# Application Framework (TAM)

*Concepts and Principles*

**GB929-CP**

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# Notice

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# Executive Summary

This Concepts and Principles document is part of a set of documents that together comprise the Application Framework. The document strives to enable the reader to get a complete point of view of the compilation and creation of Application Framework, explaining the reasoning to its construction

At its core, Application Framework is a logical function map supporting the business processes in a Communications Service Provider enterprise. It contains verbal descriptions and hierarchal grouping that are structured based on the Information Framework domains and the Business Process Framework vertical groupings. The framework strives to outline the relationship between the processes of the Business Process Framework, information objects of the Information Framework and Application Framework listed functionalities

The Concepts and Principles document describes the fundamental *notions* at the base of this part of Frameworx. Chapter 2 is devoted to the definitions of the concepts: application, functionality and business services.

Each Framework has its own systematic method for identifying its core concepts, grouping and classification. Chapter 3 describes the various identification approaches employed within the Application Framework. The identification guidelines include commercial and best IT practices while preserving atomic attributes such as self-containment and uniqueness for reusability.

Reasoning for grouping of applications can vary. The document suggests a number of cases for grouping throughout the Application Framework. These can be based on applications that consume other application's functionality or share functionality with another application. Grouping can also be based on similar end users, purpose, or data entity.

The classification system as described in this document is reusing the Business Process Framework verticals and the SID Domains plus augmentations required to represent the integration infrastructure functionality.

Further information on the Application Framework and examples of its use are shown on the TM Forum website www.tmforum.org .

  

# 1. Introduction

## 1.1. What is the TM Forum Application Framework

The TM Forum Application Framework (a.k.a. TAM) is a functionality framework of reference. It describes the CSP ecosystem of OSS/BSS applications. The map comprises:

- **Logical function description** – Verbal specification of functionalities in the CSP ecosystem.
- **Logical functional grouping** - Common sense hierarchical grouping (or decomposition) of functionalities into applications.
- **Viewing Map** – The applications are aligned across horizontal layering of the Information Framework (a.k.a. SID) and vertical layering of the Business Process Framework (a.k.a. eTOM) so that the CSP universe is laid in a meaningful view that relates to the other frameworks.
- **Reference architecture** – The applications are related to each other through the notion of "Business Service". Each application lists the services it expose and the services it consumes yielding together a reference-architecture.

## 1.2. Purpose of the Application Framework

The TM Forum Application Framework is another plane in the Communication Service Providers ecosystem Enterprise Architecture. It provides a common reference map and language to navigate a complex systems landscape that is typically found in the CSP ecosystem. Where the Business Process Framework (a.k.a. eTOM) provides a frame of reference for *processes* and the Frameworx - Information Framework (a.k.a. SID) provides a frame of reference for *information language*, the Frameworx – Application Framework (a.k.a. TAM) provides a frame of reference for telecom *applications functionalities*.

The Applications Framework provides the bridge between the Frameworx building blocks (Business Process Framework and Information Framework) and real, deployable, potentially procurable applications by grouping together functionalities required to support business processes in the CSP ecosystem.

No document like this can ever be 'right' in the sense that it represents a perfect systems infrastructure. What this document intends to give the industry is a common frame of reference that allows the various players who specify, procure, design and sell operation and business support systems to use common logical function reference architecture.

For detailed usage of the Application Frameworks please refer to document GB929U – "The Application Framework Users Guide" (planned to be published as part of the 12.5 release).

## 1.3. Scope of the Application Framework

As the Business Process Framework (eTOM) address the business processes required to run a service provider business and the Information Framework depicts the business entities

  

information units required for the business process, the Application Framework address the logical functions supporting the business processes. As such the scope of the Application Framework logical functions is focused on the management aspects of the business.

The Application Framework depicts the applications that are utilized at the enterprise. In concert with the Business Process Framework the mass of the text is focused with SIP and Operations aspects of a CSP. Since the primary benefit of the Application Framework pertains computerized systems it is more developed in the Operations area. Additional coverage of the Enterprise domain is included albeit it is of less detail.

It would be noted that the Application Framework is not covering the logical functions that are required to deliver the customer service such as network elements (this would fall under other SDOs such as 3GPP) as the TM Forum Frameworx is focused on the management aspects.

# 2. Application Framework Concepts

## 2.1. Application

An application is a cluster of related functionalities or other related applications. Application is an abstract logical description while a product and it capabilities is a realization of the application functionality.

