapter 7.3.6

Units of functionality - UoF Aggregated element

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The aggregated element UoF provides the capability to specify that an element within a breakdown represents a collection of elements for an identified purpose.

Examples:

- Family
- Function
- System

2 UoF Aggregated element

Key features of the UoF aggregated element data model, (refer to Fig 1), are:

- Aggregated element is a specialization of breakdown element, which means that wherever breakdown element is being used in the data model, aggregated element can be used instead
- Aggregated element revision is a specialization of breakdown element revision, which means that wherever breakdown element revision is being used in the data model, aggregated element revision can be used instead

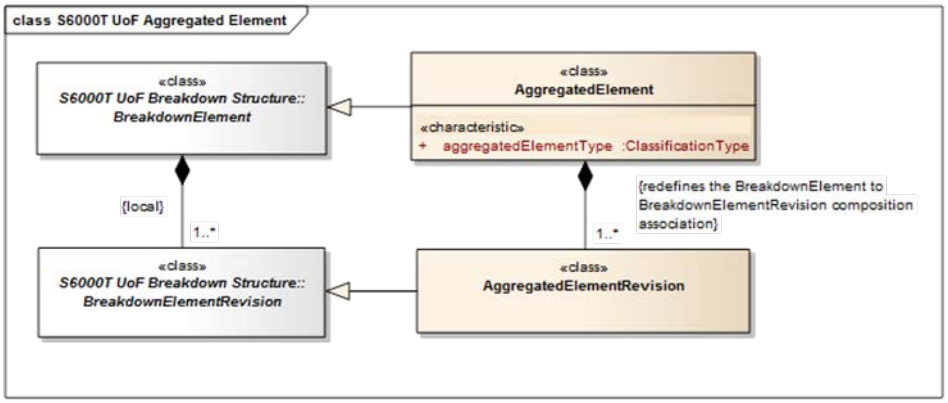

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Fig 1 UoF Aggregated element

2.1 Aggregated element

Definition:

Aggregated element (aggregatedElement) is a breakdown element that is a container for a collection of breakdown elements which are grouped for an identified purpose.

Reference:

– SX001G

2.1.1 Aggregated element type

Definition:

Aggregated element type (aggregatedElementType) is a classification that identifies further specialization for an aggregated element.

Examples:

– Family
– Function
– System

Reference:

– SX001G

2.2 Aggregated element revision

Definition:

Aggregated element revision (aggregatedElementRevision) is a breakdown element revision representing an iteration applied to an aggregated element.

Reference:

– SX001G

Chapter 7.3.7

Units of functionality - UoF Zone element

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The zone element UoF defines the characteristics that are unique for a zonal breakdown element representing a three-dimensional space in relation to a Product.

2 UoF Zone element

Key features of the UoF zone element data model, (refer to Fig 1), are:

- Zone element is a specialization of breakdown element which means that, wherever breakdown element is being used in the data model, zone element or can be used instead
- Zone element revision is a specialization of breakdown element revision which means that, wherever breakdown element revision is being used in the data model, zone element revision can be used instead
- An instance of zone element can have one or more associated breakdown elements (including specific revisions and usages thereof) which are located in the three-dimensional space that the zone element represents

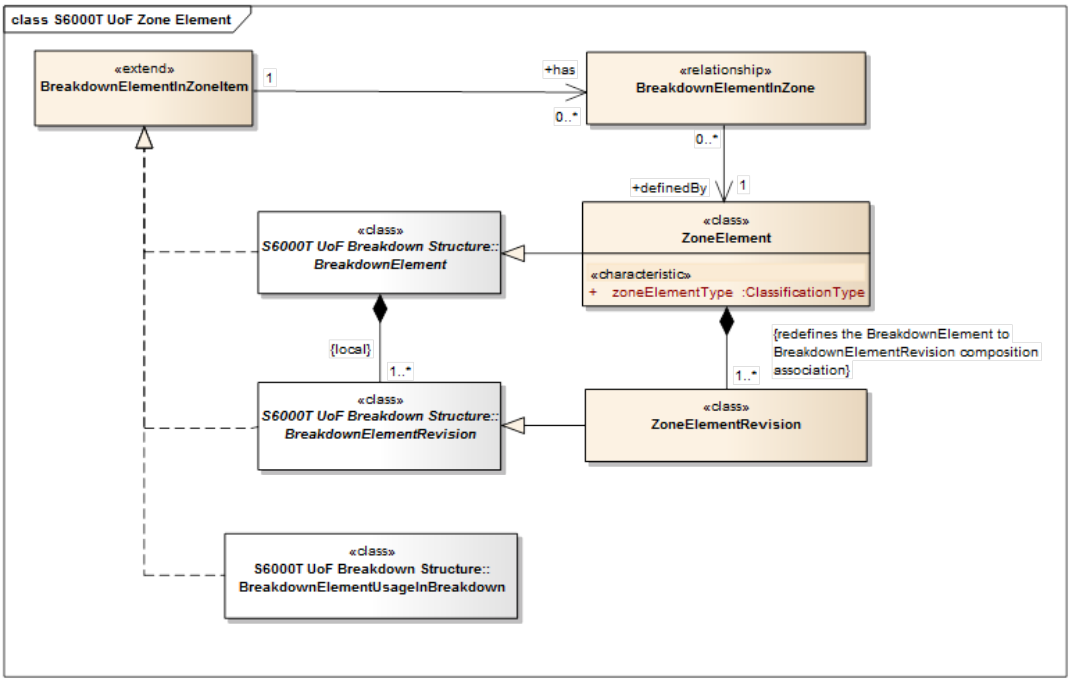

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Fig 1 UoF Zone element

2.1 Breakdown element in zone

Definition:

Breakdown element in zone (breakdownElementInZone) is a relationship where a breakdown element in zone item relates to the zone element where it is located.

Reference:

– SX001G

2.2 Breakdown element in zone item

Definition:

Breakdown element in zone item (breakdownElementInZoneItem) provides its associated data model to those classes that implement it.

Reference:

– SX001G

2.3 Zone element

Definition:

Zone element (zoneElement) is a breakdown element that represents a three-dimensional space related to a Product.

Note

A zone element can also represent a work area such as a mechanical workshop onboard a ship.

Reference:

– SX001G

2.3.1 Zone element type

Definition:

Zone element type (zoneElementType) is a classification that identifies further specialization for a zone element.

Example:

– Work area

Reference:

– SX001G

2.4 Zone element revision

Definition:

Zone element revision (zoneElementRevision) is a breakdown element revision representing an iteration applied to a zone element.

Reference:

– SX001G

Chapter 7.3.8

Units of functionality - UoF Part definition

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Table 1 References

Chap No./Document No.	Title
S3000L	International procedure specification for Logistics Support Analysis (LSA)
SX001G	Glossary for the S-Series ILS specifications

1 General

The part definition UoF provides the capability of defining hardware and software parts and their characteristics.

2 UoF Part definition

Key features of the UoF part definition data model, (refer to Fig 1), are:

- A part as designed represents the definitional information for an artifact fulfilling a set of requirements, which can be produced or realized
- A part as designed must be defined as either a hardware part as designed, or a software part as designed

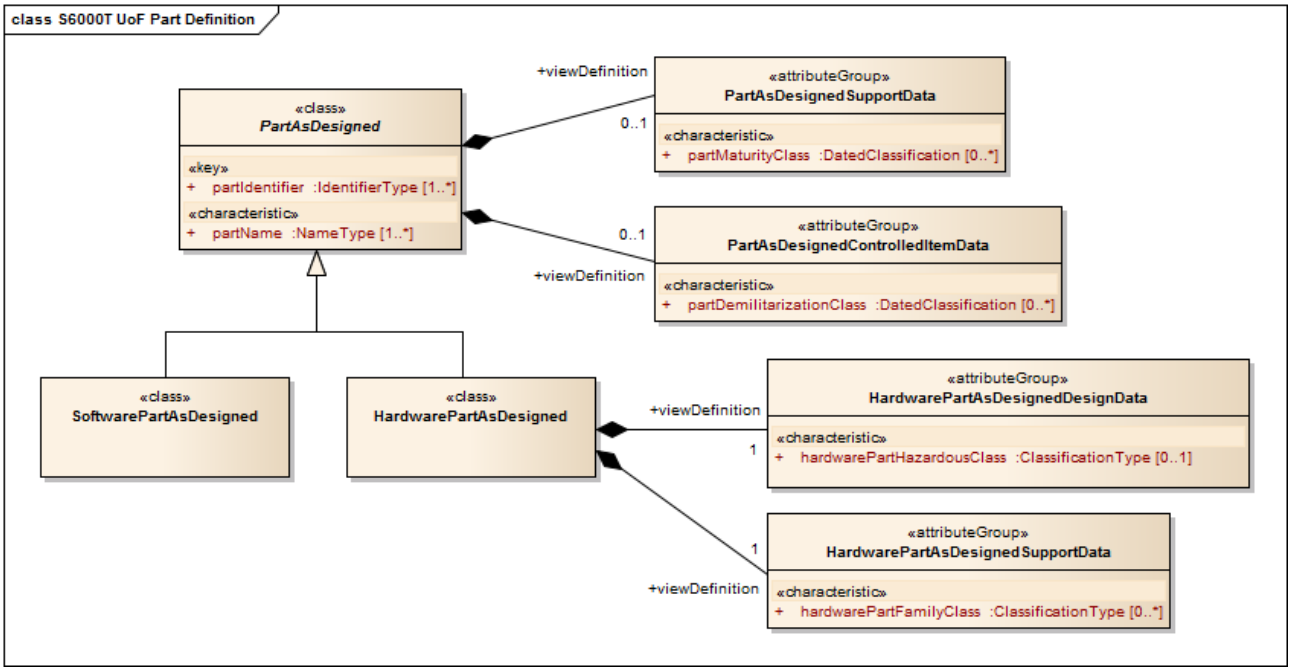

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Fig 1 UoF Part definition

2.1 Hardware part as designed

Definition:

Hardware part as designed (hardwarePartAsDesigned) is a part as designed that is to be realized as physical items, including non-countable material.

Examples:

- Oil
- Sealant
- Paint

Reference:

- SX001G

2.2 Hardware part as designed design data

Definition:

Hardware part as designed design data (hardwarePartAsDesignedDesignData) collects hardware part as designed characteristics identified during design activities.

Reference:

- SX001G

2.2.1 Hardware part hazardous class
Definition:

Hardware part hazardous class (hardwarePartHazardousClass) is a classification that identifies to what extent a hardware part as designed is capable of posing a significant risk to health, safety or property during transportation, handing or storage.

Reference:

- SX001G

2.3 Hardware part as designed support data
Definition:

Hardware part as designed support data (HardwarePartAsDesignedSupportData) collects hardware part as designed characteristics identified during supportability analysis activities.

2.3.1 Hardware part family class
Definition:

Hardware part family class (hardwarePartFamilyClass) is a classification that identifies further specialization for a hardware part as designed from a support analysis perspective.

Examples:

- Gearbox
- Piston valve

Reference:

- S3000L

2.4 Part as designed
Definition:

Part as designed (partAsDesigned) represents the definitional information for an artifact fulfilling a set of requirements, which can be produced or realized.

Reference:

- SX001G

2.4.1 Part identifier
Definition:

Part identifier (partIdentifier) is an identifier that establishes a unique designator for a part as designed and to differentiate it from other instances of part as designed.

Note

Part identification includes drawing, model, type and source controlling numbers.

Example:

- "12345-501"

Reference:

- SX001G

2.4.2 Part name
Definition:

Part name (partName) is a name by which the part as designed is known and can be easily Referenced.

Reference:

- SX001G

2.5 Part as designed controlled item data
Definition:

Part as designed controlled item data (partAsDesignedControlledItemData) collects part as designed characteristics identified during different control analysis activities.

Reference:

- S3000L

2.5.1 Part demilitarization class
Definition:

Part demilitarization class (partDemilitarizationClass) is a classification that identifies special measures to be taken when a part is being disposed of.

Example:

- Render them useless for military purposes or destroy any indications of military purposes or performance characteristics

Reference:

- S3000L

2.6 Part as designed support data
Definition:

Part as designed design data (partAsDesignedDesignData) collects part as designed characteristics identified during design activities.

Reference:

- S3000L

2.6.1 Part maturity class
Definition:

Part maturity class (partMaturityClass) is a classification that identifies the maturity of a part as designed in order to determine the certainty by which the parts characteristics can be valued.

Examples:

- COTS part
- Customer part
- Major modification of existing part
- Moderate modification of existing part
- New developed

Reference:

– S3000L

2.7 Software part as designed

Definition:

Software part as designed (softwarePartAsDesigned) is a part as designed that is produced as executable software or as a data file.

Note

Non-executable software includes eg, maps.

Reference:

– SX001G

Chapter 7.3.9

Units of functionality - UoF Task

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Table 1 References

Chap No./Document No.	Title
S1000D	International specification for technical publications using a common source database
S3000L	International procedure specification for Logistics Support Analysis (LSA)
SX001G	Glossary for the S-Series ILS specifications

1 General

The Task UoF supports the detailed definition of tasks required to support a Product.

2 UoF Task

Key features of the UoF Task data model, (refer to Fig 1), are:

- A task must be defined as either a rectifying task, operational task, supporting task or operator task
- Work steps within a task, are described using a set of subtasks
- A subtask can either be described in detail within the task under consideration (subtask by definition) or by a Reference to another task (subtask by task reference)
- Time dependencies between subtasks can be defined using subtask timeline

Note

A subtask, which is defined and described within a task, cannot be Referenced by any other task.

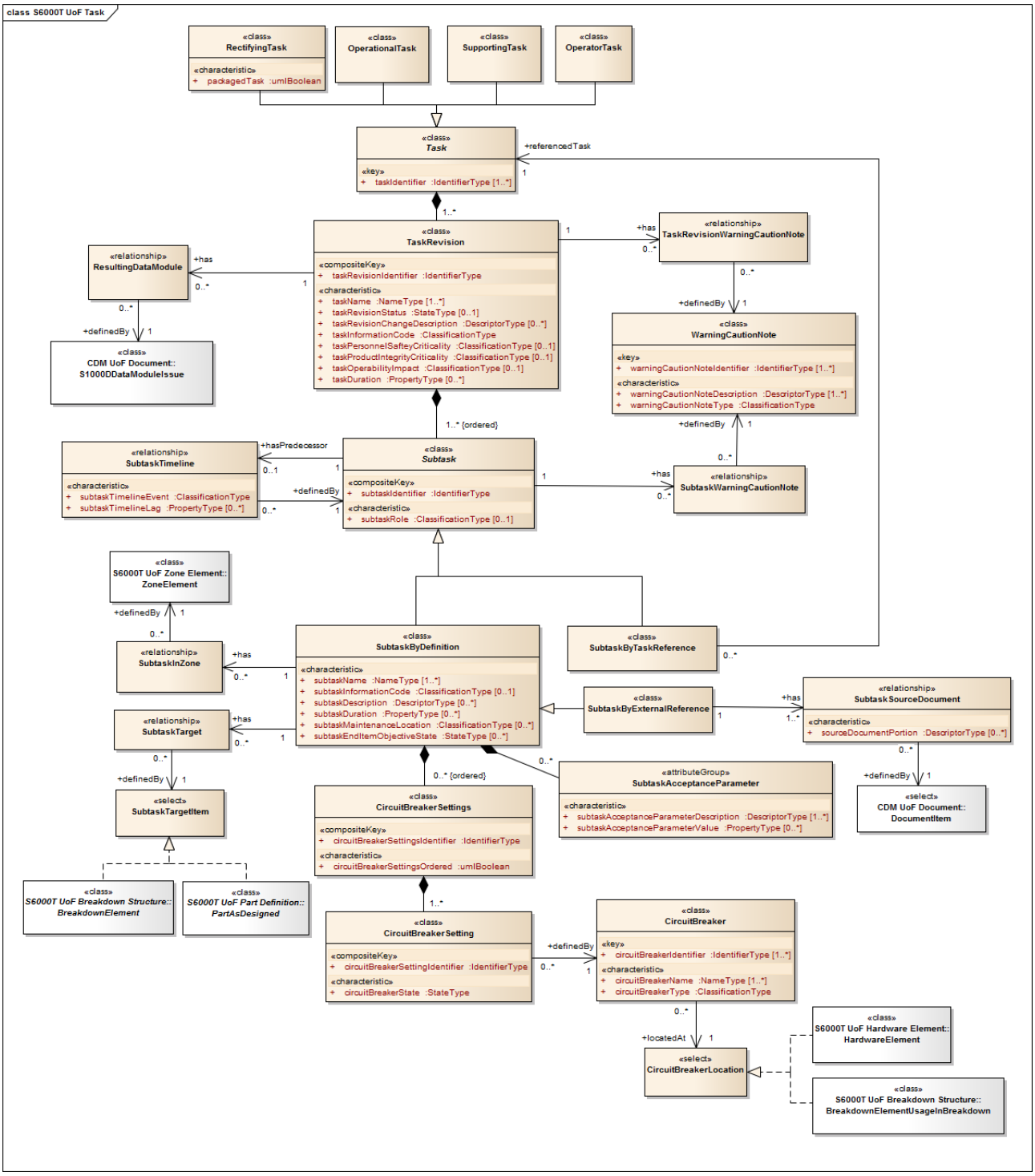

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Fig 1 UoF Task

2.1 Circuit breaker

Definition:

Circuit breaker (circuitBreaker) represents an individual circuit breaker identified in the context of a defined product.

Reference:

– SX001G

2.1.1 Circuit breaker identifier

Definition:

Circuit breaker identifier (circuitBreakerIdentifier) is an identifier that establishes a unique designator for a circuit breaker and to differentiate it from other instances of circuit breaker.

Reference:

– SX001G

2.1.2 Circuit breaker name

Definition:

Circuit breaker name (circuitBreakerName) is a name by which the circuit breaker is known and can be easily Referenced.

Reference:

– SX001G

2.1.3 Circuit breaker type

Definition:

Circuit breaker type (circuitBreakerType) is a classification that defines the technical principle for the circuit breaker.

Examples:

– Electro mechanic circuit breaker
– Electronic circuit breaker

Reference:

– SX001G

2.2 Circuit breaker setting

Definition:

Circuit breaker setting (circuitBreakerSetting) specifies an individual circuit breaker that must be in a specific state.

Reference:

– SX001G

2.2.1 Circuit breaker setting identifier

Definition:

Circuit breaker setting identifier (circuitBreakerSettingIdentifier) is an identifier that establishes a unique designator for a defined circuit breaker setting, and to differentiate it from other instances of circuit breaker setting.

Reference:

– SX001G

2.2.2 Circuit breaker state

Definition:

Circuit breaker state (circuitBreakerState) is a state that identifies the position that a given circuit

Examples:

– Circuit breaker open
– Circuit breaker closed

Reference:

– SX001G

2.3 Circuit breaker settings

Definition:

Circuit breaker settings (circuitBreakerSettings) identify a set of circuit breakers that must be set in specific states.

Reference:

– SX001G

2.3.1 Circuit breaker settings identifier

Definition:

Circuit breaker settings identifier (circuitBreakerSettingsIdentifier) is an identifier that establishes a unique designator for a defined set of circuit breaker settings, and to differentiate it from other instances of circuit breaker settings.

Reference:

– SX001G

2.3.2 Circuit breaker settings ordered

Definition:

Circuit breaker settings ordered (circuitBreakerSettingsOrdered) defines if the individual circuit breaker setting must be accomplished in the specified order.

Note

A true value specifies that the respective individual circuit breaker setting must be accomplished in the defined order. A false value specifies that the respective individual circuit breaker setting can be accomplished in any order.

Reference:

– SX001G

2.4 Operational task

Definition:

Operational task (operationalTask) is a task that is required to support the use of a Product.

Examples:

- Fueling
- Towing

Reference:

- SX001G

2.5 Operator task

Definition:

Operator task (operatorTask) is a task that defines a required interaction between the user of a Product and the Product itself.

Examples:

- Land an aircraft
- Park a car

2.6 Rectifying task

Definition:

Rectifying task (rectifyingTask) is a task that ensures or returns the function of the associated item.

Note

An event that can require a task to be performed includes a failure, damage, special event and time limit.

Examples:

- Repair
- Replace
- Lubrication

Reference:

- SX001G

2.6.1 Packaged task

Definition:

Packaged task (packagedTask) specifies if the task is created in order to group a set of defined tasks for a specific purpose.

Note

Grouping of tasks that can be performed to support the maintenance planning and scheduling activities.

Example:

- 1000 Flight Hours Overhaul

Reference:

– SX001G

2.7 Resulting data module

Definition:

Resulting data module (resultingDataModule) is a relationship that identifies a data module issue in which a task revision is further detailed.

Note

A data module can contain either a complete or partial description of a given task revision.

Reference:

– SX001G

2.8 Subtask

Definition:

Subtask represents the specification of a work step that is to be performed as part of a task.

Reference:

– SX001G

2.8.1 Subtask identifier

Definition:

Subtask identifier (subtaskIdentifier) is an identifier that establishes a unique designator for a subtask and to differentiate it from other instances of subtask.

Note

A subtask is identified within the context of a specific task.

Reference:

– SX001G

2.8.2 Subtask role

Definition:

Subtask role (subtaskRole) is a classification that identifies how the subtask is related to the main function of the task.

Note

Subtask role enables mapping between S3000L and the main portions of the S1000D procedure schema.

Examples:

– Startup subtask
– Core subtask
– Close-up subtask

Reference:

– SX001G

2.9 Subtask acceptance parameter

Definition:

Subtask acceptance parameter (subtaskAcceptanceParameter) defines criteria's that must be fulfilled before the subtask can be closed.

Reference:

– S3000L

2.9.1 Subtask acceptance parameter description

Definition:

Subtask acceptance parameter description (subtaskAcceptanceParameterDescription) is a description of the criteria that determines when a subtask is completed.

Reference:

– S3000L

2.9.2 Subtask acceptance parameter value

Definition:

Subtask acceptance parameter value (subtaskAcceptanceParameterValue) is the value (criteria) that must be fulfilled before the subtask can be closed.

Reference:

– S3000L

2.10 Subtask by definition

Definition:

Subtask by definition: (subtaskByDefinition) is a Subtask that provides detailed information of the defined work step.

Reference:

– SX001G

2.10.1 Subtask name

Definition:

Subtask name (subtaskName) is a name by which the subtask is known and can be easily Referenced.

Reference:

– SX001G

2.10.2 Subtask information code

Definition:

Subtask information code (subttaskInformationCode) is a classification that identifies the main purpose for the subtask.

Note
An information code must be assigned in accordance with the rules defined in S1000D.

Reference:

- SX001G

2.10.3 Subtask description

Definition:

Subtask description (subtaskDescription) is a description of the procedure performed during the subtask.

Reference:

- SX001G

2.10.4 Subtask duration

Definition:

Subtask duration (subtaskDuration) is a property that specifies the average time required for the performance of a subtask, regardless of the number of personnel working simultaneously.

Reference:

- SX001G

2.10.5 Subtask maintenance location

Definition:

Subtask maintenance location (subtaskMaintenanceLocation) is a classification that specifies where the subtask will be performed in relation to the product.

Note
Proposed values equal the S1000D Item Location Codes.

Examples:

- Maintenance on item when installed on product
- Maintenance on item on major assembly
- Maintenance on bench
- Maintenance anywhere

Reference:

- SX001G

2.10.6 Subtask end item objective state

Definition:

Subtask end item objective state (subtaskEndItemObjectiveState) is a state that identifies the condition of the product that will exist after the accomplishment of the subtask.

Examples:

- Electrical power established
- Jacked
- Fueled

Reference:

– SX001G

2.11 Subtask by external reference

Definition:

Subtask by external Reference (subtaskByExternalReference) is a subtask by definition where the details are defined in an external source.

Reference:

– SX001G

2.12 Subtask by task reference

Definition:

Subtask by task reference: (subtaskByTaskReference) is a subtask where the details of the subtask are defined as a separate task.

Reference:

– SX001G

2.13 Subtask in zone

Definition:

Subtask in zone (subtaskInZone) is a relationship that identifies the zone where the subtask is to be performed.

Reference:

– SX001G

2.14 Subtask source document

Definition:

Subtask source document (subtaskSourceDocument) is a relationship that identifies the document where the subtask details are given.

Reference:

– SX001G

2.14.1 Subtask document portion

Definition:

Source document portion (sourceDocumentPortion) is a description that gives more information on relevant portions of the related document.

Reference:

– SX001G

2.15 Subtask target

Definition:

Subtask target (subtaskTarget) is a relationship that identifies the item on which the subtask is to be performed.

Reference:

– SX001G

2.16 Subtask target item

Definition:

Subtask target item (subtaskTargetItem) identifies items on which a subtask can be performed.

Reference:

– SX001G

2.17 Subtask timeline

Definition:

Subtask timeline (subtaskTimeline) identifies that there is a time dependency between two subtasks within the same task.

Reference:

– SX001G

2.17.1 Subtask timeline event

Definition:

Subtask timeline event (subtaskTimelineEvent) is a classification that identifies how the starting point for a subtask depends upon its preceding subtask.

Examples:

– Start
– End

Reference:

– SX001G

2.17.2 Subtask timeline lag

Definition:

Subtask timeline lag (subtaskTimelineLag) is a property that specifies the time that must elapse before the subtask under consideration can start, in relation to its associated timeline event.

Reference:

– SX001G

2.18 Subtask warning caution note

Definition:

Subtask warning caution note (subtaskWarningCautionNote) is a relationship that identifies a warning caution or note that is associated with a given subtask.

Reference:

- SX001G

2.19 Supporting task

Definition:

Supporting task (supportingTask) is a Task that does not meet an event but identifies a set of work steps which will be carried out as part of multiple Tasks.

Note

The objective for a supporting task is to enable reuse of a sequence of work steps, needed by a set of tasks.

Note

A supporting task will only be used in the context of subtask by task reference.

Examples:

- Open hatch
- Jack vehicle

Reference:

- SX001G

2.20 Task

Definition:

Task represents the specification of work to be done or undertaken.

Reference:

- SX001G

2.20.1 Task identifier

Definition:

Task identifier (taskIdentifier) is an identifier that establishes a unique designator for a task and to differentiate it from other instances of task.

Reference:

- SX001G

2.21 Task revision

Definition:

Task revision (taskRevision) represents an iteration applied to a Task.

Reference:

– SX001G

2.21.1 Task revision identifier

Definition:

Task revision identifier (taskRevisonIdentifier) is an identifier that establishes a unique designator for a task revision and to differentiate it from other instances of task revision.

Reference:

– SX001G

2.21.2 Task name

Definition:

Task name (taskName) is a name by which the task is known and can be easily Referenced.

Reference:

– SX001G

2.21.3 Task revision status

Definition:

Task revision status (taskRevisionStatus) is a state that identifies the progress on the development of a task revision.

Reference:

– SX001G

2.21.4 Task revision change description

Definition:

Task revision change description (taskRevisionChangeDescription) is a description that gives more information on content that has been altered between two revisions of a task.

Reference:

– SX001G

2.21.5 Task information code

Definition:

Task information code (taskInformationCode) is a classification that identifies the main purpose for the task.

Note

Valid information codes are defined in S1000D.

Reference:

– SX001G

2.21.6 Task personnel safety criticality
Definition:

Task personnel safety criticality (taskPersonnelSafteyCriticality) is a classification that identifies the most serious health aspects that the performance of the task can pose on personnel performing the task.

Reference:

- S3000L

2.21.7 Task product integrity criticality
Definition:

Task product integrity criticality (taskProductIntegrityCriticality) is a classification that identifies the most adverse effects on system reliability, efficiency, effectiveness, safety, or cost that the failure to accomplish the task would result in.

Note

A task will also be designated as critical whenever system design characteristics approach human limitations, and thereby, significantly increase the likelihood of degraded, delayed, or otherwise impaired mission performance.

Reference:

- S3000L

2.21.8 Task operability impact
Definition:

Task operability impact (taskOperabilityImpact) is a classification that indicates the operational status and mission readiness of the end item during the task.

Examples:

- System inoperable during equipment maintenance
- System operable during equipment maintenance
- Full mission capable
- Partial mission capable
- Not mission capable
- Turnaround

Reference:

- S3000L

2.21.9 Task duration
Definition:

Task duration (taskDuration) is a property that specifies the average time required for the performance of a task, regardless of the number of personnel working simultaneously.

Note

Task duration does not include time spent awaiting spares, support equipment, facilities or personnel (logistics delay time).

Note

Task duration could be calculated from the subtask durations.

Reference:

- S3000L

2.22 Task revision warning caution note

Definition:

Task revision warning caution note (taskRevisionWarningCautionNote) is a relationship that identifies a warning caution or note that is associated with a given task.

Reference:

- SX001G

2.23 Warning caution note

Definition:

Warning caution note (warningCautionNote) defines advice concerning safety, legal and health aspects.

Reference:

- SX001G

2.23.1 Warning caution note identifier

Definition:

Warning caution note identifier (warningCautionNoteIdentifier) is an identifier that establishes a unique designator for a warning or caution, and to differentiate it from other instances of warning or caution.

Reference:

- SX001G

2.23.2 Warning caution note description

Definition:

Warning caution note description (warningCautionNoteDescription) is a description that gives more information on safety, legal and health considerations.

Reference:

- SX001G

2.23.3 Warning caution note type

Definition:

Warning caution note type (warningCautionNoteType) is a classification that identifies severity and scope for the safety, legal and health considerations.

Examples:

- Warning
- Caution

Reference:

– SX001G

Chapter 7.3.10

Units of functionality - UoF Task resource

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Table 1 References

Chap No./Document No.	Title
S3000L	International procedure specification for Logistics Support Analysis (LSA)
SX001G	Glossary for the S-Series ILS specifications

1 General

The Task resource UoF supports a detailed specification of resources needed to perform a specified amount of work.

2 UoF Task resource

Key features of the UoF Task resource data model, (refer to Fig 1), are:

- A task resource can either be specified for the overall task or per subtask
- A task resource must be defined as either a:
  - Material resource (eg, spare part, tool, consumable, etc)
  - Infrastructure resource (eg, hangar, power, etc)
  - Personnel resource (eg, skill, trade, etc)
  - Document resource (eg, forms for recording test results, etc)

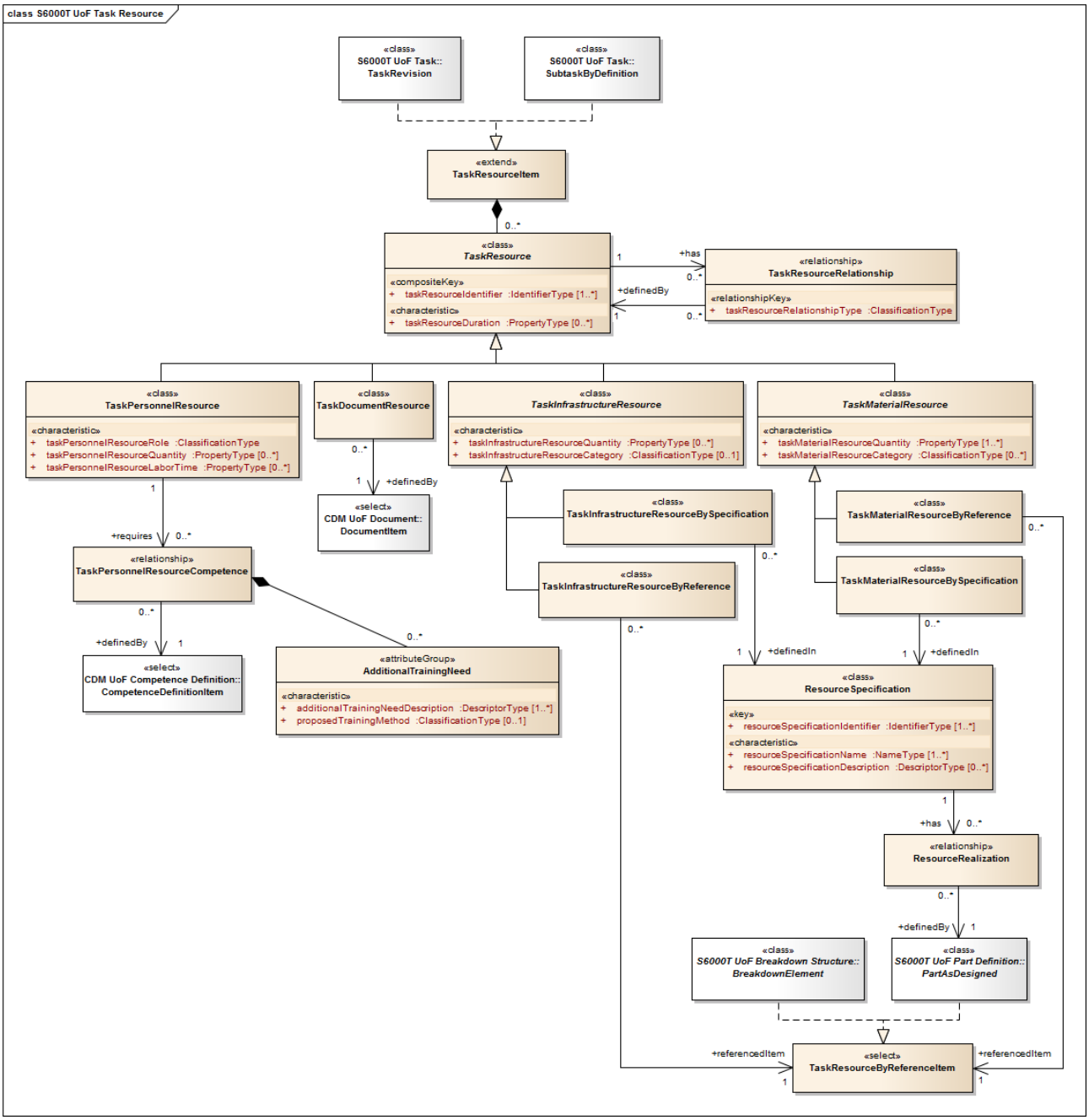

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Fig 1 UoF Task resource

2.1 Additional training need

Definition:

Additional training need (additionalTrainingNeed) specifies additional learning required for the associated competence in order to qualify as the task personnel resource.

