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Open API Map

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Direct inquiries to the TM Forum office:

4 Century Drive, Suite 100
Parsippany, NJ 07054 USA

Tel No. +1 973 944 5100

Fax No. +1 973 944 5110

TM Forum Web Page: www.tmforum.org

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Executive Summary

In this increasingly digitized world, IT technology is connecting more and more people. This technology brings the enterprises into a dynamic, distributed environment and delivers business value on multiple channels including desktops and mobile devices. Since the complexity and scale is unprecedented, more openness and agility is required during innovation and competition in today's economy. The industrial trend has shown clearly that enterprises must provide more visibility to their APIs (Application Programming Interfaces) to facilitate open integration.

The TM Forum knows the importance of APIs and a group of open digital API definitions has been made. To date, those definitions have been based on the contributions of discrete API initiatives.

The API Map is intended to show the complete landscape of all the necessary APIs in a telecommunications ecosystem. It can guide the Service Providers or other large Enterprises to construct the ecosystem to attract DSP partners and integrating with them or as a basis of customization for individual partnerships.

The API Map will also uncover the future-oriented planning for potential new business APIs. In the years hereafter, those API definitions will be explored and the efforts to build them are encouraged fully.

The use of a standard API Map will facilitate the understanding of the interoperability between Service Providers and their partners and provide additional benefits for the enterprises such as:

- With a unified API Map, an enterprise can experience:
 - o Lower software integration costs, as application vendors converge on standardized exposure of capabilities
 - o Increased portability of applications
 - o Improved interoperability within and between business functions
 - o Easier upgrade and exchange of system components.
- By exposing IT capabilities as APIs, we will find new partnership models to enhance our services.

1. Introduction

This document provides an overview of the TM Forum API Map and its inheritance from the TM Forum API done to-date.

Its purpose is to present the value of the TM Forum API Map which shows the complete picture of business related API for the first time.

It is structured as follows:

- An overview of the Open Digital API Map:
 - o The business value it can provide
 - o The principles of the API Map
- A hierarchical taxonomy of the API Map
- A description of all the current TM Forum APIs in the API Map
- A summary of planned and future APIs which are in development now or need to be developed in future within the TM Forum.

1.1 The audience of the API Map

This document is intended for any party wishing to play a role in the open digital economy – Commercial, Operations and Technical management in Communications and Digital Service Providers, Content Providers and Brokers, Software Suppliers and Systems Integrators – who want to use/bundle simple content/communication services traditionally only available to Telco/Cable providers & partners.

It should have optimal benefit for players in industries outside ICT (example Automotive, Health Care ...), or for small technology startups that cannot afford the high investment in bespoke enterprise integration.

The specific focus is on business people wishing to know what they can achieve by using TM Forum APIs. In addition, IT Architects and developers will benefit from an overview of available APIs.

2. Open Digital API Map Overview

2.1 Business value of API Map

The API Map is helpful in a variety of possibilities to create distinct values. By building API following the map, the digital ecosystem can be achieved with fewer obstacles and it will result in systems integration and data sharing between partners through API interactions:

- For vertical industries
 - o Reduce the difficulties to enter and combine communication capabilities with the creative products, spanning national borders and specific brands
- For start-ups and SME
 - o Availability of a simple and modern interface technology requiring minimum domain expertise and allowing quick setup and deployment.
- For Telco & Information Providers
 - o Reduce administration of multiple external disparate interfaces.
 - o Faster capitalization of assets (increased usage through micro and cross industry exposure).

2.2 Principles of API Map

There are a number of industry-standard principles that guide the construction of good APIs, such as:

- **Abstraction:** Reflect the “business” service being provided, hiding the implementation.
- **Loose-coupling:** Do not expose any technical dependencies/intimate knowledge of the underlying implementation.
- **Reusability:** APIs are defined with re-use in mind (even for unknown future use-cases).
- **Discoverability:** Service contracts can be effectively communicated and interpreted.
- **Developer-friendly:** APIs can be consumed with minimal effort/cost.

Especially for the API in this Map, the division and position of the APIs also follow the distinct organization principles, as follows:

- Each API belongs to one or several Level 0 domains rooted in TMF Information Framework (SID) model.
- The domain of the API is determined by the relevant Information Framework ABE which is the base of the main resource of that API.
 - o If there are multiple Information Framework ABE entities which are depended by one API resource, the main Information Framework ABE is chosen according to the degree of correlation between Information Framework ABE and API resource.
 - o If there are multiple Information Framework ABE entities which are depended by one API resource, and the Information Framework ABE entities have same degree of importance for this API resource, such API should be placed in all relevant domains.

- The relationship between API and Information Framework will still be verified via business process (As shown in Chapter 4, this will be done in the future).
- The existing published TMF API is expected to keep as it is currently. Any change to the existing APIs should be discussed and agreed.
- The API should contain the tightly-related resources for the same purpose. The loose-coupled resources need to be divided into different API.
- The purpose of API and exposed resources in the API should not be duplicated.

2.3 Consistency with API Catalog

The API Catalog is regarded as the unique representation of TM Forum APIs for the members to trace all the APIs which has been confirmed by API Governance Board.

This Map keeps the consistent information with the API Catalog but it contains the levels and detailed descriptions for those API. Additionally, the map provides the landscape for the API evolution. It also gives the examples for the usage of APIs to help the members to understand and apply them.

3. Hierarchy of the API & Resource Map

The TMF APIs can be related to all other TMF frameworks, in that they:

- Are typically entity-centric, manipulating a primary resource that can be found in TMF Information Framework, an Information view of the API's
- Play a part in (potentially a number of) business processes from TMF-BPF (eTOM), a Business Process view of the API's
- Can be exposed by an normalized endpoint application or application-domain described by TMF-TAM, an Application view of the API's

You can therefore consider the API Map as a central catalog with a number of framework-centric views, expressed as mappings into that catalog.

Multiple views of the API Map are required to address different concerns and to represent different viewpoints.

The Information view of the API Map shows the API and API resources mapped to the Information Framework data domains and ABE's. This is useful to understand what data *is managed* through which API's.

The Business Process view of the API Map shows the API's in business context. This is useful to understand how API's *are used* to support the business processes of an organisation.

The 'Information view' of the API Map is organized in multiple levels:

- Level 0: the standard Framework business domains
- Level 1: The main TM Forum APIs, typically the primary resource, and aligned to TMF Information Framework ABEs.
- Level 2: the component resources exposed within the API.

3.1 Level 0 Map

The general business capabilities are divided according to SID domain:

Marketing/Sales	The Market/Sales domain supports the sales and marketing activities needed to gain business from customers and potential customers.
Product	The Product domain is concerned with the lifecycle of products offered to and procured by customers.
Customer	The Customer domain represents individuals or organizations that obtain products from an enterprise, such as a service provider. It represents of all types of contact with the customer, the management of the relationship, and the administration of customer data.
Service	The Service Domain is concerned with the definition, development, and operational aspects of Services used to realize offerings to the market.
Resource	The Resource domain is concerned with the definition, development, and operational aspects of the applications, computing, and networks which represent the infrastructure of an enterprise.
Engaged Party	The Engaged Party domain encompasses planning of strategies for Engaged Parties, handling of all types of contact with Engaged Parties, the management of the relationship, and the administration of Engaged Parties data. I
Enterprise	The Enterprise domain provides support and sets policy for the overall business, enterprise or Service Provider. It also includes activities that are common to all enterprises across all industries such as accounting and human resource management.
Common	The common domain is of different nature from the above defined ones as the processes, information data and applications described there do not necessarily have relationships.



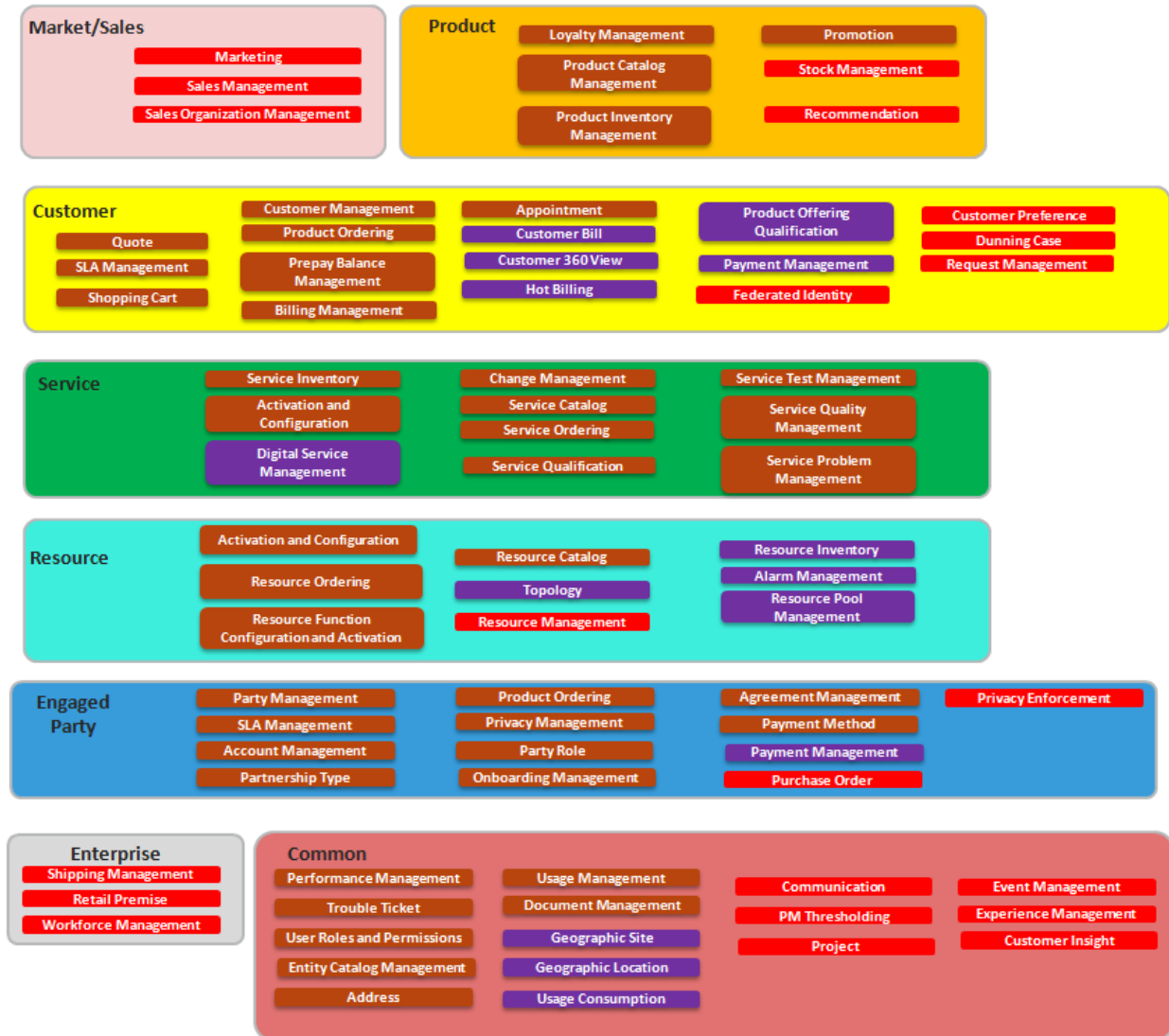
Figure 1 – Level 0 Map

3.2 Level 1 Map

Level 1 is the main TM Forum APIs and aligned to TMF-Information Framework ABEs.

Each level-0 part in the API Map shall contain the APIs which are based on the enterprise business operation requirements.

An API can contain a group of API resources which are aggregated to accomplish the same business purpose. API resource is mapped in Level 2 of the API Map.



The legend of the API status is as the following:

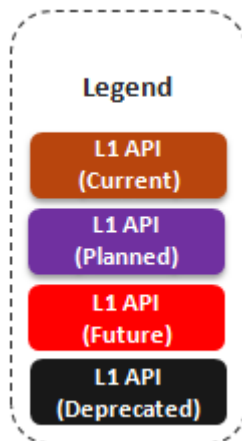


Figure 2 – Level 1 Map

Meaning of the status:

- “Current” : The API has been published with approved specification.
- “Planned”: The API has the draft specification which is still under reviewing of the stakeholders.
- “Future”: The API is recognized as useful, but no specification has been accepted by the API Governance board to start the reviewing.
- “Deprecated”: The API has been once published. However, it is replaced by other new API or become not required.

