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SERIES M: TELECOMMUNICATION MANAGEMENT,
INCLUDING TMN AND NETWORK MAINTENANCE

Telecommunications management network

Shared information and data model (SID)

Recommendation ITU-T M.3190

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Recommendation ITU-T M.3190

Shared information and data model (SID)

Summary

Recommendation ITU-T M.3190 is an introduction to the TM Forum SID analysis model and a specification through reference of the ITU-T subset of SID (the product and service business entities). The SID analysis model scope covers the information required to implement use cases based on the eTOM processes. The SID analysis model is implementation independent, focusing on what the information is and what its relationships are, not on how these are to be implemented.

The SID applies primarily to service providers' businesses and engaged stakeholders, e.g., system integrators, independent software vendors and network equipment providers.

Source

Recommendation ITU-T M.3190 was approved on 14 July 2008 by ITU-T Study Group 4 (2005-2008) under Recommendation ITU-T A.8 procedure.

Keywords

Data model, information model, methodology, TM Forum, UML.

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Recommendation ITU-T M.3190

Shared information and data model (SID)

1 Scope

This Recommendation is an introduction to the TM Forum SID analysis model and a specification through reference of the ITU-T subset of SID. The SID analysis model scope covers all of the information required to implement use cases based on the eTOM processes [ITU-T M.3050.x]; in effect, this means that the SID covers a large proportion of the information needs for a service provider. However, the SID is still being developed and while the documents available today cover a substantial part of a service provider's core information needs, they do not cover all of them.

The SID analysis model is implementation independent, focusing on *what* the information is and *what* its relationships are, not on *how* these are to be implemented.

The SID applies primarily to service providers' businesses and engaged stakeholders: system integrators (SI), independent software vendors (ISV) and network equipment providers (NEP).

Parts of the SID may also apply directly to, or be adaptable to, other non-Telco service provider enterprise businesses.

The focus of this Recommendation is the product and service business entities.

2 References

The following ITU-T Recommendations and other references contain provisions which, through reference in this text, constitute provisions of this Recommendation. At the time of publication, the editions indicated were valid. All Recommendations and other references are subject to revision; users of this Recommendation are therefore encouraged to investigate the possibility of applying the most recent edition of the Recommendations and other references listed below. A list of the currently valid ITU-T Recommendations is regularly published. The reference to a document within this Recommendation does not give it, as a stand-alone document, the status of a Recommendation.

- [ITU-T M.3020] Recommendation ITU-T M.3020 (2007), *Management interface specification methodology*. <<http://web.itu.int/rec/T-REC-M.3020/>>
- [ITU-T M.3050.x] Recommendations ITU-T M.3050.x-series (2007), *Enhanced Telecom Operations Map (eTOM)*. <<http://web.itu.int/rec/T-REC-M.3050.0/>>
- [ITU-T M.3100] Recommendation ITU-T M.3100 (2005), *Generic network information model*. <<http://web.itu.int/rec/T-REC-M.3100/>>
- [TMF GB922] TM Forum GB922, *Shared Information/Data (SID) Model. Concepts, Principles, and Domains, Release 7.5*.
<<http://www.tmforum.org/DocumentsInformation/GB922InformationFramework/35040/article.html>>
- [TMF GB922A3] TM Forum GB922, *Shared Information/Data (SID) Model. Addendum 3 – Product Business Entity Definitions, Release 7.5*.
<<http://www.tmforum.org/DocumentsInformation/GB922InformationFramework/35040/article.html>>
- [TMF GB922A4SO] TM Forum GB922, *Shared Information/Data (SID) Model. Addendum 4SO – Service Overview Business Entity Definitions, Release 7.5*.
<<http://www.tmforum.org/DocumentsInformation/GB922InformationFramework/35040/article.html>>

Additional non-normative references can be found in the Bibliography.

3 Definitions

3.1 Terms defined elsewhere

This Recommendation uses the following terms defined elsewhere:

3.1.1 aggregate business entity [TMF GB922]: An Aggregate Business Entity (ABE) is a well-defined set of information and operations that characterize a highly cohesive, loosely coupled set of business entities.

3.1.2 attribute [TMF GB922]: An attribute is a fact that describes a business entity.

3.1.3 business entity [TMF GB922]: A Business Entity represents something of interest to the business that may be tangible things (such as a Customer), active things (such as a Customer Order), or conceptual things (such as a Customer Account). Business entities are characterized by attributes and participate in relationships with other business entities. Business entity instances typically move through a well-defined life cycle.

3.1.4 domain [TMF GB922]: A Domain is a collection of Aggregate Business Entities associated with a specific management area. Domains that make up the SID Framework are consistent with eTOM level 0 concepts.

3.1.5 relationship [TMF GB922]: A relationship is an association of business interest between two business entities, or between a business entity and itself.