Reference:

– SX001G

2.1.1 Additional training need description

Definition:

Additional training need description (additionalTrainingNeedDescription) is a description that gives more information on additional learning required.

Examples:

- Experience
- Knowledge
- Skills
- Values
- Behaviors

Reference:

- SX001G

2.1.2 Proposed training method

Definition:

Proposed training method (proposedTrainingMethod) is a classification that suggests the way in which the additional learning can be acquired.

Examples:

- Classroom
- On the job
- Courseware

Reference:

- SX001G

2.2 Resource realization

Definition:

Resource realization (resourceRealization) is a relationship where a resource specification relates to an instance of part as designed that fulfills the resource specification.

Reference:

- SX001G

2.3 Resource specification

Definition:

Resource specification (resourceSpecification) defines a resource by its characteristics.

Note

Resource specification allows for more generic resource definitions ie, a task/subtask does not need to be changed due to eg, customer specific resource References.

Reference:

- SX001G

2.3.1 Resource specification identifier

Definition:

Resource specification identifier (resourceSpecificationIdentifier) is an identifier that establishes a unique designator for a resource specification and to differentiate it from other instances of resource specification.

Reference:

– SX001G

2.3.2 Resource specification name

Definition:

Resource specification name (resourceSpecificationName) is a name by which the resource specification is known and can be easily Referenced.

Reference:

– SX001G

2.3.3 Resource specification description

Definition:

Resource specification description (resourceSpecificationDescription) is a description that gives more information on the characteristics that a part realization must fulfill in order to qualify as a possible resource.

Reference:

– SX001G

2.4 Task document resource

Definition:

Task document resource (taskDocumentResource) is a task resource that identifies a document used as a resource.

Example

– A form that must be filled out before, during or after the specified amount of work is carried out.

Reference:

– SX001G

2.5 Task infrastructure resource

Definition:

Task infrastructure resource (taskInfrastructureResource) is a task resource that defines foundational systems and services required as a resource.

Reference:

– SX001G

2.5.1 Task infrastructure resource quantity

Definition:

Task infrastructure resource quantity (taskInfrastructureResourceQuantity) is a property that specifies the number of the task infrastructure resource.

Reference:

- SX001G

2.5.2 Task infrastructure resource category

Definition:

Task infrastructure resource category (taskInfrastructureResourceCategory) is a classification that identifies further specialization for a task infrastructure resource.

Examples:

- Communication network
- Transport network
- Power

Reference:

- SX001G

2.6 Task infrastructure resource by reference

Definition:

Task infrastructure resource by reference (taskInfrastructureResourceByReference) is a task infrastructure resource that is determined by an associated realization.

Reference:

- SX001G

2.7 Task infrastructure resource by specification

Definition:

Task infrastructure resource by specification (taskInfrastructureResourceBySpecification) is a task infrastructure resource that is defined in an associated resource specification.

Note

The use of task infrastructure resource by specification allows users to identify infrastructures that comply with the specification.

Reference:

- SX001G

2.8 Task material resource

Definition:

Task material resource (taskMaterialResource) is a task resource that identifies parts which are required as a resource.

Reference:

- SX001G

2.8.1 Task material resource quantity

Definition:

Task material resource quantity (taskMaterialResourceQuantity) is a property that specifies the number of the task material resource.

Reference:

- SX001G

2.8.2 Task material resource category

Definition:

Task material resource category (taskMaterialResourceCategory is a classification that defines the role of the task material resource in the context of the specified Task.

Examples:

- Spare part
- Consumable
- Support equipment

Reference:

- SX001G

2.9 Task material resource by reference

Definition:

Task material resource by reference (taskMaterialResourceByReference) is a task material resource that is determined by an associated realization.

Reference:

- SX001G

2.10 Task material resource by specification

Definition:

Task material resource by specification (taskMaterialResourceBySpecification) is a task material resource that is defined in an associated resource specification.

Note

The use of Task material resource by specification allows users to identify parts that comply with the specification.

Reference:

- SX001G

2.11 Task personnel resource

Definition:

Task personnel resource (taskPersonnelResource) is a task resource that specifies the manpower required as a resource.

Reference:

- SX001G

2.11.1 Task personnel resource role

Definition:

Task personnel resource role (taskPersonnelResourceRole) is a classification that defines the purpose of the required task personnel resource.

Examples:

- Man A
- Man B
- Performer
- Supervisor
- Quality assurance

Reference:

- SX001G

2.11.2 Task personnel resource quantity

Definition:

Task personnel resource quantity (taskPersonnelResourceQuantity) is a property that specifies the number of the required task personnel resource.

Note

Quantities can be given as single values but also as ranges or as text eg, "As required".

Reference:

- SX001G

2.11.3 Task personnel labor time

Definition:

Task personnel resource labor time (taskPersonnelResourceLaborTime) is a property that specifies the time expended by the required task personnel resource.

Note

Labor time can be given as single values but also as ranges or as text eg, "As required".

Reference:

- SX001G

2.12 Task personnel resource competence

Definition:

Task personnel resource competence (taskPersonnelResourceCompetence) is a relationship that identifies the proficiency required for task personnel resource.

Reference:

- S3000L

2.13 Task resource

Definition:

Task resource (taskResource) identifies means that have to be available to perform a specified amount of work.

Reference:

– SX001G

2.13.1 Task resource identifier

Definition:

Task resource identifier (taskResourceIdentifier) is an identifier that establishes a unique designator for a task resource and to differentiate it from other instances of task resource.

Reference:

– SX001G

2.13.2 Task resource duration

Definition:

Task resource duration (taskResourceDuration) is a property that specifies the average time that a task resource is needed to perform a specified amount of work.

Reference:

– SX001G

2.14 Task resource by reference item

Definition:

Task resource by reference item (taskResourceByReferenceItem) identifies items which can be used as either infrastructure or material resource.

Reference:

– SX001G

2.15 Task resource item

Definition:

Task resource item (taskResourceItem) provides its associated data model to those classes that implement it.

Reference:

– SX001G

2.16 Task resource relationship

Definition:

Task resource relationship (taskResourceRelationship) defines an association between two instances of task resource.

Note

Instances of task resource that are related to each other must be defined as resources for the same instance of task or subtask by definition.

Example

– Person A "uses" tool B

Reference:

– S3000L

2.16.1 Task resource relationship type

Definition:

Task resource relationship type (taskResourceRealtionshipType) is a classification that identifies the meaning of the established relationship.

Reference:

– SX001G

Chapter 7.3.11

Units of functionality - UoF Task resource competence definition

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Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The Task Resource Competence Definition UoF supports the definition of abilities, craft, profession, and proficiency. Refer to Fig 1.

2 UoF Task resource competence definition

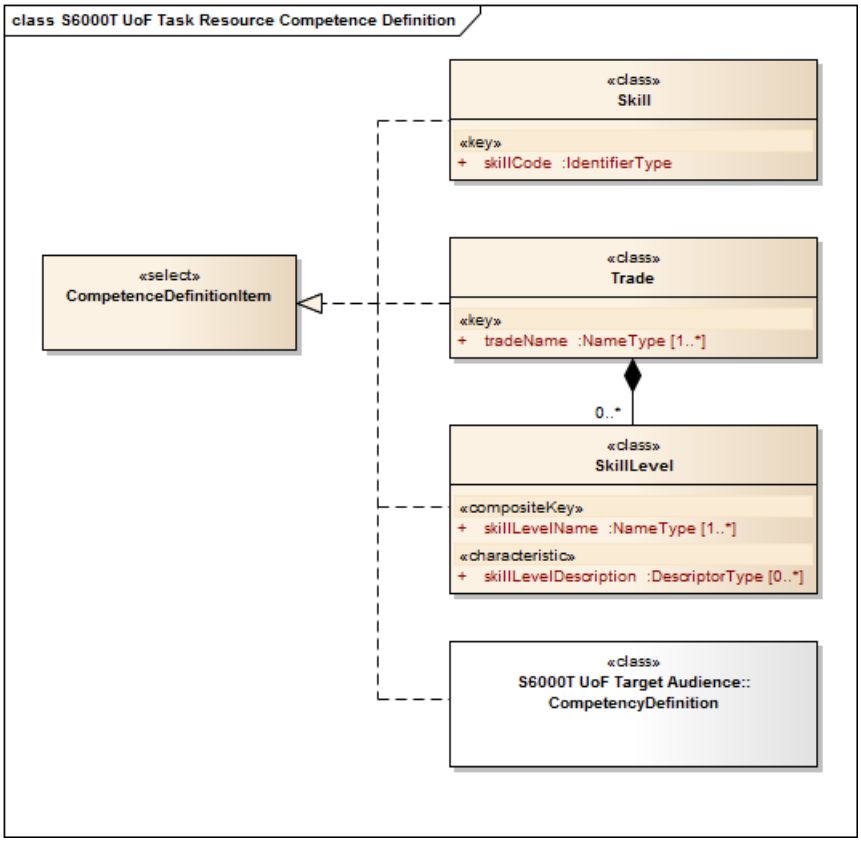

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Fig 1 UoF Task resource competence

2.1 Competence definition item

Definition:

Competence definition item (competenceDefinitionItem) identifies items which define a competence.

Reference:

– SX001G

2.2 Skill

Definition:

Skill represents an ability required to perform a task.

Reference:

– SX001G

2.2.1 Skill code

Definition:

Skill code (skillCode) is an identifier that establishes a unique designator for a skill and to differentiate it from other instances of skill.

Reference:

– SX001G

2.3 Skill level

Definition:

Skill level (skillLevel) represents a defined proficiency of a trade.

Reference:

– SX001G

2.3.1 Skill level name

Definition:

Skill level name (skillLevelName) is a name that uniquely establishes a proficiency.

Reference:

– SX001G

2.3.2 Skill level description

Definition:

Skill level description (skillLevelDescription) is a description that gives more information on proficiency.

Reference:

– SX001G

2.4 Trade

Definition:

Trade represents a craft or profession.

Reference:

– SX001G

2.4.1 Trade name

Definition:

Trade name (tradeName) is a name that uniquely establishes a craft or profession.

Reference:

– SX001G

Chapter 7.3.12

Units of functionality - UoF Product support task usage

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The Product support task usage UoF provides the capability to expand the definition for the execution of a Product support task in the context of a given support solution.

2 UoF Task resource competence definition

Key features of the UoF Product support task usage data model, (refer to Fig 1), are:

- Associate tasks with the breakdown element revision or part as designed on which the task is to be performed
- Define where the associated task is to be performed in the context of a given support concept or support solution
- Defines the frequency for the associated task in relation to where the task is to be performed

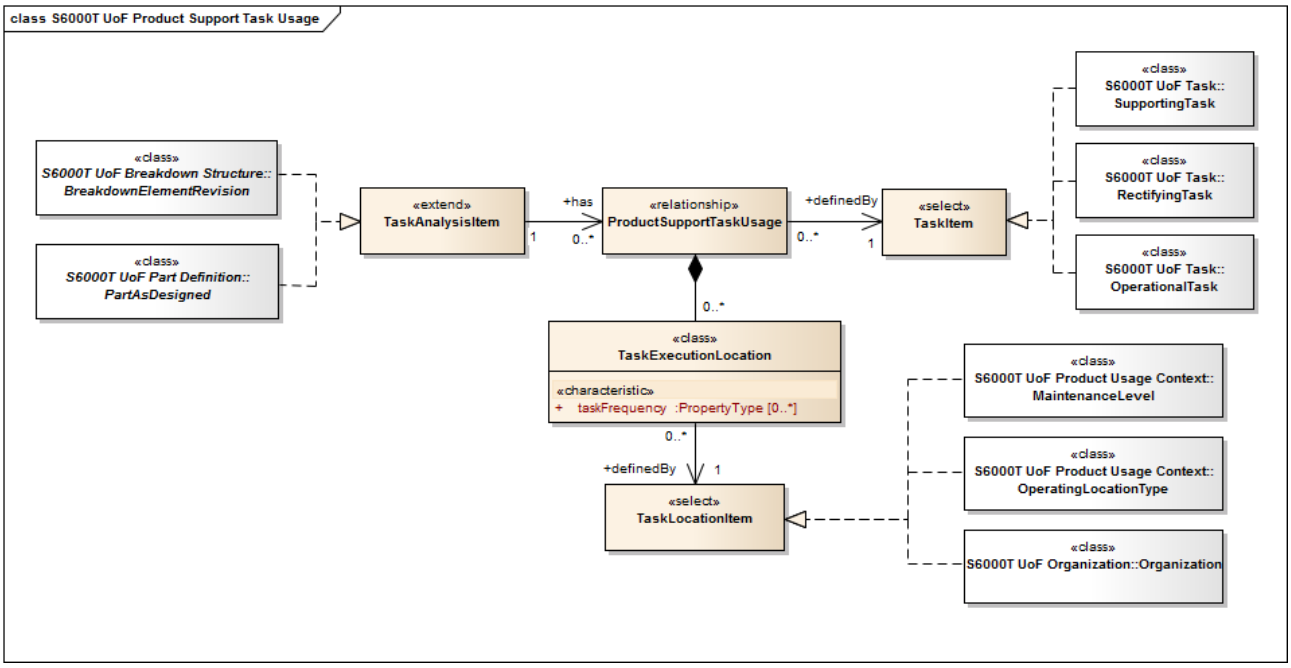

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Fig 1 UoF Product support task usage

2.1 Product support task usage

Definition:

Product support task usage (productSupportTaskUsage) is a relationship that identifies a task that is to be performed on the task analysis item.

2.2 Task analysis item

Definition:

Task analysis item (taskAnalysisItem) provides its associated data model to those classes that implement it.

Reference:

– SX001G

2.3 Task execution location

Definition:

Task execution location (taskExecutionLocation) identifies where a Task is to be performed in the context of a given support concept or support solution.

Reference:

– S6000T

2.3.1 Task frequency value

Definition:

Task frequency value (taskFrequencyValue) is a property that represents the rate of occurrence value.

Reference:

– SX001G

2.4 Task item

Definition:

Task item (taskItem) identifies items which can be used in the context of product support task usage.

2.5 Task location item

Definition:

Task location item (taskLocationItem) identifies items where tasks can be performed.

Chapter 7.3.13

Units of functionality - UoF Mission definition

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1 General

The mission definition UoF supports the definition of missions to be carried out by a Product together with descriptions on how a person, or body of persons, must interact with the Product in order to achieve its defined operational scenario objectives.

2 UoF Mission definition

Key features of the UoF Mission definition data model, (refer to Fig 1), are:

- Define missions which will be carried out or be supported by a Product
- Defines situations where one or many persons must interact with the Product during a defined mission
- Identify during which Product usage phases these interactions are required
- Detail distinct interactions in the format of one or many tasks

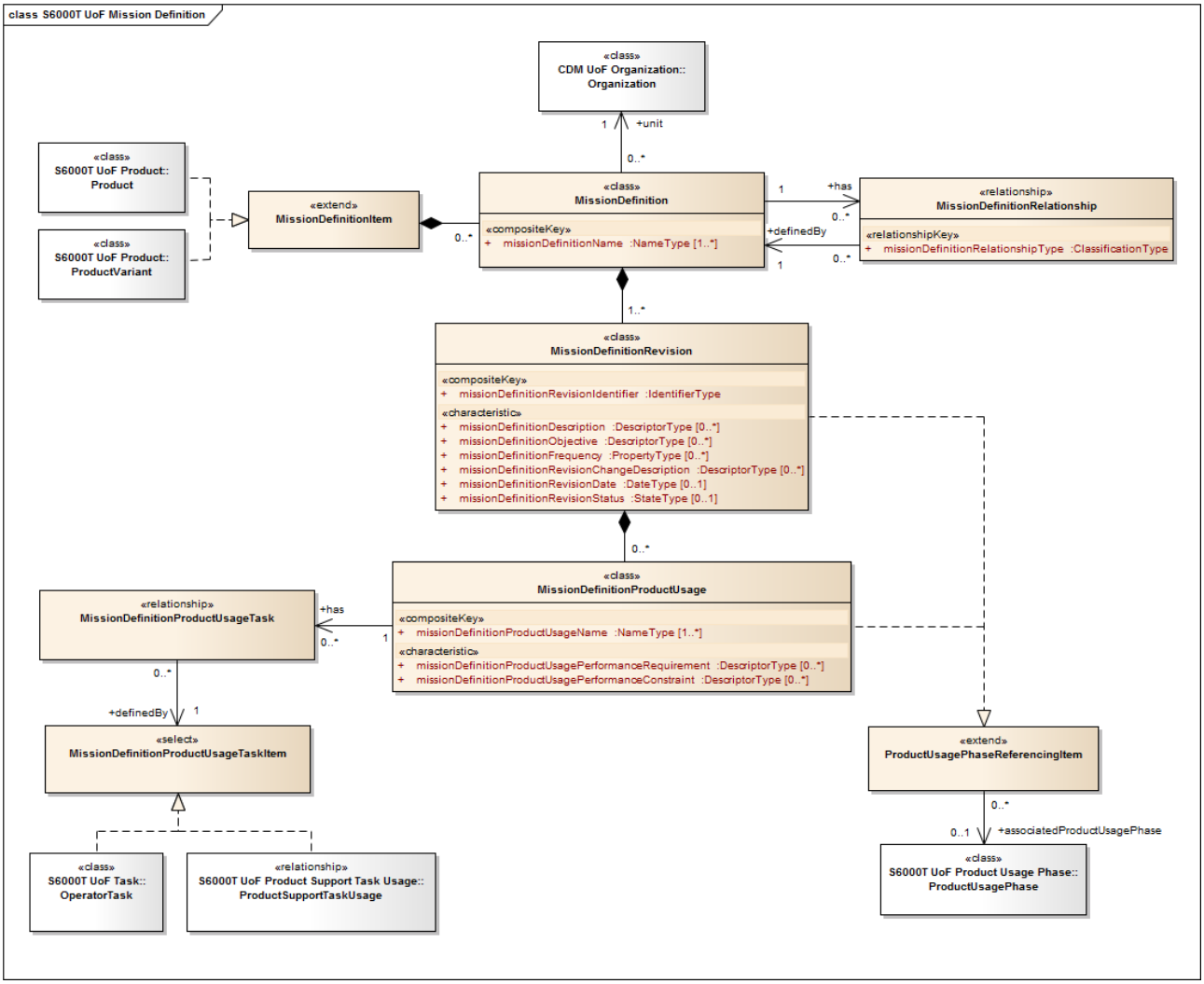

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Fig 1 UoF Mission definition

2.1 Mission definition

Definition:

Mission definition (missionDefinition) represents the definitional information for a Product operational scenario where a person, or body of persons, can be tasked to perform a service or carry out an activity.

Examples:

- Helicopter search and rescue
- Airplane long haul flight

2.1.1 Mission definition name

Definition:

Mission definition name (missionDefinitionName) is a name by which the mission definition is known and can be easily referenced.

2.2 Mission definition item

Definition:

Mission definition item (MissionDefinitionItem) provides its associated data model to those classes that implement it.

2.3 Mission definition product usage

Definition:

Mission definition product usage (MissionDefinitionProductUsage) represents the need for a person, or group of persons, to interact with a defined Product interface.

2.3.1 Mission definition product usage name

Definition:

Mission definition product usage name (missionDefinitionProductUsageName) is a name by which the mission definition product usage is known and can be easily referenced.

2.3.2 Mission definition product usage performance constraint

Definition:

Mission definition product usage performance constraint (missionDefinitionProductUsagePerformanceConstraint) is a description that defines possible limitations in the performance from the person(s) interacting with the Product.

2.3.3 Mission definition product usage performance requirement

Definition:

Mission definition product usage performance requirement (missionDefinitionProductUsagePerformanceRequirement) is a description that defines the performance that is required from the person(s) interacting with the Product.

2.4 Mission definition product usage task

Definition:

Mission definition product usage task (missionDefinitionProductUsageTask) defines an association between the defined usage of the Product and explicit task definitions that provides detailed information on how the interaction between the person(s) and the Product must be carried out.

2.5 Mission definition product usage task item

Definition:

Mission definition product usage task item (missionDefinitionProductUsageTaskItem) identifies items which provide task information.

2.6 Mission definition relationship

Definition:

Mission definition relationship (missionDefinitionRelationship) defines an association between two instances of mission definition.

Note

Mission definition relationship can be used to represent the relationship between an overarching mission definition and sub-mission definitions.

Examples:

- Helicopter search and rescue relationship with sub-mission definitions for search, locate and rescue, respectively
- Perform long haul flight relationship with sub-mission definitions for takeoff, inflight and land, respectively

2.6.1 Mission definition relationship type

Definition:

Mission definition relationship type (missionDefinitionRelationshipType) is a classification that identifies the meaning of the established relationship.

2.7 Mission definition revision

Definition:

Mission definition revision (missionDefinitioRevision) represents an iteration applied to a mission definition.

Note

Mission definition relationship can be used to represent the relationship between an overarching mission definition and sub-mission definitions.

Examples:

- Helicopter search and rescue relationship with sub-mission definitions for search, locate and rescue, respectively
- Perform long haul flight relationship with sub-mission definitions for takeoff, inflight and land, respectively

2.7.1 Mission definition revision identifier

Definition:

Mission definition revision identifier (missionDefinitionRevisionIdentifier) is an identifier that establishes a unique designator for a mission definition revision and to differentiate it from other instances of mission definition revision.

2.7.2 Mission definition description

Definition:

Mission definition description (missionDefinitionDescription) is a description of the Product operational scenario.

2.7.3 Mission definition objective

Definition:

Mission definition objective (missionDefinitionObjective) defines the expected end state after that that the defined mission is completed.

2.7.4 Mission definition frequency

Definition:

Mission definition frequency (missionDefinitionFrequency) is a property that represents the rate of occurrence value.

2.7.5 Mission definition revision change description

Definition:

Mission definition revision change description (missionDefinitionRevisionChangeDescription) is a description that gives more information on content that has been altered between two revisions of a mission definition.

2.7.6 Mission definition revision date

Definition:

Mission definition revision date (missionDefinitionRevisionDate) is a date that defines when a mission definition revision was defined.

2.7.7 Mission definition revision status

Definition:

Mission definition revision status (missionDefinitionRevisionStatus) is a state that identifies the maturity of a mission definition revision.

2.8 Product usage phase referencing item

Definition:

Product usage phase referencing item (productUsagePhaseReferencingItem) provides its associated data model to those classes that implement it.

Chapter 7.3.14

Units of functionality - UoF Performance parameter

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Table 1 References

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None	

1 General

The performance parameter UoF supports the definition of metrics that if changed will have a major impact on the system performance, schedule, cost and/or risk. Refer to Fig 1.

2 UoF Performance parameter

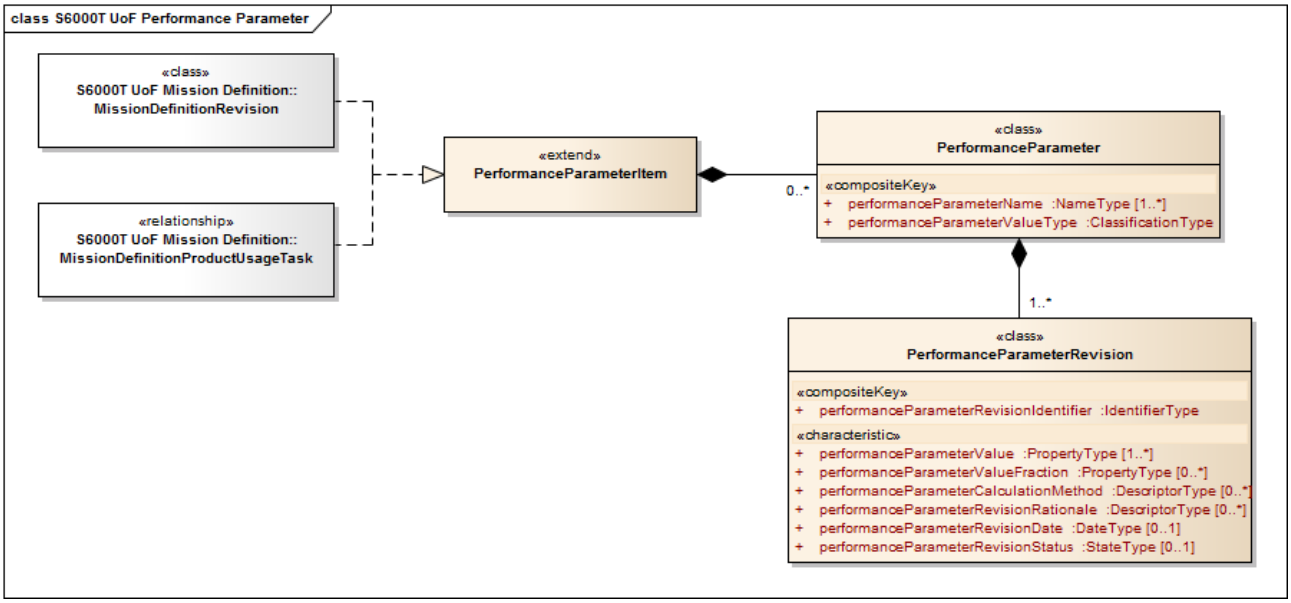

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Fig 1 UoF Performance parameter

2.1 Performance parameter

Definition:

Performance parameter (performanceParameter) defines a metrics that if changed, or will not be fulfilled, will have a major impact on the system performance, schedule, cost and/or risk.

2.1.1 Performance parameter name

Definition:

Performance parameter name (performanceParameterName) is a name by which the performance parameter is known and can be easily referenced.

Examples:

- Mean time between failure
- Mean time between scheduled shop visits
- Turnaround time
- Down time

2.1.2 Performance parameter value type

Definition:

Performance parameter value type (performanceParameterValueType) is a classification that qualifies the method by which the value of the property has been determined.

Example

- Required
- Measured
- Estimated

2.2 Performance parameter revision

Definition:

Performance parameter revision (performanceParameterRevision) represents an iteration applied to a performance parameter.

2.2.1 Performance parameter revision identifier

Definition:

Performance parameter revision identifier (performanceParameterRevisionIdentifier) is an identifier that establishes a unique designator for a performance parameter revision and to differentiate it from other instances of performance parameter revision.

2.2.2 Performance parameter value

Definition:

Performance parameter value (performanceParameterValue) is a property that represents the value (criteria) that must be fulfilled in order to avoid impact on the system performance, schedule, cost and/or risk.

2.2.3 Performance parameter value fraction

Definition:

Performance parameter value fraction (performanceParameterValueFraction) is a property that represents the fraction of all occurrences related to a specified performance parameter that must be within the limit of the value defined.

Example

– A customer requirement is that 98% of all replacement tasks must be performed below a specified value of two hours (= maximum replacement time)

2.2.4 Performance parameter value calculation method

Definition:

Performance parameter value calculation method (performanceParameterCalculationMethod) is a description that gives more information on the method by which the performance parameter value has been derived.

2.2.5 Performance parameter revision rationale

Definition:

Performance parameter revision rationale (performanceParameterRevisionRationale) is a description that gives more information on the justification for revising the defined performance parameter and its values.

2.2.6 Performance parameter revision date

Definition:

Performance parameter revision date (performanceParameterRevisionDate) is a date that defines when a performance parameter revision was defined

2.2.7 Performance parameter revision status

Definition:

Performance parameter revision status (performanceParameterRevisionStatus) is a state that identifies the maturity of a performance parameter revision.

Chapter 7.3.15

Units of functionality - UoF Job duty

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Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The job duty UoF supports the definition of a position of regular employment, responsibility domains, and specific tasks that need to be carried out on the Product for the overall organization to be successful in reaching its objectives. Refer to Fig 1.

2 UoF Job duty

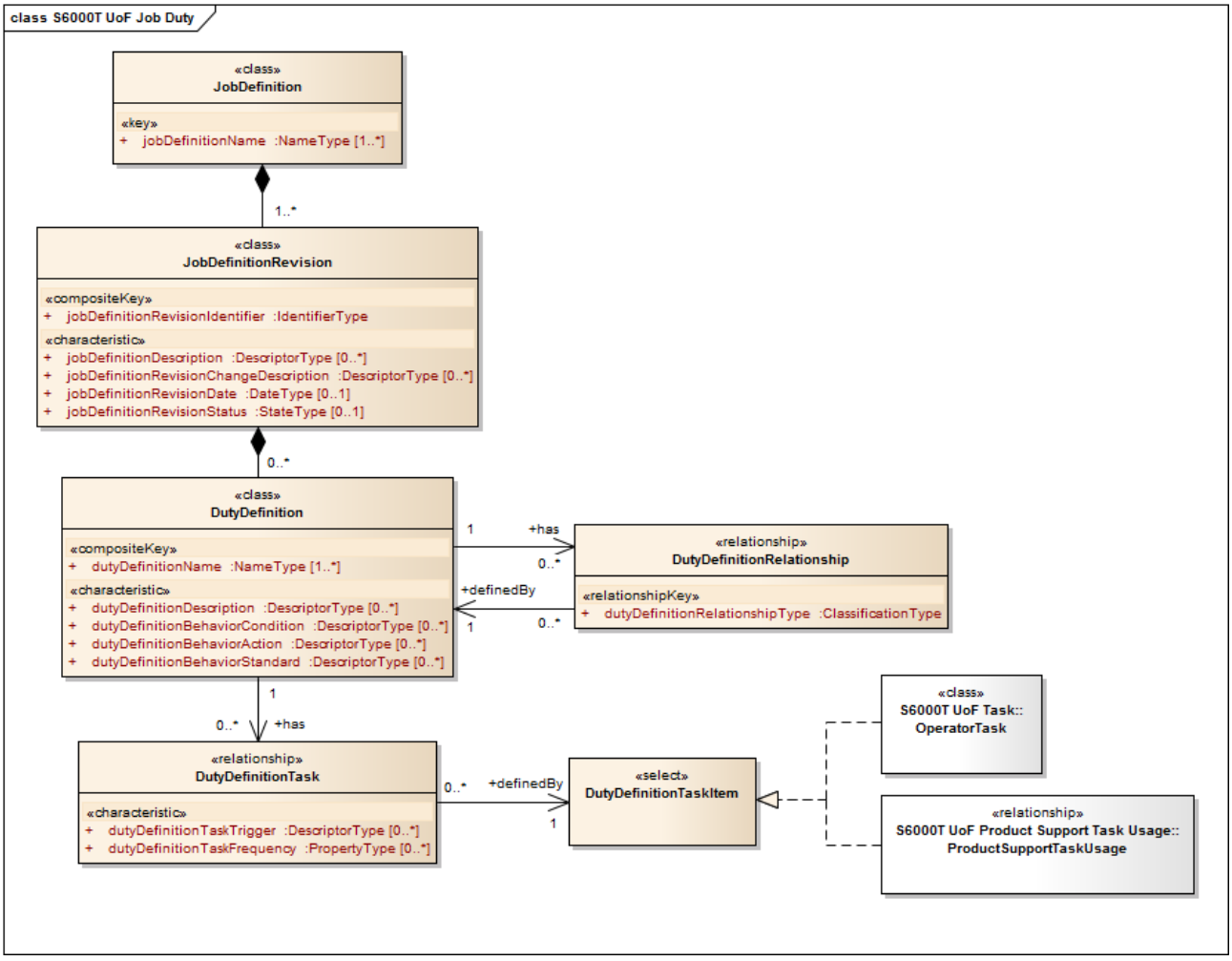

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Fig 1 UoF Job duty

2.1 Duty definition

Definition:

Duty definition (dutyDefinition) defines a responsibility within a defined position of regular employment.

2.1.1 Duty definition name

Definition:

Duty definition name (dutyDefinitionName) is a name by which the duty definition is known and can be easily Referenced.

2.1.2 Duty definition description
Definition:

Duty definition description (dutyDefinitionDescription) is a description on the activities that are included in the defined responsibility.

2.1.3 Duty definition behavior condition
Definition:

Duty definition behavior condition (dutyDefinitionBehaviorCondition) is a description that expresses the environmental, physical and psychological circumstances under which the duty is to be performed.

2.1.4 Duty definition behavior action
Definition:

Duty definition behavior action (dutyDefinitionBehaviorAction) is a description that expresses the main purpose for the duty.

2.1.5 Duty definition behavior standard
Definition:

Duty definition behavior standard (dutyDefinitionBehaviorStandard) is a standard that expresses the expected quality and/or time constraints that must be met in the performance of the duty.

2.2 Duty definition relationship
Definition:

Duty definition relationship (dutyDefinitionRelationship) defines an association between two instances of duty definition.

2.2.1 Duty definition relationship type
Definition:

Duty definition relationship type (dutyDefinitionRelationshipType) is a classification that identifies the meaning of the established relationship.

Example

– Includes

2.3 Duty definition task
Definition:

Duty definition task (dutyDefinitionTask) an association between the defined duty and explicit task definitions that provides detailed information on how the duty, or portions of the duty, is to be carried out.

2.3.1 Duty definition task trigger
Definition:

Duty definition task trigger (dutyDefinitionTaskTrigger) is a description that provides information on what initiates the performance of a task related to the duty.

2.3.2 Duty task frequency
Definition:

Duty task frequency (dutyTaskFrequency) is a property that represents the rate of occurrence value.

2.4 Duty definition task item
Definition:

Duty definition task item (dutyDefinitionTaskItem) identifies items which provide task information for a given duty.