Nota bene:

- 1) Product Ordering API, SLA API, Activation and Configuration, Payment Management API appear in multiple domains due to the Information Framework mapping relationship.
- 2) “Address” API will be renamed as “Geographic Address”

3.2.1 Level 1 Map – Current API's

The following is a view of all existing TMF APIs:

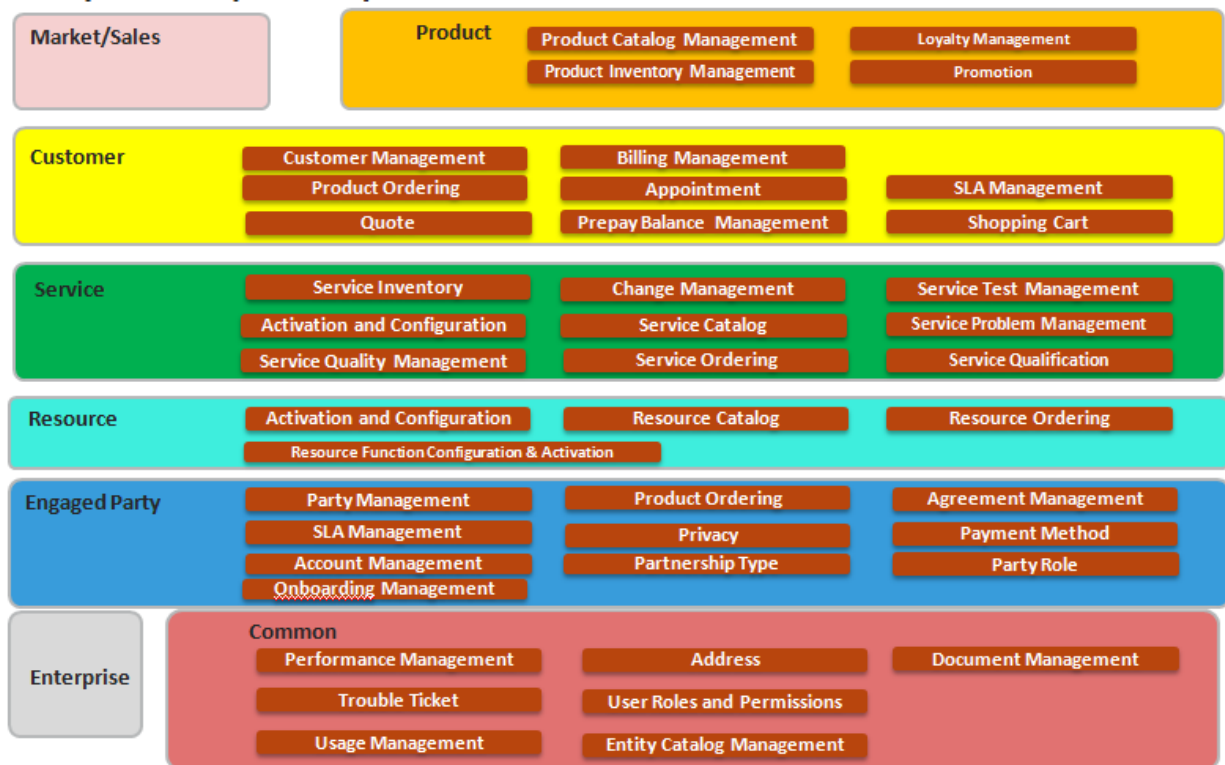


Figure 3- API Map Level 1 (Current/Existing)

To date, the TM Forum Open Digital API has delivered or started defining the following APIs:

Product Domain

- **Promotion API**

Promotion is the online incentive which provides discount, gift or other substantial stimulation to encourage more consumption according to the purchased offering.

- **Product Ordering API**

The Product Ordering API provides a standardized mechanism for placing a product order with all of the necessary order parameters. The API consists of a simple set of operations that interact with CRM/Order

negotiation systems in a consistent manner. A product order is created based on a product offering that is defined in a catalog. The product offering identifies the product or set of products that are available to a customer, and includes characteristics such as pricing, product options and market. The product order references the product offering and identifies any specific requests made by the customer.

- **Product Catalog Management API**

The Product Catalog Management API allows the management of the entire lifecycle of the catalog elements, the consultation of catalog elements during several processes such as ordering process, campaign management and sales management.

- **Loyalty Management API**

A loyalty program product specification is a detailed description of a loyalty program made available externally in the form of a Loyalty Product to Loyalty Program Members. A loyalty program product specification defines one or more Loyalty Rules that have to be checked in order to identify the actions to apply

- **Product Inventory Management API**

The Product Inventory API provides standardized mechanism for product inventory management such as creation, partial or full update and retrieval of the representation of a product in the inventory. It also allows the notification of events related to product lifecycle.

For example, product inventory API can be used to retrieve products owned by a customer or update the status of an installed product.

Customer Domain

- **Billing Management API**

The Billing Management API provides standardized mechanisms for billing account, bill item and settlement note advice management either in B2B or B2B2C contexts. It allows creation, update and retrieval of a billing account either in a B2B2C relationship context (creation of mass market customer billing account within a "Billing on Behalf of" process for example) or in a B2B context (creation of a billing account for a partner or B2B customer). It allows also creation and query of bill items allowing partners or B2B customer to check their invoice. In addition, it allows notification of settlement note advice to partners who can, then, query it.

There are plans to improve the billing management API. For 16.5 everything is going to stay as it is in the billing domain.

- **Shopping Cart API**

This API provides a shopping cart which is used for the temporarily selection and reservation of offerings in e-commerce and retail purchase.

- **SLA Management API**

The SLA API provides a standardized interface for SLA life cycle Management (SLA Negotiation, SLA configuration SLA Activation/enforcement, SLA Operations, SLA violation / consequence handling, SLA reporting) between a Customer and a Service Provider which provides offers (product with attached SLA in its catalog) the customer can discover, browse, trigger and order.

It also will be also useful in a multi-partner environment where exchanging SLA is needed in order to allow rapid and efficient SLA life cycle management across partners' environment. From SLA perspective, duties and rights are assigned to each actor & associated roles mainly in the case where a service is composed of various components brought by different partners within federation or / and syndication models.

- **Customer Management API**

The Customer Management API provides standardized mechanism for customer and customer account management, such as creation, update, retrieval, deletion and notification of events.

Customer can be a person, an organization or another service provider who buys products from an enterprise. Customer management API allows management of identification and financial information about him.

- **Prepay Balance Management API**

Prepay Balance Management API manages the balance, recharge (top-up) and transfer resources.

- **Appointment API**

The Appointment API is one of the Pre-Ordering Management APIs. The appointment API provides a standardized mechanism to book an appointment with all the necessary appointment characteristics. First, the API consists in searching free slots based on parameters, as for example a party. Then, the appointment is created. The appointment has characteristics such as nature of appointment, place of appointment.

Service Domain

- **Service Qualification API**

Service Qualification API is one of the Pre-Ordering Management APIs. Service Qualification API goal is to provide service availability at Customer location.

- **Service Quality Management API**

This API provides Quality Management for the certain service. It enables easy integration of Service Quality Management applications and client applications within the Digital Eco-system, where Service Quality Management application may reside in one enterprise and client applications may be in multiple other Enterprises.

- **Service Test Management API**

This API provides test procedure for the certain service. The Service Test API provides a standardized mechanism for placing a service test with all of the necessary test parameters.

- **Change Management API**

This API provides the control mechanism for the change of the service. Change Management process is to respond to the customer's changing business requirements while maximizing value and reducing incidents, disruption and network. The Change Management API provides the standard integration capabilities between external applications and Change Management Application.

- **Service Catalog**

This API allows the management of the entire lifecycle of the catalog elements, the consultation of catalog elements during service processes.

- **Service Inventory**

The Service Inventory API can be used to query the service instances for a customer via Self Service Portal or the Call Centre operator can query the service instances on behalf of the customer while a customer may have a complaint or a query.

- **Service Ordering**

The Service Ordering API provides a standardized mechanism for placing a service order with all of the necessary order parameters. It allows users to create, update & retrieve Service Orders and manages related notifications.

- **Service Problem Management API**

This SPM API is used for the service providers (Defined as the Middle B) to manage the service problems in their service area. Service problem is generated based on the information declared by Middle B or the event information notified from infrastructure providers (Defined as the First B) who provide the infrastructure of cloud or network.

- **Activation and Configuration API**

The Activation and Configuration API allows the user to retrieve, create, update, delete services and retrieve the monitor resource used to monitor the execution of asynchronous requests on specific resource.

Resource Domain

- **Resource Ordering API**

This API provides the order implementation on the resource to change or allocate the resource to meet the request of product order and service order.

- **Resource Function Configuration & Activation API**

This API is to be used for provisioning of components in support of cloud services. The components may be virtualized or physical.

- **Resource Catalog API**

The Resource Catalog Management API REST specification allows the management of the entire lifecycle of the Resource Catalog elements, the consultation of resource catalog elements during several processes such as ordering process, campaign management, and sales management.

- **Activation and Configuration API**

(Refer to the same API in “Resource Domain”).

Engaged Party Domain

- **Party Management API**

The Party Management API provides standardized mechanism for party management such as creation, update, retrieval, deletion and notification of events.

Party can be an individual or an organization that has any kind of relation with the enterprise.

Party is created to record individual or organization information before the assignment of any role.

For example, within the context of a split billing mechanism, Party management API allows creation of the individual or organization that will play the role of 3rd party payer for a given offer and, then, allows retrieval or update of their information.

- **Privacy API**

This API provides the management for the customer privacy information and preference.

- **Onboarding Management API**

It provides standardized mechanisms for managing an onboarding process. The intention for onboarding process in the Digital Ecosystem is to have a lightweight approach similar to an end-user signing-on to terms and conditions for downloadable applications. The interface will provide onboarding that identifies that a new API would be needed to automate the onboarding process. The onboarding of the “Party”, the role can be Partner, Supplier, Developer, etc. The onboarding of the “Services” could be product offerings.

- **Agreement Management API**

This API provides standardized mechanism for managing agreements, especially in the context on partnerships between partners.

- **Payment Method API**

This API supports the frequently-used payment methods for the customer to choose and pay the usage, including voucher card, coupon and money transfer bank card, a voucher, a bank account, a telco account, a loyalty account, a bucket, a check or an online wallet.

- **Party Role**

Party role is the basis data for the customer and partner. It is the business incarnation of the party.

- **SLA API**

(refer to the same API in “Customer Domain”)

- **Product Ordering API**

(refer to the same API in “Customer Domain”)

- **Account Management API**

The Account API provides standardized mechanism for the management of billing and settlement accounts, as well as for financial accounting (account receivable) either in B2B or B2B2C contexts.

Common Domain

- Trouble Ticketing API

The Trouble Ticketing API provides a standardized client interface to Trouble Ticket Management Systems for creating, tracking and managing trouble tickets among partners as a result of an issue or problem identified by a customer or another system. Examples of Trouble Ticket API clients include CRM applications, network management or fault management systems, or other trouble ticket management systems (e.g. B2B).

The API supports the ability to send requests to create a new trouble ticket specifying the nature and severity of the trouble as well as all necessary related information. The API also includes mechanisms to search for and update existing trouble tickets. Notifications are defined to provide information when a ticket has been updated, including status changes. A basic set of states of a trouble ticket has been specified to handle ticket lifecycle management.

- Performance Management API

The Performance Management API provides standardized mechanism for performance management such as creation, partial or full update and retrieval of the resources involved in performance management (Measurement Production Job, Measurement Collection Job, and Ad hoc Collection). It allows also notification of events related to performance.

- Usage Management API

The Usage management API provides standardized mechanism for usage management such as creation, update, retrieval, import and export of a collection of usages.

This API will be extended to include more services relevant to usage charging.

Usage API manages both rated and non-rated usage.