3.2 Terms defined in this Recommendation

This Recommendation defines the following terms:

3.2.1 information model: An information model for a problem space represents all relevant things, i.e., objects in that problem space along with all of their relevant attributes, and relationships.

- There may be a number of different relevant viewpoints represented for different purposes.

An information model is *independent* of implementation, i.e., independent of platform, language, protocol, etc.

- For example, it does not represent whether it is defined using CORBA IDL or a XML schema.

Not all things (objects) in the information model will result in implementation forms.

- For example, an information model view may be specified for the purpose of communication across management interfaces. However, not all things (objects, attributes, relationships) in that model will be visible across a management interface.
- The things to be encoded in an implementation form will be identified in the information model.

3.2.2 data model: A data model is an encoded form of relevant parts of the information model for a *specific* platform, language and/or protocol, i.e., this is an implementation view.

- A data model adds no problem space specific properties, it only applies encoding and augments the information model with encoding directives.
- The relevant parts to be encoded for a specific application will be identified in the information model.

A single information model may give rise to one or more data models.

- Data models are typically designed with respect to the characteristics of the platform, language or protocol.
- For example, an information model may be represented via a data model defined in CORBA IDL and also a data model defined using a XML schema.

4 Abbreviations

This Recommendation uses the following abbreviations:

ABE	Aggregate Business Entity
CMIP	Common Management Information Protocol
eTOM	Enhanced Telecom Operations Map
MISM	Management Interface Specification Methodology (see [ITU-T M.3020])
NgOSS	New Generation Operations Systems and Software
QoS	Quality of Service
SID	Shared Information and Data model
SLA	Service Level Agreement
UML	Unified Modelling Language
VPN	Virtual Private Network

5 Conventions

SID is described using UML [OMG UML] as described in Appendix III.

An analysis pattern describes a problem which occurs over and over again, and describes the core of the solution to that problem. Key analysis patterns that have been applied for the modelling of SID are described in Appendix I.

6 SID introduction

6.1 SID as an information model

6.1.1 What it is

A common information model will streamline the processes associated with information exchange, both within an enterprise and between the enterprise and its external stakeholders.

Having a standard information model provides the following benefits:

- it allows for simplification of information management, by providing a common terminology and reducing unnecessary variation;
- it allows for unification of information both within an enterprise and between enterprises;
- it provides a bridge between the business and information technology groups by providing definitions that are understandable by the business, but are rigorous enough to be used for software development.

These benefits then enable business benefits relating to cost, quality, timeliness and adaptability of enterprise operations, allowing an enterprise to focus on value creation for their customers.

An information model should model fundamental concepts and not be affected by minor business environment changes like organization restructures.

The information model should be an enabler of change (new products, processes and ways of doing business), not a blocker to progress.

An information model (as opposed to a data model) is an abstraction and only provides a high level view of things of interest to the business. It aids in understanding the scope and breadth of the business, rather than the depth.

An information model is a way of representing and structuring information that has advantages over other common artifacts, as described in Table 1.

Table 1 – Information model comparison to other artifacts

Artefact	Artefact limitations	Information model advantage
Glossary	Hard to understand how the concepts relate	An information model links concepts together and provides a visual overview.
Descriptive document	Often rambling & inconsistent with overlapping terminologies used	An information model is more precise, using the power of UML to ensure that the information is represented in a consistent manner.
Database model or source code	Too detailed to get a feel of the big picture. Hard to match to business requirements. Hard to convert from a particular language/platform/environment.	A database model is a solution, but it may not map to your problem. A business is likely to have many database models and these need to be understood against a common view of the business (e.g., for EAI integration, business intelligence, etc.). The SID documents a unifying view: the basis for decisions, not just the results.

There are many views as to what an information model is and does. For the SID, the initial work has focused on creating a conceptual or analysis model, (also known as a domain model [b-Patterns-1] [b-Patterns-2] or a semantic model [b-Zachman]). The model is a representation of real world objects in which there is interest from the business.

An analysis model includes:

- things in which the business is interested (domain entities);
- how they are related to one another (associations);
- key details about those things which help to define them unambiguously (domain-level attributes).

An information model is useful:

- as a starting point for internal modelling work, applications and messages between software components or database schemas;
- to help in defining a common business terminology, e.g., for integration activities;
- to help in business transformation programs;
- to help in understanding business concepts and their relationships;
- as a source of inspiration – for a new view on traditional practices.

6.1.2 What it is not

An information model – and SID – is not:

- a database model;
- a definition of how software will be written;
- an implementation of software classes;
- a software API (application programming interface);

- a set of component messaging definitions.

The analysis model will, however, provide business definitions that should be a major input to the definition of the above items.

The SID analysis model is not:

- a definition of software classes;
- enough to do an implementation on its own;
- a definition of platforms, protocols, software languages or software products to be used for developing software components.

The SID is not a "magic bullet" but should be seen as a key component of an integrated information architecture (model framework + methodology) within an overall enterprise architecture.