2.5 Job definition
Definition:

Job definition (jobDefinition) defines a position of regular employment.

2.5.1 Job definition name
Definition:

Job definition name (jobDefinitionName) is a name by which the job definition is known and can be easily referenced.

2.6 Job definition revision
Definition:

Job definition revision (jobDefinitionRevision) represents an iteration applied to a job definition.

2.6.1 Job definition revision identifier
Definition:

Job definition revision identifier (jobDefinitionRevisionIdentifier) is an identifier that establishes a unique designator for a job definition revision and to differentiate it from other instances of job definition revision.

2.6.2 Job definition description
Definition:

Job definition description (jobDefinitionDescription) is a description on the position of regular employment.

2.6.3 Job definition revision change description
Definition:

Job definition revision change description (jobDefinitionRevisionChangeDescription) is a description that gives more information on content that has been altered between two revisions of a job definition.

2.6.4 2.6.4Job definition revision date
Definition:

Job definition revision status (jobDefinitionRevisionStatus) is a date that defines when a job definition revision was defined

2.6.5 Job definition revision status

Definition:

Job definition revision status (jobDefinitionRevisionStatus) is a state that identifies the maturity of a job definition revision.

Chapter 7.3.16

Units of functionality - UoF Task performance objective

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1 General

The task performance objective UoF supports the definition of required behavior and performance standards that the person executing a specific task must meet, given the conditions under which the task is to be performed. Refer to Fig 1.

2 UoF Task performance objective

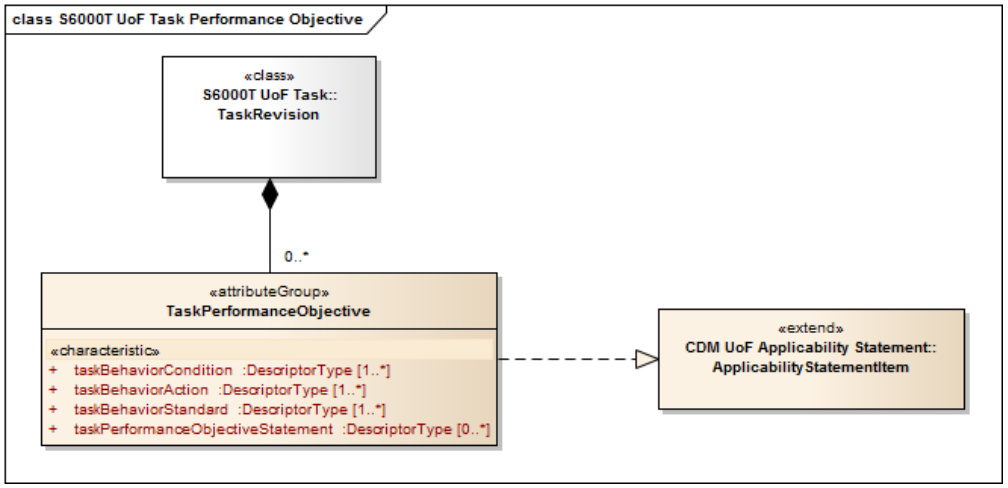

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Fig 1 UoF Task performance objective

2.1 Task performance objective

Definition:

Task performance objective defines the precise statement of the performance expected in the execution of a task expressed in terms of the task conditions, task performance and task standard.

2.1.1 Task behavior condition

Definition:

Task behavior condition (taskBehaviorCondition) is a description that expresses the environmental, physical and psychological circumstances under which the task is to be performed.

2.1.2 Task behavior action

Definition:

Task behavior action (taskBehaviorAction) is a description that expresses the main purpose for the task.

2.1.3 Task behavior standard

Definition:

Task behavior standard (taskBehaviorStandard) is a description that expresses the expected quality and/or time constraints that must be met in the performance of the task.

2.1.4 Task performance objective statement

Definition:

Task performance objective statement (taskPerformanceObjectiveStatement) is a description that expresses the task behavior condition, action and standard in one sentence.

Chapter 7.3.17

Units of functionality - UoF Task train prioritization

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1 General

The task train prioritization UoF supports the identification of training prioritization for a given task and its revision. Refer to Fig 1.

Key features of the UoF task train prioritization data model are:

- Task train prioritization for a task and its revision can be grouped by allowing tasks to refer to other tasks for its train prioritization. For example, a task for remove left front tire on a car can refer to the task for remove right front tire as the source for the training prioritization and subsequent training development.
- Task train prioritization for a task revision can refer to a previous task revision for its train prioritization
- Task train prioritization can be evaluated using the task difficulty, importance and frequency evaluation model
- The decision on task train prioritization can be iterated for a given task revision. For example, feedback on actual performance in the field can result in iterating the evaluation of the task/subtask train prioritization

2 UoF Task train prioritization

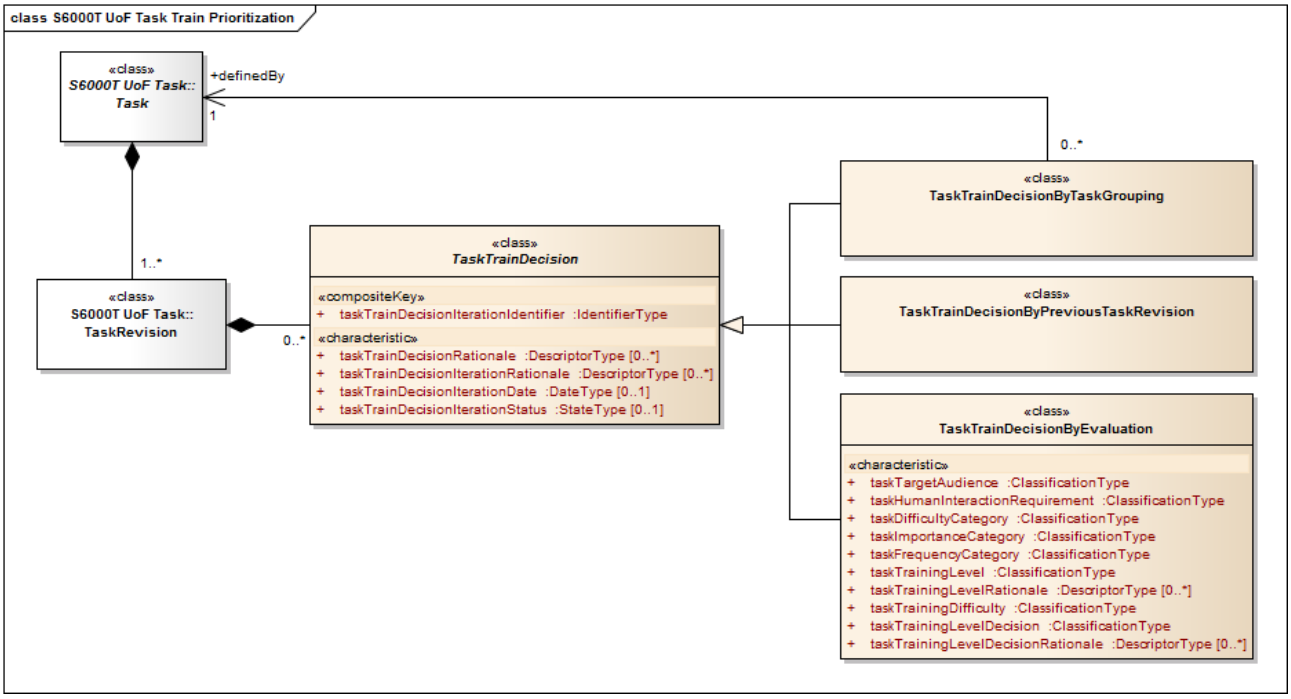

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Fig 1 UoF Task train prioritization

2.1 Task train decision

Definition:

Task train decision (taskTrainDecision) defines how a task is to be managed from a training perspective.

2.1.1 Task train decision iteration identifier

Definition:

Task train decision iteration identifier (taskTrainDecisionIterationIdentifier) is an identifier that establishes a unique iteration for a task train decision and to differentiate it from other iterations of task train decision.

2.1.2 Task train decision rationale
Definition:

Task train decision rationale (taskTrainDecisionRationale) is a description that gives more information on the justification for the choice on further training analysis for the task revision.

2.1.3 Task train decision iteration rationale
Definition:

Task train decision iteration rationale (taskTrainDecisionIterationRationale) is a description that gives more information on the justification for iterating the decision on further training analysis for the task revision.

2.1.4 Task train decision iteration date
Definition:

Task train decision iteration date (taskTrainDecisionIterationDate) is a date that specifies when the decision on further training analysis for the task revision was revised.

2.1.5 Task train decision iteration status
Definition:

Task train decision iteration status (taskTrainDecisionIterationStatus) is a state that identifies the maturity of the task train decision iteration.

2.2 Task train decision by task grouping
Definition:

Task train decision by task grouping (taskTrainDecisionByTaskGrouping) is a task train decision that refers to another task as the source for further training analysis.

2.3 Task train decision by previous task revision
Definition:

Task train decision by previous task revision (taskTrainDecisionByPreviousTaskRevision) is a task train decision that refers to a previous revision of the task as its source for further training analysis.

2.4 Task train decision by task grouping
Definition:

Task train decision by evaluation (taskTrainDecisionByEvaluation) is a task train decision where the characteristics of the task are evaluated in order to decide its training level.

2.4.1 Task target audience
Definition:

Task target audience (taskTargetAudience) is a classification that identifies the kind of personnel that is to be trained to perform the task.

Example

- Product support
- Operator

2.4.2 Task human interaction requirement

Definition:

Task human interaction requirement (taskHumanInteractionRequirement) is a classification that identifies the type of human coordination that needs to take place when performing the task.

Example:

- Individual
- Collective

2.4.3 Task difficulty category

Definition:

Task difficulty category (taskDifficultyCategory) is a classification that identifies the complexity of a task from a human performance perspective.

Note

Task difficulty category can be derived from eg, the following task aspects:

- Personal safety
- Time it takes to perform the task
- Need for human interaction
- Special clothing needed in the performance of the task

2.4.4 Task importance category

Definition:

Task importance category (taskImportanceCategory) is a classification that identifies possible adverse effects that the performance of the task can have with respect to cost (damage) and availability for the item under analysis.

Note

Task importance category can be derived from eg, the following task aspects:

- Mission (operability) impact
- Product integrity impact
- Function essentiality

2.4.5 Task frequency category

Definition:

Task frequency category (taskFrequencyCategory) is a classification that identifies how often a task is to be performed.

Note

Task frequency category is based on how many times a task (including similar tasks) is to be performed under a given time period (usually defined per year).

2.4.6 Task training level

Definition:

Task training level (taskTrainingLevel) is a classification that identifies the priority for training in order for the performer to be able to carry out the task within its defined performance requirement.

Note

Training level is often referred to as training priority.

2.4.7 Task training level rationale
Definition:

Task training level rationale (taskTrainingLevelRationale) is a description that gives more information on the justification for selecting the defined task training level.

2.4.8 Task training difficulty
Definition:

Task training difficulty (taskTrainingDifficulty) is a classification that identifies the complexity involved in training for the Task.

2.4.9 Task training level decision
Definition:

Task training level decision (taskTrainingLevelDecision) is a classification that identifies the final decision on task training level based on the task difficulty, importance and frequency analysis as well as additional considerations such as task training difficulty, customer stipulations and regulations.

2.4.10 Task training level decision rationale
Definition:

Task training level decision rationale (taskTrainingLevelDecisionRationale) is a description that gives more information on the justification for the final task training level decision.

Chapter 7.3.18

Units of functionality - UoF Subtask train prioritization

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1 General

The subtask train prioritization UoF supports the identification of training prioritization for a given subtask and its subtask steps.

2 UoF Subtask train prioritization

Key features of the UoF subtask train prioritization data model, (refer to Fig 1), are:

- Subtask train prioritization can refer to a subtask in a previous task revision for its train prioritization
- Subtask train prioritization can be evaluated using the task difficulty, importance and frequency evaluation model
- Subtasks can be further detailed into subtask steps which need to be evaluated based on its required performance standard

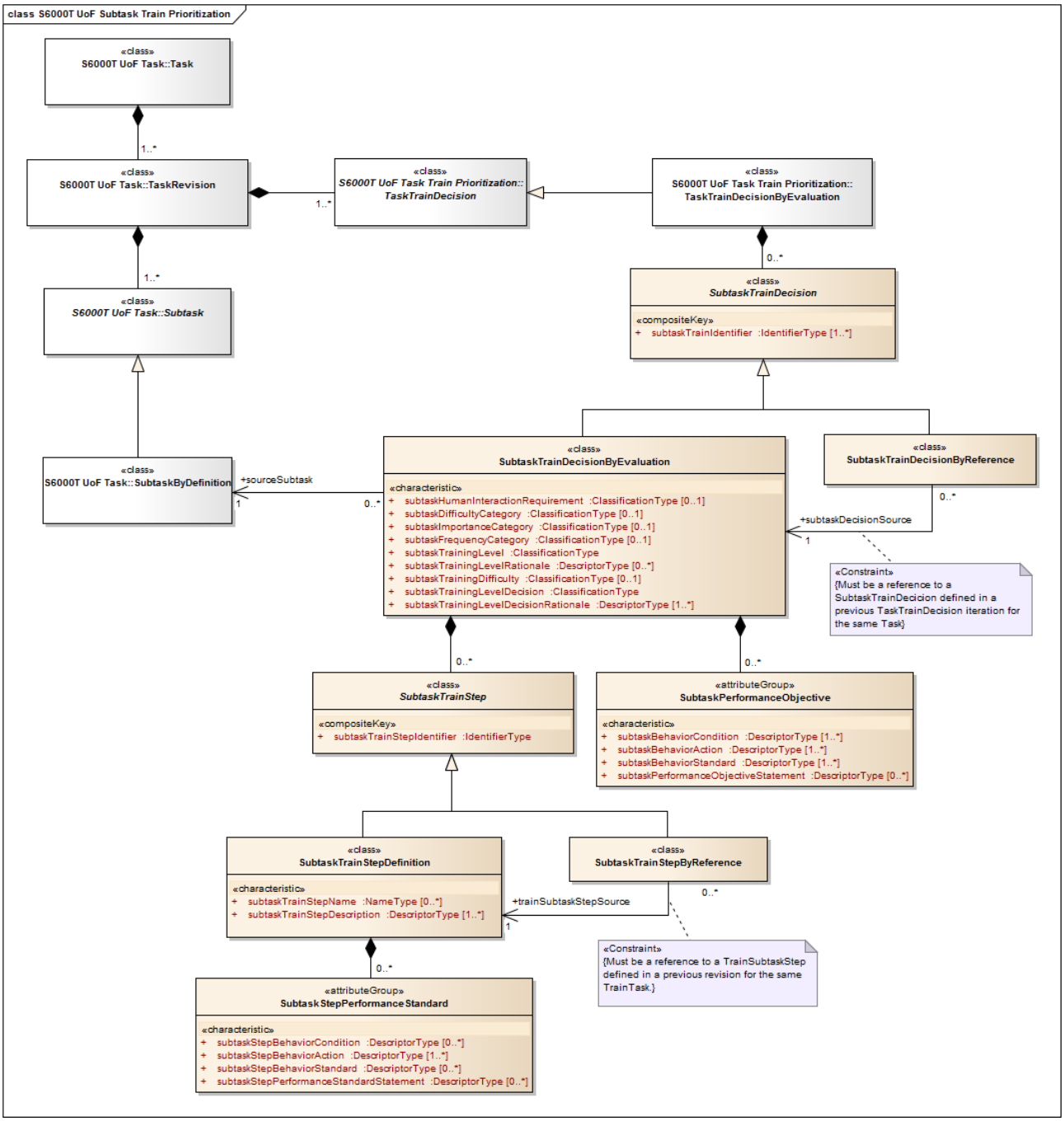

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Fig 1 UoF Subtask train prioritization

2.1 Subtask train decision

Definition:

Subtask train decision (subtaskTrainDecision) represents how a subtask within a task revision is to be managed from a training perspective.

2.1.1 Subtask train identifier
Definition:

Subtask train identifier (subtaskTrainIdentifier) is an identifier that establishes a unique designator for a subtask train decision and to differentiate it from other instances of subtask train decision.

2.2 Subtask train decision by reference
Definition:

Subtask train decision by reference (subtaskTrainDecisionReference) is a subtask train decision that refers to a previous revision of the task and subtask as its source for the subtask training decision.

2.3 Subtask train decision by evaluation
Definition:

Subtask train decision by evaluation (subtaskTrainDecisionByEvaluation) is a subtask train decision where the characteristics of the associated subtask are evaluated in order to decide if the subtask is subject for training.

2.3.1 Subtask human interaction requirement
Definition:

Subtask human interaction requirement (subtaskHumanInteractionRequirement) is a classification that identifies the type of human coordination that needs to take place when performing the subtask.

Example

- Individual
- Collective

2.3.2 Subtask difficulty category
Definition:

Subtask difficulty category (subtaskDifficultyCategory) is a classification that identifies the complexity of a subtask from a human performance perspective.

Note

Subtask difficulty category can be derived from eg, the following subtask aspects:

- Personal safety
- Time it takes to perform the subtask
- Need for human interaction
- Conditions under which the subtask is to be performed
- Special clothing needed in the performance of the subtask

2.3.3 Subtask importance category
Definition:

Subtask importance category (subtaskImportanceCategory) is a classification that identifies possible adverse effects that the performance of the subtask can have with respect to cost (damage) and availability for the item under analysis.

Note

Subtask importance category can be derived from eg, the following task aspects:

- Mission (operability) impact
- Product integrity impact
- Function essentiality

2.3.4 Subtask frequency category

Definition:

Subtask frequency category (subtaskFrequencyCategory) is a classification that identifies how often a subtask is to be performed.

Note

Subtask frequency category is based on how many times a subtask is to be performed under a given time period (usually defined per year).

2.3.5 Subtask training level

Definition:

Subtask training level (subtaskTrainingLevel) is a classification that identifies the priority for training in order for the performer to be able to carry out the subtask within its defined performance requirement.

Note

Training level is often referred to as training priority.

2.3.6 Subtask training level rationale

Definition:

Subtask training level rationale (subtaskTrainingLevelRationale) is a description that gives more information on the justification for selecting the defined subtask training level.

2.3.7 Subtask training difficulty

Definition:

Subtask training difficulty (subtaskTrainingDifficulty) is a classification that identifies the complexity involved in actually training for the subtask.

2.3.8 Subtask training level decision

Definition:

Subtask training level decision (subtaskTrainingLevelDecision) is a classification that identifies the final decision on subtask training level based on the subtask difficulty, importance and frequency analysis as well as additional considerations such as subtask training difficulty, customer stipulations and regulations.

2.3.9 Subtask training level decision rationale

Definition:

Subtask training level decision rationale (subtaskTrainingLevelDecisionRationale) is a description that gives more information on the justification for the final subtask training level decision.

2.4 Subtask performance objective

Definition:

Subtask performance objective (subtaskPerformanceObjective) defines the precise statement of the performance expected in the execution of a subtask expressed in terms of the subtask conditions, subtask performance and subtask standard.

2.4.1 Subtask behavior condition

Definition:

Subtask behavior condition (subtaskBehaviorCondition) is a description that expresses the environmental, physical and psychological circumstances under which the subtask is to be performed.

2.4.2 Subtask behavior action

Definition:

Subtask behavior action (subtaskBehaviorAction) is a description that expresses the main purpose for the subtask.

2.4.3 Subtask behavior standard

Definition:

Subtask behavior standard (subtaskBehaviorStandard) is a description that expresses the expected quality and/or time constraints that must be met in the performance of the subtask.

2.4.4 Subtask performance objective statement

Definition:

Subtask performance objective statement (subtaskPerformanceObjectiveStatement) is a description that expresses the subtask behavior condition, action and standard in one sentence.

2.5 Subtask train step

Definition:

Subtask train step (subtaskTrainStep) represents a specific action within a subtask that must be addressed from training perspective.

2.5.1 Subtask train step identifier

Definition:

Subtask train step identifier (subtaskTrainStepIdentifier) is an identifier that establishes a unique designator for a subtask train step and to differentiate it from other instances of subtask train step.

2.6 Subtask train step by reference

Definition:

Subtask train step by reference (subtaskTrainStepByReference) is a subtask train step that refers to a previous revision of the task and subtask train step definition as its source for the subtask step training decision.

2.7 Subtask train step definition

Definition:

Subtask train step definition (subtaskTrainStepDefinition) is a subtask train step where the characteristics of a defined step (action) within a subtask is described in order to decide if the step (action) is to be trained.

2.7.1 Subtask train step name

Definition:

Subtask train step name (subtaskTrainStepName) is a name by which the subtask train step is known and can be easily Referenced.

2.7.2 Subtask train step description

Definition:

Subtask train step description (subtaskTrainStepDescription) is a description of a specific action performed as part of a Subtask.

2.8 Subtask step performance objective

Definition:

Subtask step performance objective (subtaskStepPerformanceObjective) defines the precise statement of the performance expected in the execution of an action within a Subtask expressed in terms of the subtask step conditions, subtask step performance and subtask step standard.

2.8.1 Subtask step behavior condition

Definition:

Subtask step behavior condition (subtaskStepBehaviorCondition) is a description that expresses the environmental, physical and psychological circumstances under which an action within a Subtask is to be performed.

2.8.2 Subtask step behavior action

Definition:

Subtask step behavior action (subtaskStepBehaviorAction) is a description that identifies the main purpose for the specific action within a Subtask.

2.8.3 Subtask step behavior standard

Definition:

Subtask step behavior standard (subtaskStepBehaviorStandard) is a description that expresses the expected quality and/or time constraints that must be met in the performance of a Subtask step.

2.8.4 Subtask step performance standard statement

Definition:

Subtask step performance standard statement (subtaskStepPerformanceStandardStatement) is a description that expresses the subtask step behavior condition, action and standard in one sentence.

Chapter 7.3.19

Units of functionality - UoF Warning caution train prioritization

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Table 1 References

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None	

1 General

The warning caution train prioritization UoF supports the identification training prioritization for a given warning or caution. Refer to Fig 1.

Note

The decision on task train prioritization can be iterated for a warning caution. For example, feedback on actual performance in the field can result in iterating the evaluation of the warning caution train prioritization.

2 UoF Warning caution train prioritization

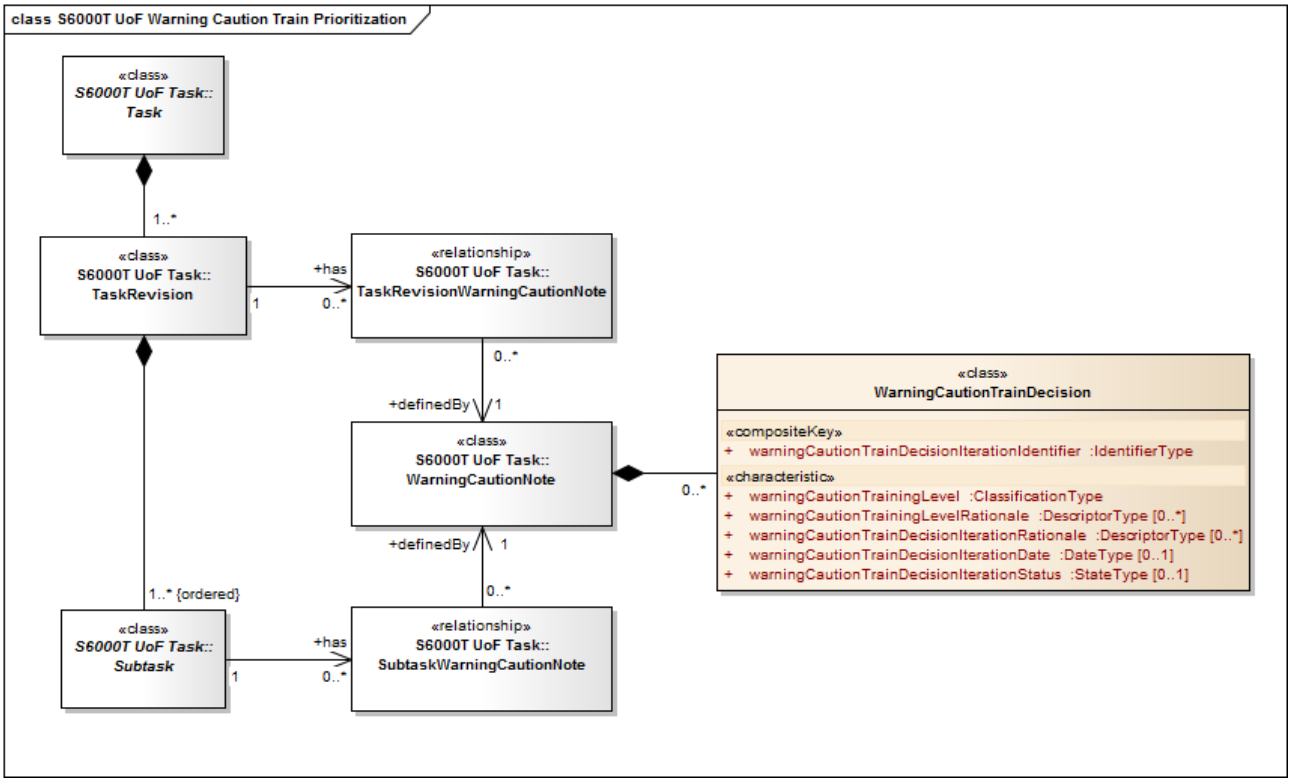

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Fig 1 UoF Warning caution train prioritization

2.1 Warning caution train decision

Definition:

Warning caution train decision (warningCautionTrainDecision) represents how a warning or caution is to be managed from a training perspective.

2.1.1 Warning caution train decision iteration identifier

Definition:

Warning caution train decision iteration identifier (warningCautionTrainDecisionIterationIdentifier) is an identifier that establishes a unique designator for a warning caution train decision and to differentiate it from other instances of warning caution train decision.

2.1.2 Warning caution training level

Definition:

Warning caution training level (warningCautionTrainingLevel) is a classification that identifies the priority for training for the performer to deal with a specific safety aspect.

Note

Training level is often referred to as training priority.

2.1.3 Warning caution training level rationale
Definition:

Warning caution training level rationale (warningCautionTrainingLevelRationale) is a description that gives more information on the justification for selecting the defined warning caution training level.

2.1.4 Warning caution train decision iteration rationale
Definition:

Warning caution train decision iteration rationale (warningCautionTrainDecisionIterationRationale) is a is a description that gives more information on the justification for iterating the decision on further training analysis for the warning caution.

2.1.5 Warning caution train decision iteration date
Definition:

Warning caution train decision iteration date (warningCautionTrainDecisionIterationDate) is a date that specifies when the decision on further training analysis for the warning caution was revised.

2.1.6 Warning caution train decision iteration status
Definition:

Warning caution train decision iteration status (warningCautionTrainDecisionIterationStatus) is a state that identifies the maturity of the warning caution train decision iteration.

Chapter 7.3.20

Units of functionality - UoF Task knowledge skill and attitude

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Table 1 References

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None	

1 General

The task knowledge skill and attitude UoF supports the identification of knowledge, skill and attitude required to perform a given task, subtask or subtask step.

2 UoF Task knowledge skill and attitude

Key features of the UoF task knowledge skill and attitude data model, (refer to Fig 1), are:

- Level of learning must be defined for both the affective, cognitive and psychomotor domain
- Decision on required level of learning can be iterated per domain. For example, feedback on actual performance in the field can result in iterating the decision on required level of learning.

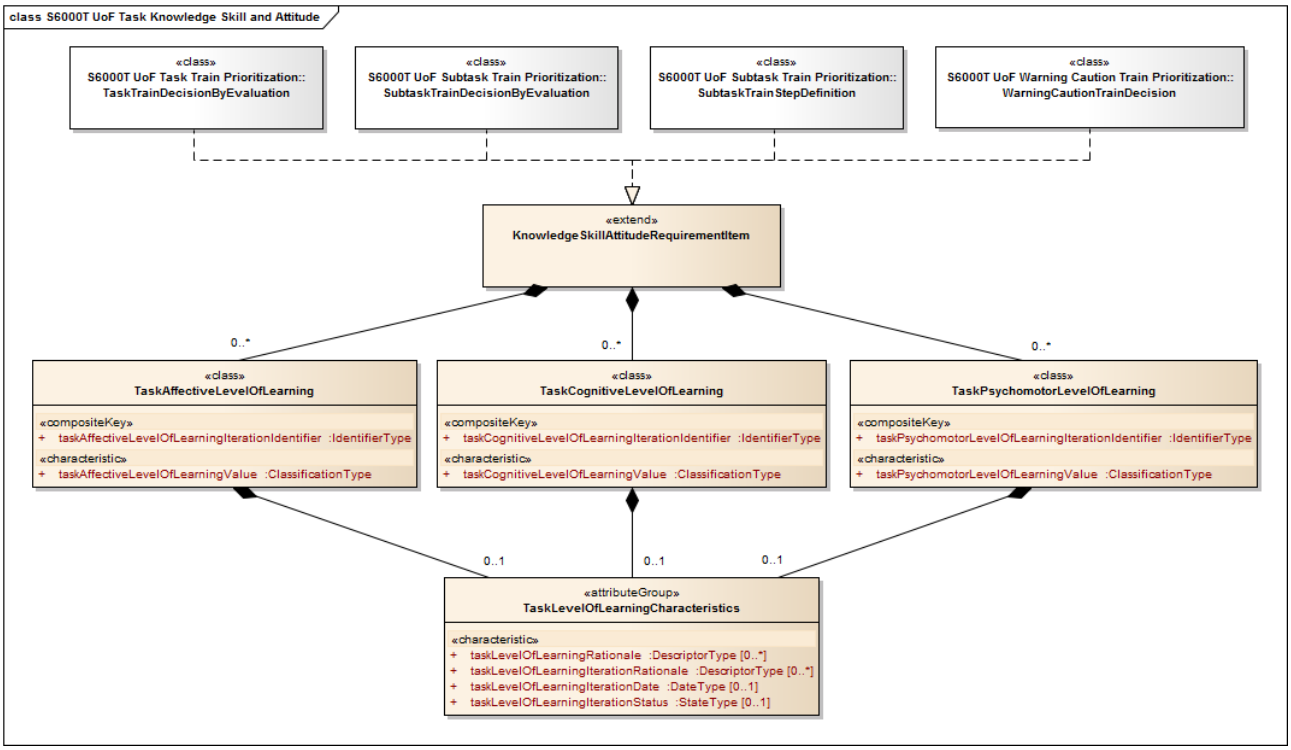

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Fig 1 UoF Task knowledge skill and attitude

2.1 Knowledge skill attitude requirement item

Definition:

Knowledge skill attitude requirement item (knowledgeSkillAttitudeRequirementItem) provides its associated data model to those classes that implement it.

2.2 Task affective level of learning

Definition:

Task affective level of learning (taskAffectiveLevelOfLearning) identifies the task's level of sophistication with respect to emotional, motivational and/or social aspects.

Example

- Feelings
- Values
- Appreciation
- Enthusiasm
- Motivation
- Attitude

2.2.1 Task affective level of learning iteration identifier

Definition:

Task affective level of learning iteration identifier (taskAffectiveLevelOfLearningIterationIdentifier) is an identifier that establishes a unique designator for a task affective level of learning iteration and to differentiate it from other instances of task affective level of learning iteration.

2.2.2 Task affective level of learning value

Definition:

Task affective level of learning value (taskAffectiveLevelOfLearningValue) is a classification that defines the level of emotional, motivational, and social sophistication that a person must be able to manage.

2.3 Task cognitive level of learning

Definition:

Task cognitive level of learning (taskCognitiveLevelOfLearning) identifies the task's level of sophistication with respect to mental, cognitive, and/or logical aspects.

Example

- Process information
- Create knowledge
- Think

2.3.1 Task cognitive level of learning iteration identifier

Definition:

Task cognitive level of learning iteration identifier (taskCognitiveLevelOfLearningIterationIdentifier) is an identifier that establishes a unique designator for a task cognitive level of learning iteration and to differentiate it from other instances of task cognitive level of learning iteration.

2.3.2 Task cognitive level of learning value

Definition:

Task cognitive level of learning value (taskCognitiveLevelOfLearningValue) is a classification that defines the mental and logical sophistication that a person must be able to manage.

2.4 Task psychomotor level of learning

Definition:

Task psychomotor level of learning (taskPsychomotorLevelOfLearning) identifies the task's level of sophistication with respect to physical, mechanical, and/or movement-based aspects.

Examples:

- Motor skills
- Coordination
- Physical movement

2.4.1 Task psychomotor level of learning iteration identifier

Definition:

Task psychomotor level of learning iteration identifier (taskPsychomotorLevelOfLearningIterationIdentifier) is an identifier that establishes a unique

designator for a task psychomotor level of learning iteration and to differentiate it from other instances of task psychomotor level of learning iteration.

2.4.2 Task psychomotor level of learning value
Definition:

Task psychomotor level of learning value (taskPsychomotorLevelOfLearningValue) is a classification that defines the physical, mechanical, and movement-based sophistication that a person must be able to manage.

2.5 Task level of learning characteristics
Definition:

Task level of learning characteristics (taskLevelOfLearningCharacteristics) provides the capability to record additional information for the required task level of learning decision and iteration.

2.5.1 Task level of learning rationale
Definition:

Task level of learning rationale (taskLevelOfLearningRationale) is a description that gives more information on the justification for the chosen level of learning.

2.5.2 Task level of learning iteration rationale
Definition:

Task level of learning iteration rationale (taskLevelOfLearningIterationRationale) is a description that gives more information on the justification to revise the defined level of learning for the associated task, subtask or subtask step.