For example, Usage API allows a service provider:

- To retrieve usage generated by a partner service platform in order to rate it,
- To provide rated usage to a partner for consumption follow up purposes.

- Address API

The Address API is one of the Pre-Ordering Management APIs. The Address API provides a standardized client interface to an Address management system .It allows to look for worldwide addresses. It can also be used to validate address data, to be sure that it corresponds to a real address.

- Quote API

The Quote API is one of the Pre-Ordering Management APIs. The customer Quote API provides a standardized mechanism for placing a customer quote with all of the necessary quote parameters.

- Document Management API

It provides the operations to synchronize documents and document versions across systems. It also provides operations for uploading documents by Users as well as for viewing of documents online.

- User Roles and Permissions

This API is used to manage the user account with which the customer or staff can log-in and log-off the system and the permission for the user to enter or operate the special information.

- Entity Catalog Management

This API provides the capability to manage the entity catalog API. The catalog entity item could be an entity, entity specification, product offering, service candidate, or resource candidate that appears in an entity catalog.

3.2.2 Mapping between current TM Forum API and Information Framework

The mapping between the current TM Forum API and Information Framework ABE is described as the table below. The above figure is made based on the mapping results. The policy is that any API will be put in its main domain.

If one API covers several domains besides Customer and Engaged Party together, the main domain will be decided by the business. If one API covers Customer and Engaged Party together, the main domain will be decided by the business also but generally Engaged Party is prior to Customer.

#	API NAME(API)	Resource (API)	Information Framework Domain::L1 ABE-	API L0 Domain
1.	Product Catalog Management API	Catalog	Product Domain ::Product catalog ABE	Product
		Category	N/A	
		Product Offering	Product Domain::Product Offering ABE	
		Product Specification	Product Domain::Product Specification ABE	
2.	Product Inventory Management API	Product	Product Domain::Product ABE	Product
3.	Billing Management API	Billing Account	Customer Domain::Customer ABE Engaged Party Domain::Additional Party Entities ABE	Customer
		Customer Bill Format	Customer Domain::Customer Bill ABE Engaged Party Domain::Party Revenue ABE	
		Customer Bill Presentation Media	Customer Domain::Customer Bill ABE Engaged Party Domain::Party Revenue ABE	
		Applied Billing Charge	Customer Domain::Applied Customer Billing Rate ABE Engaged Party Domain::Party Revenue ABE	
		Settlement Note Advice	N/A	
4.	Customer Management API	Customer	Customer Domain::Customer ABE	Customer
5.	Service Qualification API	Service Qualification	Customer Domain:: Customer Order ABE	Customer
		Product offering Qualification	N/A	
6.	Quote API	Quote	Customer Domain:: Customer Interaction ABE	Customer
7.	Appointment API	Search Task	N/A	Customer
		Appointment	Common Domain::Calendar ABE	
8.	Prepay Balance Management API	Balance	No existing ABE for mapping	Customer
		Topup Operation	No existing ABE for mapping	

		Balance transfer operation	No existing ABE for mapping	
9.	Product Ordering Management API	Product Order	Engaged Party Domain::Party Order ABE Customer Domain::Customer Order ABE	Customer & Engaged Party
10.	SLA Management API	SLA Resource	Engaged Party Domain::Agreement ABE Customer Domain:: Customer Service Level Agreement ABE	Customer & Engaged Party
		SLA Violation Resource	N/A	
11.	Service Quality Manage API	Service Level Objective	Service Domain:: Service Performance ABE	Service
		Service Level Specification	Service Domain:: Service Performance ABE	
12.	Service Test Management API	Service Test	Service Domain::Service Test ABE	Service
		Service Test Specification	Service Domain::Service Test ABE	
13.	Service Change Management API	Change Request	Engaged Party Domain:: Party Order ABE	Service
14.	Service Catalog API	Service Catalog	Service Domain:: Service Specification ABE	Service
		Service Category	Service Domain:: Service Specification ABE	
		Service Candidate	Service Domain:: Service Specification ABE	
		Service Specification	Service Domain:: Service Specification ABE	
15.	Service Inventory API	Service	Service Domain: Service ABE	Service
16.	Service Problem Management API	Service Problem	Service Domain::Service Problem ABE	Service
17.	Service Ordering API	Service Order	Service Domain::Service Order ABE	Service
18.	Activation and Configuration API	Service	Service Domain::Service ABE	Service & Resource
		Resource(abstract)	Resource Domain::Resource ABE	
		Monitor	N/A	
19.	Resource Ordering API	Resource Order	Resource Domain:: Resource Order ABE	Resource
20.	Resource Catalog API	Resource Catalog	Resource Domain:: Resource Catalog ABE	Resource
		Resource Category	Resource Domain:: Resource Specification ABE	
		Resource Candidate	Resource Domain:: Resource Specification ABE	
		Resource Specification	Resource Domain:: Resource Specification ABE	
21.	Resource Function Configuration & Activation API	Resource Function	Resource Domain:: Resource Specification ABE	Resource
		Resource Function/Heal	Resource Domain:: Resource ABE	

		Resource Function/Scale	Resource Domain:: Resource ABE	
		Resource Function/Migrate	Resource Domain:: Resource ABE	
22.	Party Management API	Individual	Engaged Party Domain::Party ABE	Engaged Party
		Organization	Engaged Party Domain::Party ABE	
23.	Privacy API	Party Privacy Profile	Engaged Party Domain::Party Privacy ABE	Engaged Party
		Party Privacy Profile Type	Engaged Party Domain::Party Privacy ABE	
		Party Privacy Agreement	Engaged Party Domain::Party Privacy ABE	
24.	Onboarding Management API	Party Role	Engaged Party Domain:: Party ABE	Engaged Party
		Partnership Type	Engaged Party Domain:: Party ABE	
25.	Partnership Type API	Partnership Type	Engaged Party Domain:: Party ABE	<u>Engaged Party</u>
26.	Party Role API	Party Role	Engaged Party Domain:: Party ABE	<u>Engaged Party</u>
27.	Agreement Management API	Agreement	Engaged Party Domain:: Agreement ABE	Engaged Party
		Agreement Specification	Engaged Party Domain:: Agreement ABE	
28.	Address API	Address	Common Business Entities Domain::Location ABE	Common
		Area	Common Business Entities Domain::Location ABE	
		Street	Common Business Entities Domain::Location ABE	
		Street Segment	Common Business Entities Domain::Location ABE	
29.	Trouble Ticket Management API	Ticket Resource	Common Business Entities Domain::Trouble Ticket ABE	Common
30.	Usage Management API	Usage Resource	Common Business Entities Domain::Usage ABE	Common
31.	Performance Management API	Usage Specification Resource	Common Business Entities Domain::Usage ABE	Common (Note: Performance ABE is in Common Business Entity Domain in Information Framework)
		Measurement Production Job Resource	Common Business Entities Domain::Performance ABE	
		Measurement Collection Job Resource	Common Business Entities Domain::Performance ABE	
		Ad-hoc Collection Resource	Common Business Entities Domain::Performance ABE	
32.	Loyalty Management	Loyalty Program Product Spec	Product Domain::Loyalty ABE	<u>Product</u>
33.	Promotion API	Promotion	Product Offering ABE::Product Promotion ABE	<u>Product</u>
34.	Shopping Cart API	Shopping Cart	Customer::Customer Order ABE	<u>Customer</u>
35.	User Roles & Permissions	User	Common Business Entities:: User and Roles ABE	<u>Common</u>

36.		Privilege	Common Business Entities:: User and Roles ABE	
37.	Entity Catalog Management	Entity Catalog	Common Business Entities::Catalog	<u>Common</u>
		Category	N/A	
		Entity Catalog Item	Common Business Entities::Catalog	
		Entity Specification	N/A	
		Association	N/A	
		Association Specification	N/A	
38.	Document Management API	Document	Common Business Entities:: Configuration and profiling ABE	Common
39.	Payment Method API	Payment Method	Engaged Party:: Party Revenue ABE	Engaged Party
40.	Account Management API	Party Account	Engaged Party Domain::Party ABE	Engaged Party
		Billing Account	Customer Domain::Customer ABE Engaged Party Domain::Additional Party Entities ABE	
		Settlement Account	N/A	
		Financial Account	N/A	
		Billing Cycle Specification	Customer Domain::Customer Bill ABE Engaged Party Domain::Party Revenue ABE	
		Bill Format	Customer Domain::Customer Bill ABE Engaged Party Domain::Party Revenue ABE	
		Bill Presentation Media	N/A	

Note: Product Ordering API, SLA API, Activation and Configuration, Payment Management API appear in multiple domains due to the Information Framework mapping relationship.

3.2.3 Level 1 Map – Planned & Future API's

The following is a view of all the potential business APIs Level 1 Map that briefly describes each resource for the potential business API. In the years hereafter, those API definitions will be further explored and the efforts to build them are encouraged fully for all the industry.

Note: More details about the future API shall be supplemented when the API is confirmed. Currently the brief descriptions of those APIs are given in this chapter for understanding.

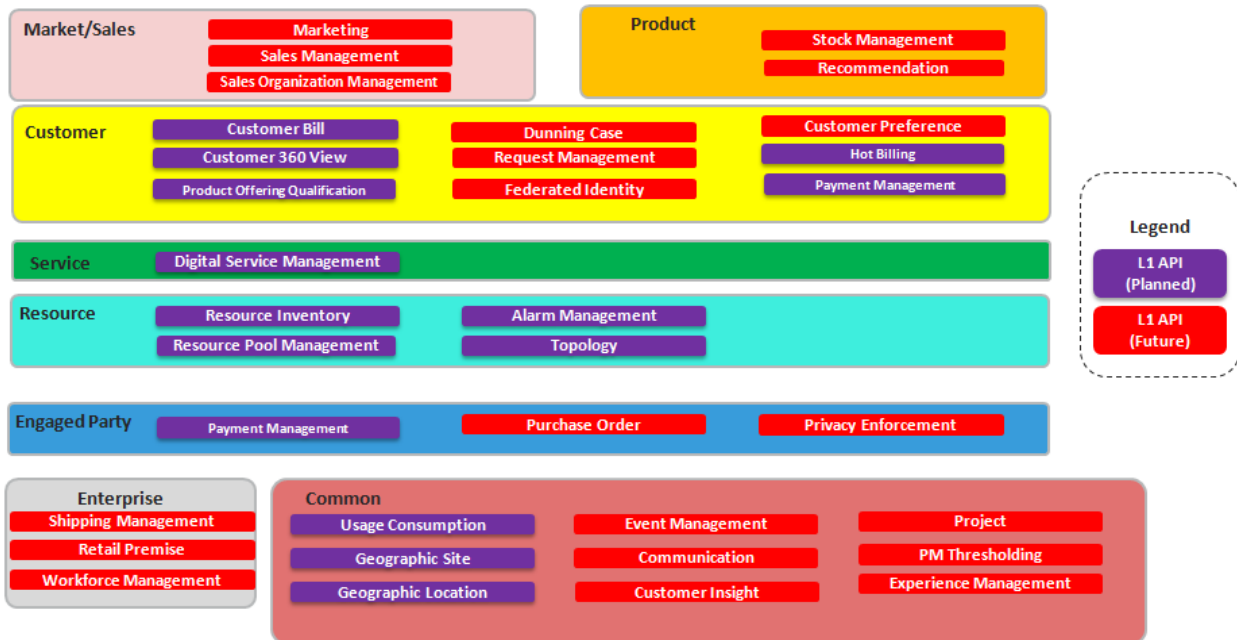


Figure 4 - API Map Level 1 (Planned & Future)

Here lists the APIs which have been planned in TM Forum and the proposed APIs which could be used to fill in the unfinished area in API Map.

This list is the guide for the API development in the future. The details of these APIs are expected to be found in the separate API specification.

Marketing/Sales

- Marketing API
This API is used to manage the campaign to represent the carrier initiated marketing activity which aims at the better recognition about its brand and offerings by the market.
- Sales Management API
This API provides interfaces for Sales Lead, Sales Opportunity, Sales Quote and the other management capabilities to support the sales activities to build relationship with the prospect customer who could be a person or organization that has an interest in the goods and/or services and possibly become the actual customers with one or more Subscriptions.
- Sales Organization Management API
Provides the management capability for sales organization. The structure of a sales organization identifies how an organizations sales department is organized in order facilitate the organizations sales growth.