For example: A word processing application is an abstract list of functions being required to author a document while Notepad, WordPerfect, MS-Word, Open office Writer, Apple iWork are just examples out of a long list of products available on the market for that purpose.

Note: The rationale of the clustering is described in a further section.

## 2.2. Functionality

Functionality is a verbal description of a capability required to perform a specific task.

The granularity of the functionality may vary from time to time. Coarse grain functionality may be decomposed further into lower level functionalities that can be clustered into applications.

For example: Mail merge can be considered as functionality in a word processing application. This functionality can be broken further into lower level functions such as template definitions, recipient list definition, etc.

## 2.3. Business Services

The notion of Business Services is outside of the scope of this document. Business Service (Formerly Known as NGOSS contract) definition is still a work in progress. The reader is referred to GB945 as a starting point. However, the notion of Business Service is important in the context of the Application Framework as the association that relates Applications to each other. Every Application provides functionality to other applications through exposed services. The functionality can be realized as a process of combining other functionalities exposed by other applications or through accessing Business Entities. It is expected that there will be at least one consuming Application of the service (otherwise the service is meaningless) and ideally only one application that exposes a particular service thus providing a normalized Application Map.

# 3. Application Framework Principles

## 3.1. How applications are identified?

### 3.1.1. Application definition methods

*Top down*

The top down approach begins with coarse grain functionality in mind and decomposing those in to fine grain functions. It is followed by an affinity analysis that clusters functions. Analysis and refinement of the resulting clusters results in a set of well-defined logical applications.

*Bottom up*

An approach that examines existing systems and identifies the logical functional groupings they contain. These groupings are used to amalgamate and / or refine the logical groupings of application.

*Combined Approach*

In practice both methods can work interleaving i.e. a system architect with optimizing an existing system or start with an abstract target architecture, decomposing/grouping functionalities back and forth, aiming towards a refined cluster of well-defined functions

### 3.1.2. Prime identification guidelines

Given that an application is a collection of functionalities, it makes sense to cluster functionalities based on a theme. The clustering themes of Application Framework are similar to that customarily used in SOA. There are three basic themes:

- Task centric- a collection of functionalities that are supporting a specific task; typically a business process element in Business Process Framework.

  E.g. Fallout Management

- Entity centric- a grouping based on a specific entity; typically a business entity identified by Information Framework

  E.g. Service Order management

- Utility centric- when a functionality pattern is being recognized or a functionality is repeated across the application map a generalized / normalized application is being advised

  E.g. Transactional Document Production

### 3.1.3. Practical identification guidelines

Practically, the Application Framework represents industry agreed reference architecture that has been evolved following market and IT trends. The following factors affected the formation of the Application Map:

#### *Commercial availability / value*

A basic measurement to identify an application can be the availability of similar products in the market. If there are available two or more products with similar functionality, it is probably an indication for a reasonable clustering of functionality thus justifying the existence of an application in the application framework. However this cannot be a prerequisite in becoming an application-framework application since it would position the application framework as a follower and not as a target reference framework. On the other hand it is expected that COTS products will be available addressing this application. Hence, an application in the framework shall have a sellable added value in the Communication Service Providers market[1]. The application framework should refrain from defining applications that has no commercial value associated with their productization.

#### *Best IT practice*

Best IT practices tend to drive architectures that affect application grouping. For example: A tiering architecture that separates backend and frontend applications would be reflected in defining the functionality of an application.

#### *Normalization / Reusability*

Whenever the same functionality is being listed as part of two distinct applications, the functionality should be extracted from all appearances into a self-contained application. The new application would expose a business service for this functionality. The original applications would consume this newly established service. The consuming applications would typically invoke this service for the purpose of providing its intended functionality. This practice is being suggested in order to streamline the Application Framework and minimize overlap. For example a customer order is viewed in a number of places in the document. An order is being captured in the various Channel Sales as well as in the Customer Order Management Application.

#### *Self-containment*

It is expected that an application will represent a coarse grained functionality collection that should in most instances be able to run on its own. I.e. it will minimize the number of consumed business services that are required to fulfill the application functionality. Note that the reusability guidance (described above) necessitates by definition the use of external services. E.g. A bill calculation application will need to rely upon external tax calculation application.

[1] It may have a value in the software components market but this is out of the intention of the Application Framework.

## 3.2. How applications are grouped?

Once we have a set of fine grain applications, those are grouped based on several criteria. This section describes the various grouping options which are used throughout the TAM document. The various applications are grouped according the any of these methods.