2.5.3 Task level of learning iteration date
Definition:

Task level of learning iteration date (taskLevelOfLearningIterationDate) is a date that specifies when the defined level of learning for the associated task, subtask or subtask step was revised.

2.5.4 Task level of learning iteration status
Definition:

Task level of learning iteration status (taskLevelOfLearningIterationStatus) is a state that identifies the maturity of a task level of learning iteration.

Chapter 7.3.21

Units of functionality - UoF Target audience

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1 General

The target audience UoF supports the documentation of occupational backgrounds including expected Knowledge, Skills and Attitudes (KSA) ratings for persons that are to operate and maintain the Product in focus.

2 UoF Target audience

Key features of the UoF target audience data model, (refer to Fig 1), are:

- Enables the recording of expected KSA for persons that are to operate and maintain the Product in focus
- Any job definition, skill or trade can be analyzed from the perspective that persons coming into the training can have different occupational backgrounds with different KSA ratings
- The description of an occupational background can be further subdivided into a set of domains where each domain can be associated with more precise KSA ratings
- Each occupational background description can be associated with one or many competency definitions eg, required credentials

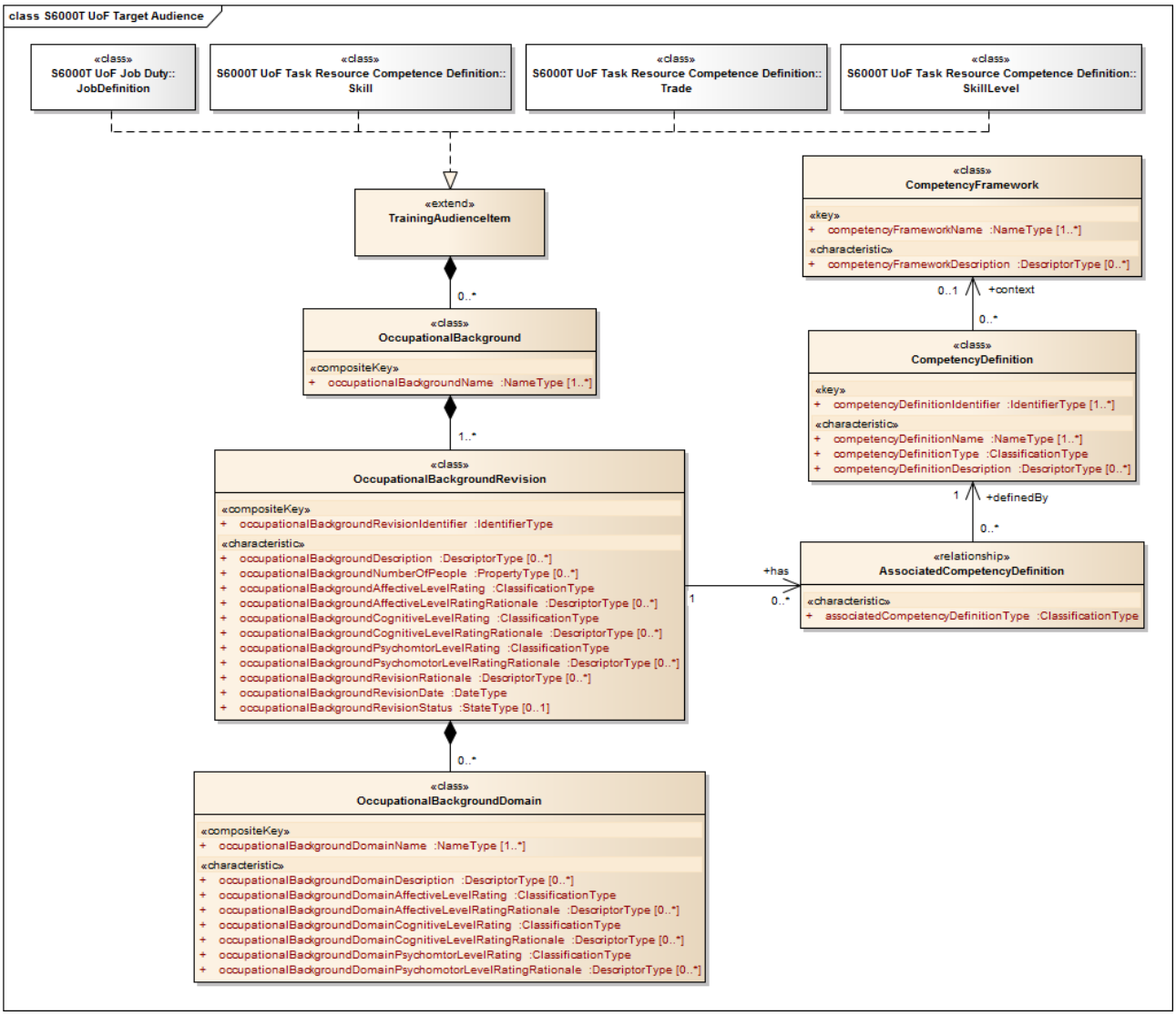

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Fig 1 UoF Target audience

2.1 Associated competency definition

Definition:

Associated competency definition (AssociatedCompetencyDefinition) is a relationship where an occupational background relates to a defined competency definition that is an important part of the description of the occupational background.

2.2 Competency definition

Definition:

Competency definition (CompetencyDefinition) represents measurable or observable KSA necessary for successful performance by a person in a given context.

Note

Competency definition is broadly defined to include assertions of academic, professional, occupational, vocational and life goals, outcomes, and standards, however labeled.

2.2.1 Competency definition identifier
Definition:

Competency definition identifier (competencyDefinitionIdentifier) is an identifier that establishes a unique designator for a competency definition and to differentiate it from other instances of competency definition.

2.2.2 Competency definition name
Definition:

Competency definition name (competencyDefinitionName) is a name by which the competency definition is known and can be easily referenced.

2.2.3 Competency definition type
Definition:

Competency definition type (competencyDefinitionType) is a classification that identifies further specialization of competency definition.

Examples:

- Credential
- Experience
- Job title

2.2.4 Competency definition description
Definition:

Competency definition description (competencyDefinitionDescription) is a description that provides information on the KSA that a person is expected to have by having acquired a certain competency.

2.3 Competency framework
Definition:

Competency framework (CompetencyFramework) represents a context within which a specific competency definition is established.

Examples:

- An educational institution
- A company providing training

2.3.1 Competency framework name
Definition:

Competency framework name (competencyFrameworkName) is a name by which the competency framework is known and can be easily referenced.

2.3.2 Competency framework description
Definition:

Competency framework description (competencyFrameworkDescription) is a description that provides information on the context in which a competency definition can be established and verified.

2.4 Occupational background

Definition:

Occupational background (OccupationalBackground) defines the perceived KSA common to a set of persons within the target audience designated to perform a certain job, or act based on trade or skill code.

2.4.1 Occupational background name

Definition:

Occupational background name (occupationalBackgroundName) is a name by which the occupational background is known and can be easily referenced.

2.5 Occupational background domain

Definition:

Occupational background domain (OccupationalBackgroundDomain) defines the perceived KSA in a specific field which is important to evaluate and highlight in the context of KSA ratings.

2.5.1 Occupational background domain name

Definition:

Occupational background domain name (occupationalBackgroundDomainName) is a name by which the occupational background domain is known and can be easily referenced.

2.5.2 Occupational background domain description

Definition:

Occupational background domain description (occupationalBackgroundDomainDescription) is a description that provides further information on a specific field of experience.

2.5.3 Occupational background domain affective level rating

Definition:

Occupational background domain affective level rating (occupationalBackgroundDomainAffectiveLevelRating) is a classification of a person's expected level of sophistication with respect to emotional, motivational and/or social abilities in the context of the defined field of experience.

2.5.4 Occupational background domain affective level rating rationale

Definition:

Occupational background domain affective level rating rationale (occupationalBackgroundDomainAffectiveLevelRatingRationale) is a description that gives more information on the justification for assigning the affective level rating for the defined occupational background domain.

2.5.5 Occupational background domain cognitive level rating

Definition:

Occupational background domain cognitive level rating (occupationalBackgroundDomainCognitiveLevelRating) is a classification of a person's expected level of sophistication with respect to mental, cognitive, and/or logical aspects in the context of the defined field of experience.

2.5.6 Occupational background domain cognitive level rating rationale
Definition:

Occupational background domain cognitive level rating rationale (occupationalBackgroundDomainAffectiveLevelRatingRationale) is a description that gives more information on the justification for assigning the cognitive level rating for the defined occupational background domain.

2.5.7 Occupational background domain psychomotor level rating
Definition:

Occupational background domain psychomotor level rating (occupationalBackgroundDomainPsychomotorLevelRating) is a classification of a person's expected level of sophistication with respect to physical, mechanical, and/or movement-based aspects in the context of the defined field of experience.

2.5.8 Occupational background domain psychomotor level rating rationale
Definition:

Occupational background domain psychomotor level rating rationale (occupationalBackgroundDomainPsychomotorLevelRatingRationale) is a description that gives more information on the justification for assigning the psychomotor level rating for the defined occupational background domain.

2.6 Occupational background revision
Definition:

Occupational background revision (OccupationalBackgroundRevision) represents an iteration applied to the definition of an occupational background.

2.6.1 Occupational background revision identifier
Definition:

Occupational background revision identifier (occupationalBackgroundRevisionIdentifier) is an identifier that establishes a unique designator for an occupational background revision and to differentiate it from other instances of occupational background revision.

2.6.2 Occupational background description
Definition:

Occupational background description (occupationalBackgroundDescription) is a description that provides further information on the perceived KSA common to a set of persons within the target population designated to perform a certain job, or act based on trade or skill code.

2.6.3 Occupational background number of people
Definition:

Occupational background number of people (occupationalBackgroundNumberOfPeople) is a property that identifies the number of people with a specific occupational background that will enter into service in order to operate and/or maintain the Product in focus.

2.6.4 Occupational background affective level rating
Definition:

Occupational background affective level rating (occupationalBackgroundAffectiveLevelRating) is a classification of a person's expected level of sophistication with respect to emotional, motivational and/or social abilities in the context of the defined occupational background.

2.6.5 Occupational background affective level rating rationale
Definition:

Occupational background affective level rating rationale (occupationalBackgroundAffectiveLevelRatingRationale) is a description that gives more information on the justification for assigning the affective level rating for the defined occupational background.

2.6.6 Occupational background cognitive level rating
Definition:

Occupational background cognitive level rating (occupationalBackgroundCognitiveLevelRating) is a classification of a person's expected level of sophistication with respect to mental, cognitive, and/or logical aspects in the context of the defined occupational background.

2.6.7 Occupational background cognitive level rating rationale
Definition:

Occupational background cognitive level rating rationale (occupationalBackgroundCognitiveLevelRatingRationale) is a description that gives more information on the justification for assigning the cognitive level rating for the defined occupational background.

2.6.8 Occupational background psychomotor level rating
Definition:

Occupational background psychomotor level rating (occupationalBackgroundPsychomotorLevelRating) is a classification of a person's expected level of sophistication with respect to physical, mechanical, and/or movement-based aspects in the context of the defined occupational background.

2.6.9 Occupational background psychomotor level rating rationale
Definition:

Occupational background psychomotor level rating rationale (occupationalBackgroundPsychomotorLevelRatingRationale) is a description that gives more information on the justification for assigning the psychomotor level rating for the defined occupational background.

2.6.10 Occupational background revision rationale
Definition:

Occupational background revision rationale (occupationalBackgroundRevisionRationale) is a description that gives more information on the justification for revising the defined occupational background.

2.6.11 Occupational background revision date
Definition:

Occupational background revision date (occupationalBackgroundRevisionDate) is a date that specifies when the occupational background was revised.

2.6.12 Occupational background revision status
Definition:

Occupational background revision status (occupationalBackgroundRevisionStatus) is a state that identifies the maturity of the occupational background revision.

Chapter 7.3.22

Units of functionality - UoF Task train target audience

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1 General

The train task target audience UoF supports the identification of personnel categories that are to carry out the tasks, subtasks and/or subtask steps that has been analyzed for training need.

2 UoF Train task target audience

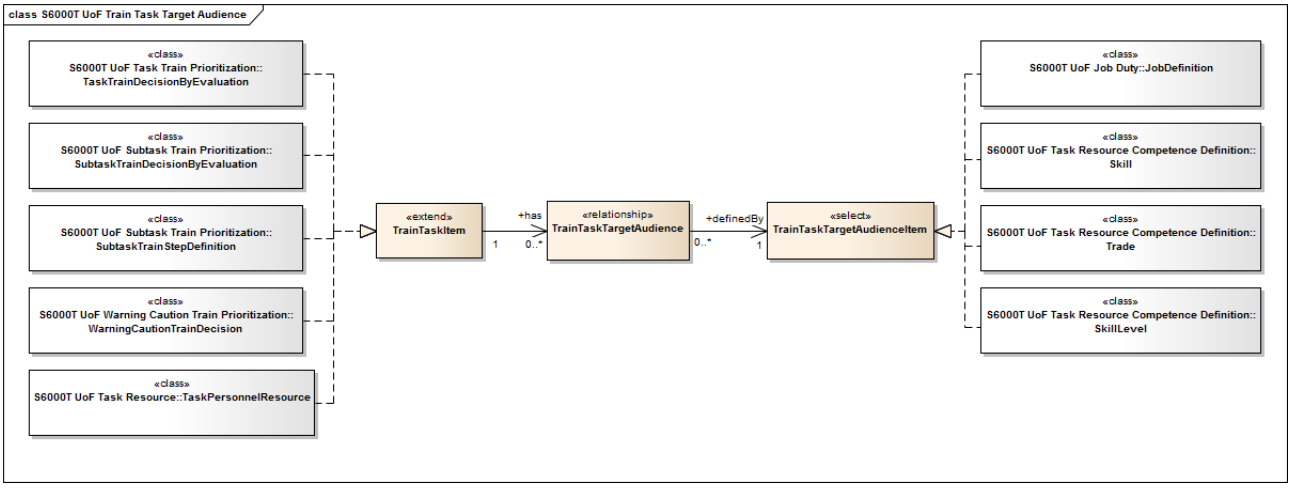

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Fig 1 UoF Train task target audience

2.1 Train task item

Definition:

Train task item (TrainTaskItem) provides its associated data model to those classes that implement it.

2.2 Train task target audience

Definition:

Train task target audience (TrainTaskTargetAudience) is a relationship where a task, or portion of a task, is associated with the personnel category that is targeted to carry out the task.

2.3 Train task target audience item

Definition:

Train task target audience item (TrainTaskTargetAudienceItem) identifies items that represent personnel categories that can be targeted to carry out a task, or portions thereof.

Chapter 7.3.23

Units of functionality - UoF Learning analysis

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1 General

The objective for the learning analysis UoF is to document the Knowledge, Skills and Attitude (KSA) gaps that are identified between the requirements of the tasks to be trained and the target audience.

2 UoF Learning analysis

Key features of the UoF learning analysis, (refer to Fig 1), are:

- KSA gaps can be defined for an occupational background description, optionally with a reference to the description for a specific occupational background domain
- KSA gaps can refer to one or many tasks, or portions thereof, against which the gap has been identified

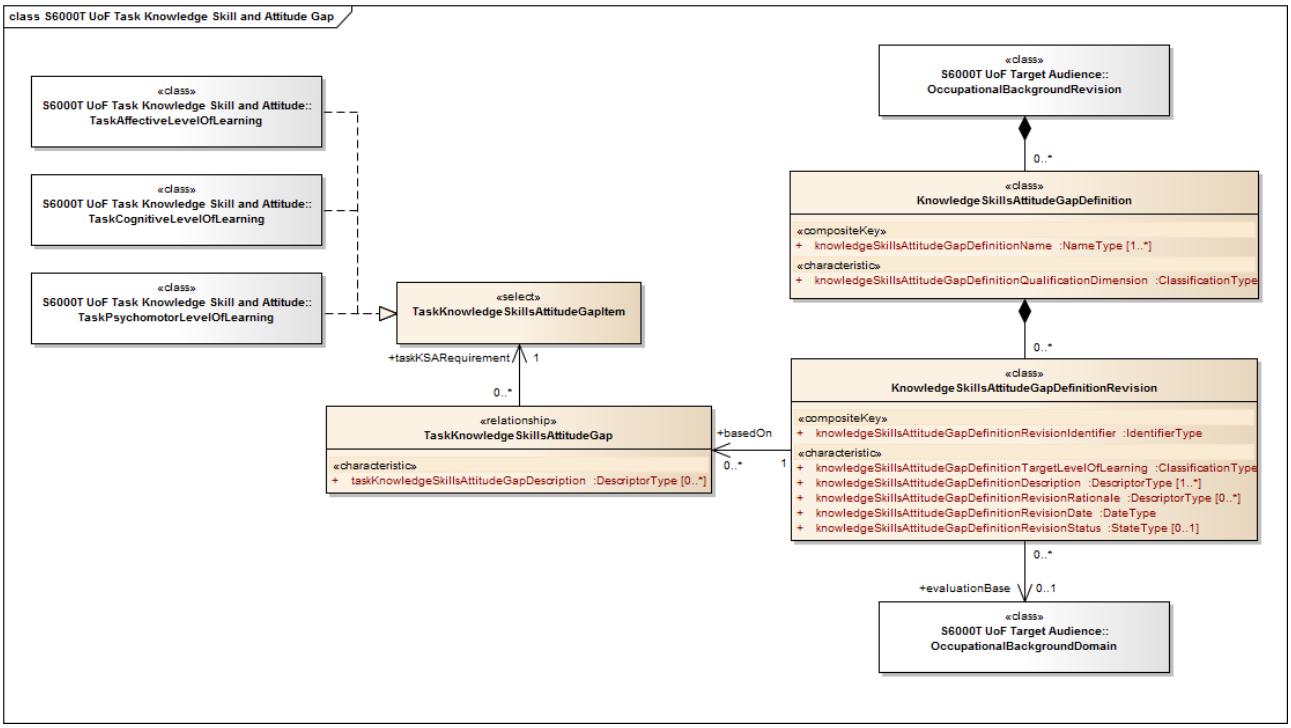

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Fig 1 UoF Learning analysis

2.1 Knowledge skill attitude gap definition

Definition:

KSA gap definition (KnowledgeSkillsAttitudeGapDefinition) defines a deficiency in KSA that must be addressed for the identified target audience.

2.1.1 Knowledge skills attitude gap definition name

Definition:

KSA gap definition name (knowledgeSkillsAttitudeGapDefinitionName) is a name by which the KSA gap definition is known and can be easily referenced.

2.1.2 Knowledge skills attitude gap definition qualification dimension

Definition:

KSA gap definition qualification dimension (knowledgeSkillsAttitudeGapDefinitionQualificationDimension) is a classification that determines the learning domain (affective, cognitive or psychomotor) for which the KSA gap is written.

2.2 Knowledge skills attitude gap definition revision

Definition:

KSA gap definition revision (KnowledgeSkillsAttitudeGapDefinitionRevision) represents an iteration applied to a KSA gap definition.

2.2.1 Task affective level of learning iteration identifier
Definition:

KSA gap definition revision identifier (knowledgeSkillsAttitudeGapDefinitionRevisionIdentifier) is an identifier that establishes a unique designator for a KSA gap definition revision and to differentiate it from other instances of KSA gap definition revision.

2.2.2 Task affective level of learning value
Definition:

KSA gap definition target level of learning (knowledgeSkillsAttitudeGapDefinitionTargetLevelOfLearning) is a classification that identifies the required level of sophistication for the defined qualification dimension.

2.2.3 Knowledge skills attitude gap definition description
Definition:

KSA gap definition description (knowledgeSkillsAttitudeGapDefinitionDescription) is a description that gives more information on the identified deficiency in KSA.

2.2.4 Knowledge skills attitude gap definition revision rationale
Definition:

KSA gap definition revision rationale (knowledgeSkillsAttitudeGapDefinitionRevisionRationale) is a description that gives more information on the justification for revising the KSA gap definition.

2.2.5 Knowledge skills attitude gap definition revision date
Definition:

KSA gap definition revision date (knowledgeSkillsAttitudeGapDefinitionRevisionDate) is a date that specifies when the KSA gap definition was revised.

2.2.6 Knowledge skills attitude gap definition revision status
Definition:

KSA gap definition revision status (knowledgeSkillsAttitudeGapDefinitionRevisionStatus) is a state that identifies the maturity of the KSA gap definition revision.

2.3 Task knowledge skills attitude gap
Definition:

Task KSA gap (TaskKnowledgeSkillsAttitudeGap) is a relationship that identifies the task context where the deficiency in qualification is identified.

2.3.1 Task knowledge skills attitude gap description
Definition:

Task KSA gap description (taskKnowledgeSkillsAttitudeGapDescription) is a description that gives more information on the identified deficiency in qualifications in relation to the required KSA defined for a specific task, or portion thereof.

2.4 Task knowledge skills attitude gap item

Definition:

Task KSA gap item (TaskKnowledgeSkillsAttitudeGapItem) identifies items that represent the qualification requirement.

Chapter 7.3.24

Units of functionality - UoF Learning objective

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1 General

The learning objective UoF supports the documentation for goals of training. Each learning objective is a statement that defines what learners should know or be able to do as a result of training, the conditions under which they will demonstrate this proficiency, and the standard by which their performance will be measured.

2 UoF Learning objective

Key features of the UoF learning objective data model, (refer to Fig 1), are:

- Learning objectives can be associated with Knowledge, Skills or Attitude (KSA) gaps identified during learning analysis
- Learning objectives can be associated with its recommended/chosen assessment strategy
- Learning objectives can be associated with its recommended/chosen instructional strategy
- Learning objectives can be associated with other learning objectives to define eg, hierarchies of enabling learning objectives

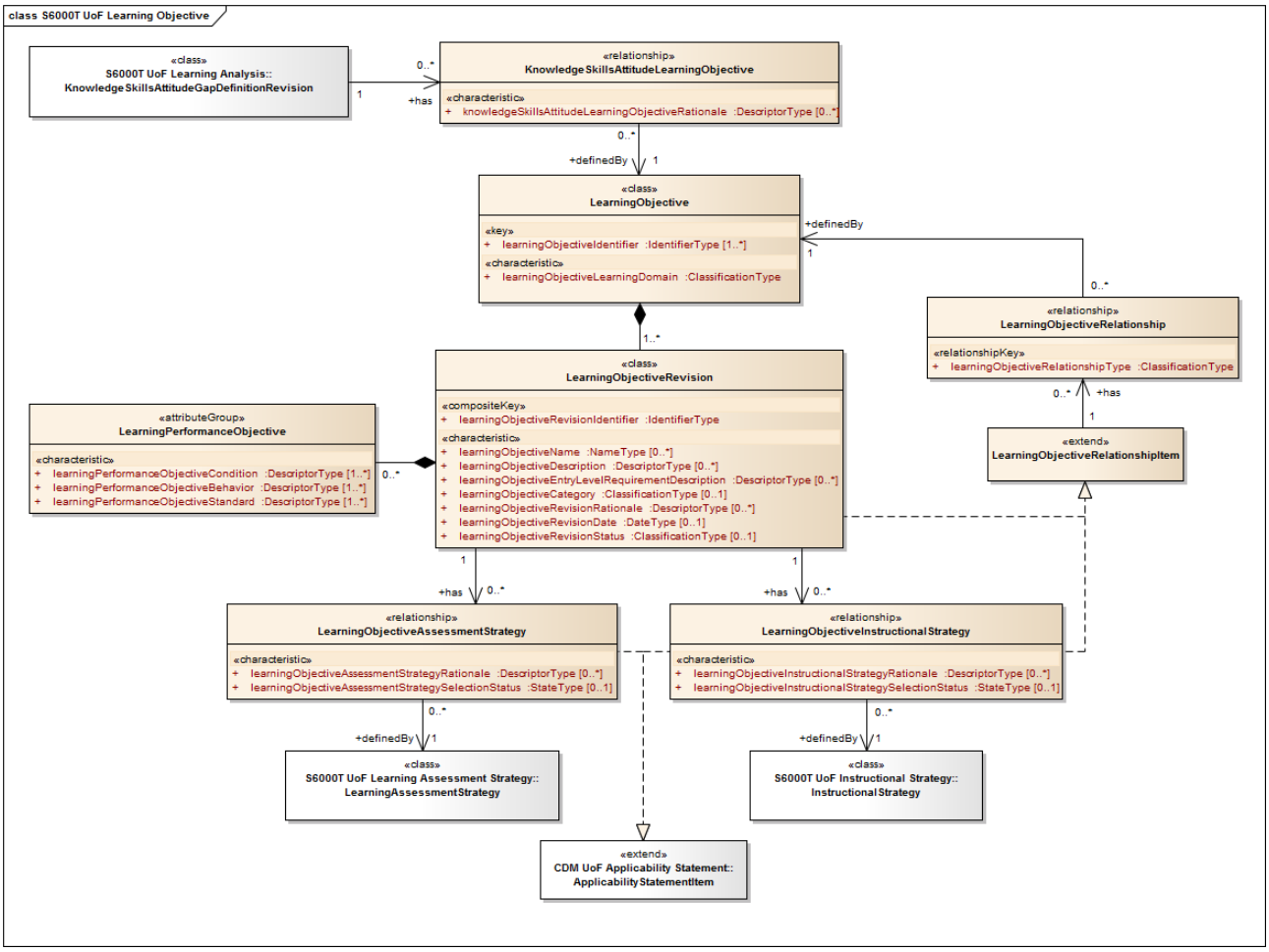

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Fig 1 UoF Learning objective

2.1 Knowledge skill attitude learning objective

Definition:

KSA learning objective (KnowledgeSkillsAttitudeLearningObjective) is a relationship that identifies a learning objective that addresses the identified gap in qualification, or portions thereof.

2.1.1 Knowledge skills attitude learning objective rationale

Definition:

KSA learning objective rationale (knowledgeSkillsAttitudeLearningObjectiveRationale) is a description that gives more information on the justification on how the identified learning objective addresses the identified gap in qualification.

2.2 Learning objective

Definition:

Learning objective (LearningObjective) is a statement that defines the expected outcome of a learning activity in terms of assessable KSA that will be acquired by a student as a result of instruction.

Note

Learning objectives when attained should be observable behaviors or actions.

2.2.1 Learning objective identifier

Definition:

Learning objective identifier (learningObjectiveIdentifier) is an identifier that establishes a unique designator for a learning objective and to differentiate it from other instances of learning objective.

2.2.2 Learning objective learning domain

Definition:

Learning objective learning domain (learningObjectiveLearningDomain) is a classification that determines the learning aspect (affective, cognitive or psychomotor) from which the learning objective is written.

2.3 Learning objective assessment strategy

Definition:

Learning objective assessment strategy (LearningObjectiveAssessmentStrategy) defines a relationship between a learning objective and a learning assessment strategy.

2.3.1 Learning objective assessment strategy rationale

Definition:

Learning objective assessment strategy rationale (learningObjectiveAssessmentStrategyRationale) is a description that gives more information on the justification for selecting the associated learning assessment strategy.

2.3.2 Learning objective assessment strategy selection status

Definition:

Learning objective assessment strategy selection status (learningObjectiveAssessmentStrategySelectionStatus) is a state that identifies the stage in the decision making process in which the decision for the associated assessment strategy selection is.

2.4 Learning objective instructional strategy

Definition:

Learning objective instructional strategy (LearningObjectiveInstructionalStrategy) defines a relationship between a learning objective and an instructional strategy.

2.4.1 Learning objective instructional strategy rationale

Definition:

Learning objective instructional strategy rationale (learningObjectiveInstructionalStrategyRationale) is a description that gives more information on the justification for selecting the associated instructional strategy.

2.4.2 Learning objective instructional strategy selection status
Definition:

Learning objective instructional strategy selection status (learningObjectiveInstructionalStrategySelectionStatus) identifies the stage in the decision making process in which the decision for the associated instructional strategy is.

2.5 Learning objective relationship
Definition:

Learning objective relationship (LearningObjectiveRelationship) is a relationship where one learning objective relates to another learning objective.

2.5.1 Learning objective relationship type
Definition:

Learning objective relationship type (learningObjectiveRelationshipType) is a classification that identifies the meaning of the established relationship.

Example

- Prerequisite learning objective defines a sequential dependency
- Enabling learning objective defines a hierarchical dependency

2.6 Learning objective relationship item
Definition:

Learning objective relationship item (LearningObjectiveRelationshipItem) provides its associated data model to those classes that implement it.

2.7 Learning objective revision
Definition:

Learning objective revision (LearningObjectiveRevision) represents an iteration applied to a learning objective.

2.7.1 Learning objective revision identifier
Definition:

Learning objective revision identifier (learningObjectiveRevisionIdentifier) is an identifier that establishes a unique designator for a learning objective revision and to differentiate it from other instances of learning objective revision.

2.7.2 Learning objective name
Definition:

Learning objective name (learningObjectiveName) is a name by which the learning objective is known and can be easily referenced.

2.7.3 Learning objective description
Definition:

Learning objective description (learningObjectiveDescription) is a description that gives more information on the defined learning objective.

2.7.4 Learning objective entry level requirement description
Definition:

Learning objective entry level requirement description (learningObjectiveEntryLevelRequirementDescription) is a description that gives more information on the KSA that is a prerequisite for how the learning objective is written.

2.7.5 Learning objective category
Definition:

Learning objective category (learningObjectiveCategory) is a classification that identifies further specialization for the learning objective.

Example

- KSA gap learning objective
- Course element learning objective

2.7.6 Learning objective revision rationale
Definition:

Learning objective revision rationale (learningObjectiveRevisionRationale) is a description that gives more information on the justification for revising the learning objective.

2.7.7 Learning objective revision date
Definition:

Learning objective revision date (learningObjectiveRevisionDate) is a date that specifies when the learning objective was revised.

2.7.8 Learning objective revision status
Definition:

Learning objective revision status (learningObjectiveRevisionStatus) is a state that identifies the maturity of the learning objective revision.

2.8 Learning performance objective
Definition:

Learning performance objective (LearningPerformanceObjective) defines the precise statement of the performance expected at the end of learning expressed in terms of the learning objective performance conditions, behavior and standard.

2.8.1 Learning performance objective condition
Definition:

Learning performance objective condition (learningPerformanceObjectiveCondition) is a description that expresses the environmental, physical and psychological circumstances under which the acquired proficiency can be demonstrated.

2.8.2 Learning performance objective behavior
Definition:

Learning performance objective behavior (learningPerformanceObjectiveBehavior) is a description that expresses the main purpose for the learning objective.

2.8.3 Learning performance objective standard
Definition:

Learning performance objective standard (learningPerformanceObjectiveStandard) is a statement that identifies what a trainee will do to demonstrate that they learned a specific knowledge, skills or attitude.

Chapter 7.3.25

Units of functionality - UoF Learning assessment strategy

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1 General

The learning assessment strategy UoF supports the identification of methods used to evaluate how well the trainee's masters the desired learning outcomes or learning objectives. These methods should be observable, measurable, and repeatable.

2 UoF Learning assessment strategy

Key features of the UoF learning assessment strategy data model, (refer to Fig 1), are:

– It defines a library of learning assessment strategies which can be referred to from individual learning objectives (refer to Chap 7.3.24)

– A learning assessment strategy can only have one combination of method and media. If any given method can have multiple media alternatives, then must there be one defined learning assessment strategy per combination.

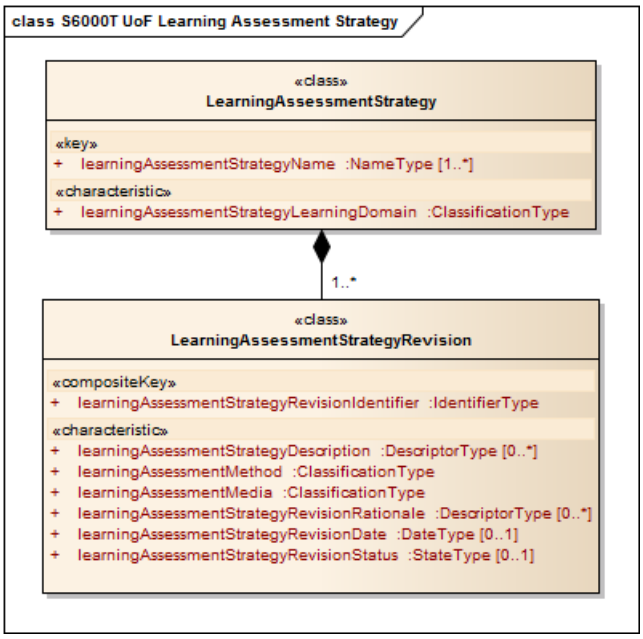

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Fig 1 UoF Learning assessment strategy

2.1 Learning assessment strategy

Definition:

Learning assessment strategy (LearningAssessmentStrategy) represents the definition of method, and other solutions needed, which are to be used to evaluate how well the trainee's meet the learning objective performance requirements.

2.1.1 Learning assessment strategy name

Definition:

Learning assessment strategy name (learningAssessmentStrategyName) is a name by which the learning assessment strategy is known and can be easily referenced.

2.1.2 Learning assessment strategy learning domain

Definition:

Learning assessment strategy learning domain (learningAssessmentStrategyLearningDomain) is a classification that determines the learning aspect for which the learning assessment strategy is defined.

Example

– Affective
– Cognitive
– Psychomotor

2.2 Learning assessment strategy revision

Definition:

Learning assessment strategy revision (LearningAssessmentStrategyRevision) represents an iteration applied to a learning assessment strategy.

2.2.1 Learning assessment strategy revision identifier

Definition:

Learning assessment strategy revision identifier (learningAssessmentStrategyRevisonIdentifier) is an identifier that establishes a unique designator for a learning assessment strategy and to differentiate it from other instances of learning assessment strategy.