Product

- Stock Management API
This API checks availability of products in stock, and provides adjustment, reservation for the stock.
- Recommendation API
This API provides automated system action to determine the products offerings to be presented to the customer.

Customer

- Request Management API

- This API provides service to store and manage records of a contact with the customer. It manages the request from the customer which represents communications with customers, and the translation of customer requests and inquiries into appropriate events.
- Customer Preference API
 - It provides the capabilities to manage the customers' preference for their information access and control, including permission and profile.
- Dunning Case API
 - This API helps to control the overdue charge (arrear) of the customer by the way of notification and service limitation
- Customer 360 View
 - This API helps to have a full analysis of customer.
- Federated Identity
 - Identity management provides the management of principals of any kind (persons, objects ...) and their access to resources in an open environment which can span across different enterprise boundaries. It relies on authentication, authorization and consent mechanisms to protect privacy with a simple and easy user experience. Different parties can provide identity services (operators, social networks, GSMA ...).
- Payment Management
 - This API manages the payment action of the customer.
- Product Offering Qualification
 - This API provides Quality Management for the product offering. It checks whether the offering can be delivered to a specific location.
- Hot Billing
 - Hot billing is used to generate the bill before the formal bill-run at the bill cycle date. It can help provide the usage and accumulation result until the current moment.

Service

- Service Problem Management API
 - This SPM API is used for the service providers (Defined as the Middle B) to manage the service problems in their service area. Service problem is generated based on the information declared by Middle B or the event information notified from infrastructure providers (Defined as the First B) who provide the infrastructure of cloud or network.

Resource

- Resource Inventory API
 - This API provides capabilities to update and retrieve sets of resources available for the Service Provider.
- Alarm Management API
 - This API is to be used to management the information about a given alarm condition of an alarmed Managed Object.
- Topology API
 - This API is used to support application to have an up to date and accurate view of the topology and the vertexes and edges required to provide the service. At the same time, topology API could be used to feed other applications for value-adding – such as a layer network view for provisioning, or a vertical slice for assurance.
- Resource Pool Management API
 - This API is to reserve and un-reserve the resource which is required by the sales or service action.

Enterprise

- Shipping Management API
 - This API is used to manage the delivery and transportation of physical goods.
- Retail Premise API
 - This API is the management of the enterprise routine tasks, including project, purchase order and retail premises information enquiry.
- Workforce Management API

This API manages work force which supports and execute the manual work that can be sent to a workforce staff team to process.

- Purchase Order API
It supports capability to manage purchase order raised by the operator to 3rd party suppliers.

Common

- Customer Insight API
This API is the statistics and business intelligence capabilities for the enterprise data.
- Geographic Location API
This API provides the information of geographic region of the entity (customer, equipment, address).
- Communication API
It provides a capability to create and send communications, notifications and instructions to Parties, Individuals, Organizations or Users.
- Project API
It is the management of internal enterprise project.
- PM Thresholding
This API covers the Threshold aspects of Performance Management, also named Performance Threshold Management or PM Threshold.
- Usage Consumption API
This API is used by applications to request/publish a report on the measured usage of a given product/service by a customer. The report could be for a specific product or for a specific customer in a given time range.
- Event Management
Event is any of the action triggered by the human or the system which requires the notification to the other system.
- Experience Management
Experience is the data and their impact which reflect the feeling of the user of the system. Based on the experience, the user can give judgment to the system about its usability.

3.2.4 Mapping between planned/future TM Forum API and Information Framework

The mapping between the planned and future TM Forum API and Information Framework ABE is described as the table below.

#	API NAME(API)	Resource (API)	Information Framework Domain::L1 ABE-	API L0 Domain
1.	Marketing API	Marketing resource	Market/Sales:: Marketing Campaign ABE	Market/Sales
2.	Sales Management API	Sales Lead	No existing ABE for mapping	Market/Sales
		Sales Opportunity	No existing ABE for mapping	
		Sales Task	No existing ABE for mapping	
		Sales Account	No existing ABE for mapping	

		Sales Partner Account	No existing ABE for mapping	
3.	Sales Organization Management API	Sales Channel Management	Market/Sales:: Sales Channel ABE Engaged Party:: Party ABE	Market/Sales Engaged Party
4.	Stock Management API	Product Stock	No existing ABE for mapping	Product
		Product Stock Adjustment	No existing ABE for mapping	
		Product Stock Reservation	No existing ABE for mapping	
5.	Customer Preference API	Customer Preference	Customer::Customer ABE	Customer
		Customer Permission	Customer::Customer ABE	
6.	Request Management API	Request Management	Customer::Customer Interaction ABE	Customer
7.	Dunning Case API	Dunning Case	Customer:: Customer Bill Collection ABE	Customer
8.	Customer 360 View API	Customer 360 View	Customer::Customer ABE	Customer
9.	Federated Identity API	N/A	No existing ABE for mapping	Customer
10.	Digital Service Management API	Digital Service	Service ::Service ABE	Service
11.	Alarm Management API	Alarm	Resource:: Resource Trouble ABE	Resource
12.	Resource Inventory API	Logical Resource	Resource:: Resource ABE	Resource
		Physical Resource	Resource:: Resource ABE	
13.	Topology API	N/A	Common Business Entities Domain:: Topology ABE	Common
14.	Purchase Order API	Purchase Order	Engaged Party:: PartyOrder	EngagedParty
15.	Shipping Management API	Shipping Order	Resource:: Resource Order ABE	Resource
		Advance Shipment Notification	Resource:: Resource Order ABE	

16.	Retail Premise API	Retail Premise	Engaged Party:: Party ABE	Engaged Party
17.	Workforce Management API	Work Order	Enterprise::Workforce ABE Common Business Entities Domain:: Project ABE	Enterprise Common
18.	Usage (Extension of the existing API)	Service Balance	Common Business Entities Domain::Usage ABE	Common
		Fee Deduction	Common Business Entities Domain::Usage ABE	
		Service Account Adjustment	Common Business Entities Domain::Usage ABE	
19.	Project API	Project	Common Business Entities:: Project ABE	Common
20.	Geographic Location API	Location	Common Business Entities::Location ABE	Common
21.	Customer Insight API	Check Customer Credit Rating	Common Business Entities:: Performance ABE	Common
		Customer Insight	Common Business Entities:: Performance	
22.	Communication API	Communication	Common Business Entities:: Business Interaction ABE	Common
23.	Usage Consumption API	N/A	Common Business Entities Domain::Usage ABE	Common
24.	PM Thresholding API	N/A	Common Business Entities:: Performance ABE	Common
25.	Payment Management	N/A	Customer Bill Collection ABE::Customer Payment ABE	Customer
26.	Product Offering Qualification	Product Offering Qualification	Product:: ProductOffering ABE	Product
27.	Hot Billing	Hot Billing	Customer Domain::Customer Bill ABE	Customer
28.	Resource Pool Management API	NA	Resource:: Resource ABE	Resource
29.	Event Management	NA	Event ABE	Common
30.	Experience Management	NA	NA	Common
31.	Recommendation	Recommendation	Product Domain::Product Offering ABE	Product

3.3 Level 2 Map

Level 2 shows the API which inherits from the current TM Forum API or extends on the base of TM Forum API.

The legend in the Level 2 diagram is as:

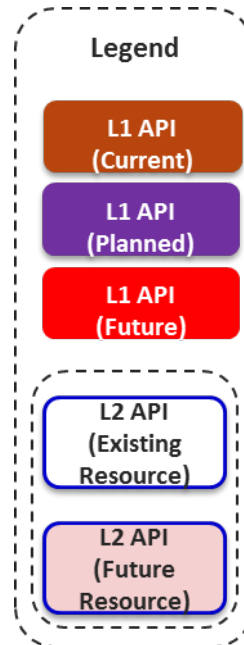


Figure 5 - Legend

3.3.1 API in Marketing/Sales



Figure 6 - API in Marketing/Sales

The list of API in this portion is as follows:

- **Marketing API**
 - **Marketing Campaign** (as API resource)
Campaign represents the carrier initiated marketing activity which aims at the better recognition about its brand and offerings by the market.
- **Sales Management API**
 - **Sales Lead** (as API resource)
A Sales Lead is the identification of a person or organization that has an interest in the goods and/or services provided in the prospect of them becoming Customers with one or more Subscriptions.
 - **Sales Opportunity** (as API resource)
Sales Opportunity is an 'opportunity' to generate revenue from a Sales Account or Sales Lead. Opportunities are the pending deals that need to be tracked and on which Sales Team plans and

executes Sales Activities (Events and Tasks). Opportunities build the “pipeline” that will contribute to sales forecasts and planning.

- **Sales Account** (as API resource)

The Sales Team within the operator or its partners opens a Sales Account for the potential customer on behalf of a Party. At this point the Party may be new to the Service Provider or the partner as a Sales Lead in which case they have the role of Prospect or may be an existing Customer. The Sales Account and associated Sales Opportunity form the basis around which sales activities are focused.

- **Sales Partner Account** (as API resource)

It provides a capability for a consumer to search for and return the set of Sales Partner Account (the potential customer managed by the partner) records that match the supplied criteria in the request.

- **Sales Task** (as API resource)

A Sales Task represents a business activity such as making a phone call or other to-do items. It can define and track activities for many different objects, including campaigns, accounts, contacts, and leads. An example of a Sales Task would be Manager scheduling a Task for an Assignee to make a call to the contact lead of a Sales Lead at a given time.

- **Sales Organization Management API**

- **Sales Channel Management** (as API resource)

It provides the management capability for sales channels and organization which execute sales activities.

3.3.2 API in Product

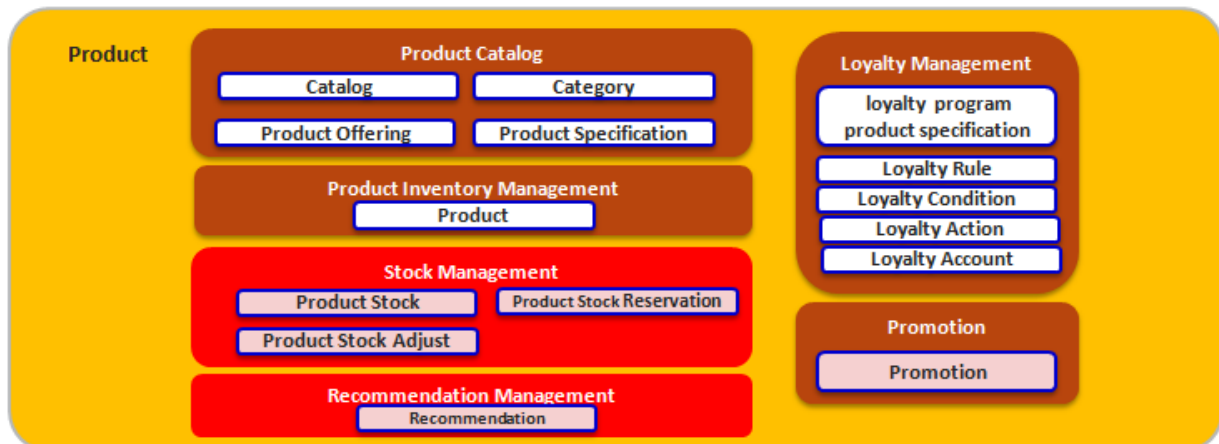


Figure 7 – API in Product

The list of API in this portion is as follows:

- **Product Catalog API**

- **Catalog** (as API resource)

Catalog is a collection of Product Offerings, intended for a specific Distribution Channel, enhanced with additional information such as SLA parameters, invoicing and shipping detail.

- **Category** (as API resource)

The category resource is used to group product offerings, service and resource candidates in logical containers. Categories can contain other categories and/or product offerings, resource or service candidates.

- **Product Offering** (as API resource)

The Product Offering resource represents entities that are orderable from the provider of the catalog, this resource includes pricing information

Product Offering in a Product Catalog combines pricing and availability information with Product Specifications that describe the relationships between Products, the Services used to realize the Products and the Resources they require.