### 3.2.1. Invocation Context

Applications with tight invocation relationship are likely to be grouped together in a higher level application. For example: if each of the applications A and B provides business services consumed by application C it is an indication for grouping.
Another example is when shared functionality is consumed by a set of applications. For example *B0 is* sharing the same functionality in B1 B2 etc. The Bx applications are subject to grouping into a single application group B As in the common applications of Channel sales Management such as create and promote leads, Sales quotation etc. .
This type of grouping would reduce the number of overall interactions between applications by creating a self-contained coarse grain application. See Figure 1.

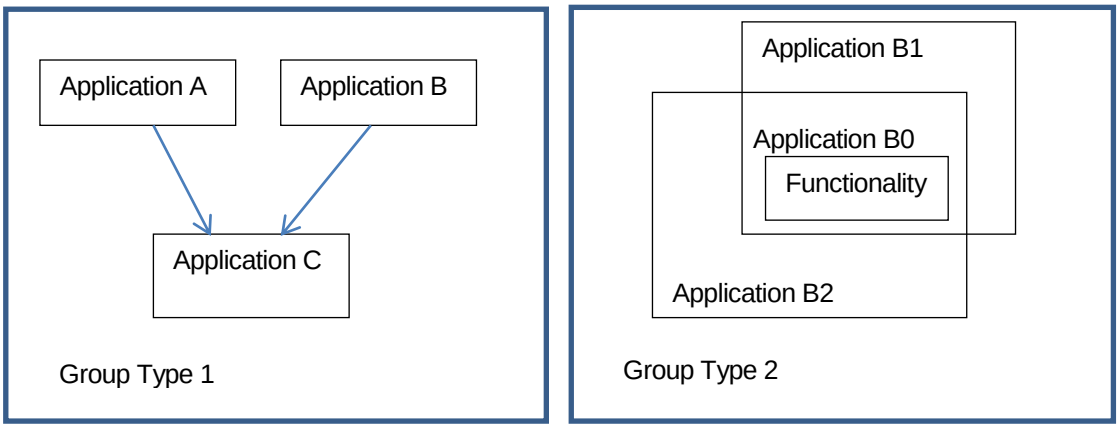


**Figure 1**

### 3.2.2. End user

The Application Framework takes into consideration the end user of the application. The end user would typically wish to see sibling functionalities required for his day to day job to be adjacent. Thus the end user using the destined product becomes an anchor for grouping the applications together.

### 3.2.3. Purpose

Another criterion to be used for grouping is commonality of objectives between applications. If several applications are used for sibling purpose they are likely to be grouped together.

### 3.2.4. Acting on a specific Information Framework entity

Applications can be grouped via the data they are acting upon. As mentioned in the document, application is automating business processes by using Information

  

Frameworx entities. In some cases a group of functionalities will be related and clustered as an application based on the fact the they are strongly related to data from a specific entity with in the Information framework

## 3.3. How applications are mapped

One of the aspects provided with Application Framework is a viewing system. The application map approach was to reuse existing classification mechanisms from the existing frameworks (Business Process Framework & Information Framework) while extending those as necessary.

### 3.3.1. Embracing Process & Information Frameworks views

The application framework adopts the Business Process Framework vertical segments Strategy and Commit, Infrastructure Lifecycle Management, Product Lifecycle Management, Operational Support and Readiness, Fulfillment, Assurance and Billing. It also adopts the Information Framework domain horizontals, originally eight domains, the Common domain in Information Framework has been excluded from Application Framework view since it contains mostly general constructs that are used as basis for meaningful Business Entities.

The Application Framework structure maps each application in the SIP and Operation Business Process Framework domains to an intersection of both a horizontal and vertical classifications from Information Framework and Business Process Framework respectively[2].

Some applications may span across several classification segments.

### 3.3.2. The cross domain and its applications

Typically, an Application Framework application is listed under the domain its functionality pertains. This taxonomy, allows intra-domain (horizontal) application spanning (or grouping). However, there are some applications that span across multiple domains that needs vertical footprint. The Cross Domain Section lists applications that pertain to multiple Application Framework domains. Cross domain applications are typically created through identifying common functionality between applications across Application Framework domains (usually under the same vertical). This analysis is useful in identifying the Utility-centric business services as described in the Implementation Methodology of the TM Forum Frameworks (GB945M). A common application can be further specialized in the particular domain for the purpose of adding unique domain functionality. E. g. Catalog Management is a cross domain application and in addition in the Product, Service and Resource domains a subject specific application is described. The cross domain application concept resembles the concept of a base class and a derived class in object oriented design. Thus, a set of specialized applications (in multiple domains) that are based on the same common application can be productized in various ways. One option would be to have a unified product that encapsulates the inclusive functionality from the multiple pertaining domains. Another option would be to productize each domain

[2] The Supplier / Partner domain should be reworked to complete the mapping.

functions in a separate product while encompassing the base functionality depicted in the common application. A third option would be to productize each functional grouping by its own and have the specialized application expose the common functionality by consuming the services exposed by the common application.