2.2.2 Learning assessment strategy description

Definition:

Learning assessment strategy description (learningAssessmentStrategyDescription) is a description that gives more information on the defined learning assessment strategy.

2.2.3 Learning assessment method

Definition:

Learning assessment method (learningAssessmentMethod) is a classification that identifies the way in which learning is to be assessed.

2.2.4 Learning assessment media

Definition:

Learning assessment media (learningAssessmentMedia) is a classification that identifies the delivery vehicles used to present assessment material or basic sensory stimulus presented to a student to conduct assessment.

2.2.5 Learning assessment strategy revision rationale

Definition:

Learning assessment strategy revision rationale (learningAssessmentStrategyRevisionRationale) is a description that gives more information on the justification for revising the learning assessment strategy definition.

2.2.6 Learning assessment strategy revision date

Definition:

Learning assessment strategy revision date (learningAssessmentStrategyRevisionDate) is a date that specifies when the learning assessment strategy definition was revised.

2.2.7 Learning assessment strategy revision status

Definition:

Learning assessment strategy revision status (learningAssessmentStrategyRevisionStatus) is a state that identifies the maturity of the learning assessment strategy revision.

Chapter 7.3.26

Units of functionality - UoF Instructional strategy

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Chap 7.3.24	Unit of functionality – UoF Learning objective

1 General

The instructional strategy UoF supports the identification of methodology that most effectively conveys the instructional content while motivating the trainee to become an active and independent learner.

2 UoF Instructional strategy

Key features of the UoF instructional strategy data model, (refer to Fig 1), are:

– It defines a library of instructional strategies which can be referred to from individual learning objectives (refer to Chap 7.3.24)

– An instructional strategy can only have one combination of method and media. If any given method can have multiple media alternatives then must there be one defined instructional strategy per combination.

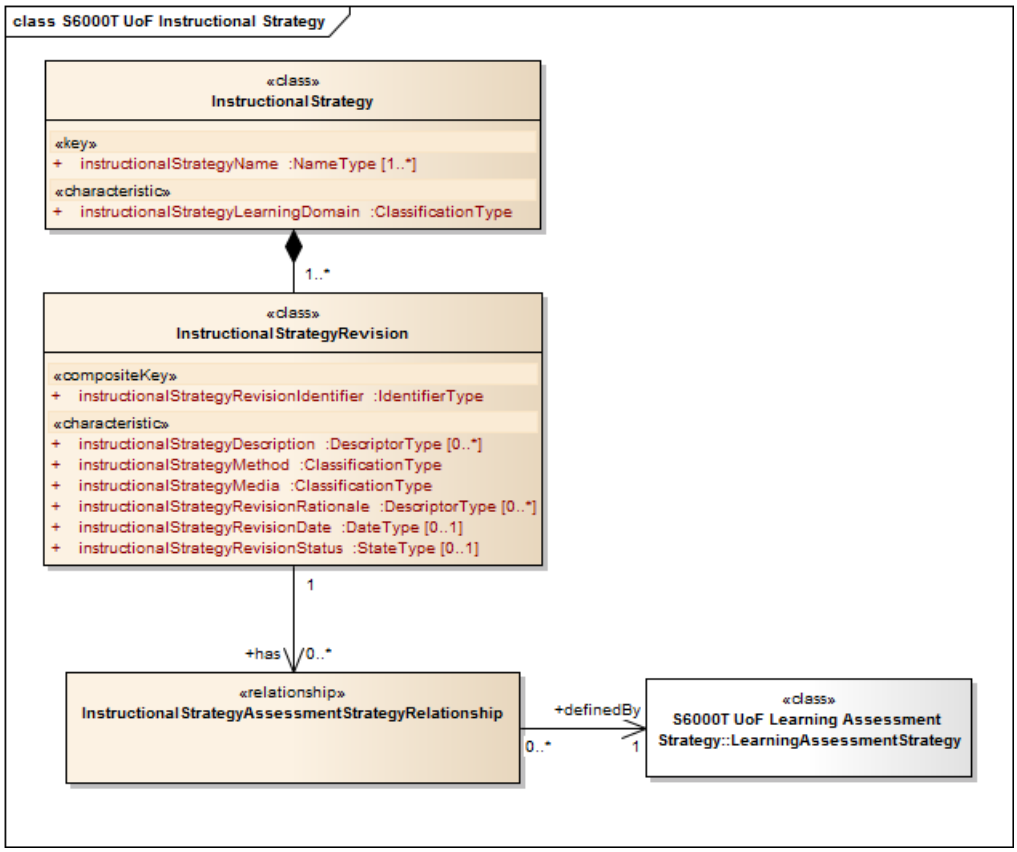

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Fig 1 UoF Instructional strategy

2.1 Instructional strategy

Definition:

Instructional strategy (InstructionalStrategy) represents techniques used to support the acquisition of new knowledge, skills and attitudes.

2.1.1 Instructional strategy name

Definition:

Instructional strategy name (instructionalStrategyName) is a name by which the instructional strategy is known and can be easily referenced.

2.1.2 Instructional strategy learning domain

Definition:

Instructional strategy learning domain (instructionalStrategyLearningDomain) is a classification that determines the learning aspect for which the instructional strategy is defined.

Example

– Affective
– Cognitive

- Psychomotor

2.2 Instructional strategy revision

Definition:

Instructional strategy revision (InstructionalStrategyRevision) represents an iteration applied to an instructional strategy.

2.2.1 Instructional strategy revision identifier

Definition:

Instructional strategy revision identifier (instructionalStrategyRevisonIdentifier) is an identifier that establishes a unique designator for an instructional strategy and to differentiate it from other instances of instructional strategy.

2.2.2 Instructional strategy description

Definition:

Instructional strategy description (instructionalStrategyDescription) is a description that gives more information on the defined instructional strategy.

2.2.3 Instructional strategy method

Definition:

Instructional strategy method (instructionalStrategyMethod) is a classification that identifies the way in which the learning is to be conducted.

2.2.4 Instructional strategy media

Definition:

Instructional strategy media (instructionalStrategyMedia) is a classification that identifies the delivery vehicles used to present instructional material or basic sensory stimulus presented to a student to induce learning.

Example

- Printed material
- Video
- Simulator

2.2.5 Instructional strategy revision rationale

Definition:

Instructional strategy revision rationale (instructionalStrategyRevisionRationale) is a description that gives more information on the justification for revising the instructional strategy definition.

2.2.6 Instructional strategy revision date

Definition:

Instructional strategy revision date (instructionalStrategyRevisionDate) is a date that specifies when the instructional strategy definition was revised.

2.2.7 Instructional strategy revision status

Definition:

Instructional strategy revision status (instructionalStrategyRevisionStatus) is a state that identifies the maturity of the instructional strategy revision.

2.3 Instructional strategy learning assessment strategy relationship

Definition:

Instructional strategy learning assessment strategy relationship (InstructionalStrategyLearningAssessmentStrategyRelationship) is a relationship that identifies the dependency between the defined instructional strategy and a given assessment strategy.

Chapter 7.3.27

Units of functionality - UoF Learning Resource

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References

Table 1 References

Chap No./Document No.	Title
None	

1 General

The learning resource UoF supports the identification learning resources which can be considered during training material development or can or must be used in the actual training.

2 UoF Learning resource

Key features of the UoF learning resource data model, (refer to Fig 1), are:

- The referred learning resource can either be an physical item or an information asset
- A learning resource can be associated with a learning assessment strategy, an instructional strategy and/or a specific learning objective.

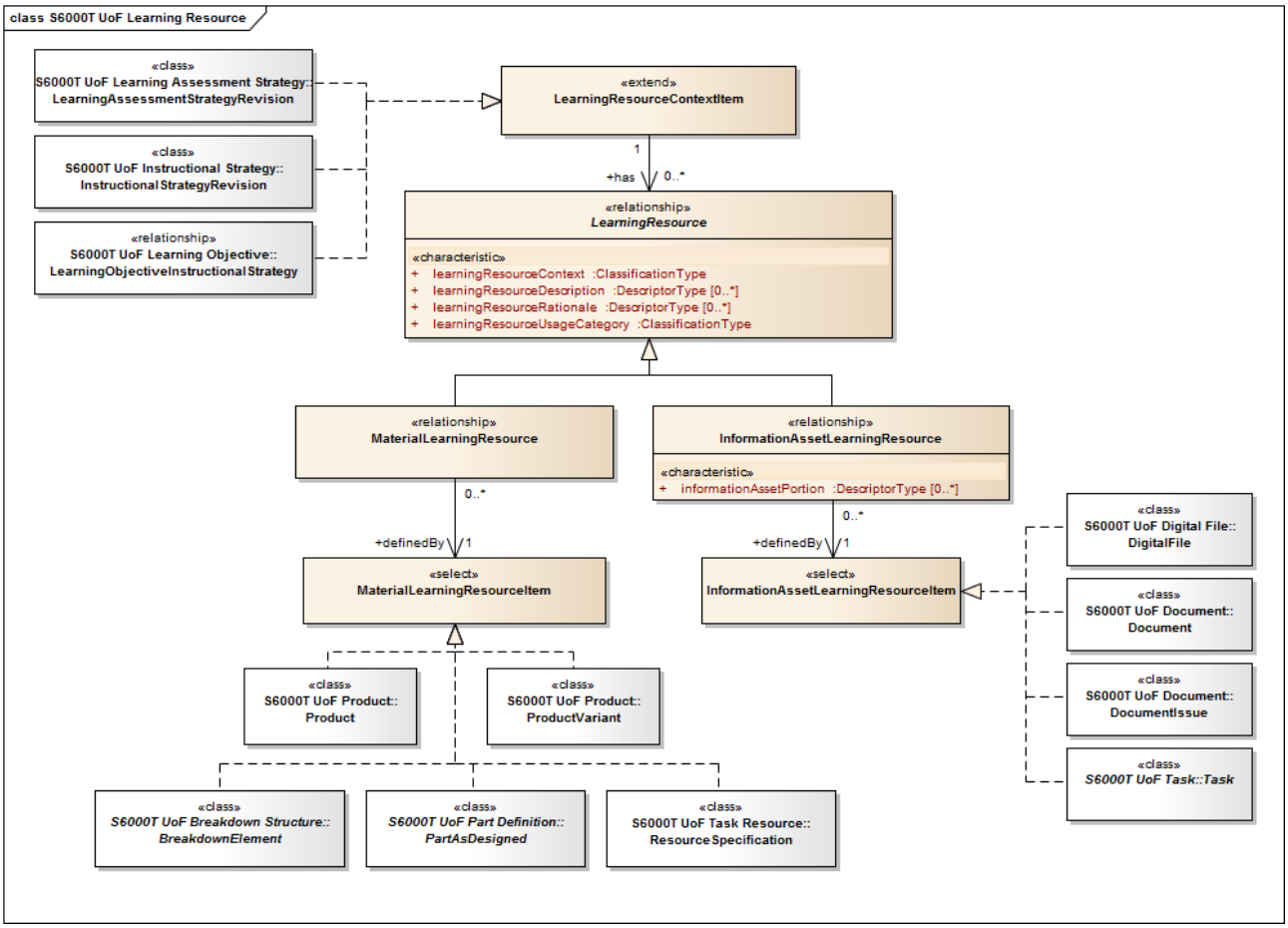

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Fig 1 UoF Learning resource

2.1 Information asset learning resource item

Definition:

Information asset learning resource item (InformationAssetLearningResourceItem) identifies items which can be selected as information assets.

2.2 Information asset learning resource

Definition:

Information asset learning resource (InformationAssetLearningResource) is a learning resource that exists in the form of information.

2.2.1 Information asset portion

Definition:

Information asset portion (informationAssetPortion) is a description that provides further information on which part of an information item that is of interest for the development of instructional and/or learning assessment material.

2.3 Learning resource

Definition:

Learning resource (LearningResource) defines a relationship between a learning resource context item and an item which can or must be considered during training material development or can or must be used in the actual training.

2.3.1 Learning resource context

Definition:

Learning resource context (learningResourceContext) is a classification that identifies the context in which the referenced resource is to be used.

Example

- Instructional resource
- Assessment resource
- Instructional and assessment resource

2.3.2 Learning resource description

Definition:

Learning resource description (learningResourceDescription) is a description that provides further information about the resource that can or must be considered during training material development or can or must be used in the actual training.

2.3.3 Learning resource rationale

Definition:

Learning resource rationale (learningResourceRationale) is a description that gives more information on the justification for identifying the resource as something which can or must be used in the development of the instructional and/or assessment material for the learning resource context item.

2.3.4 Learning resource usage category

Definition:

Learning resource usage category (learningResourceUsageCategory) is a classification that defines how the resource is to be regarded from the training material development perspective.

Example

- Hard requirement
- Resource example
- Resource idea
- Resource base

2.4 Learning resource context item

Definition:

Learning resource context item (LearningResourceContextItem) provides its associated data model to those classes that implement it.

2.5 Material learning resource

Definition:

Material learning resource (MaterialLearningResource) is a learning resource that exists in the form of physical item.

2.6 Material learning resource item

Definition:

Material learning resource item (MaterialLearningResourceItem) identifies items which can be considered during training material development or can or must be used in the actual training.

Chapter 7.3.28

Units of functionality - UoF Curriculum and course plan

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References

Table 1 References

Chap No./Document No.	Title
None	

1 General

The curriculum and course plan UoF supports the definition of curriculum and courses needed to bring the target audience up the knowledge, skills and attitudes level required for the Product in focus.

2 UoF curriculum and course plan

Key features of the UoF curriculum and course plan data model, (refer to Fig 1), are:

– A curriculum can include a set of courses

– The target audience can be associated with one or many curriculums

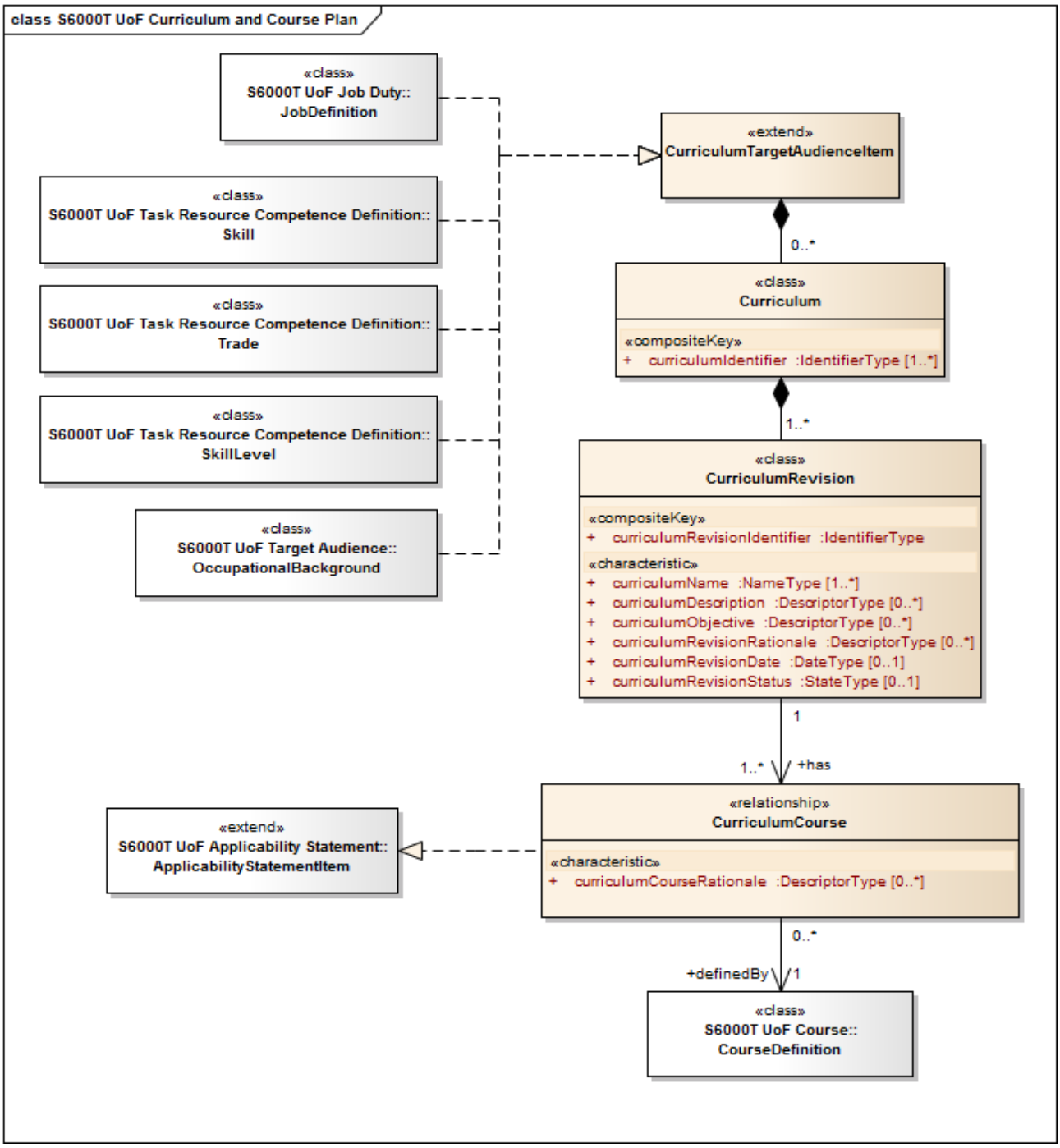

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Fig 1 UoF Curriculum and course plan

2.1 Curriculum

Definition:

Curriculum (Curriculum) defines the framework within which persons from specific target audience is to be trained to meet the requirements for a particular job or duty, or portions thereof.

2.1.1 Curriculum identifier
Definition:

Curriculum identifier (curriculumIdentifier) is an identifier that establishes a unique designator for a curriculum and to differentiate it from other instances of curriculum.

2.2 Curriculum course
Definition:

Curriculum course (CurriculumCourse) defines a relationship between a curriculum and a course that is included in the curriculum.

2.2.1 Curriculum course rationale
Definition:

Curriculum course rationale (curriculumCourseRationale) is a description that gives more information on the justification for including the course in the curriculum.

2.3 Curriculum revision
Definition:

Curriculum revision (CurriculumRevision) represents an iteration applied to a curriculum.

2.3.1 Curriculum revision identifier
Definition:

Curriculum revision identifier (curriculumRevisionIdentifier) is an identifier that establishes a unique designator for a curriculum revision and to differentiate it from other instances of curriculum revision.

2.3.2 Curriculum name
Definition:

Curriculum name (curriculumName) is a name by which the curriculum is known and can be easily referenced.

2.3.3 Curriculum description
Definition:

Curriculum description (curriculumDescription) is a description that gives more information on the defined curriculum.

2.3.4 Curriculum objective
Definition:

Curriculum objective (curriculumObjective) is a description that identifies what a trainee will have learnt after having undertaken the defined training courses.

2.3.5 Curriculum revision rationale
Definition:

Curriculum revision rationale (curriculumRevisionRationale) is a description that gives more information on the justification for revising the curriculum.

2.3.6 Curriculum revision date
Definition:

Curriculum revision date (curriculumRevisionDate) is a date that specifies when the curriculum was revised.

2.3.7 Curriculum revision status

Definition:

Curriculum revision status (curriculumRevisionStatus) is a state that identifies the maturity of the curriculum revision.

2.4 Curriculum target audience item

Definition:

Curriculum target audience item (CurriculumTargetAudienceItem) provides its associated data model to those classes that implement it.

Chapter 7.3.29

Units of functionality - UoF Course

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References

Table 1 References

Chap No./Document No.	Title
Chap 7.3.24	Learning objective

1 General

The course UoF supports the sequencing of learning objectives and to document clusters and orders of the learning objectives into an effective instructional sequence using a course structure.

2 UoF Course

Key features of the UoF course data model, (refer to Fig 1), are:

- A course can be subdivided into a hierarchical structure of course elements
- A course can be associated with other courses
- A course element can be associated with one or many learning objectives which are covered by, or defined for, the course element (refer to Chap 7.3.24).

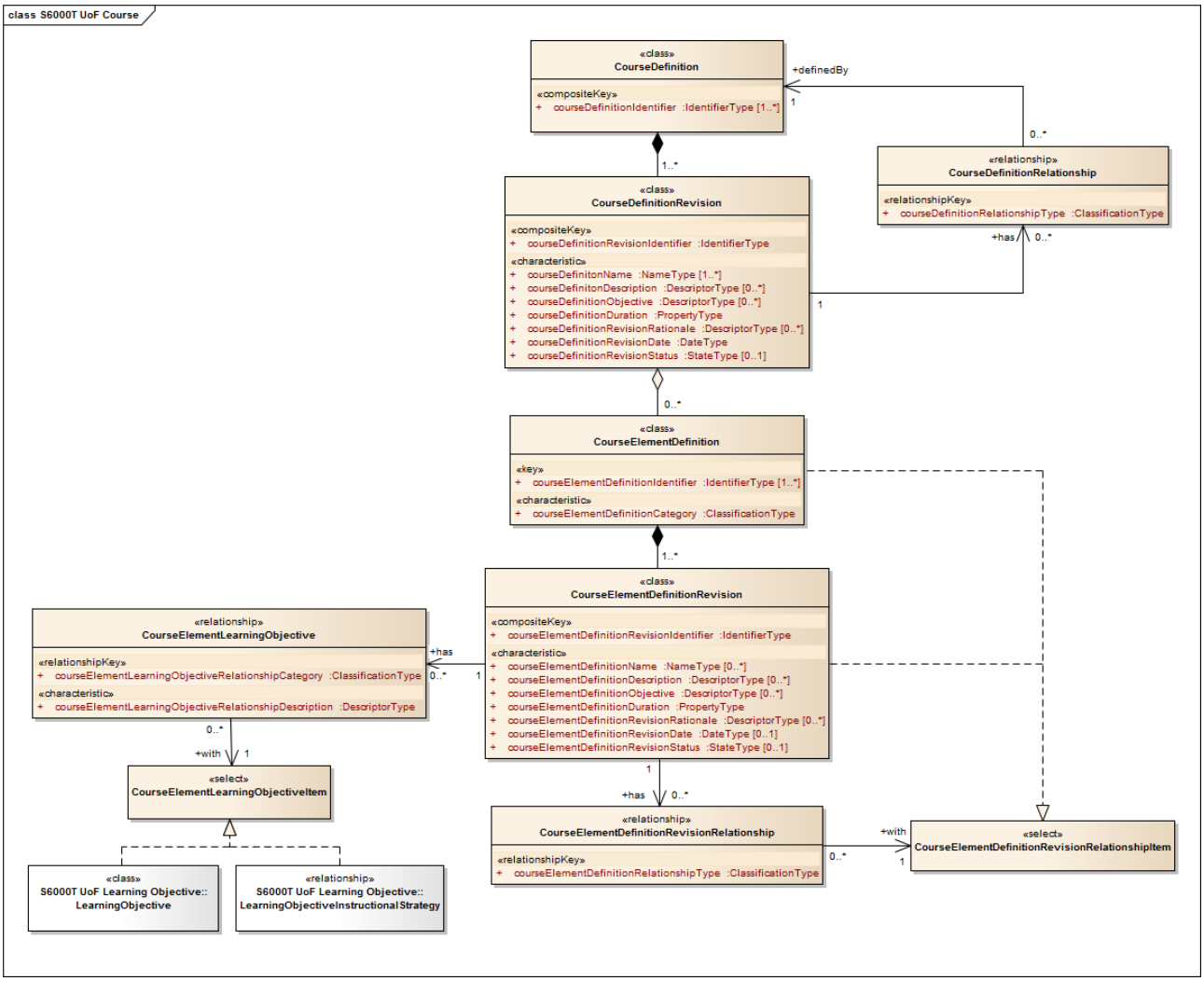

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Fig 1 UoF Course

2.1 Course definition

Definition:

Course definition (CourseDefinition) defines a combination of course elements with the objective that a trainee is to learn knowledge, skills and attitude to meet performance requirements for a particular aspect of a job or duty.

2.1.1 Course definition identifier

Definition:

Course definition identifier (courseDefinitionIdentifier) is an identifier that establishes a unique designator for a course definition and to differentiate it from other instances of course definition.

2.2 Course definition relationship

Definition:

Course definition relationship (CourseDefinitionRelationship) is a relationship where one course definition relates to another course definition.

2.2.1 Course definition relationship type
Definition:

Course definition relationship type (courseDefinitionRelationshipType) is a classification that identifies the meaning of the established relationship.

Example

- Enabling course which defines an hierarchical dependency
- Prerequisite course which defines a sequential dependency

2.3 Course definition revision
Definition:

Course definition revision (CourseDefinitionRevision) represents an iteration applied to a course definition.

2.3.1 Course definition revision identifier
Definition:

Course definition revision identifier (courseDefinitionRevisionIdentifier) is an identifier that establishes a unique designator for a course definition revision and to differentiate it from other instances of course definition revision.

2.3.2 Course definition name
Definition:

Course definition name (courseDefinitionName) is a name by which the course definition is known and can be easily referenced.

2.3.3 Course definition description
Definition:

Course definition description (courseDefinitionDescription) is a description that gives more information on the defined course.

2.3.4 Course definition objective
Definition:

Course definition objective (courseDefinitionObjective) is a description that defines what a trainee will have learnt after having undertaken the defined training course.

2.3.5 Course definition duration
Definition:

Course definition duration (courseDefinitionDuration) is a property that specifies the estimated calendar time required for undergo the course and its associated assessments.

2.3.6 Course definition revision rationale
Definition:

Course definition revision rationale (courseDefinitionRevisionRationale) is a description that gives more information on the justification for revising the course definition.

2.3.7 Course definition revision date
Definition:

Course definition revision date (courseDefinitionRevisionDate) is a date that specifies when the course definition was revised.

2.3.8 Course definition revision status
Definition:

Course definition revision status (courseDefinitionRevisionStatus) is a state that identifies the maturity of the course definition revision.

2.4 Course element definition
Definition:

Course element definition (CourseElementDefinition) defines a partition of knowledge, skills and attitude that a trainee is to learn to meet requirements for a particular subject.

2.4.1 Course element definition identifier
Definition:

Course element definition identifier (courseElementDefinitionIdentifier) is an identifier that establishes a unique designator for a course element definition and to differentiate it from other instances of course element definition.

2.4.2 Course element definition category
Definition:

Course element definition category (courseElementDefinitionCategory) is a classification that identifies further specialization for the course element and to position the course element in the context of a course structure.

Example

- Course unit
- Course module
- Course lesson
- Course assessment

2.5 Course element definition revision
Definition:

Course element definition revision (CourseElementDefinitionRevision) represents an iteration applied to a course element definition.

2.5.1 Course element definition revision identifier
Definition:

Course element definition revision identifier (courseElementDefinitionRevisionIdentifier) is an identifier that establishes a unique designator for a course element definition revision and to differentiate it from other instances of course element definition revision.

2.5.2 Course element definition name
Definition:

Course element definition name (courseElementDefinitionName) is a name by which the course element definition is known and can be easily referenced.

2.5.3 Course element definition description
Definition:

Course element definition description (courseElementDefinitionDescription) is a description that gives more information on the defined course element.

2.5.4 Course element definition objective
Definition:

Course element definition objective (courseElementDefinitionObjective) is a description that defines what a trainee will be expected to have learnt after having undertaken the defined training course element.

2.5.5 Course element definition duration
Definition:

Course element definition duration (courseElementDefinitionDuration) is a property that specifies the estimated calendar time required for undergo the course element and/or its associated assessments.

2.5.6 Course element definition revision rationale
Definition:

Course element definition revision rationale (courseElementDefinitionRevisionRationale) is a description that gives more information on the justification for revising the course element definition.

2.5.7 Course element definition revision date
Definition:

Course element definition revision date (courseElementDefinitionRevisionDate) is a date that specifies when the course element definition was revised.

2.5.8 Course element definition revision status
Definition:

Course element definition revision status (courseElementDefinitionRevisionStatus) is a state that identifies the maturity of the course element definition revision.

2.6 Course element definition revision relationship
Definition:

Course element definition revision relationship (CourseElementDefinitionRevisionRelationship) is a relationship where one course element definition relates to another course element definition or course element definition revision.

2.6.1 Course element definition relationship type
Definition:

Course element definition relationship type (courseElementDefinitionRelationshipType) is a classification that identifies the meaning of the established relationship.

Example

- Prerequisite course element which defines a sequential dependency
- Child course element which defines a hierarchical dependency

2.7 Course element definition revision relationship item
Definition:

Course element definition revision relationship item (CourseElementDefinitionRevisionRelationshipItem) identifies items which can be selected as course elements.

2.8 Course element learning objective
Definition:

Course element learning objective (CourseElementLearningObjective) is a relationship where the course element definition relates to a learning objective that is to be covered by the course element (refer to Chap 7.3.24).

2.8.1 Course element learning objective relationship category
Definition:

Course element learning objective relationship category (courseElementLearningObjectiveRelationshipCategory) is a classification that specifies the purpose for the relationship.

Example

- Learning objective defined for the course element
- Learning objective defined to address a knowledge, skills or attitude gap

2.8.2 Course element learning objective relationship description
Definition:

Course element learning objective relationship description (courseElementLearningObjectiveRelationshipDescription) is a description that gives more information on purpose for the referring to the learning objective.

2.9 Course element learning objective item
Definition:

Course element learning objective item (CourseElementLearningObjectiveItem) identifies items which can be covered by the course element.

Chapter 7.3.30

Units of functionality - UoF Product usage context

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Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The Product usage context UoF defines the context in which the defined Product(s) and Product variant(s) are to be operated and maintained.

2 UoF Product usage context

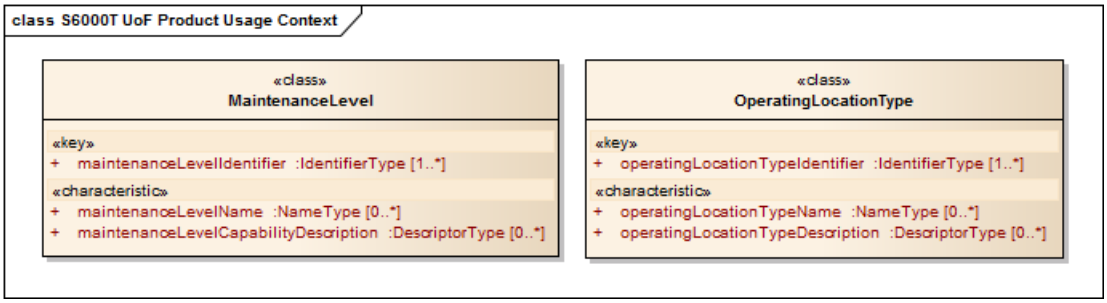

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Fig 1 UoF Product usage context

2.1 Maintenance level

Definition:

Maintenance level (MaintenanceLevel) represents the definition of a set of maintenance capabilities which will be made available to support a defined Product.

Note

Maintenance level might be established either by a single organization or be distributed between a set of organizations.

Reference:

– SX001G

2.1.1 Maintenance level identifier

Definition:

Maintenance level identifier (maintenanceLevelIdentifier) is an identifier that establishes a unique designator for a maintenance level and to differentiate it from other instances of maintenance level.

Reference:

– SX001G

2.1.2 Maintenance level name

Definition:

Maintenance level name (maintenanceLevelName) is a name by which the maintenance level is known and can be easily referenced.

Reference:

– SX001G

2.1.3 Maintenance level capability description

Definition:

Maintenance level capability description (maintenanceLevelCapabilityDescription) is a description that gives more information on the ability to perform maintenance based on availability of support resources and environmental conditions.

Note
The defined abilities are the basis in determining the functions to be accomplished at the defined maintenance level.

Note
Support resources include eg, personnel and skills, special facilities and support equipment.

Reference:

– SX001G

2.2 Operating location type

Definition:

Operating location type (OperatingLocationType) represents the definition of the nature of the environment in which a product will be operated.

Reference:

– SX001G

2.2.1 Operating location type identifier

Definition:

Operating location type identifier (operatingLocationTypeIdentifier) is an identifier that establishes a unique designator for an operating location type and to differentiate it from other instances of operating location type.

Reference:

– SX001G

2.2.2 Operating location type name

Definition:

Operating location type name (operatingLocationTypeName) is a name by which the operating location type is known and can be easily referenced.

Reference:

– SX001G

2.2.3 Operating location type description

Definition:

Operating location type description (operatingLocationTypeDescription) is a description that gives more information on the operating location type, including environmental conditions to be expected.

Reference:

– SX001G

Chapter 7.3.31

Units of functionality - UoF Change information

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References

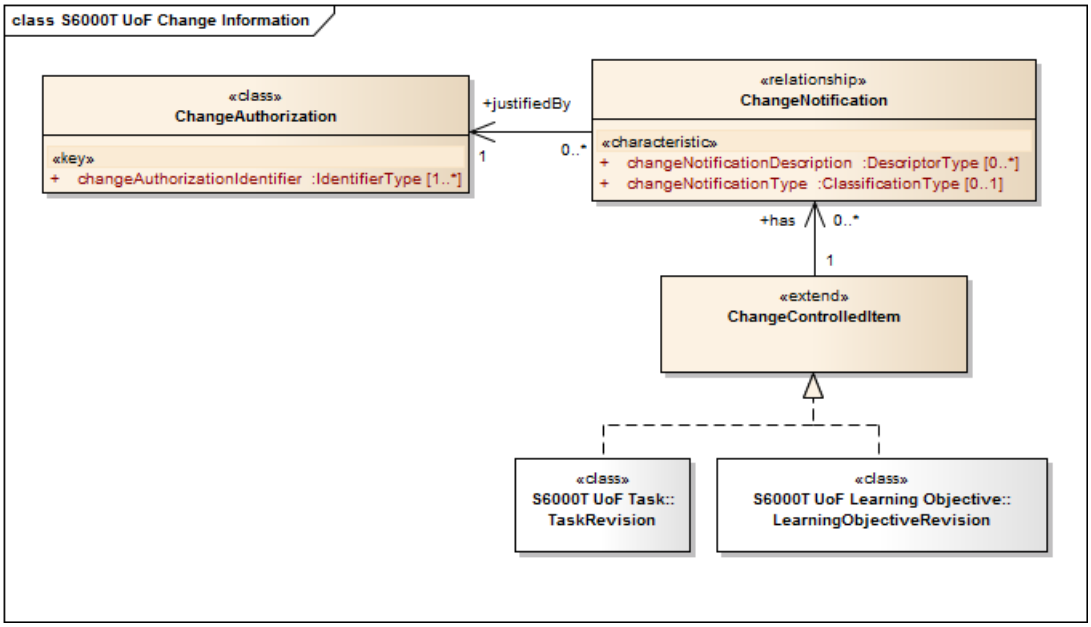
Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The change information UoF provides the capability to identify that an item has been affected by a change authorization.