- **Product Specification** (as API resource)

Product Specification Resource is a detailed description of a tangible or intangible object made available externally in the form of a Product Offering to customers or other parties playing a party role.

- **Loyalty Management API**

- **Loyalty Program Product Specification** (as API resource)

A loyalty program product specification is a detailed description of a loyalty program made available externally in the form of a Loyalty Product to Loyalty Program Members. A loyalty program product specification defines one or more Loyalty Rules that have to be checked in order to identify the actions to apply

- **Product Inventory Management API**

- **Product** (as API resource)

Product attributes are its identifier, name, description, status, related product offering, characteristics, specification, related billing account and parties, location, realized service and price information

- **Promotion API**

- **Promotion** (as API resource)

Promotion is the online incentive which provides discount, gift or other substantial stimulation to encourage more consumption according to the purchased offering.

- **Recommendation API**

Recommendation (as API resource)

This API provides automated system action to determine the products offerings to be presented to the customer.

- **Stock Management API**

- **Product Stock** (as API resource)

It supports capability to check availability of products in stock.

- **Product Stock Adjustment** (as API resource)

It supports capability to do an adjustment to the stock for a product in a warehouse or store.

- **Product Stock Reservation** (as API resource)

It supports capabilities to reserve/de-reserve stock for products.

3.3.3 API in Customer

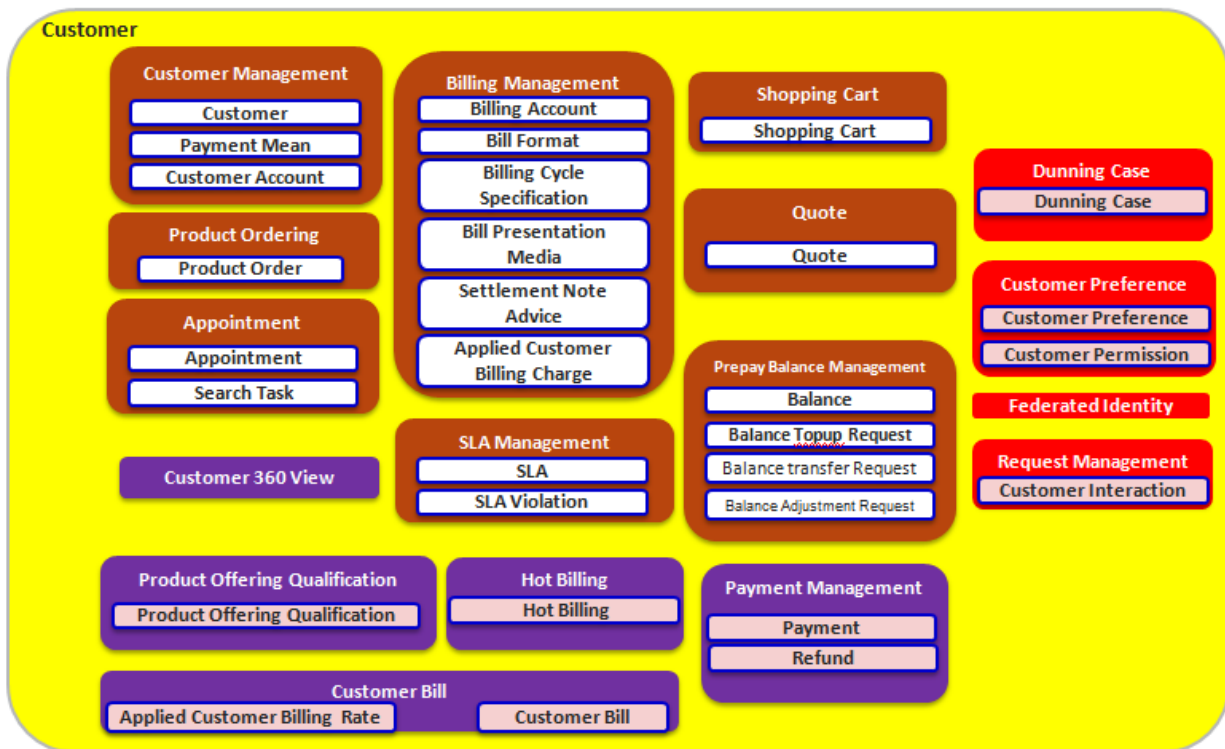


Figure 8 – API in Customer

Note: Product Ordering API, SLA API appear in multiple domains due to the Information Framework mapping relationship.

The list of API in this portion is as follows:

- **Customer Management API**
 - **Customer** (as API resource)
Customer represents a person or organization that buys products and services from the enterprise or receives free offers or services.
 - **Customer Account** (as API resource)
The Customer account represents a financial entity. It records all customer accounting events (payment and invoices amounts)
 - **Payment Mean** (as API resource)
The payment mean resource is used to define a specific mean of payment (e.g. direct debit with all associated details).
- **Bill Management API**
 - **Billing Account** (as API resource)
A billing account is a detailed description of a customer's bill structure.
 - **Customer Bill Format** (as API resource)
A detailed description of the way in which a customer's bill is presented.
 - **Customer Billing Cycle Specification** (as API resource)
It is a detailed description of when to initiate a billing cycle and the various sub steps of a billing cycle.
 - **Customer Bill Presentation Media** (as API resource)
It is a means of communicating a Customer Bill, supported by the associated bill format. For example, post mail, email, and web page.
 - **Applied Customer Billing Charge** (as API resource)

- It includes the bill amount, usually of money, for which a person or an organization is financially liable.
 - **Settlement Note Advice** (as API resource)
The settlement is about transferring money receiving by a partner to another partner. The settlement is notified to the partner with a settlement note advice containing details in settlement lines.
- **Dunning Case API**
 - **Dunning Case API (Debt Collection)** (as API resource)
The collection (dunning) is to control the overdue charge (arrear) of the customer by the way of notification and service limitation.
- **Customer Preference API**
 - **Customer Permission** (as API resource)
The Customer Permission service is an "Entity" service that provides capabilities to store and manage the set of Permissions configured by a Party in the Role of Customer.
 - **Customer Preference** (as API resource)
The Customer Preference service is an "Entity" service that provides capabilities to store and manage the set of Preferences configured by a Party in the Role of Customer.
- **Product Offering qualification API**
 - **Product Offering qualification** (as API resource)
Service provider execute Product-Offering Qualification task to get the customer location Feasibility include Commercial and Technical eligibility.
- **Quote API**
 - **Quote** (as API resource)
It provide a mechanism for placing a customer quote based on a product offer in a catalog
It identifies available product to a customer w/ pricing, product options and agreement
- **Appointment API**
 - **Appointment** (as API resource)
An appointment is a meeting with several persons, in one place, in order to do an action (an intervention, a sale ...). This action has a root, for example a trouble ticket.
 - **Search Task** (as API resource)
This task resource is used to look for free slots before booking an appointment (cf. operations).
- **Customer 360 View API**
 - The customer 360° view interface allows finding and retrieving the main information regarding the customer. A customer view gathers different information to be presented to a user or the customer himself. This interface is designed in order to be consumed by any kind of front end which need to present a customer view.
In order to build a customer 360°View, the following information can be retrieved:
 - ◆ **Individual or organization information,**
 - ◆ **Contact medium: mail, telephone, ...,**
 - ◆ **Product order,**
 - ◆ **Product : offers subscribed by the customer,**
 - ◆ **Customer problem,**
 - ◆ **Interaction : inbound and outbound contact,**
 - ◆ **Customer bill,**
 - ◆ **Usage**
- **Shopping Cart API**
 - **Shopping Cart** (as API resource)
The shopping cart is widely used for the temporarily selection and reservation of offerings in e-commerce and retail purchase.
- **Request Management**

- **Customer Interaction** (as API resource)
 Customer Interaction service is an "Entity" service that provides capabilities to store and manage records of a Parties Contact with another Party acting in the role of Customer.
- **Product Ordering API**
 - **Product Order** (as API resource)
 It provides a standardized mechanism for placing a product order with all of the necessary order parameters. The API consists of a simple set of operations that interact with CRM/Order negotiation systems in a consistent manner. A product order is created based on a product offering that is defined in a catalog. The product offering identifies the product or set of products that are available to a customer, and includes characteristics such as pricing, product options and market.
- **SLA Management API**
 - **Service Level Agreement (SLA)** (as API resource)
 The SLA API provides a standardized interface for SLA life cycle Management (SLA Negotiation, SLA configuration, SLA Activation/enforcement, SLA Operations, SLA reporting) between a Customer and a Service Provider which provides offers (product with attached SLA in its catalog) the customer can discover, browse, trigger and order.
 - **SLA Violation** (as API resource)
 It is about SLA violation / consequence handling.
- **Prepay Balance Management API**
 - **Balance Resource** (as API resource)
 The represents and tracks the amount remained or owed in certain account which is owned by certain customer.
 - **BalanceTopup Request** (as API resource)
 The resource is a detailed description of a recharge operation requested over a subscription.
 - **BalanceTransfer Request** (as API resource)
 The resource is a detailed description of credit transfer operation requested between two subscriptions.
 - **BalanceAdjustment Request** (as API resource)
 The resource is a detailed description of credit adjustment operation performed on a given subscriptions.
- **Federated Identity API**
 The resource of this API is not decided in this version.
- **Payment Management**
 This API manages the payment action of the customer.
- **Product Offering Qualification**
 - **Product Offering Qualification**
 This resource provides Quality Management for the product offering. It checks whether the offering can be delivered to a specific location.
- **Hot Billing**
 - **Hot Billing**
 Hot billing is used to generate the bill before the formal bill-run at the bill cycle date. It can help provide the usage and accumulation result until the current moment.
- **Customer Bill**
 To be defined.

3.3.4 API in Service

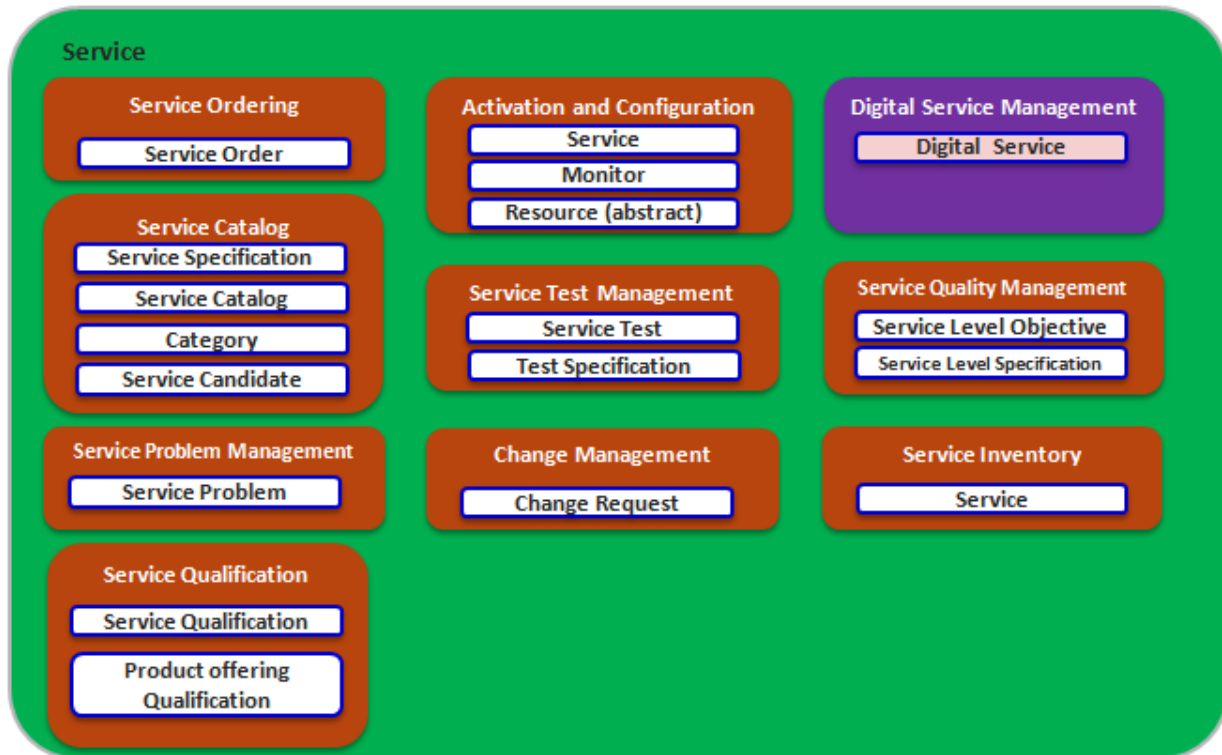


Figure 9 – API in Service

Note: Activation and Configuration API appears in multiple domains due to the Information Framework mapping relationship.