### 3.3.3. Application Integration Infrastructure

The application Integration Infrastructure is needed to complete the view of the CSPs environment, yet not reflected in other Frameworks.

This class will include applications that are not geared towards business entities (so will not be viewed in Information Framework) nor to business processes per se (so they will not have a representation in Business Process Framework).

Applications in this class will include middleware, communication application as well as business process management, workflow tools and Complex Event Processing.

Future uses of this section may expand into other aspects such as Computer Telephone Integration functionality, etc.

## 3.4. Forward Compatibility

As explained earlier about the Application Framework formation, it is subject to the evolution of IT best practices. While the importance of organized evolution is closely considered, no forward compatibly restriction can be endorsed and future version of the document may detail applications that will not be compliable with the current version.

## 3.5. Relations with other frameworks

The Application Framework needs to be viewed within the context of The TM Forum's Frameworx.

The TM Forums Business Process Framework (Business Process Framework) is concerned with the business needs of an organization. Application Framework, on the other hand is concerned, with the functionalities that are supporting these processes.

One Application Framework Application can support a number of business process. E.g. the Transactional Document Designer is a general purpose document generating application that is utilized in a number of business processes to create the pertinent document.

In other cases a single business process stipulates the use of a number of Application Framework Applications, e.g. The Retention and Loyalty Process necessitates a number of applications to fully support the business process in hand.

Additionally, the Application Framework is concerned with automated systems so human interventions in the BPs will not be covered by Application Framework. E.g. a collection business processes may require a human business interaction to speak with the customer. The supporting Application Framework application can list the

  

recommended customers to call and the call recommended script and even to initiate the call through CTI. However, the human interaction itself is out of the scope for Application Framework.

# 4. Annex A - Acronyms

| | |
|---|---|
| BP | Business Process |
| BSS | Business Support System |
| COTS | Commercial Off-the-shelf |
| E2E | End-to-end |
| eTOM | enhanced Telecom Operations Map |
| FAB | Fulfillment, Assurance and Billing |
| OPS | Operations |
| OSR | Operations Support & Readiness |
| OSS | Operations Support System |
| PLM | Product Lifecycle Management |
| SID | Shared Information & Data Model |
| SIP | Strategy, Infrastructure and Product |
| S/P | Supplier/Partner |
| S/PRM | Supplier/Partner Relationship Management |
| TM Forum | TeleManagement Forum (see also TMF) |
| TMF | TeleManagement Forum (see also TM Forum) |

To find Acronyms expansions go to http://www.acronymfinder.com.

# 5. Administrative Appendix

## 5.1. Acknowledgments

This release of the Application Framework is the result of the combined efforts of a large group of individuals from companies all over the world.

## 5.2. Document History

### 5.2.1. Version History

| Version Number | Date Modified | Modified by: | Description of changes |
|---|---|---|---|
| 0.1 | 13 July 2011 | Avi Talmor | Straw man proposal |
| 0.2 | 29 July 2011 | Avi Talmor | Editorial amendments |
| 0.3 | 3 August 2011 | Avi Talmor | Editorial amendments |
| 0.4 | 20 September | Avi Talmor | Based on comment in TAM Call (TMF, IBM AT&T) |
| 0.5 | 28 October 2011 | Avi Talmor | Based on comment in TAM Call (GRASP, TMF, IBM AT&T) |
| 0.6 | 12 December 2011 | Avi Talmor | Combining comments for BT, TMF, Ericsson, Amdocs |
| 0.7 | 14 February 2012 | Avi Talmor | Resolved most comments as per call, Added Executive Summery, Add a scope section |
| 0.8 | 20 March 2012 | Avi Talmor | Editorial Changes and more comments |
| 0.9 | 26 April 2012 | Alicja Kawecki | Updated notice, minor formatting and cosmetic corrections prior to web posting and Member Evaluation |
| 0.10 | 22 October 2012 | Alicja Kawecki | Updated to reflect TM Forum Approved status |