2 UoF Change information



ICN-S6000T-B6865-00057-001-01

Fig 1 UoF Change information

2.1 Change authorization

Definition:

Change authorization (ChangeAuthorization) represents the record of the permission to modify product design, its procedures and/or associated product support data.

Reference:

– SX001G

2.1.1 Change authorization identifier

Definition:

Change authorization identifier (changeAuthorizationIdentifier) is an identifier that establishes a unique designator for an change authorization and allows it to be differentiated from other instances of change authorization.

Reference:

– SX001G

2.2 Change controlled item

Definition:

Change controlled item (ChangeControlledItem) provides its associated data model to those classes that can be affected by a change authorization.

Reference:

– SX001G

2.3 Change notification

Definition:

Change notification (ChangeNotification) is a relationship that identifies an item changed due to the associated change authorization.

Reference:

– SX001G

2.3.1 Change notification description

Definition:

Change notification description (changeNotificationDescription) is a description providing a summary of affects made to the related item due to a change authorization.

Reference:

– SX001G

2.3.2 Change notification type

Definition:

Change notification type (changeNotificationType) is a classification that identifies a change effect as belonging to a group of change effects sharing a particular characteristic or set of characteristics.

Example

– Markup
– Technical
– Applicability
– Editorial

Reference:

– SX001G

Chapter 7.3.32

Units of functionality - UoF Document

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References

Table 1 References

Chap No./Document No.	Title
SX001G	Glossary for the S-Series ILS specifications

1 General

The document UoF provides the capability to identify a physical document or a digital file and their associated metadata.

2 UoF Document

Key features of the UoF document data model, (refer to Fig 1), are:

- Any class in the data model can make a reference to a document, a specific document issue or portion thereof
- A document being referenced can either be defined to be a document in general or be a document that is published in the format of S1000D data modules or publication modules

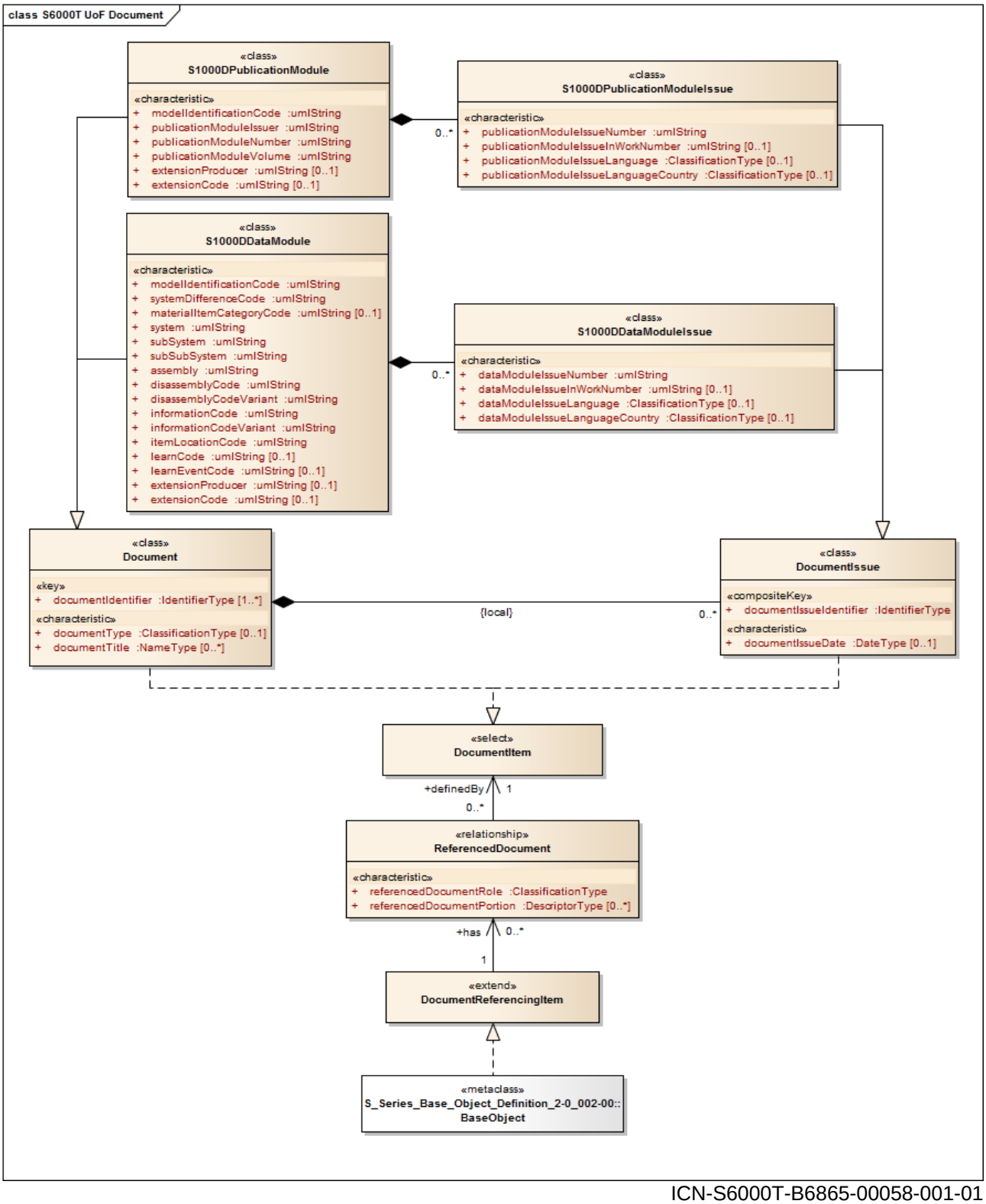

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Fig 1 UoF Document

2.1 Document

Definition:

Document represents a compiled set of information that serves a purpose.

Example

- Drawing
- Report
- Manual

Reference:

- SX001G

2.1.1 Document identifier

Definition:

Document identifier (documentIdentifier) is an identifier that establishes a unique designator for a document and to differentiate it from other instances of document.

Reference:

- SX001G

2.1.2 Document type

Definition:

Document type (documentType) is a classification that identifies the category of the document.

Example

- Standard
- Specification
- Technical report
- Drawing

Reference:

- SX001G

2.1.3 Document title

Definition:

Document title (documentTitle) is a name by which the document is known and can be easily referenced.

Reference:

- SX001G

2.2 Document issue

Definition:

Document issue (DocumentIssue) represents a specific release of a Document.

Reference:

– SX001G

2.2.1 Document issue identifier

Definition:

Document issue identifier (DocumentIssueIdentifier) is an identifier that establishes a unique designator for a document issue and to differentiate it from other instances of document issue.

Reference:

– SX001G

2.2.2 Document issue date

Definition:

Document issue date (documentIssueDate) is a date that defines when a specific issue of a document was released.

Reference:

– SX001G

2.3 Document item

Definition:

Document item (DocumentItem) identifies items which can be selected as Document.

Reference:

– SX001G

2.4 Document referencing item

Definition:

Document referencing item (DocumentReferencingItem) provides its associated data model to those classes that implement it.

Reference:

– SX001G

2.5 Referenced document

Definition:

Referenced document (ReferencedDocument) is a relationship where one document referencing item relates to a document item.

Reference:

– SX001G

2.5.1 Referenced document role
Definition:

Referenced document role (referencedDocumentRole) is a classification that identifies the function of the established relationship.

Example

- Verification
- Directive
- Source
- Document reference
- Drawing reference
- Design document reference

Reference:

- SX001G

2.5.2 Referenced document portion
Definition:

Referenced document portion (referencedDocumentPortion) is a description that provides a reference to the portion of a document which is of interest in a specific usage.

Reference:

- SX001G

2.6 S1000D data module
Definition:

S1000D data module (S1000DDataModule) is a document that identifies a document written in accordance with an S1000D schema.

Reference:

- SX001G

2.6.1 Model identification code
Definition:

Model identification code (modelIdentificationCode) is a string of characters that represents the model identification code attribute of the data module code.

Note

A model identification code must be created in accordance with the rules defined in S1000D.

Reference:

- SX001G

2.6.2 System difference code
Definition:

System difference code (systemDifferenceCode) is a string of characters that represents the system difference code attribute of the data module code.

Note
A system difference code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.3 Material item category code
Definition:

Material item category code (materialItemCategoryCode) is a string of characters that represents the material item category code attribute of the data module code.

Note
A material item category code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.4 System
Definition:

System (system) is a string of characters that represents the system attribute of the data module code.

Note
A system must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.5 Subsystem
Definition:

Subsystem (subSystem) is a string of characters that represents the subsystem attribute of the data module code.

Note
A subsystem must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.6 Sub-subsystem
Definition:

Sub-subsystem (subSubSystem) is a string of characters that represents the sub-subsystem attribute of the data module code.

Note
A sub-subsystem must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.7 Assembly
Definition:

Assembly (assembly) is a string of characters that represents the unit or assembly attribute of the data module code.

Reference:

– SX001G

2.6.8 Disassembly code
Definition:

Disassembly code (disassemblyCode) is a string of characters that represents the disassembly code attribute of the data module code.

Note
A disassembly code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.9 Disassembly code variant
Definition:

Disassembly code variant (disassemblyCodeVariant) is a string of characters that represents the disassembly code variant attribute of the data module code.

Note
A disassembly code variant must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.10 Information code
Definition:

Information code (informationCode) is a string of characters that represents the information code attribute of the data module code.

Note
An information code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.11 Information code variant
Definition:

Information code variant (informationCodeVariant) is a string of characters that represents the information code variant attribute of the data module code.

Note

An information code variant must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.12 Item location code

Definition:

Item location code (itemLocationCode) is a string of characters that represents the item location code attribute of the data module code.

Note

An item location code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.13 Learn code

Definition:

Learn code (learnCode) is a string of characters that represents the learn code attribute of the data module code.

Note

A learn code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.14 Learn event code

Definition:

Learn event code (learnEventCode) is a string of characters that represents the learn event code attribute of the data module code.

Note

A learn event code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.15 Extension producer

Definition:

Extension producer (extensionProducer) is a string of characters used to identify the organization providing the customized data module.

Note

An extension producer must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.6.16 Extension code

Definition:

Extension code (extensionProducer) is a string of characters used to identify the organization receiving the customized data module.

Note

An extension code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.7 S1000D data module issue

Definition:

S1000D data module issue (S1000DDataModuleIssue) is a document issue that identifies a specific issue of a data module produced in accordance with S1000D.

Reference:

– SX001G

2.7.1 Data module issue number

Definition:

Data module issue number (dataModuleIssueNumber) is a string of characters used to identify the release number of the S1000D data module issue.

Note

A data module issue number must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.7.2 Data module issue in work number

Definition:

Data module issue in work number (dataModuleIssueInWorkNumber) is a string of characters used for monitoring and control of intermediate drafts of S1000D data module issue.

Note

A data module issue in work number must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.7.3 Data module issue language

Definition:

Data module issue language (dataModuleIssueLanguage) is a classification that identifies the language used to produce the content of the S1000D data module issue.

Note

A data module issue language must be created in accordance with the rules defined in S1000D.

Reference:

- SX001G

2.7.4 Data module issue language country

Definition:

Data module issue language country (dataModuleIssueLanguageCountry) is a classification that identifies the country where the language, identified by data module issue language, is spoken.

Note

A data module issue language country must be created in accordance with the rules defined in S1000D.

Reference:

- SX001G

2.8 S1000D publication module

Definition:

S1000D publication module (S1000DPublicationModule) is a document that identifies a publication published in accordance with S1000D.

Reference:

- SX001G

2.8.1 Model identification code

Definition:

Model identification code (modelIdentificationCode) is a string of characters that represents the model identification code attribute of the publication module code.

Note

A model identification code must be created in accordance with the rules defined in S1000D.

Reference:

- SX001G

2.8.2 Publication module issuer

Definition:

Publication module issuer (publicationModuleIssuer) is a string of characters that represents the issuing authority attribute of the publication module code.

Note

A publication module issuer must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.8.3 Publication module number

Definition:

Publication module number (publicationModuleNumber) is a string of characters that represents the number of the publication module attribute of the publication module code.

Note

A publication module number must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.8.4 Publication module volume

Definition:

Publication module volume (publicationModuleVolume) is a string of characters that represents the volume of the publication attribute of the publication module code.

Note

A publication module volume must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.8.5 Extension producer

Definition:

Extension producer (extensionProducer) is a string of characters used to identify the organization providing the customized publication module.

Note

An extension producer must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.8.6 Extension code

Definition:

Extension code (extensionProducer) is a string of characters used to identify the organization receiving the customized publication module.

Note

An extension code must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.9 S1000D publication module issue

Definition:

S1000D publication module issue (S1000DPublicationModuleIssue) is a document issue that identifies a specific issue of a publication module published in accordance with S1000D.

Reference:

– SX001G

2.9.1 Publication module issue number

Definition:

Publication module issue number (publicationModuleIssueNumber) is a string of characters used to identify the release number of the S1000D publication module issue.

Note

A publication module issue number must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.9.2 Publication module issue in work number

Definition:

Publication module issue in work number (publicationModuleIssueInWorkNumber) is a string of characters used for monitoring and control of intermediate drafts of S1000D publication module issue.

Note

A publication module issue in work number must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.9.3 Publication module issue language

Definition:

Publication module issue language (publicationModuleIssueLanguage) is a classification that identifies the language used to produce the content of the S1000D publication module issue.

Note

A publication module issue language must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

2.9.4 Publication module issue language country
Definition:

Publication module issue language country (publicationModuleIssueLanguageCountry) is a classification that identifies the country where the language, identified by publication module issue language, is spoken.

Note

A publication module issue language country must be created in accordance with the rules defined in S1000D.

Reference:

– SX001G

Chapter 7.3.33

Units of functionality - UoF Digital file

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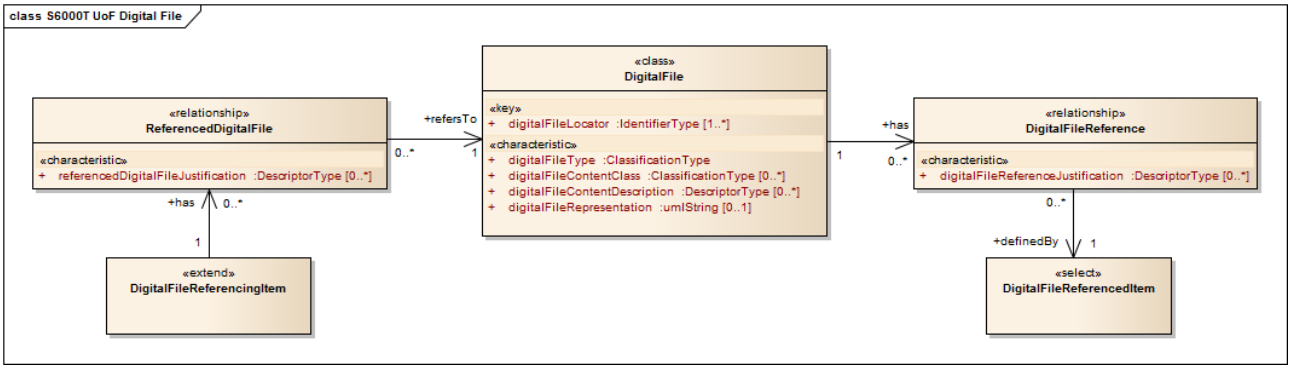
SX001G	Glossary for the S-Series ILS specifications

1 General

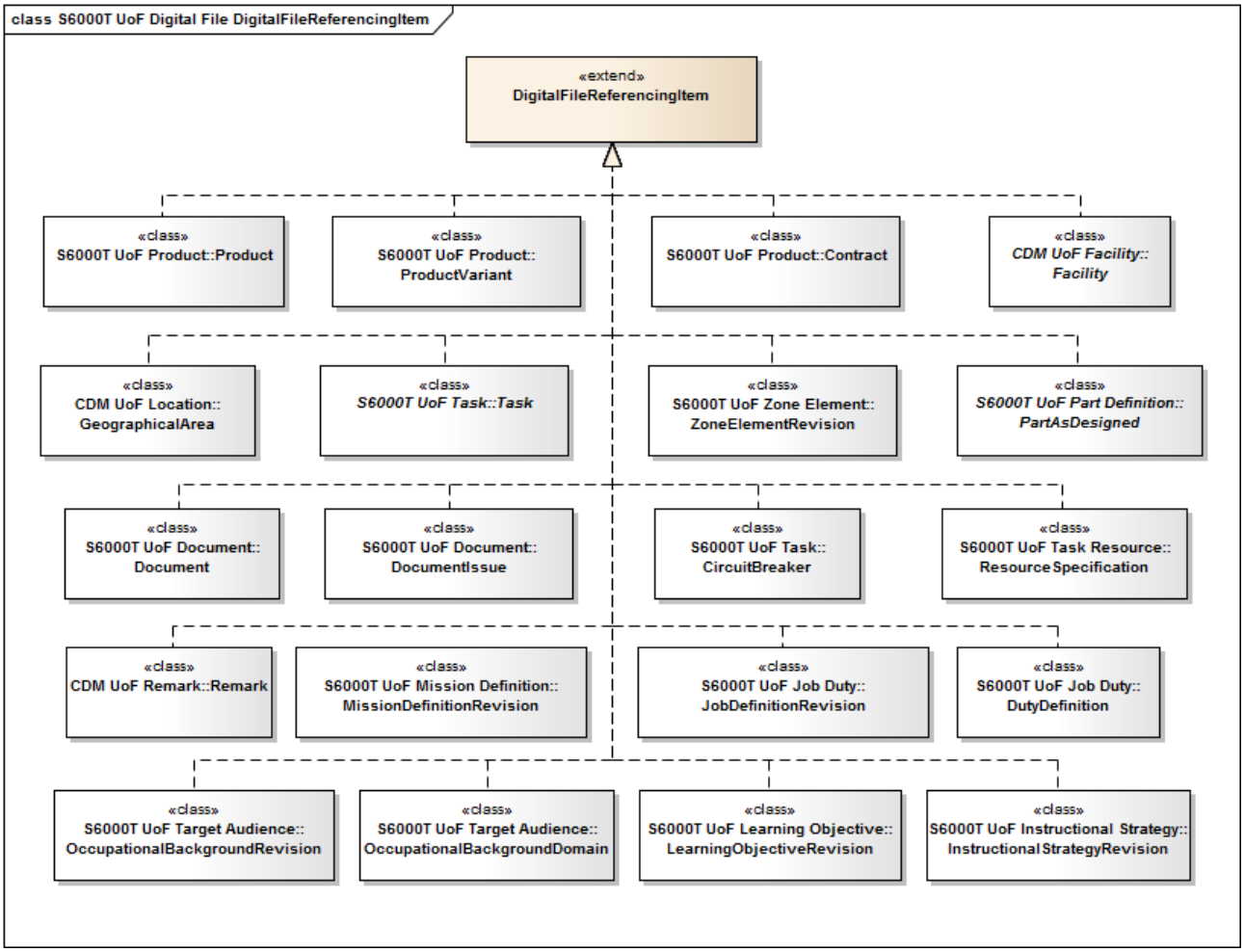
The digital file UoF provides the capability to both refer to a digital file from the exchanged data as well as to exchange the digital file itself.

2 UoF Digital file



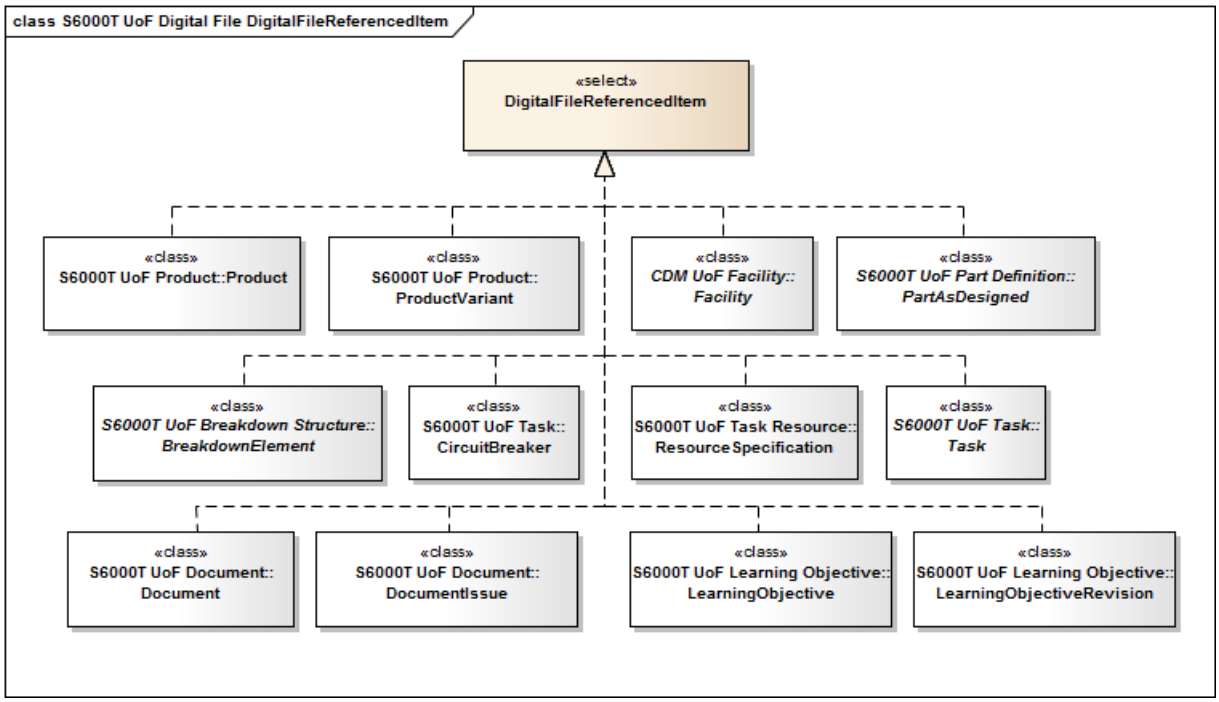
ICN-S6000T-B6865-00059-001-01

Fig 1 UoF Digital file



ICN-S6000T-B6865-00060-001-01

Fig 2 UoF Digital file - Referencing items



ICN-S6000T-B6865-00061-001-01

Fig 3 UoF Digital file - Referenced item

2.1 Digital file

Definition:

Digital file (DigitalFile) provides the identification of data stored on an electronic device that can be interpreted by a computer.

Reference:

– SX001G

2.1.1 Digital file locator

Definition:

Digital file locator (digitalFileLocator) is an identifier that establishes a unique designator for a digital file used to locate and identify a digital file and to differentiate it from other instances of digital file.

Reference:

– SX001G

2.1.2 Digital file type

Definition:

Digital file type (digitalFileType) is a classification that specifies the format of the data within the digital file.

Note

Typically, the file name extension in Microsoft Windows.

Example

- DOC (Microsoft Word Format)
- PDF (Portable Document Format)

Reference:

- SX001G

2.1.3 Digital file content class

Definition:

Digital file content class (digitalFileContentClass) is a classification that determines the meaning of the information within the digital file.

Example

- Movie
- Audio
- Drawing
- Courseware
- Problem report
- Publication

Reference:

- SX001G

2.1.4 Digital file content description

Definition:

Digital file content description (digitalFileContentDescription) is a phrase that gives more details about the information contained in the digital file.

Reference:

- SX001G

2.1.5 Digital file representation

Definition:

Digital file representation (digitalFileRepresentation) is a string of characters representing the content of the digital file.

Example

- A uuencoded ASCII file representing a binary source file.

Reference:

- SX001G

2.2 Digital file reference

Definition:

Digital file reference (DigitalFileReference) is a relationship that allows a digital file to reference an item.

Reference:

– SX001G

2.2.1 Digital file reference justification

Definition:

Digital file reference justification (digitalFileReferenceJustification) is a phrase that provides more on information on the reason why the digital file referenced item is referenced.

Example

– Crack discovered on breakdown element ABC-123

Reference:

– SX001G

2.3 Digital file referenced item

Definition:

Digital file referenced item (DigitalFileReferencedItem) identifies an item which in some way is associated with the content of digital file.

Reference:

– SX001G

2.4 Digital file referencing item

Definition:

Digital file referencing item (DigitalFileReferencingItem) provides its associated data model to those classes that implement it.

Reference:

– SX001G

2.5 Referenced digital file

Definition:

Referenced digital file (ReferencedDigitalFile) is a relationship that allows an item to refer to a digital file.

Reference:

– SX001G

2.5.1 Referenced digital file justification

Definition:

Referenced digital file justification (referencedDigitalFileJustification) is a phrase that provides more on information on the reason why the digital file is referenced.

Example

– Video showing the task execution

Reference:

– SX001G

Chapter 7.3.34

Units of functionality - UoF Organization

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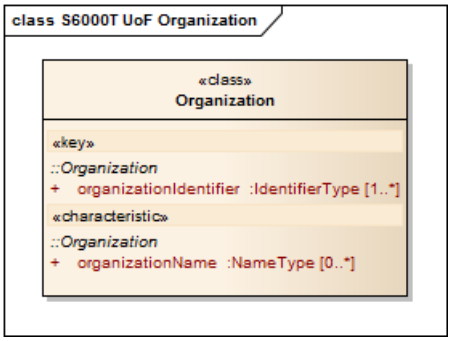
SX001G	Glossary for the S-Series ILS specifications

1 General

The organization UoF provides the capability to identify organizations.

2 UoF Organization



ICN-S6000T-B6865-00062-001-01

Fig 1 UoF Organization

2.1 Organization

Definition:

Organization represents an administrative structure with a particular purpose belonging to a legal entity.

Example

- International agency
- Department
- Government department
- Company

Reference:

- SX001G

2.1.1 Organization identifier

Definition:

Organization identifier (organizationIdentifier) is an identifier that establishes a unique designator for an Organization and allows it to be differentiated from other instances of Organization.

Example

- CAGE

Reference:

- SX001G

2.1.2 Organization name

Definition:

Organization name (organizationName) is a name by which the Organization is known and can be easily referenced.

Reference:

- SX001G

Chapter 7.3.35

Units of functionality - UoF Security classification

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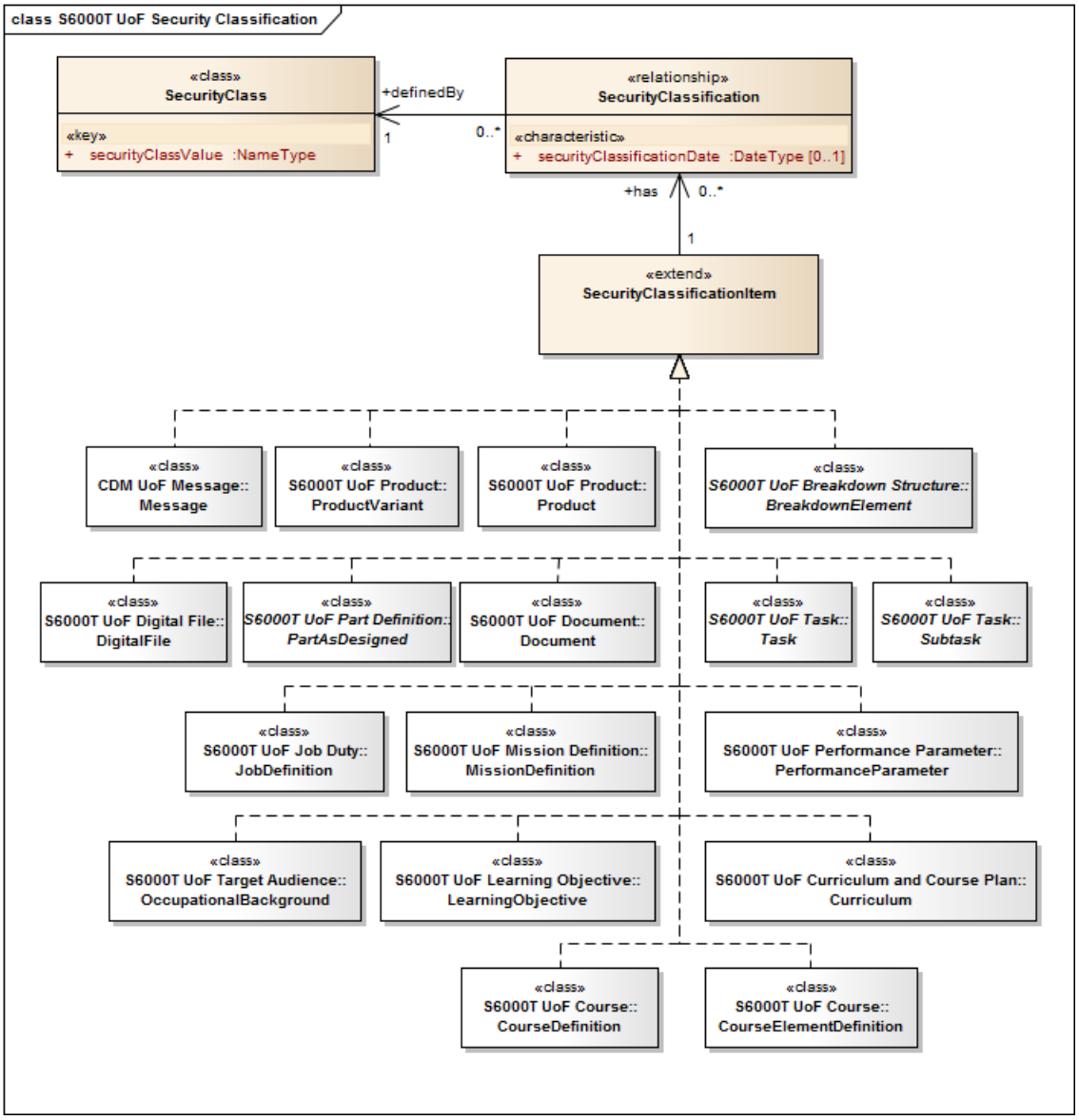
SX001G	Glossary for the S-Series ILS specifications

1 General

The security classification UoF provides the capability to assign security classifications to objects that need special handling for protection against unauthorized access or distribution.

2 UoF Security classification



ICN-S6000T-B6865-00063-001-01

Fig 1 UoF Security classification

2.1 Security class

Definition:

Security class (SecurityClass) identifies a level of confidentiality which can be used to protect something against unauthorized access.

Reference:

– SX001G

2.1.1 Security class value

Definition:

Security class value (securityClassValue) is a name that defines the level of confidentiality.

Example

- Unclassified
- Restricted
- Top Secret
- Secret
- Confidential
- Company Confidential

Reference:

- SX001G

2.2 Security classification

Definition:

Security classification (SecurityClassification) is a relationship that associates a given security class with the item that must be protected against unauthorized access or distribution.

Reference:

- SX001G

2.2.1 Security classification date

Definition:

Security classification date (securityClassificationDate) is a date when the security classification is declared.

Reference:

- SX001G

2.3 Security classification item

Definition:

Security classification item (SecurityClassificationItem) provides its associated data model to those classes that implement it.