The list of API in this portion is as follows:

- **Activation and configuration API**
 - **Service** (as API resource)
Services may be the process to support the accomplishment of sales or customer request, normally it requires human handled work. It can be activated or configured by the Activation and Configuration API.
 - **Monitor** (as API resource)
This is to monitor the activation progress.
 - **Resource (abstract)** (as API resource)
It is to describe the common set of attributes shared by all concrete resource (e.g. cross-connect, shelf). The abstract Resource collection is a container or collection for all the “concrete” resources.
- **Service Ordering API**
 - **Service Order** (as API resource)
Service order composed of order lines (order Items):
 - Line “1”: Ordering of a new simple Service that needs a physical delivery place and an appointment to be delivered
 - Line “2”: Modification of a characteristic value of an already owned Service, and change the user associated to this Service
 - Line “3”: Ordering of a new simple Service that needs (is supported by) another already owned Service

- **Service Catalog API**
 - **Service Catalog** (as API resource)
The root entity for catalog management.
 - **Service Category** (as API resource)
The category resource is used to group service candidates in logical containers.
 - **Service Candidate** (as API resource)
A Service Candidate is an entity that makes a Service Specification available to a catalog. A Service Candidate and its associated Service Specification may be published - made visible - in any number of Service Catalogs, or in none.
 - **Service Specification** (as API resource)
Service Specification is a class for representing a generic means for implementing a particular type of Service.
- **Service Inventory API**
 - **Service** (as API resource)
Service is an abstract base class for defining the Service hierarchy. All Services are characterized as either being possibly visible and usable by a Customer or not. This gives rise to the two subclasses of Service: Customer Facing Service and Resource Facing Service.
- **Service Problem Management API**
 - **Service Problem** (as API resource)
Service problem is generated based on the information declared by Middle B or the event information notified from infrastructure providers (Defined as the First B) who provide the infrastructure of cloud or network.
- **Digital Service Management API**
 - **Digital Service** (as API resource)
This digital service is a kind of service that managed in this API.
- **Service Test Management API**
 - **Service Test** (as API resource)
A service test specification describes the service test in terms of parameters to be configured and measures to be taken.
 - **Service Test Specification** (as API resource)
A service test is an entity that exists that exists for a controlled test invocation on a service. The service test is executed according to a schedule and contains service test configuration parameters that are to be applied at execution time, and service test measures that result.
- **Change Management API**
 - **Change Request** (as API resource)
Change Management process is to respond to the customer's changing business requirements while maximizing value and reducing incidents, disruption and network. The Change Management API provides the standard integration capabilities between external applications and Change Management Application. The API consists of a simple set of operations that interact with Change Request in a consistent manner. A Change Request is an IT service management discipline. The objective of change management in this context is to ensure that standardized methods and procedures are used for efficient and prompt handling of all changes to control IT infrastructure and Network, in order to minimize the number and impact of any related incidents upon service.
- **Service Qualification API**
 - **Service Qualification** (as API resource)
It is to validate the qualification of pre-ordering. For Service Qualification at a specific location 1 of Address ID, Address description, geoCode and publicKey should be provided.
 - **Product Offering qualification** (as API resource)
Service provider execute Product-Offering Qualification task to get the customer location Feasibility include Commercial and Technical eligibility.

- **Service Quality Management API**
 - **Service Level Objective** (as API resource)
 Service level objective is the quality goal for a Service Level Specification defined in terms of parameters and metrics, thresholds, and tolerances associated with the parameters.
 - **Service Level Specification** (as API resource)
 A service level specification is a pre-defined or negotiated set of Service Level Objectives, and consequences that occur, if the objectives are not met.

3.3.5 API in Resource

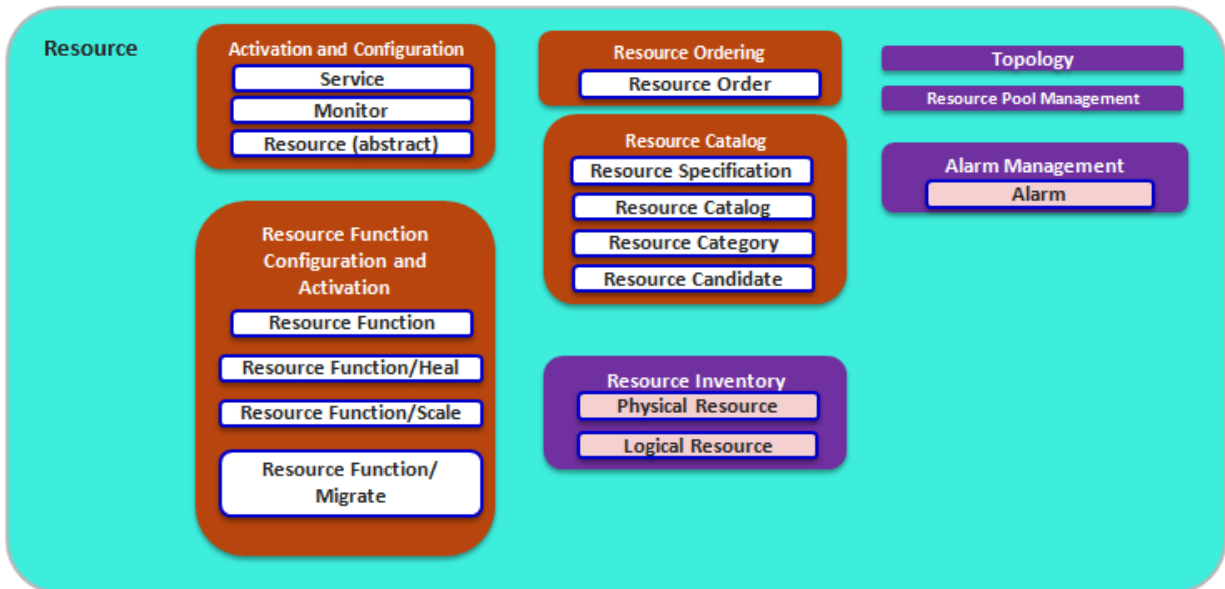


Figure 10 – API in Resource

Note: Activation and Configuration API appears in multiple domains due to the Information Framework mapping relationship.

The list of API in this portion is as follows:

- **Activation and configuration API**
 Note: the description for this API is same as the API in “Service” domain
- **Resource Catalog API**
 - **Resource Catalog** (as API resource)
 The root entity for catalog management.
 - **Resource Category** (as API resource)
 The category resource is used to group service candidates in logical containers.
 - **Resource Candidate** (as API resource)
 A Resource Candidate: Is an entity that makes a Resource Specification available to a catalog.
 - **Resource Specification** (as API resource)
 A Resource Specification is an abstract base class for representing a generic means for implementing a particular type of Resource. In essence, a Resource Specification defines the common attributes and relationships of a set of related Resources, while Resource defines a specific instance that is based on a particular Resource Specification.
- **Resource Ordering API**
 - **Resource Order** (as API resource)

- A Resource order composed of 3 order lines (orderItems):
 - Line "1": Ordering of a new simple Resource that needs a physical delivery place and an appointment to be delivered.
 - Line "2": Modification of a characteristic value of an already owned Resource, and change the user associated to this Resource.
 - Line "3": Ordering of a new simple Resource that needs (is supported by) another already owned Resource (in this case for example a new Resource that relies on the owned mobile access Resource to be installed).
- **Resource Function Configuration & Activation API**
 - **Resource Function** (as API resource)
A network service that is composed from one or many virtual or physical network functions.
 - **Resource Function /Heal** (as API resource)
Task resource used to request heal of the network service
 - **Resource Function /Scale** (as API resource)
Task resource used to request scale of the network service
 - **Resource Function /Migrate** (as API resource)
Task resource used to request migration of the network service
- **Alarm Management API**
 - **Alarm** (as API resource)
The alarm contains information about a given alarm condition of an alarmed Managed Object.
- **Resource Inventory API**
 - **Logical Resource** (as API resource)
The Logical Resource is an "Entity" providing capabilities to update and retrieve sets of logical resources, for example, mobile number is one type of logical resource
 - **Physical Resource** (as API resource)
The Physical Resource is an "Entity" providing capabilities to update and retrieve sets of physical resources allocated to the Service Provider by external 3rd party providers.
- **Topology API**
The resource of this API is not decided in this version.
- **Resource Pool Management API**
The resource of this API is not decided in this version.

3.3.6 API in Engaged Party

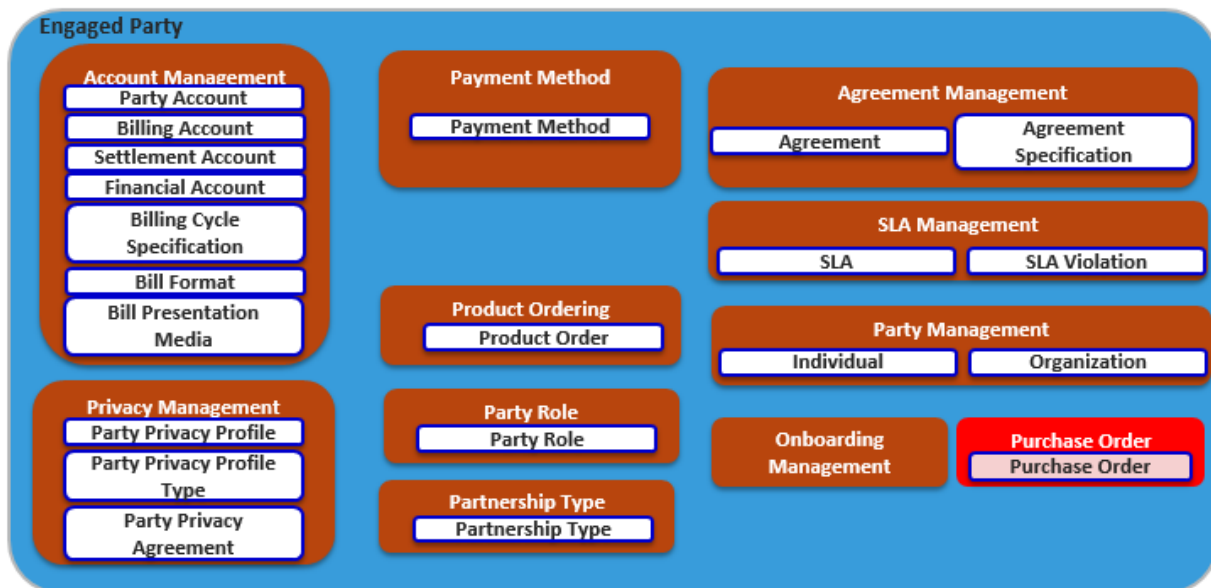


Figure 11 – API in Engaged Party

Note: Product Ordering API, SLA API appear in multiple domains due to the Information Framework mapping relationship.

The list of API in this portion is as follows:

- **Party Management API**
 - **Individual** (as API resource)
Individual represents a single human being (a man, woman or child). The individual can be a customer, an employee or any other person that the organization needs to store information about
 - **Organization** (as API resource)
Organization represents a group of people identified by shared interests or purpose. Examples include business, department, and enterprise.
- **Product Ordering API**
 - **Product Order** (as API resource)
Note: the description is same as this API in "Customer" domain
- **SLA Management API**
Note: the description is same as this API in "Customer" domain
- **Party Role**
 - **Party Role** (as API resource)
Party role is the basis data for the customer and partner. It is the business incarnation of the party.
- **Partnership Type API**
 - **Partnership Type** (as API resource)
A partnership type contains all the information for the setup of a partnership of a given kind. This includes the list of identified role types for the partnership with the corresponding agreement specifications.
- **On-boarding API Family**
 - **Party Role** (as API resource)

This resource represents the party role, the part played by a party in a given context.