Other parts of an information architecture are typically:

- Information policy – Directs information management within a business.
- Communication policy – Information maintenance and publishing standards (model downloads, data glossary/dictionary definitions, interface definitions, data translations, etc.).
- Governance processes – Managing separate component models within the overarching framework principles including interface design; managing data definitions within process design; managing data definition within applications design.

To achieve maximum business benefits, businesses need to consider how to integrate the use of the SID into their existing processes and procedures, especially those relating to IT definition & development.

6.2 Document structure

The SID is organized in a number of Addenda. The following documents are normative parts of this Recommendation.

Reference	Title	Included aggregate business entities
GB922 [TMF GB922]	Business View Concepts, Principles, and Domains describing the organizing structure of the SID Business View shared information/data, the relationship to other TMF deliverables, and views of the contents of the model.	
GB922 Addendum 3 [TMF GB922A3]	Product	Product Specification, Product Offering, Product, Product Offering Price
GB922 Addendum 4SO [TMF GB922A4SO]	Service	Service Specification, Service

NOTE – Only the service and product ABEs [TMF GB922A3] [TMF GB922A4SO] are normatively referenced by this Recommendation. The complete set of ABEs can be found in Appendix II.

The SID Addenda use a mixture of descriptive text, UML diagrams and tables which formally define the entities and attributes. This provides concise and precise definitions with background reasoning and explanations.

6.3 Relationship with other Recommendations

6.3.1 Relationship with [ITU-T M.3020]

The management interface specification methodology (MISM) defined by [ITU-T M.3020] specifies a three-phase process with features that allow traceability across the three phases. The three phases apply industry-accepted techniques using object-oriented analysis and design principles. The three phases are requirements, analysis and design.

The requirements and analysis phases produce UML specifications. The design phase uses network management paradigm specific notation. The outputs of the 3 phases are:

- Requirements phase – Requirements.
- Analysis phase – Implementation-independent specification.
- Design phase – Technology-specific specification.

The SID as a conceptual model is an implementation-independent specification. Given the historic background, the SID has not been developed based on the methodology of [ITU-T M.3020], but the result maps well to the outcome of the analysis phase. A distinction between the SID and [ITU-T M.3020] is that the SID is limited to the conceptual information model and without the interface (operations and notifications) aspects also covered by [ITU-T M.3020]. However, SID can be used as an input to the specification of concrete interfaces based on the methodology.

6.3.2 Relationship with eTOM ([ITU-T M.3050.x])

The SID and eTOM [ITU-T M.3050.x] model the same subject matter from different points of view. The eTOM focuses on the business processes; the dynamic aspects of the business.

The SID analysis model focuses on the static aspects of the business; the things that the business processes act on, their characteristics and relationships.

The SID analysis model is organized using the SID framework.

The top level of grouping, called a SID domain, aligns with the eTOM level 0 definitions of:

- Market/Sales
- Product
- Customer
- Service
- Resource
- Supplier/Partner.

The framework also represents common business entities (e.g., party, location, policy) and has a placeholder domain for Enterprise entities which have not yet been fully defined (e.g., Financial information).

The SID framework is extensively documented in the main GB922 document [TMF GB922] with an overview given in clause 7.

6.3.3 Relationship with [ITU-T M.3100]

[ITU-T M.3100] is a generic information model focused on modelling of equipment and network resources. [ITU-T M.3100] is structured into fragments:

- Network fragment
- Managed element fragment
- Physical equipment fragment
- Logical equipment fragment

- Termination point fragment – Network element view
- Termination point fragment – Network view
- Topology and connectivity fragment – Network view
- Telemetry fragment
- Transmission fragment
- Cross-connection fragment
- Functional area fragment

The products and service domains defined by SID can be considered as complements to the current content of [ITU-T M.3100], i.e., there is no direct overlap between the two models.

The current [ITU-T M.3100] is based on the GDMO notation. As a result, [ITU-T M.3100] can be considered a data model (see definitions). GDMO is a flexible notation that need not be supported by CMIP. The result is that [ITU-T M.3100] today is a combination of an information model (the conceptual aspects) and a specific data model for use with CMIP.

6.3.4 Relationship with [b-ITU-T M.1400.x]

The [b-ITU-T M.1400.x] series Recommendations focus on the specification of the terminology and grammar as perceived by the end users. The specification requirements may include requirements to support end-user interaction at their human-computer interfaces.

A detailed description of the relationship and differences can be found in Appendix V.

7 SID Framework

This clause describes the SID framework that is used to organize the SID model. The SID framework provides a high-level view into the SID entities, as well as providing an organizing structure in which the SID business entities reside. Additional details can be found in [TMF GB922].

Figure 1 below shows how the domains contained within the SID framework align with eTOM level one domains/concepts. Whether taking a process or information perspective, it is important to be viewing the same set of concepts. The alignment is also a necessary enabler when mapping eTOM processes to SID business entities.