Reference:

- SX001G

Chapter 7.3.36

Units of functionality - UoF Remark

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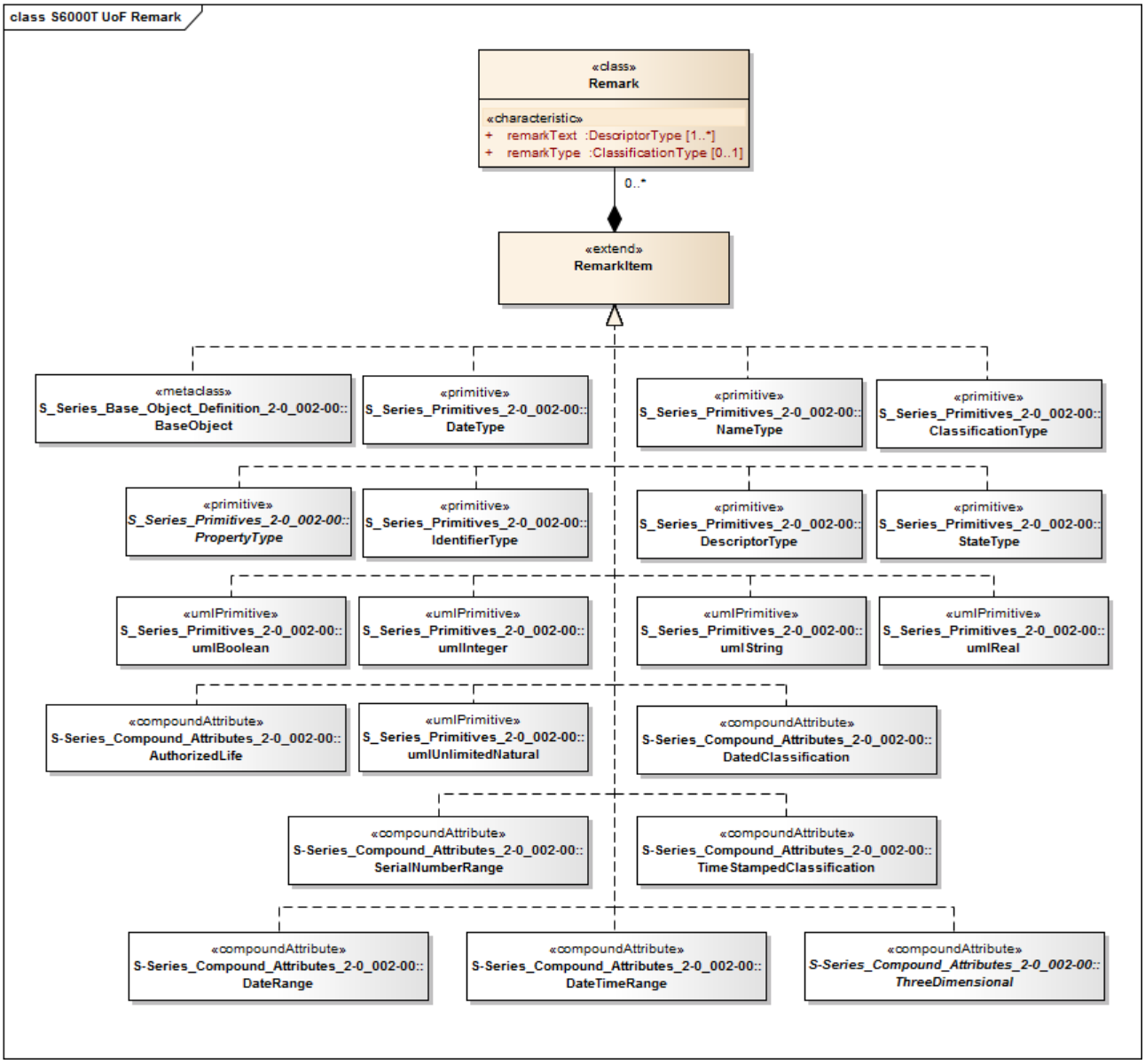
SX001G	Glossary for the S-Series ILS specifications

1 General

The remark UoF provides the capability to annotate additional information relevant to the associated item which is not part of the immediate subject.

2 UoF Remark



ICN-S6000T-B6865-00064-001-01

Fig 1 UoF Remark

2.1 Remark

Definition:

Remark provides additional information about the associated item.

Note

A remark may be a personal opinion (“I prefer more onions in my soup”) or it may be a technical fact (“The manufacturer recommends heating the soup to 45 degrees”).

Reference:

– SX001G

2.1.1 Remark text
Definition:

Remark text (remarkText) is a description that provides the text of the additional information.

Reference:

- SX001G

2.1.2 Remark type
Definition:

Remark type (remarkType) is a classification that defines the purpose of the remark.

Example

- Internal note
- Technical fact

Reference:

- SX001G

2.2 Remark item
Definition:

Remark item (RemarkItem) provides its associated data model to those classes that implement it.

Reference:

- SX001G

Chapter 7.3.37

Units of functionality - UoF Applicability statement

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1 General

The applicability statement UoF provides the capability to define the situation or situations under which related items are valid.

2 UoF Applicability statement

Key features of the UoF applicability statement data model (Refer to Fig 1 and Fig 2) are:

- It consists of three major components:
  - the identification and definition of the applicability statement
  - the definition of the evaluation expression (evaluation criteria)
  - the identification of the data that is to be asserted
- Applicability statement does not require an evaluation criteria but can contain only a textual expression
- Evaluation criteria is always computer interpretable (ie, it can be calculated to be TRUE or FALSE)
- Evaluation criteria must be defined as either:
  - Logical AND
  - Logical OR
  - Logical XOR
  - Logical NOT
  - Evaluation by nested applicability statement
  - Evaluation by assertion of class instance
  - Evaluation by assertion of serialized items
  - Evaluation by assertion of condition
- The value to be asserted can either be an existing value defined by other classes in the data model (evaluation by assertion of class instance or evaluation by assertion of serialized items) or be an additional condition defined by a condition type along with a set of values (condition type assert member)

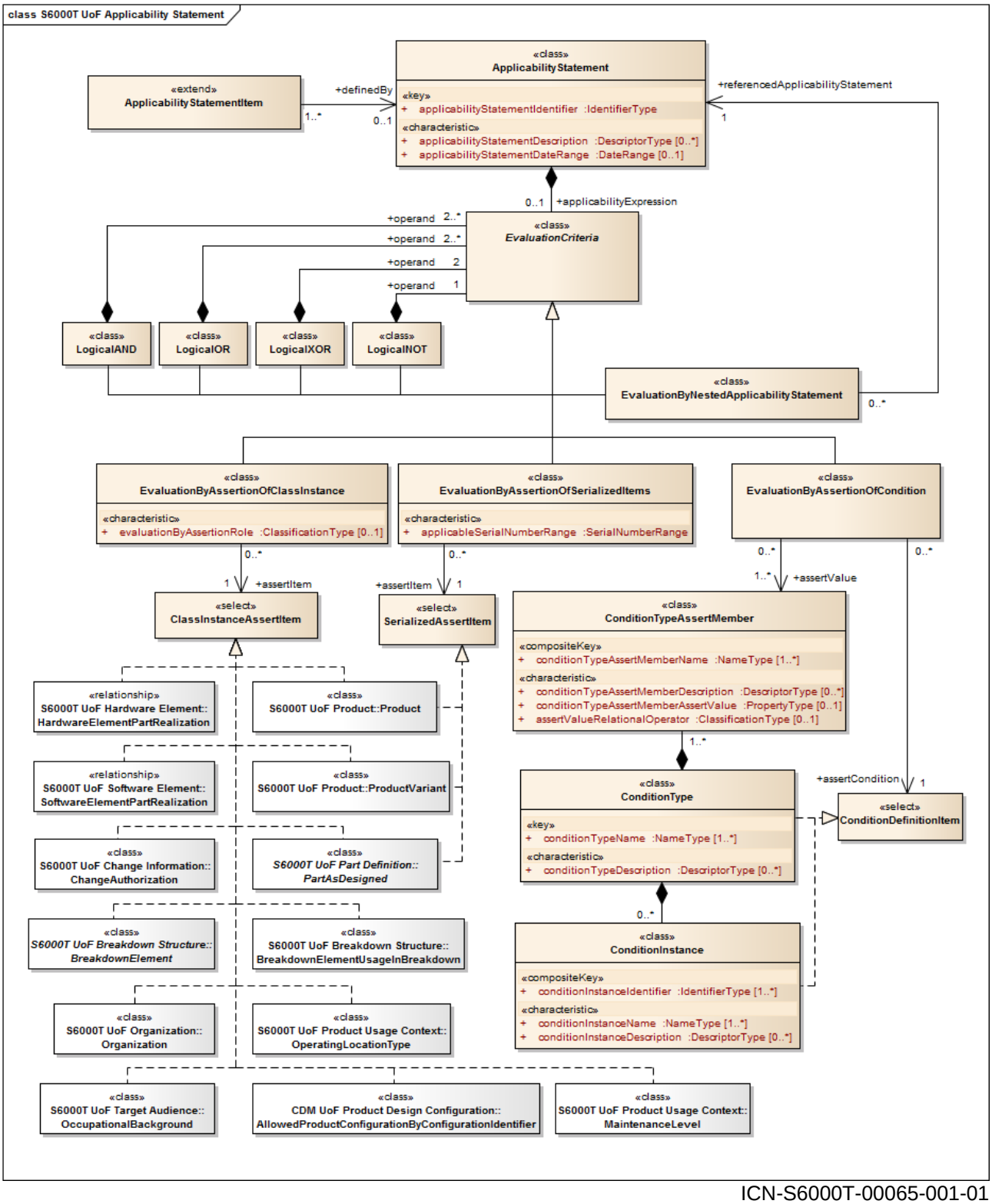

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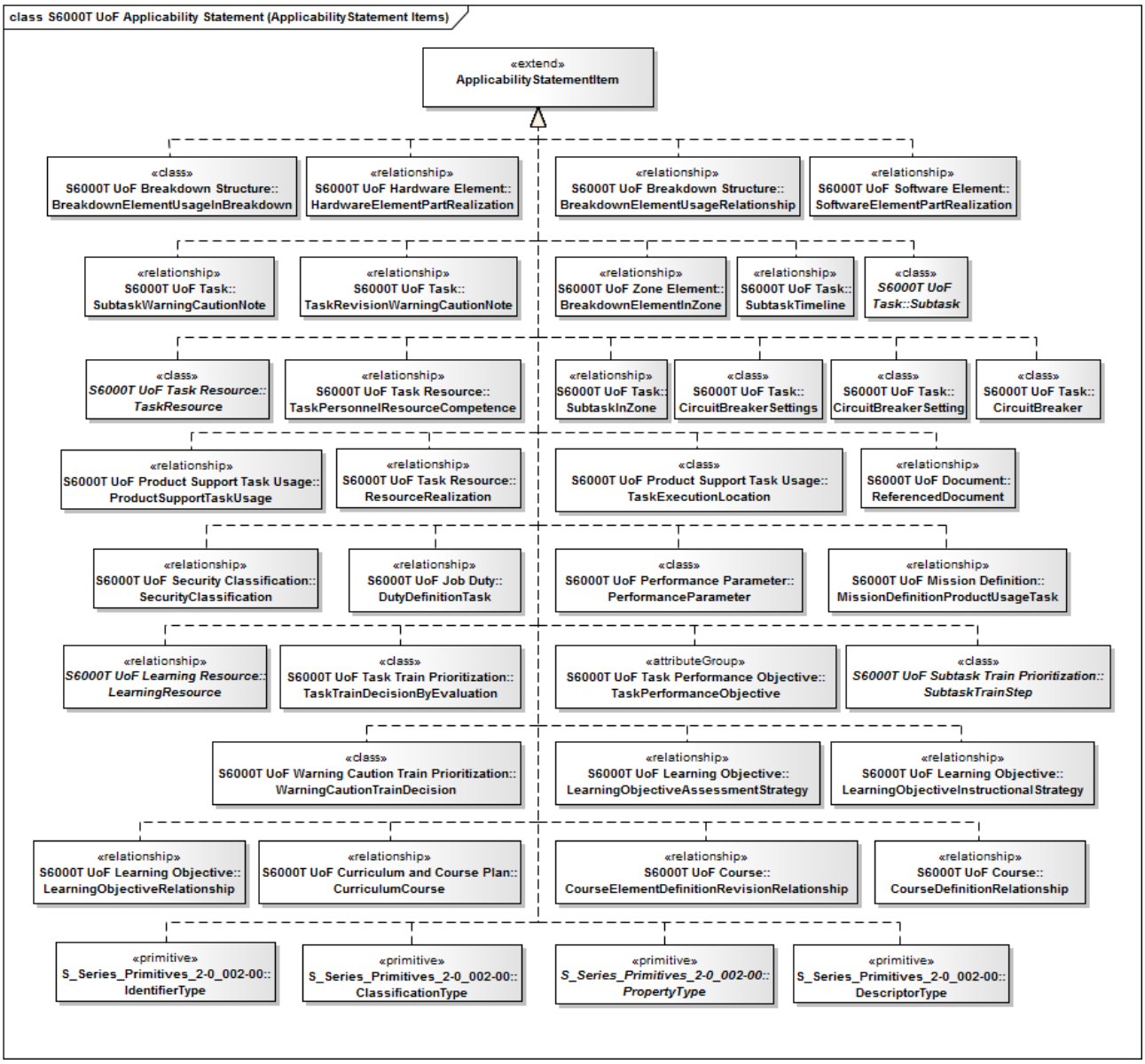
Fig 1 UoF Applicability statement



ICN-S6000T-00066-001-01

Fig 2 UoF Applicability statement - Applicability statement items

2.1 Applicability statement

Definition:

Applicability statement defines the situation or situations under which related items are valid.

Reference:

– SX001G

2.1.1 Applicability statement identifier

Definition:

Applicability statement identifier (applicabilityStatementIdentifier) is an identifier that establishes a unique designator for an applicability statement and to differentiate it from other instances of applicability statement.

Reference:

– SX001G

2.1.2 Applicability statement description

Definition:

Applicability statement description (applicabilityStatementDescription) is a description that provides a human readable expression of the defined rule.

Reference:

– SX001G

2.1.3 Applicability statement date range

Definition:

Applicability statement date range (applicabilityStatementDateRange) is a date range that defines the date interval for when the applicability evaluation can result in a TRUE result.

Note

If outside that date range, the applicability statement always results in a FALSE statement.

Reference:

– SX001G

2.2 Applicability statement item

Definition:

Applicability statement item (ApplicabilityStatementItem) provides its associated data model to those classes which can have restricted validity as defined by an associated applicability statement.

Reference:

– SX001G

2.3 Class instance assert item

Definition:

Class instance assert item (ClassInstanceAssertItem) identifies classes from which an instance can be used as the evaluation by assertion of class instance assert item.

Reference:

– SX001G

2.4 Condition definition item

Definition:

Condition definition item (ConditionDefinitionItem) identifies classes from which an instance can be used as the evaluation by assertion of condition assert condition.

Reference:

– SX001G

2.5 Condition instance

Definition:

Condition instance (ConditionInstance) defines an individual concept or object having the characteristics of a generic condition type.

Example

– Uniquely identified Service Bulletin

Reference:

– SX001G

2.5.1 Condition instance identifier

Definition:

Condition instance identifier (conditionInstanceIdentifier) is an identifier that establishes a unique designator for a condition instance and to differentiate it from other instances of condition instance.

Reference:

– SX001G

2.5.2 Condition instance name

Definition:

Condition instance name (conditionInstanceName) is a name by which the condition instance is known and can be easily referenced.

Reference:

– SX001G

2.5.3 Condition instance description

Definition:

Condition instance description (conditionInstanceDescription) is a description that gives more information on the meaning of the condition instance.

Reference:

– SX001G

2.6 Condition type

Definition:

Condition type (ConditionType) defines a concept or an object that needs to be included in applicability statements where the concept or object is not already represented in the data model.

Example

– Environmental conditions

Reference:

– SX001G

2.6.1 Condition type name

Definition:

Condition type name (conditionTypeName) is a name by which the condition type is known and can be easily referenced.

Example

– Service bulletin
– Ashore or afloat
– Operational environment
– Maintenance environment

Reference:

– SX001G

2.6.2 Condition type description

Definition:

Condition type description (conditionTypeDescription) is a description that gives more information on the meaning of the condition type.

Reference:

– SX001G

2.7 Condition type assert member

Definition:

Condition type assert member (ConditionTypeAssertMember) defines a member for a given condition type which can be mapped to a Boolean expression and be evaluated to be either TRUE or FALSE.

Reference:

– SX001G

2.7.1 Condition type assert member name

Definition:

Condition type assert member name (conditionTypeAssertMemberName) is a name that identifies a condition type assert member.

Reference:

– SX001G

2.7.2 Condition type assert member description

Definition:

Condition type assert member description (conditionTypeAssertMemberDescription) is a description that gives more information on meaning of the condition type assert member.

Reference:

– SX001G

2.7.3 Condition type assert member assert value

Definition:

Condition type assert member assert value (conditionTypeAssertMemberAssertValue) is a numerical property that specifies values which can be used to further characterize the condition type assert member.

Reference:

– SX001G

2.7.4 Assert value relational operator

Definition:

Assert value relational operator (assertValueRelationalOperator) is a classification that identifies a mathematical operation to be applied when testing a value against a defined condition type assert member assert value.

Example

– Greater than
– Less than

Reference:

– SX001G

2.8 Evaluation by assertion of class instance

Definition:

Evaluation by assertion of class instance (EvaluationByAssertionOfClassInstance) is an evaluation criteria that identifies a class instance to be used as an assert item and be mapped to a Boolean expression which can be evaluated to be either TRUE or FALSE.

Reference:

– SX001G

2.8.1 Evaluation by assertion role

Definition:

Evaluation by assertion role (evaluationByAssertionRole) is a classification that defines the context in which the evaluation by assertion of class instance is being referenced.

Reference:

– SX001G

2.9 Evaluation by assertion of condition

Definition:

Evaluation by assertion of condition (EvaluationByAssertionOfCondition) is an evaluation criteria that identifies a combination of a defined condition and a defined value to be used as an assert item and be mapped to a Boolean expression which can be evaluated to be either TRUE or FALSE.

Reference:

– SX001G

2.10 Evaluation by assertion of serialized items

Definition:

Evaluation by assertion of serialized items (EvaluationByAssertionOfSerializedItems) is an evaluation criteria that identifies a class instance together with an associated serial number range to be used as an assert item and be mapped to a Boolean expression which can be evaluated to be either TRUE or FALSE.

Reference:

– SX001G

2.10.1 Applicable serial number range

Definition:

Applicable serial number range (applicableSerialNumberRange) is a serial number range that identifies a limited effectivity with respect to a given interval of serialized items.

Reference:

– SX001G

2.11 Evaluation by nested applicability statement

Definition:

Evaluation by nested applicability statement (EvaluationByNestedApplicabilityStatement) is an evaluation criterion that enables an applicability statement to be reused as part of this evaluation criteria.

Reference:

– SX001G

2.12 Evaluation criteria

Definition:

Evaluation criteria (EvaluationCriteria) define conditions that can be mapped to a Boolean expression which can be evaluated to be either TRUE or FALSE.

Reference:

– SX001G

2.13 Logical AND

Definition:

Logical AND (LogicalAND) is an evaluation criteria that defines a Boolean operation where the results of all its associated evaluation criteria must be TRUE for the result to be TRUE, otherwise the result is FALSE.

Reference:

– SX001G

2.14 Logical NOT

Definition:

Logical NOT (LogicalNOT) is an evaluation criteria that defines a Boolean operation where the result from its associated evaluation criteria must be FALSE for the result to be TRUE, otherwise the result is FALSE.

Reference:

– SX001G

2.15 Logical OR

Definition:

Logical OR (LogicalOR) is an evaluation criteria that defines a Boolean operation where the result from at least one of its associated evaluation criteria must be TRUE for the result to be TRUE, otherwise the result is FALSE.

Reference:

– SX001G

2.16 Logical XOR

Definition:

Logical XOR (LogicalXOR) is an evaluation criterion that defines a Boolean operation where the result from one and only one of its associated evaluation criteria must be TRUE for the result to be TRUE, otherwise the result is FALSE.

Reference:

– SX001G

2.17 Serialized assert item

Definition:

Serialized assert item (SerializedAssertItem) identifies classes from which an instance can be used as the evaluation by assertion of serialized items assert item

Reference:

– SX001G

Chapter 7.3.38

Units of functionality - UoF Message

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SX001G	Glossary for the S-Series ILS specifications
Chap 7.3.39	UoF Training analysis and design message content

1 General

Message UoF provides the capability to identify a collection of information to be communicated from one party to another.

2 UoF Message

Key features of the UoF message data model (Refer to Fig 1) are:

- Message context provides the context within which the message is defined
- Message content must be specialized in order to represent the collection of information that is the subject for the message. Refer to Chap 7.3.39.
- Message party which identifies its stakeholders, eg, sender and receiver

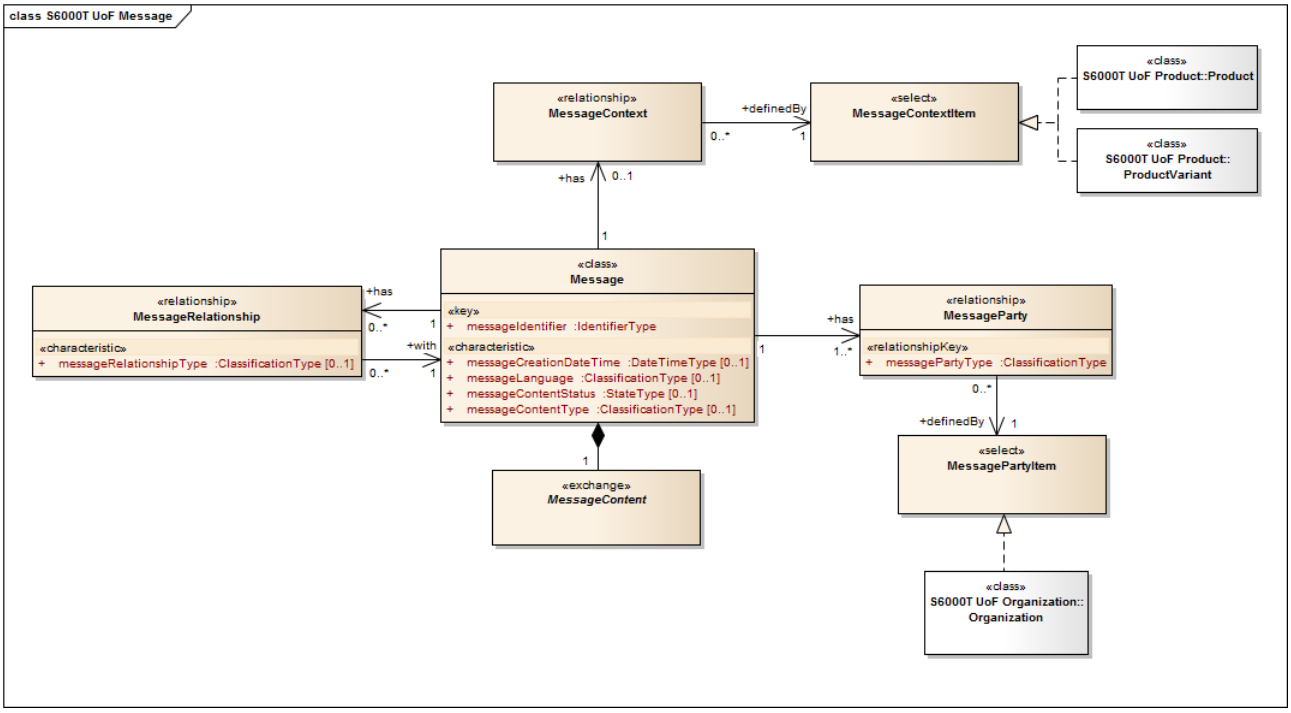

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Fig 1 UoF Message

2.1 Message

Definition:

Message represents the collection of information brought together by a message sender for the purpose of communicating it to another party.

Reference:

- SX001G

2.1.1 Message identifier

Definition:

Message identifier (messageIdentifier) is an identifier that establishes a unique designator for a message and allows it to be differentiated from other instances of message.

Reference:

- SX001G

2.1.2 Message creation date time

Definition:

Message creation date time (messageCreationDateTime) is a date and time that defines when the message was generated.

Reference:

– SX001G

2.1.3 Message language

Definition:

Message language (messageLanguage) is a classification that identifies the language of the information in the message content.

Reference:

– SX001G

2.1.4 Message content status

Definition:

Message content status (messageContentStatus) is a state that identifies the quality assurance status of the message content.

Reference:

– SX001G

2.1.5 Message content type

Definition:

Message content type (messageContentType) is a classification that characterizes the information included in the message content.

Reference:

– SX001G

2.2 Message content

Definition:

Message content (MessageContent) represents the collection of information that is the subject of the message.

Reference:

– SX001G

2.3 Message context

Definition:

Message context (MessageContext) is a relationship between a message and the context for which it is being provided.

Example

– Product
– Project
– Contract

Reference:

– SX001G

2.4 Message context item

Definition:

Message context (MessageContextItem) identifies items which can be selected as the context for a message.

Reference:

– SX001G

2.5 Message party

Definition:

Message party (MessageParty) is a relationship between a message and a stakeholder for the message.

Reference:

– SX001G

2.5.1 Message party type

Definition:

Message party type (messagePartyType) is a classification that identifies the role of the associated party.

Example

– Sender
– Receiver

Reference:

– SX001G

2.6 Message party item

Definition:

Message party item (MessagePartyItem) identifies items which can be selected as the party for a message.

Reference:

– SX001G

2.7 Message relationship

Definition:

Message relationship (MessageRelationship) is a relationship where one message relates to another message.

Examples:

– One message is a reply to another message

– One message is an update to another message

Reference:

– SX001G

2.7.1 Message relationship type

Definition:

Message relationship type (messageRelationshipType) is a classification that characterizes the relationship that is established between two messages.

Examples

– Reply
– Acknowledgement
– Update
– Observation

Reference:

– SX001G

Chapter 7.3.39

Units of functionality - UoF Training analysis and design message content

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Chap 7.3.2	UoF Product usage phase
Chap 7.3.3	UoF Breakdown structure
Chap 7.3.8	UoF Part definition
Chap 7.3.9	UoF Task
Chap 7.3.10	UoF Task resources
Chap 7.3.11	UoF Task resource competence definition
Chap 7.3.13	UoF Mission definition
Chap 7.3.14	UoF Performance parameter
Chap 7.3.15	UoF Job duty
Chap 7.3.16	UoF Task performance objective
Chap 7.3.17	UoF Task train prioritization
Chap 7.3.18	UoF Subtask train prioritization
Chap 7.3.19	UoF Warning caution train prioritization
Chap 7.3.20	UoF Task knowledge skill and attitude
Chap 7.3.21	UoF Target audience
Chap 7.3.23	UoF Learning analysis
Chap 7.3.24	UoF Learning objective
Chap 7.3.25	UoF Learning assessment strategy
Chap 7.3.26	UoF Instructional strategy
Chap 7.3.27	UoF Learning resource
Chap 7.3.28	UoF Curriculum and course plan
Chap 7.3.29	UoF Course
Chap 7.3.30	UoF Product usage context
Chap 7.3.31	UoF Change information
Chap 7.3.32	UoF Document
Chap 7.3.33	UoF Digital file
Chap 7.3.34	UoF Organization
Chap 7.3.35	UoF Security classification

1 General

The training analysis and design message content UoF defines the structure for how data resulting from training analysis and design is to be organized for an actual data exchange.

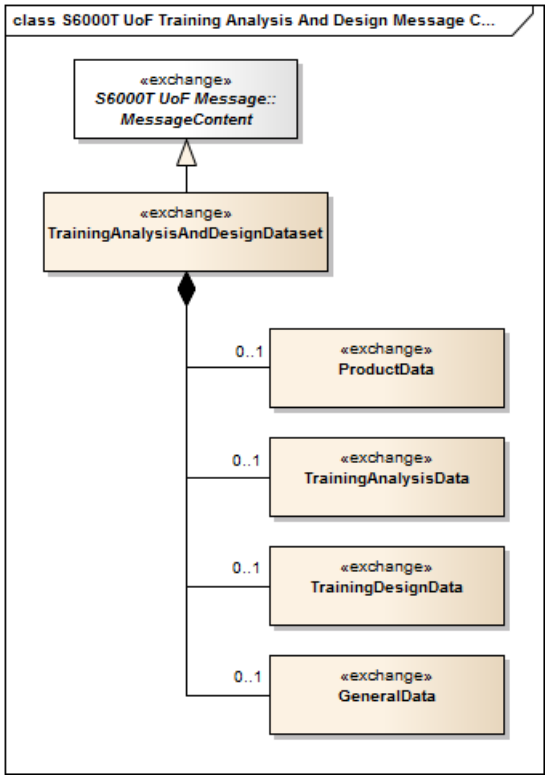
2 UoF Training analysis and design message content

Key features of the UoF training analysis and design message content data model (refer to Fig 1 thru Fig 5) are data that is exchanged and organized in four major subsections:

- Product structure and parts data that mainly originates from support analysis activities which precedes training analysis and design
- Product and task data that are further analyzed as part of training analysis
- Data identified during training design
- General data which allows for further characterization of the data that has been defined during training analysis and design

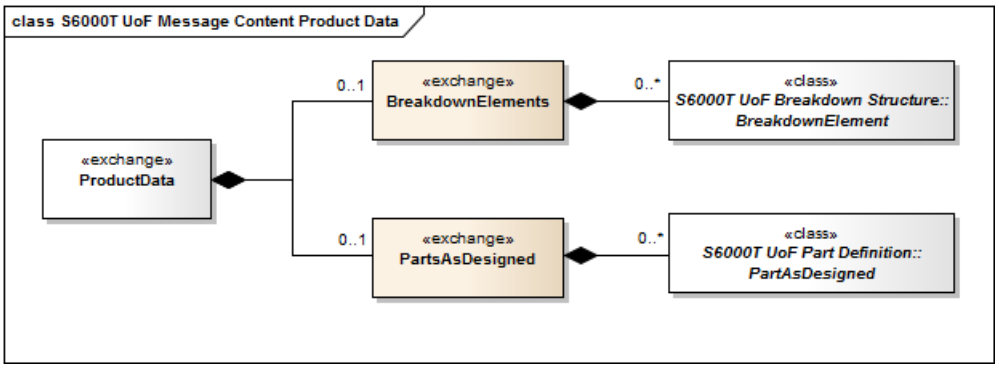
Note

Each branch in the exchange definition often encapsulates additional data which are not explicitly illustrated in the figures for the UoF. For more details see the respective UoF where the included classes are defined or further characterized.