- **Partnership Type** (as API resource)

A partnership type contains all the information for the setup of a partnership of a given kind. This includes the list of identified role types for the partnership with the corresponding agreement specifications.

Note:

Onboarding Management API has strong dependencies with the following management APIs:

- Party Management API: used to query, create, update or delete information on *individuals* or *organizations* that will be onboarded;
- Agreement Management API: used to query, create, update or delete agreements and agreement specifications. These agreements need to be created and updated when signed by the involved parties.
- Billing Management API (It will be enriched and renamed as Account Management API in the future): used to retrieve, create, update or delete different kinds of accounts that made be needed in the context of the onboarding process, such as billing or settlement accounts and financial accounts.

Other indirect APIs dependencies when using this API are:

- Product Catalog Management API: used to connect agreements to product offerings
- Product Inventory Management API: retrieval of products related to product offerings.
- Product ordering management API: establishing order on available products.

- **Payment Method API**

- **Payment Method** (as API resource)

The Payment Method resource represents an instantiated payment method that can be of different types. Some fields are common to all types while the method specification details depend on the type.

A paymentMethod might carry information about a bank card, a voucher, a bank account, a telco account, a loyalty account, a bucket, a check or an online wallet and could be updated to be used with anything else that could be used to perform a payment.

- **Privacy API**

- **Party Privacy Profile** (as API resource)

A Party Privacy Profile represents the privacy choices made by a Party Role.

- **Party Privacy Profile Type** (as API resource)

A Party Privacy Profile Type represents a type description for Party Privacy Profiles.

- **Party Privacy Agreement** (as API resource)

A Party Privacy Agreement represents the approval made by the Party about a Party Privacy Profile.

- **Agreement Management API**

- **Agreement** (as API resource)

An agreement represents a contract or arrangement, either written or verbal and sometimes enforceable by law, such as a service level agreement or a customer price agreement. An agreement involves a number of other business entities, such as products, services, and resources and/or their specifications.

- **Agreement Specification** (as API resource)

A template of an agreement that can be used when establishing partnerships.

- **Account Management API**

This API is used to manage the account resources and some related billing resources.

- **Purchase Order API**

- **Purchase Order** (as API resource)

It supports capability to manage purchase order raised by the operator to 3rd party suppliers.

- **Payment Management**

This API is same as the one in "Customer Domain".

3.3.7 API in Enterprise and Common

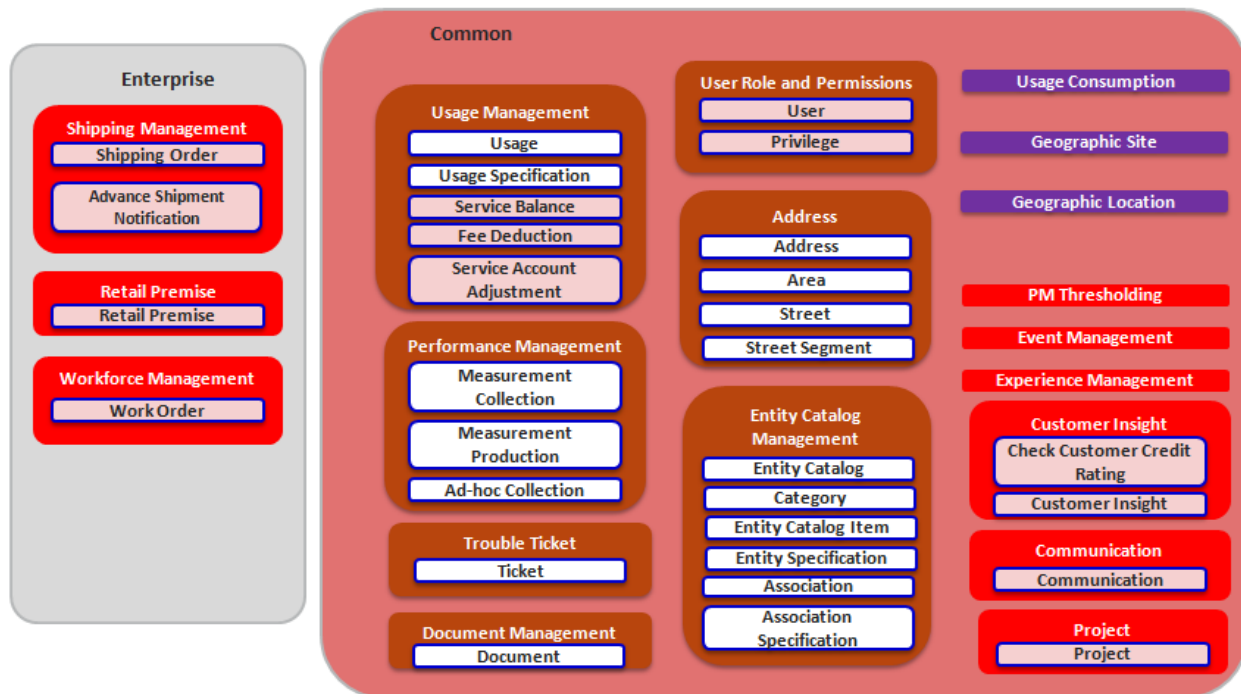


Figure 12 – API in Enterprise and Common

The list of API in the **Common domain** is as follows:

- **Customer Insight API**
 - **Customer Insight** (as API resource)
It supports capability to retrieve customer analytics profile.
 - **Check Customer Credit Rating** (as API resource)
Credit rating is to manage the estimation of credit score of the customer.
- **Performance Management API**
 - **Measurement Collection** (as API resource)
Measurement Collection Job is used to control the periodic collection of performance indicators, implemented as a sub-entity of the PM Measurement Job.
 - **Measurement Production** (as API resource)
Performance measurements production functionality is about controlling the generation of indicators.
 - **Ad-hoc Collection** (as API resource)
Ad-hoc collection is an on-demand collection method of Performance measurements results from a consuming application, requesting spontaneously a set of data for a set of network or service testing resources for a given temporal context.
- **Geographic Location API**
This API is used to manage the location and address information.
- **Geographic Site API**
The resource of this API is not decided in this version.
- **Project API**
 - **Project** (as API resource)
It is the management of internal enterprise project.

- **Document Management API**
 - **Document** (as API resource)
It provides the operations to synchronize documents and document versions across systems. It also provides operations for uploading documents by Users as well as for viewing of documents online.
- **Communication API**
 - **Communication** (as API resource)
It provides a capability to create and Send communications, notifications and instructions to Parties, Individuals, Organizations or Users.
- **User Role and Permissions API**
 - **User** (as API resource)
This API is used to manage the user account with which the customer or staff can log-in and log-off the system.
 - **Privilege** (as API resource)
Privilege means the permission for the user to enter or operate the special information. This API is used to manage the privilege to control the data visibility and operation scope for the user.
- **Trouble Ticket API**
 - **Ticket** (as API resource)
It represents a problem which affects the customer experience. It can be raised by the customer (a complaint) or by the service provider.
- **Usage Management API**
 - **Usage** (as API resource)
A usage represents an event that is of billing system's interest and can have charges applied to it. Usage: an occurrence of employing a Product, Service, or Resource for its intended purpose, which is of interest to the business and can have charges applied to it.
 - **Usage Specification** (as API resource)
A detailed description of a usage event that are of interest to the business and can have charges applied to it.
 - **Service Balance** (as API resource)
Its supports operations to retrieve service balance information
 - **Fee Deduction** (as API resource)
It deducts the balance from the account based on rated number, SP ID, Content ID.
 - **Service Account Adjustment** (as API resource)
Its supports operations to credit/debit/cancel a service balance.
- **Address API**
 - **Address** (as API resource)
Structured textual way of describing how to find a Property in an urban area (country properties are often defined differently).
 - **Area** (as API resource)
It is used to represent areas defined on maps that relate to areas of settlement.
 - **Street** (as API resource)
It is used to represent streets within an Area.
 - **Street Segment** (as API resource)
It is used to represent segments in a given street: this can be directly street numbers (22), or group of numbers materializing a geographic address, e.g. 22-24.
- **Usage Consumption**
The resource of this API is not decided in this version.
- **PM Thresholding API**
The resource of this API is not decided in this version.

- **Entity Catalog Management API**
 - **Entity Catalog** (as API resource)
Comprises of a list of RootEntities made available through Entity Catalog Items.
 - **Category** (as API resource)
It is used to group entity catalog items in logical containers.
 - **Entity Specification** (as API resource)
It is used to offer characteristics to describe a type of entity.
 - **Association** (as API resource)
It is used to describe a relationship between two or more entity specifications based on a given association specification.
 - **Association Specification**(as API resource)
It is used to describe a type of relationship between two entities.

The list of API in the **Enterprise domain** is as follows:

- **Shipping Management API**
 - **Shipping Order** (as API resource)
It supports capabilities to manage shipments order to send products to customer location.
 - **Advance Shipment Notification** (as API resource)
When the delivery gets shipped, a notification will be sent to the customer, describing the delivery with its containers and lines.
- **Retail Premise API**
 - **Retail Premise** (as API resource)
It is the information maintenance of physical retail outlets.
- **Workforce Management API**
 - **Work order** (as API resource)
This API manages work force which supports and execute the manual work that can be sent to a workforce staff team to process.
- **Event Management**
- The resource of this API is not decided in this version.
- **Experience Management**
The resource of this API is not decided in this version.

4. API Dependency Relation

In TM Forum API, some of them depend on the other. Such dependency relationship exists and impacts the adaptation of API in the digital environment. The recognition of those dependencies is important and meaningful for the users to understand the priority and sequence of the API.

Here the API dependencies are listed for the published ones due to the consideration of maturity and stability of API.

The dependency can be categorized as "internal" and "external".

- ✓ Internal dependency means the resource entities inside the API have dependency between them, such as "Catalog" resource of "Product Catalog Management API" depends on "Category" resource of the same API
- ✓ External dependency means the resource entities of the API have dependency upon the resource of another API

Normally, external dependency should be paid more attention.

API NAME(API)	Resource (API)	Internal Dependency Exists or Not	Internal Resource Entity Depended	External Dependency Exists or Not	External API Depended	External API Resource Depended
Product Catalog Management API	Catalog	Y	Category	Y	Party Management API	Party
	Category	N		N		
	Product Offering	Y	Category Product Specification	Y	Service Catalog API	Service Candidate
		Y	Product Specification		SLA Management API	SLA
					Resource Catalog API	Resource Candidate
	Product Specification	N		Y	Party Management API	Party
					Service Catalog	Service Specification
					Resource Catalog	Resource Specification
Product Inventory Management API	Product	N		Y	Product Catalog	Product Specification
					Product Catalog Management API	Product Offering
					Resource Inventory API	Resource
					Service Inventory API	Service
					Account API	BillingAccount
					Agreement Management API	Agreement
					Party Management API	Party
Shopping Cart API	Shopping Cart	N		Y	Product Catalog API	Product Offering

				Y	Product Catalog	Product Specification
				Y	Party Management API	Party
Account Management API	Party Account	Y	Financial Account	Y	Party Management API	Party
		Y	Bill Presentation Media	Y	Onboarding Management API	Party Role
		Y	Billing Cycle Specification			
		Y	Bill Format			
	Billing Account	Y	Party Account			
	Settlement Account	Y	Party Account	Y	Onboarding Management API	Party Role
	Financial Account	N		Y	Onboarding Management API	Party Role
				Y	Party Management API	Party
	Billing Cycle Account	N		N		
	Billing Cycle Specification	N		N		
	Bill Format	N		N		
	Bill Presentation Media	N		N		
Billing Management API	Billing Account	Y	Customer bill presentation	Y	Party Management API	Party
			Customer billing cycle specification		Customer Mgmt	Customer Account
			Customer bill Format		Customer Mgmt	Payment Mean
	Customer Billing Cycle Specification	N		N		
	Customer Bill Format	N		N		
	Customer Bill Presentation Media	N		N		
	Applied Billing Charge	N		N		
	Customer Account					
	Settlement Note Advice	N		Y	Product Catalog	Product Specification