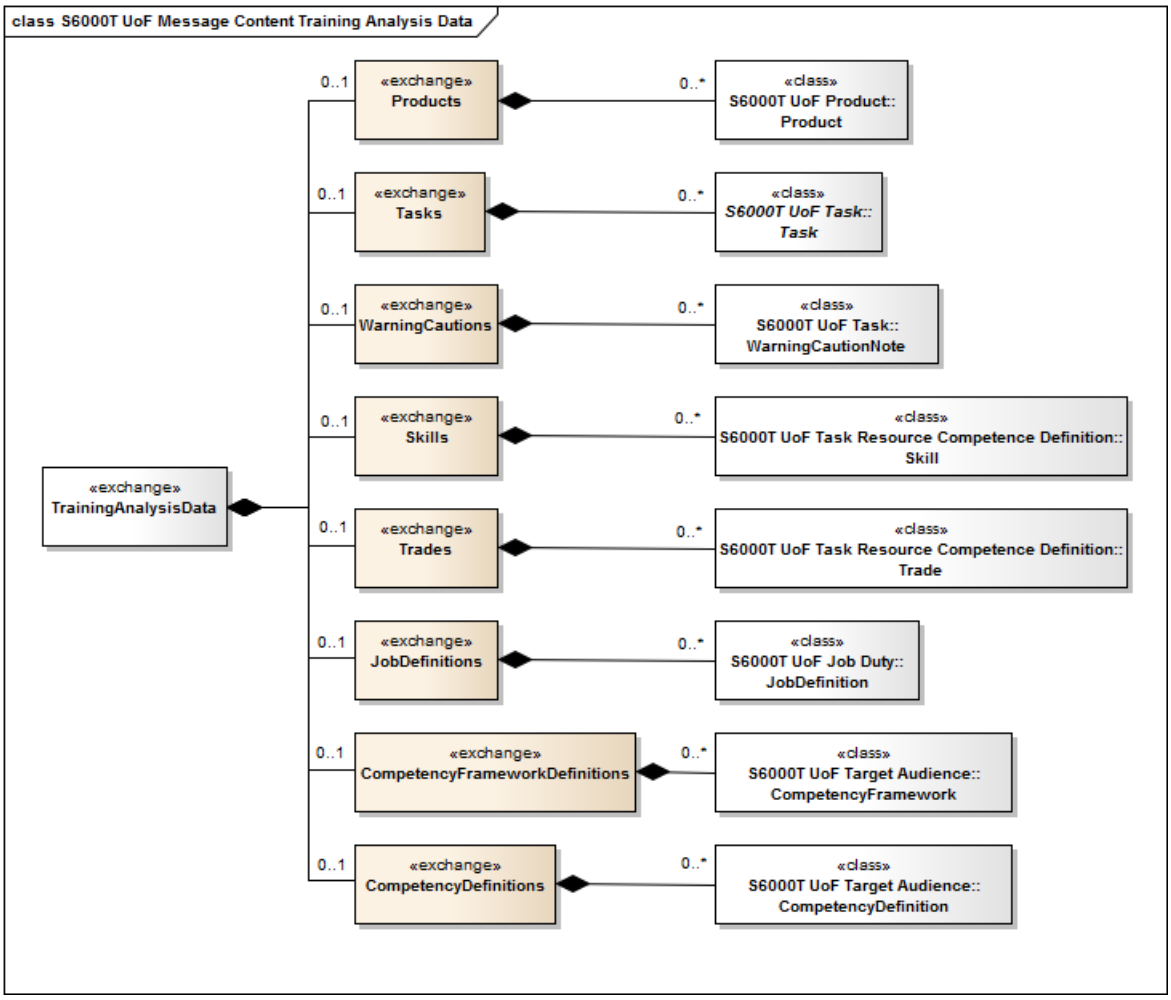
ICN-S6000T-B6865-00068-001-01

Fig 1 UoF Training analysis and design message content



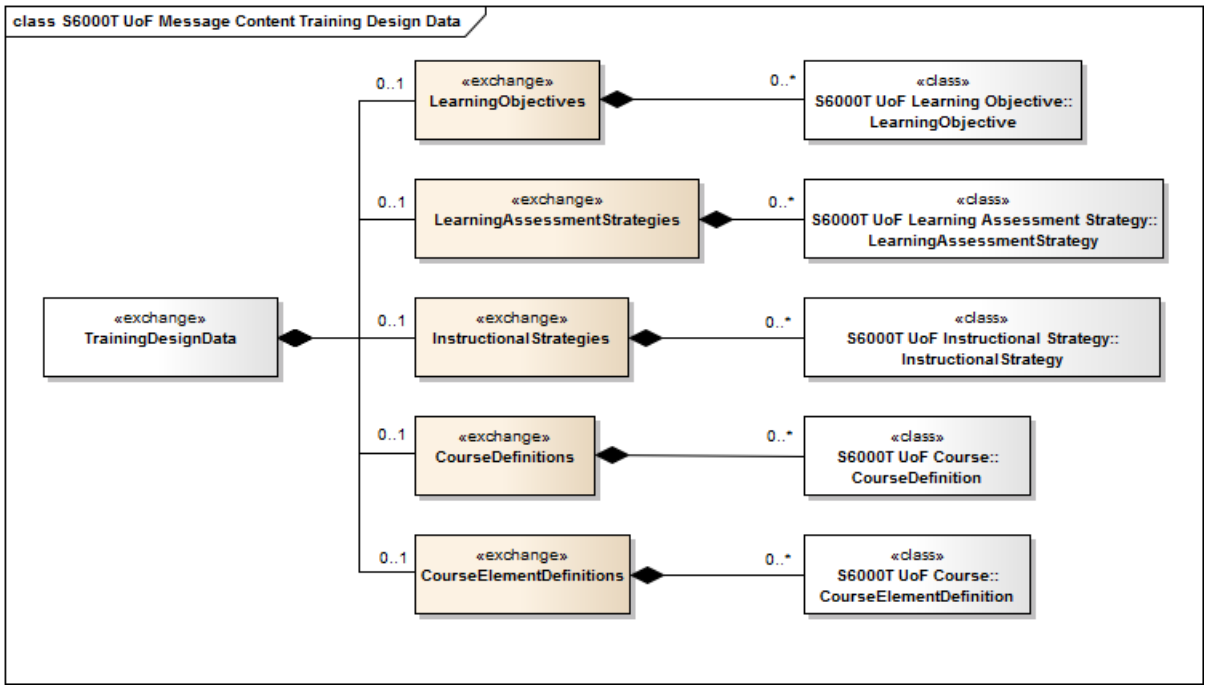
ICN-S6000T-B6865-00069-001-01

Fig 2 UoF Message content Product data



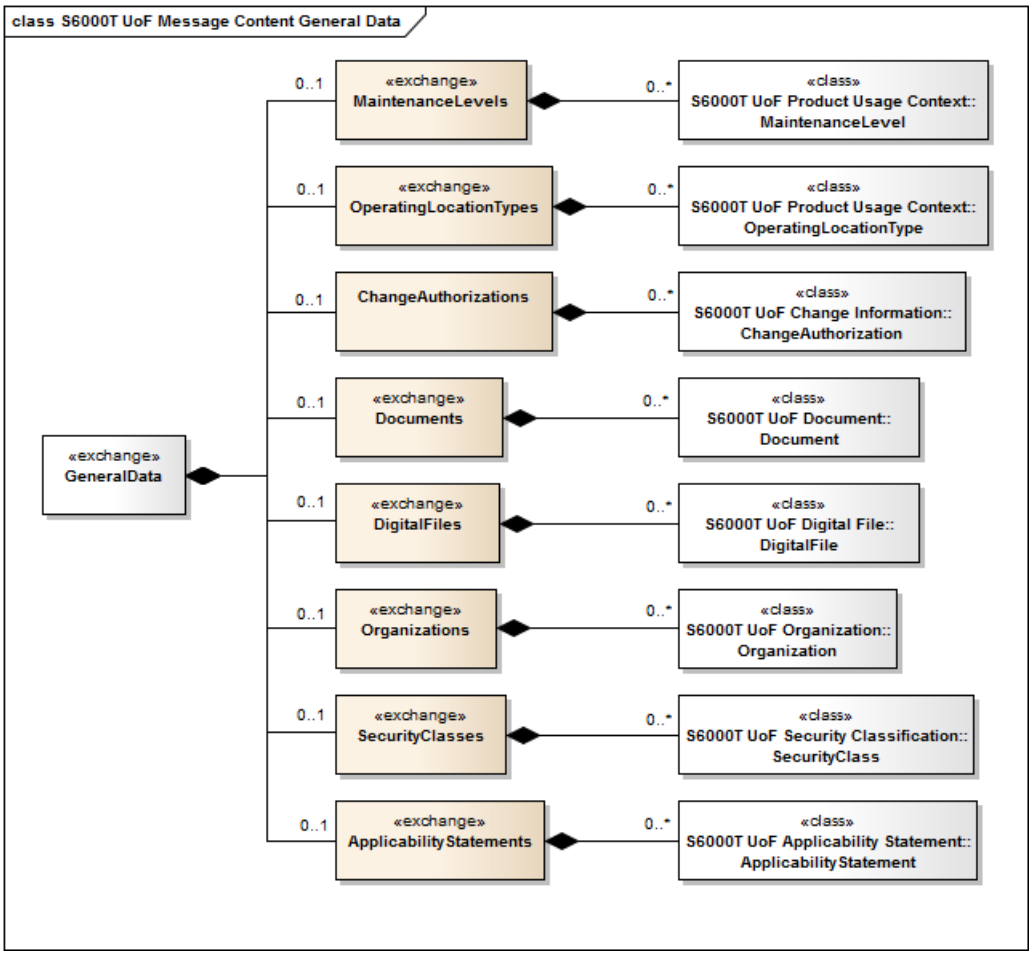
ICN-S6000T-B6865-00070-001-01

Fig 3 UoF Message content training analysis data



ICN-S6000T-B6865-00071-001-01

Fig 4 UoF Message content training design data



ICN-S6000T-B6865-00072-001-01

Fig 5 UoF Message content general data

2.1 ApplicabilityStatements

Definition:

Applicability statements (ApplicabilityStatements) is a wrapper that contains all instances of applicability statement that is in scope for a specific data exchange. Refer to Chap 7.3.37.

2.2 Breakdown elements

Definition:

Breakdown elements (BreakdownElements) is a wrapper that contains all instances of breakdown element that is in scope for a specific data exchange. Refer to Chap 7.3.3.

2.3 Change authorizations

Definition:

Change authorizations (ChangeAuthorizations) is a wrapper that contains all instances of change authorization that is in scope for a specific data exchange. Refer to Chap 7.3.31.

2.4 Competency definitions

Definition:

Competency definitions (CompetencyDefinitions) is a wrapper that contains all instances of competency definition that is in scope for a specific data exchange. Refer to Chap 7.3.21.

2.5 Competency framework definitions

Definition:

Competency framework definitions (CompetencyFrameworkDefinitions) is a wrapper that contains all instances of competency framework definition that is in scope for a specific data exchange. Refer to Chap 7.3.21.

2.6 Course definitions

Definition:

Course definitions (CourseDefinitions) is a wrapper that contains all instances of course definition that is in scope for a specific data exchange. Refer to Chap 7.3.29.

Note

Course definition also embeds information on included course elements. Refer to Chap 7.3.29.

2.7 Course element definitions

Definition:

Course element definitions (CourseElementDefinitions) is a wrapper that contains all instances of course element definition that is in scope for a specific data exchange. Refer to Chap 7.3.29.

2.8 Digital files

Definition:

Digital files (DigitalFiles) is a wrapper that contains all instances of digital file that is in scope for a specific data exchange. Refer to Chap 7.3.33.

2.9 Documents

Definition:

Documents (Documents) is a wrapper that contains all instances of document that is in scope for a specific data exchange. Refer to Chap 7.3.32.

Note

Document also embeds information on document issues. Refer to Chap 7.3.32.

2.10 General data

Definition:

General data (GeneralData) is a subset of the training analysis and design dataset that allows for further characterization of the data that has been defined during training analysis and design.

2.11 Instructional strategies

Definition:

Instructional strategies (InstructionalStrategies) is a wrapper that contains all instances of instructional strategy that is in scope for a specific data exchange. Refer to Chap 7.3.26).

Note

Instructional strategy also embeds information on learning resources. Refer to Chap 7.3.27.

2.12 Job definitions

Definition:

Job definitions (JobDefinitions) is a wrapper that contains all instances of job definition that is in scope for a specific data exchange. Refer to Chap 7.3.15.

Note

Job definition also embeds information on:

- Duty definitions (refer to Chap 7.3.15)
- Duty tasks (refer to Chap 7.3.15)
- Occupational backgrounds (refer to Chap 7.3.21)
- Competencies (refer to Chap 7.3.21)
- Knowledge skills and attitude gaps (refer to Chap 7.3.23)
- Curriculums (refer to Chap 7.3.28)
- Curriculum courses (refer to Chap 7.3.28)

2.13 Learning assessment strategies

Definition:

Learning assessment strategies (LearningAssessmentStrategies) is a wrapper that contains all instances of learning assessment strategy that is in scope for a specific data exchange. Refer to Chap 7.3.25.

Note

Learning assessment strategy also embeds information on learning resources. Refer to Chap 7.3.27.

2.14 Learning objectives

Definition:

Learning objectives (LearningObjectives) is a wrapper that contains all instances of learning objective that is in scope for a specific data exchange. Refer to Chap 7.3.24.

Note

Learning objective also embeds information on:

- Chosen learning assessment strategy (refer to Chap 7.3.24)
- Chosen instructional strategy (refer to Chap 7.3.24)

2.15 Maintenance levels

Definition:

Maintenance levels (MaintenanceLevels) is a wrapper that contains all instances of maintenance level that is in scope for a specific data exchange. Refer to Chap 7.3.30.

2.16 Operating location types

Definition:

Operating location types (OperatingLocationTypes) is a wrapper that contains all instances of operating location type that is in scope for a specific data exchange. Refer to Chap 7.3.30.

2.17 Organizations

Definition:

Organizations (Organizations) is a wrapper that contains all instances of organization that is in scope for a specific data exchange. Refer to Chap 7.3.34.

2.18 Parts as designed

Definition:

Parts as designed (PartsAsDesigned) is a wrapper that contains all instances of part as designed that is in scope for a specific data exchange. Refer to Chap 7.3.8.

2.19 Product data

Definition:

Product data (ProductData) is a subset of the training analysis and design dataset that include Product breakdown elements and part data relevant for training analysis and design.

2.20 Products

Definition:

Products (Products) is a wrapper that contains all instances of Product that is in scope for a specific data exchange. Refer to Chap 7.3.1.

Note

Product also embeds information on:

- Product variants (refer to Chap 7.3.1)
- Mission definitions (refer to Chap 7.3.13)
- Performance parameters (refer to Chap 7.3.14)
- Product usage phases (refer to Chap 7.3.2)
- Breakdowns (refer to Chap 7.3.3)

Note

Products are included in the training analysis data subset due to that training analysis adds important information to the Product branch (eg, mission definitions and performance parameters).

2.21 SecurityClasses

Definition:

Security classes (SecurityClasses) is a wrapper that contains all instances of security class that is in scope for a specific data exchange. Refer to Chap 7.3.35.

2.22 Skills

Definition:

Skills (Skills) is a wrapper that contains all instances of skill that is in scope for a specific data exchange. Refer to Chap 7.3.11.

Note

Skill also embeds information on:

- Occupational backgrounds (refer to Chap 7.3.21)
- Competencies (refer to Chap 7.3.21)
- Knowledge skills and attitude gaps (refer to Chap 7.3.23)
- Curriculums (refer to Chap 7.3.28)
- Curriculum courses (refer to Chap 7.3.28)

Note

Skills are included in the training analysis data subset due to that training analysis adds important information to the skill branch (eg, different occupational backgrounds and competencies identified for people coming into training, together with identified knowledge skills and attitude gaps and specified curriculums).

2.23 Tasks

Definition:

Tasks (Tasks) is a wrapper that contains all instances of task that is in scope for a specific data exchange.

Note

Task also embeds information on:

- Subtasks (refer to Chap 7.3.9)
- Task resources (refer to Chap 7.3.10)
- Task performance objectives (refer to Chap 7.3.16)
- Task train prioritization (refer to Chap 7.3.17)
- Subtask train prioritization (refer to Chap 7.3.18)
- Task level of learning requirements (refer to Chap 7.3.20)

Note

Tasks are included in the training analysis data subset due to that training analysis adds important information to the task branch (eg, task performance objectives, task train decisions and task level of learning requirements).

2.24 Trades

Definition:

Trades (Trades) is a wrapper that contains all instances of trade that is in scope for a specific data exchange. Refer to Chap 7.3.11.

Note

Trade also embeds information on:

- Skill levels (refer to Chap 7.3.11)
- Occupational backgrounds (refer to Chap 7.3.21)
- Competencies (refer to Chap 7.3.21)
- Knowledge skills and attitude gaps (refer to Chap 7.3.23)
- Curriculums (refer to Chap 7.3.28)
- Curriculum courses (refer to Chap 7.3.28)

Note

Trades are included in the training analysis data subset due to that training analysis adds important information to the trades branch (eg, different occupational backgrounds and competencies identified for people coming into training, together with identified knowledge skills and attitude gaps and specified curriculums).

2.25 Training analysis and design dataset

Definition:

Training analysis and design dataset (TrainingAnalysisAndDesignDataset) is an exchange definition that includes all information relevant for training analysis and design.

2.26 Training analysis data

Definition:

Training analysis data (TrainingAnalysisData) is a subset of the training analysis and design dataset that provides data which is defined during training analysis activities while maintaining the thread back to Product and task data as defined during Product design and Logistics Support Analysis.

2.27 Training design data

Definition:

Training design data (TrainingDesignData) is a subset of the training analysis and design dataset that provides data that is defined during training design while maintaining the thread back to training analysis.

2.28 WarningsCautions

Definition:

Warning cautions (WarningsCautions) is a wrapper that contains all instances of warning caution note that is in scope for a specific data exchange.

Note

Warning caution note also embeds information on:

- Warning caution note train decision (refer to Chap 7.3.19)
- Warning caution note level of learning requirement (refer to Chap 7.3.20)

Note

Warning cautions are included in the training analysis data subset due to that training analysis adds important information to the warning caution branch (eg, warning caution train decisions and warning caution level of learning requirements).

Chapter 8

Terms, abbreviations and acronyms

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Chapter 8.1

Terms, abbreviations and acronyms - General

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Chap 8.1.1	Terms, abbreviations and acronyms - Glossary of terms
Chap 8.1.2	Terms, abbreviations and acronyms - Abbreviations and acronyms

1 General

Chap 8.1.1 provides a comprehensive glossary of terms used in this specification.

Chap 8.1.2 provides a list of abbreviations and acronyms used within S6000T.

Chapter 8.1.1

Terms, abbreviations and acronyms - Glossary of terms

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Table 1 References

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1 Glossary of terms

Term	Definition
Action verb	Action verb conveys activity or behaviors and reflects the type of competency or performance that is to occur. Example: Analyze, place, cut, drive, open, and hold **Note** Action verbs reflect behaviors that are measurable, observable, verifiable, and reliable.
Active learning	Active learning defines an approach to learning in which students engage the material they study through reading, writing, talking, listening, and reflecting. **Note** Active learning focuses the responsibility of learning on the learners.
Affective taxonomy	Affective taxonomy is a classification that defines the task's level of sophistication with respect to emotional, motivational and/or social aspects.
Asynchronous learning	Asynchronous learning defines an approach to learning that does not occur in the same place or at the same time.

Term	Definition
	Note Asynchronous learning is usually done in the form of digital and online learning. Example: Prerecorded video lessons or game-based learning that trainees complete on their own that is not being delivered in person or in real time.
Attitude	Attitude represents emotions required to perform a task or sub task. Example: Feelings, values, appreciation, enthusiasm, motivations
Behavior condition	Behavior condition is a description that expresses the environmental, physical and psychological circumstances under which a behavior is portrayed.
Blended learning	Blended learning defines an approach that combines face-to-face classroom approaches with technology-delivered instruction that can be delivered either in a resident or non-resident environment to form an integrated instructional approach.
Bloom's taxonomy	Bloom’s taxonomy defines three hierarchical models used to classify ng objectives into levels of complexity and specificity. The three lists cover the learning objectives in cognitive, affective and psychomotor domains.
Cognitive taxonomy	Cognitive taxonomy is a classification that defines the task's level of sophistication with respect to mental, cognitive, and/or logical aspects. **Note** Cognitive taxonomy includes the recall or recognition of specific facts, procedural patterns, and concepts that serve in the development of knowledge and mental skills.
Collective task	Collective task is a task that requires more than one person to complete, with each person performing a discrete part of the task, or requires simultaneous performance of task steps in different locations or contains such a large number of skills that one person cannot perform it in a timely or effective manner.
Competency	Competency represents measurable or observable knowledge, skills, and attitudes necessary for successful performance by a person in a given context.
Content analysis	Content analysis is a procedure for organizing narrative and qualitative data into emerging themes and concepts.

Term	Definition
	Note Content analysis is usually associated with a quantitative form of analysis in which the themes are counted or measured.
Course	Course is a complete series of instructional units including lessons and other instructional segments.
Course description	Curriculum description is a description of a training curriculum and its contained available training courses and their respective requirements.
Course evaluation result	Course evaluations result represent a trainee survey used to measure training course performance.
Course phase	Course phase is a major part of a course which can be taught at different times due to resource and/or other constraints. **Note** Course phases are required as a necessary break-up of a course due to time, location, equipment, facility constraints, or training media.
Criterion	Criterion represents a principle or standard by which something can be judged or decided. In learning, the learning objective standard is the measure of trainee performance. In assessment validation, it is the standard against which assessment instruments are correlated to indicate the accuracy with which they predict human performance in some specific area. In evaluation, it is the measure used to determine the adequacy of a product, process, or behavior.
Curriculum	Curriculum defines a course (or set of courses) and their content offered by a formal training application.
DIF model	DIF model is a task selection model that identifies the Difficulty, Importance and Frequencies of a task.
Distributed Learning (DL)	Distributed learning represents the delivery of standardized individual, collective, and self-development training at the right place and right time, using multiple means and technologies, with synchronous and blended trainee-instructor interaction.
Educational taxonomy	Educational taxonomy is a classification system used to define and distinguish different levels of human cognition. Example: Thinking, learning, and understanding. Reference: Bloom's taxonomy

Term	Definition
Enabling Learning Objective (ELO)	ELO defines a subset of the skills, knowledge, or attitudes trainees must reach in order to successfully complete the Terminal Learning Objective (TLO). **Note** ELOs allow the TLO to be broken down into smaller, more manageable objectives. An ELO supports the TLO and measures an element of the TLO, and addresses knowledge, skill or attitude gaps. ELOs are optional based on analysis of the TLO and when used, there must be a minimum of two.
Gap analysis	Gap analysis is an analysis activity that identifies the difference between current performance and the desired performance.
Human performance analysis	Human performance analysis is an analysis that looks at a user's current performance and identifies whether the person is performing as desired. **Note** Human performance analysis is also known as knowledge skill and attitude gap analysis.
Human performance deficiency	Human performance deficiency defines difference with a negative connotation, implying that the person is not meeting a known standard for performance.
Human performance measure	Human performance measure objectively observes and measures actions to determine if a task performer has performed the task to the prescribed standard. **Note** These measures are derived from the task performance steps during task analysis.
Individual task	Individual task is a task that is performed by one person.
Instructor	Instructor is a person whose job it is to pass along to a trainee the required knowledge, skills and attitudes required to successfully complete an activity.
Instructional designer	Instructional designer is a training role that designs and develops training content and other solutions to support the acquisition of new knowledge, skill and abilities.
Instructional material	Instructional material is material used by instructors/facilitators and/or learners in formal courses. Example: Training aids, manuals, publications, and visual aids.
Instructional staff	Instructional staff is personnel that support and maintain a training system.

Term	Definition
Job	Job represents a collection of unique, specific, related activities that fulfill a specific role or function critical to achievement of an organizations mission or operational objective.
Job aid	Job aid is a supporting item that facilitates the performance of a job.
Job analysis	Job analysis is a systematic study to decompose, structure, and comprehensively describe a job for the purpose of establishing training requirements.
Knowledge	Knowledge represents facts, information, and skills acquired by a person through experience or training.
Learning	Learning is the acquisition of knowledge or skills through experience, study or formal instruction.
Learning objective	Learning objective is a statement that defines the expected goal of a learning activity in terms of demonstrable knowledge, skill and/or attitude. **Note** It is expressed in terms of condition, behavior and standard.
Lesson	Lesson represents an event where learning is intended to occur. **Note** During a lesson, trainees are taught about a particular subject or taught how to perform a particular activity. A lesson provides the instructional content for a lesson plan.
Lesson plan	Lesson plan represents detailed information used by instructors/facilitators to execute the instruction prescribed in one lesson within the prescribed time limits using the specified resources. **Note** A lesson plan includes the content and supporting information for only one lesson which supports the learning and assessment of one TLO.
Mastery	Mastery identifies possession of superior skills in the performance of an activity.
Method of Instruction (MOI)	Method of Instruction is an activity used to facilitate the accomplishment of the learning objective(s). **Note** Specific methods of instruction require varying degrees of trainee participation. Selection of the best MOI requires consideration of the trainee, the content, the goals, the learning environment, the instructor/facilitator, and the available resources.

Term	Definition
Mission analysis	Mission analysis is an analysis that identifies a Product operational scenario where a person, or body of persons, can be tasked to perform a service or carry out an activity.
Nonresident learning	Nonresident learning defines an approach to learning that is distributed to trainees for completion without the physical presence of an on-site instructor/facilitator, small group leader or otherwise designated trainer.
Occupational survey	Occupational survey is any job-related information regarding physical demands, environment conditions, education, training and experience, as well as cognitive and mental requirements of a job.
Ohio State Systematic Curriculum and Instructional Development (SCID) DIF Task Model	SCID DIF Task Model is a method used to identify training prioritization for a task based on its identified difficulty, importance, and frequency classifications.
Optimum Class Size (OCS)	Optimum Class Size defines the appropriate number of trainees in a class that can be taught indefinitely with no degradation in the effectiveness of instruction.
Performance objective	Performance objective defines performance expected in the execution of a task (subtask or subtask step) expressed in terms of behavior conditions, behavior performance and behavior standard.
Personnel qualification standard	Personnel qualification standard is a qualification system of basic performance designed to establish the minimum level of competency required for a person to successfully perform in their job and proficiency requirement.
Performance standard	Performance standard description that expresses the expected quality and/or time constraints that must be met in the performance of the task or a learning objective. Performance standard defines the accepted proficiency level required to accomplish a task or learning objective. **Note** Performance standard is normally expressed in terms of quality or time constraints. **Note** Performance standard is a statement that establishes criteria for how well a task or learning objective is performed.

Term	Definition
Plan of Instruction (POI)	Plan of Instruction is a course control document used for every block of instruction within a training course. **Note** Plan of Instruction includes objectives of the instruction block, duration, support material, and guidance scope. **Note** Plan of Instruction is also called syllabus.
Product	Product represents a family of items which share the same underlying design purpose.
Product function	Product function represents activities performed by a Product to satisfy the requirements of a mission or operation.
Project	Project represents the overall set of IPS activities defined for a Product.
Project team	Project team is a group of persons who work together toward the successful completion of a stated project goal.
Psychomotor taxonomy	Psychomotor taxonomy is a classification that defines a level of sophistication with respect to physical, mechanical, and/or movement-based aspects.
Resident learning	Resident learning is an approach to learning that is presented, managed, and controlled by an on-site instructor or facilitator, small group leader, or otherwise designated trainer.
Risk management	Risk management is the process of identifying, assessing, and controlling risks arising from operational factors and making decisions that balance risk cost with benefits.
Scenario	Scenario is a graphic and narrative description of an operational environment, means, and events of a current or hypothetical situation that sets a context for specific activities and establishes the conditions to achieve desired outcomes.
Scope	Scope defines the area covered by an activity or topic written as a clear, concise statement to achieve an end state.
Self-paced learning	Self-paced learning defines an approach to learning where a person moves through the course at varying rates according to parameters established during validation. **Note** Trainees move through the course individually at their own speed and are not dependent on group times.

Term	Definition
Seminar	Seminar is a course of study for discussion and research under the guidance of a recognized expert.
Sharable Content Object (SCO)	SCO is a learning object representing the smallest unit of instruction that is launched and received from a Learning Management System (LMS). **Note** A SCO is any entity (digital or non-digital) which can be used, reused, or referenced during technology-supported learning.
Sharable Content Object Reference Model (SCORM)	SCORM specifies a framework for content that meets the following requirements for Web-based content: interoperability, accessibility, reusability, durability, maintainability, and adaptability.
Simulator	Simulator is a machine with a similar set of controls designed to provide a realistic imitation of the operation of a vehicle, aircraft, or other complex system, used for training purposes.
Skill	Skill represents the cognitive, psychomotor, and affective abilities in the execution or performance of an activity.
Skill level	Skill level represents the identified proficiency or ability typically required for successful performance at the grade with which the skill level is associated.
Small Group Instruction (SGI)	SGI is an instruction that uses small group processes, methods, and techniques to stimulate learning.
Subject Matter Expert (SME)	SME is a person with extensive experience in performing the job or task being analyzed, as well experience mastering the performance requirements of a job/task being trained. **Note** SME knowledge qualifies the person to assist in the development process (eg, consultation, review, analysis). Normally, SMEs instruct in their area of expertise.
Synchronous learning	Synchronous learning is training where education, instruction, and learning occur at the same time, but not in the same place. **Note** The term is most commonly applied to various forms of televisual, digital, and online learning in which trainees learn from instructors, colleagues, or peers in real time, but not in person. Example: Educational video conferences, interactive webinars, chat-based online discussions, and lectures that are broadcast at the same time they

Term	Definition
	delivered would all be considered forms of synchronous learning.
Task	Task represents the specification of work to be done or undertaken.
Task analysis	Task analysis is the process to define and describe the best method and sequence of steps to complete a specific task.
Task difficulty	Task difficulty is a classification that identifies the complexity of a Task from a human performance perspective.
Task force	Task force is a group of people formed to carry out a specific project, or to solve a problem.
Task frequency	Task frequency specifies the rate of occurrence of a task.
Task importance	Task importance is a classification that identifies possible adverse effects that the performance of a task can have with respect to cost (damage) and availability for the item under analysis if not completed successfully.
Task inventory	Task inventory identifies a set of tasks for a given purpose.
Terminal learning objective (TLO)	TLO is the highest-level Learning Objective appropriate to the human performance requirements a trainee will accomplish when successfully completing the instruction. **Note** TLO is the performance required of the trainee to demonstrate appropriate knowledge, skills and attitudes normally required at the lesson level.
Total Task Inventory (TTI)	Total task inventory is a comprehensive enumeration of all tasks an incumbent performs as part of a job.
Train target audience	Train target audience defines the person or group of persons involved in a training need's assessment or training program. **Note** Persons for whom the instructional or training materials are designed. Samples from this audience are used in evaluating training materials during their development. Also called target audience.
Train task selection model	Train task selection model is a method used to perform training task selection analysis.
Trainer	Trainer is a term used in a corporate setting for a teacher.

Term	Definition
Trainee	Trainee is a person undergoing training for a particular job or profession.
Trainee behavior	Trainee behavior specifies what a trainee must do to satisfy a performance requirement. **Note** Behavior can involve recall, manipulation, discrimination, problem-solving, performing a step-by-step procedure, or producing a product.
Trainee handout	Trainee handout represents a resource used to support training which can free trainees from excessive note taking and or provides supplemental information. Example: Booklet, schematic, circuit diagram, table, or similar material that augments the study guide, workbook, trainee text, or otherwise supports course objectives.
Training analysis	Training analysis is the first phase in the training Analysis, Design, Develop, Implement and Evaluate (ADDIE) process where training needs and requirements are identified.
Training analyst	Training analyst is a role that performs a systematic study in order to determine the requirements to ensure that the training needs of a Product are met.
Training assessment	Training assessment or examination is a series of questions or exercises to measure the knowledge, skills, and attitudes of a trainee or group of trainees. **Note** Training assessment determines if a trainee or group of trainees can accomplish the objective to the established standard.
Training design	Training design is a phase in the training Analysis, Design, Develop, Implement and Evaluate (ADDIE) process where managers and training developers translate analysis data into an outline for learning, create a blueprint for learning product development, and determine the sequence and how to train.
Training development	Training development is a phase in the training Analysis, Design, Develop, Implement and Evaluate (ADDIE) process that is the act of taking design outputs and expanding on the learning activities, refining the course management plan, refining the resources, and creating the learning products. **Note** Training development is the production phase of ADDIE.

Term	Definition
Training equipment	Training equipment is equipment uniquely developed and used to the conduct training or support a training system.
Training evaluation	Training evaluation is a phase in the training Analysis, Design, Develop, Implement and Evaluate (ADDIE) process that is the quality control mechanism for learning and learning product development. **Note** Training evaluation is a systematic and continuous method to appraise the quality, effectiveness, and efficiency of a program, process, product, or procedure.
Training facility	Training facility is a facility used for the conduct of training programs or training activities.
Training feasibility analysis	Training feasibility analysis is a cost-benefit analysis that estimates of the cost of the training weighed against the possible benefits that could be achieved if training were conducted.
Training implementation	Training implementation is a phase in the training Analysis, Design, Develop, Implement and Evaluate (ADDIE) process that is the conduct and delivery of the course/event in accordance with how the course/event was designed.
Training level	Training level is a classification that identifies the priority for training in order for the performer to be able to carry out the task within its defined performance standard. **Note** Training level is often rated from one to five where one represents over training required and five represents formal training is not required.
Training media	Training media represents any means or instrument of communication that is used as a part of an instructional sequence to demonstrate or clarify course content and to facilitate learning or increase comprehension of course material. Example: Auditory media, visual media, and printed media
Training module	Training module is a group of multiple related lessons that promotes efficiency in the course structure.
Training need interview	Training need interview is the activity of asking questions to experts or performers to identify training needs.
Training needs assessment	Training needs assessment is the activity to gather information about work requirements that can be resolved by training or other human interventions.

Term	Definition
	Note Training needs assessment include performance analysis, target audience analysis, sorting training needs and wants, job analysis, and task analysis.
Training Needs Analysis (TNA)	TNA is the method of determining if a training need exists and, if it does, what training is required to complete the performance requirements of a Product.
Training audience description	Training audience description is a description that gives more information on the trainee audience for who the training program being developed. **Note** Training audience description can include training background, job experiences, etc.
Training Situation Analysis (TSA)	TSA is an analysis activity that is performed to define the need for training and to identify and evaluate possible alternative solutions.
Training Situation Analysis Report (TSAR)	TSAR is a formal report used to document the results of the training situation analysis.
Training situation document	Training situation document is a formal deliverable that details the structure/format of a Training Situation Analysis Report, (TSAR).
Training strategy	Training strategy is a blueprint for training development to meet the training needs of the organization and support mission accomplishment.
Training system organization	Training system organization is an organizational structure for the training organization.
Training task analysis	Training task analysis is a systematic study to determine the performance requirements of tasks, and subtasks, and to determine the Knowledge, Skills and Attitudes (KSA) required in the performance of tasks and subtasks.
Training task list	Training task list is a complete enumeration of all tasks that require training.
Training technology assessment report	Training technology assessment report is part of the training situation analysis report that details the technology used to support a training system.
Training assessment validation	Training assessment validation is a process used to determine if a training assessment successfully measures the intended objectives.

Term	Definition
Training validation	Training validation is the process used to determine if new/revised courses and training products/materials accomplish their intended purpose efficiently and effectively. **Note** Training validation is the process used to determine if training accomplishes its intended purpose.

Chapter 8.1.2

Terms, abbreviations and acronyms - Abbreviations and acronyms

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1 Abbreviations and acronyms

1.1 General

When there is doubt whether an abbreviation or acronym will be understood or whenever there is ample space to write in full, the term must be written out rather than abbreviated.

1.2 Word combination - Acronym

Abbreviations for word combinations, acronyms, must be used as such and not separated for use singly, unless authorized singly.

Single abbreviations can be combined when necessary if there is no abbreviation listed for the combination.

1.3 Tense and number

The same abbreviation must be used for all tenses, possessive cases, singular and plural forms of a given word.

1.4 Abbreviation and acronym list

AAR	After-Action Review
ADDIE	Analysis, Design, Development, Implementation, and Evaluation

AL	Accelerated Learning
A/V	Audio Visual
CAD	Course Administrative Data
CAI	Computer Assisted Instruction
CBT	Computer Based Training
CMP	Course Management Plan
CRI	Criterion Referenced Instruction
CO	Conference
DIF	Difficulty, Importance and Frequencies.
DL	Distributed Learning
DM	Demonstration
ELO	Enabling Learning Objective
I&KPT	Instructor and Key Personnel
IETM	Interactive Electronic Technical Manual
IETP	Interactive Electronic Technical Publication
IG	Instructor Guide
ILT	Instructor Led Training
IMI	Interactive Multimedia Instruction
ISD	Instructional System Design
ISR	Instructor-to-Student Ratio
ITP	Individual Training Plan
JA	Job Aid
JIT	Just In Time Training
KSA	Knowledge, Skills and Attitude
LO	Learning Objectives
LP	Lesson Plan
LS	Learning Step/Activity
MOI	Method of Instruction
NA	Needs Assessment
OJT	On the Job Training
PA	Performance Assessment
PE	Practical Exercise
POI	Plan of Instruction

QA	Quality Assurance
QC	Quality Control
SAT	Systems Approach to Training
SCID	Systematic Curriculum and Instructional Development
SCORM	Shareable Content Object Reference Model
SG	Student or Study Guide
SGI	Small Group Instruction
SME	Subject Matter Expert
SPL	Self-Paced Learning
SQT	Skills Qualification Test
TADSS	Training Aids, Devices, Simulators, Simulations
TBT	Technical Based Training
TD	Training Development
TLO	Terminal Learning Objective
TM	Technical Manual
TNA	Training Needs Assessment (also Training Needs Analysis)
TNG	Training
TQR	Training Quality Report
TSA	Training Situation Analysis
TSAR	Training Situation Analysis Report
TSP	Training Support Package
WBI	Web Based Instruction
WBT	Web Based Training