Customer Management API	Payment Method	N		Y	Party Management API	Party
	Customer	Y	Customer Account	Y	Party Management API	Party
		Y	Payment Mean			
Service Qualification API	Service Qualification	N		N	Service Inventory API	Service
					Service Catalog	Service Specification
					Address API	Address
	Product offering Qualification	N		Y	Product Catalog,	Product Offering
					Product Inventory API,	Product
					Address API	Address
Quote API	Quote	N		Y	Product Catalog	Product Offering
					Document Management	Attachment
					Customer Mgmt	Customer
					Product Inventory API	Product
					Billing Management API	BillingAccount
					Appointment API	Appointment
					Agreement Management API	Agreement
					Party Management API	Party
Appointment API	Search Task (available slot)	N		Y	Party Management API	Party
	Appointment	N		Y	Document Management	Attachment
				Y	Party Management API	Party
Prepay Balance	Balance	N		Y	Party Management API	Party

Management API					Product Inventory	Product
	Balance Adjustments	N		N		
	Balance Topup Request	N		Y	Party Management API	Party
					Product Inventory	Product
					Customer Mgmt	Payment Mean
	Balance transfer	N		Y	Party Management API	Party
					Product Inventory	Product
Product Ordering Management API	Product Order	N		Y	Party Management API	Party
					Billing Management API	Billing Account
					Product Inventory	Product
					Appointment API	Appointment
					Product Catalog	Product Offering
SLA Management API	SLA (Service Level Agreement)	N		Y	Party Management API	Party
	SLA Violation Resource	Y	SLA	Y	Party Management API	Party
Service Quality Manage API	Service Level Objective	N		N		
	Service Level Specification	Y	Service Level Objective	N		
Service Test Management API	Service Test	N	Service Test Specification	Y	Service Inventory	Service
	Service Test Specification	N		Y	Service Catalog	Service Specification
Change Management API	Change Request	N		Y	Party Mgmt API	Party
				Y	SLA Management	SLA
Service Catalog API	Service Catalog	Y	Service Category	Y	Party Management API	Party
	Service Category	N		N		

	Service Candidate	Y	Service Category	Y	SLA	SLA
		Y	Service Specification			
	Service Specification	N		N		
Service Inventory API	Service	N		Y	Service Catalog	Service Specification
				Y	Service Ordering	Service Order
				Y	Party Management API	Party
Service Problem Management API	Service Problem	N		Y	Party Management API	Party
				Y	Alarm API	Alarm
				Y	Trouble Ticket	Trouble Ticket
				Y	Resource Inventory	Resource
				Y	SLA	SLA Violation
				Y	Service Inventory	Service
Service Ordering API	Service Order	N		Y	Service Inventory	Service
				Y	Service Catalog	Service Specification
				Y	Service Catalog	Service Catalog
					Party management API	Party
					Appointment management	Appointment
Activation and Configuration API	Service	N		N		
	Resource (abstract)	N		N		
	Monitor	N		N		
Resource Ordering API	Resource Order	N		Y	Resource Inventory	Resource
					Party Management API	Party
					Resource Catalog	Resource Specification
					Appointment management	Appointment

Resource Catalog API	Resource Catalog	Y	Service Category	Y	Party Management API	Party
	Resource Category	N		N		
	Resource Candidate	Y	Resource Category	Y	SLA	SLA
		Y	Resource Specification			
	Resource Specification	N		N		
Resource Function Configuration & Activation API	Network Service	N		Y	Service Catalog API	Service Specification
					Service Inventory API	Service
					Party Management API	Party
					Resource Inventory API	Resource
	VNF	N		N		
	PNF	N		N		
	Network Service Heal or VNF/Heal	N		N		
	Network Service Scale or VNF/Scale	N		N		
	Network Service Migrate or VNF/Migrate	N		N		
Party Management API	Individual	N		N		
	Organization	N		N		
Privacy API	Party Privacy Profile	Y	Party Privacy Profile Type	Y	Product Catalog	Product Offering
	Party Privacy Profile Type	N		N		
	Party Privacy Agreement	Y	Party Privacy Profile	Y	Agreement	Agreement
Onboarding Management API	Party Role	N		Y	Party Management API	Party
				Y	Agreement	Agreement
				Y	Customer Mgmt	Payment Mean
	Partnership Type	N		Y	Agreement Management	Agreement Specification

Agreement Management API	Agreement	Y	Agreement Specification	Y	Product Catalog	Product Offering
				Y	Onboarding Management	Party Role
	Agreement Specification	N		Y	Party Management API	Party
					Service Catalog	Service Category
Address API	Address	N		N		
	Area	N		N		
	Street	Y	Address	N		
	Street Segment	Y	Address	N		
Trouble Ticket Management API	Ticket Resource	N		Y	Party Management API	Party
Usage Management API	Usage Resource	Y	Usage Specification	Y	Party Management API	Party
					product inventory API	product
Performance Management API	Measurement Production Job Resource	N		N		
	Measurement Collection Job Resource	N		N		
	Ad-hoc Collection Resource	N		N		
Loyalty Management	Loyalty Program Product Spec	N		Y	Product Catalog	Product Specification

5. API Map Usage examples

This chapter includes some practical examples of platforms as different service providers have defined them and how Open API Map is used to enable a platform based business model as defined in the Digital Platform Reference Architecture (DPRA).

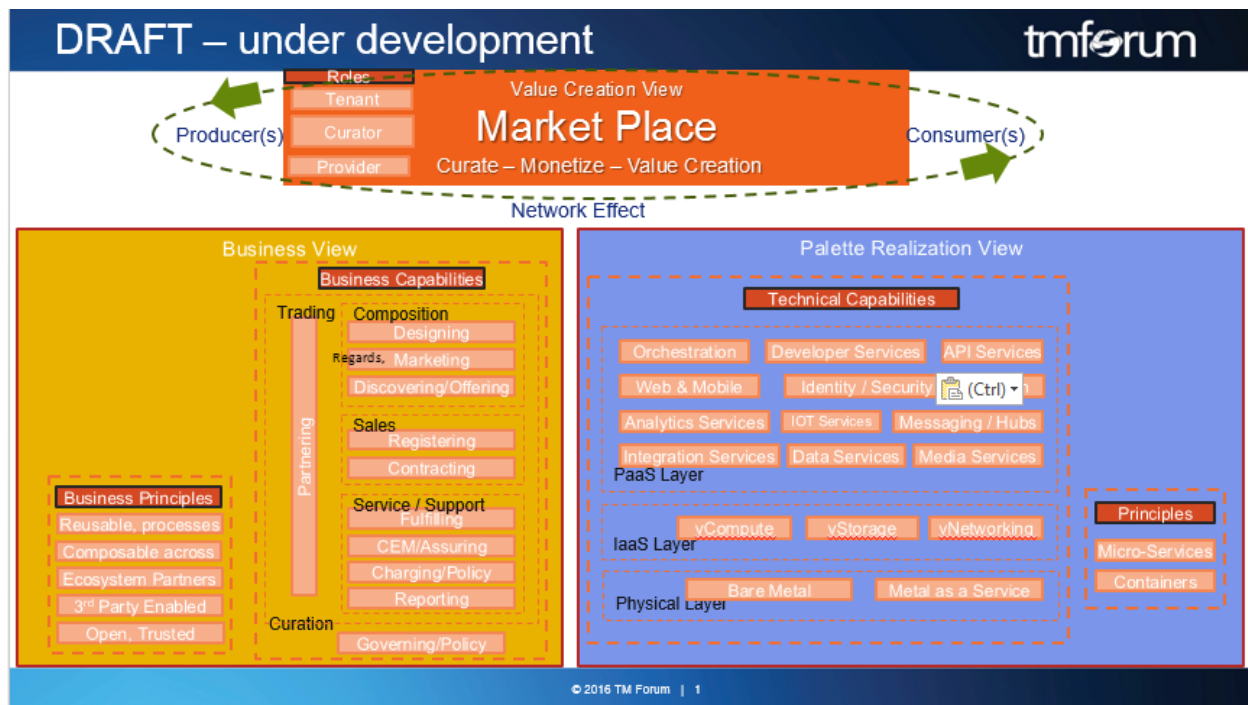


Figure 13 – DPRA Platform template

The value of transformation to a platform model to service providers as explained in the DPRA is that the platform model can help:

- To unbundle ownership of the infrastructure (e.g. network access or cloud infrastructure) from the offering of value-added services to consumers
- Promotes disaggregation of network functions (e.g.) which enable the offering of rich and new value-added composite services
- Allow for the aggregation of service elements from multiple producers to offer new and value-added services (i.e. service composition across producer boundaries).

Platform based business models can also be used to efficiently leverage an operator's core assets and provide competitive differentiation.

The service providers are already in the middle of many service chains so have a natural placement to easily become the curator between producers and consumers of services. They must transform from a "Producer" mentality to a "Curator" or match maker mentality.

The DPRA is based on 3 key concepts:

- Platforms: Instances are units of deployment defined by enterprises using templates defined by Standards Defining Organizations (SDO), including the TM Forum.

They are 'Black box like', can be Vendor /Operator specific, allow for internal evolution and innovation, and whose implementation can be agile and flexible i.e. time varying.

Platform instances are not standardized by SDOs but by enterprises.

- Platform Capabilities are exposed by a Platform and are the units of integration used to create a composed capabilities from multiple Platform Capabilities / Platforms.

Platform Capabilities define the rules and best practices for using the combination of Open APIs used to realize them.

Platform Capabilities can be standardized by SDOs.

- Open APIs which are the units of interoperability that realize Platform Capabilities and can be conformance and interoperability tested.

Open APIs are standardized and governed by the TM Forum as well as other SDOs.

Digital Platform Reference Architecture shows the relationship between platforms and API's.

Informal Metamodel

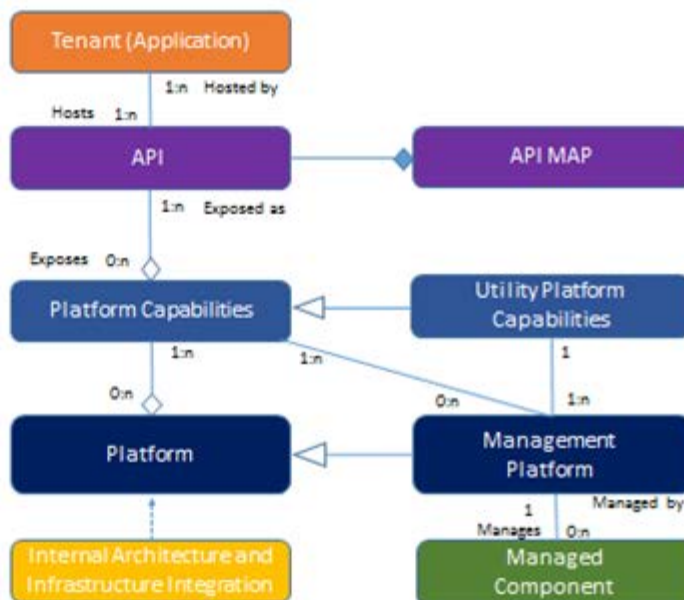


Figure 14 – Platform meta-model

A Platform is typically made up of a number of systems managed as a coherent unit to deliver a well-defined set of business capabilities through simple to use Open APIs.

5.1 API Deployment View in Vodafone

As seen above, The TMF Open API' help realize a set of Platform capabilities that can be standardized by SDO's.

At Vodafone, the Open APIs are shown in context of Platform instances, a deployment view of the Open API's.

A deployment view to the API Map:

- Enables to focus on platform capabilities that need to be exposed through API's rather than how to implement them using different systems/applications
- Enables inter-operability whilst enabling innovation in the implementation. While consuming platform capabilities and integrate through Open API's we should not have any knowledge of the underlying systems or processes that deliver those capabilities.

The deployment view is the overall illustration of the API's in the API Map where we show each API in context of the platform that acts as "system of record" or "authoritative master" for the associated API resources.

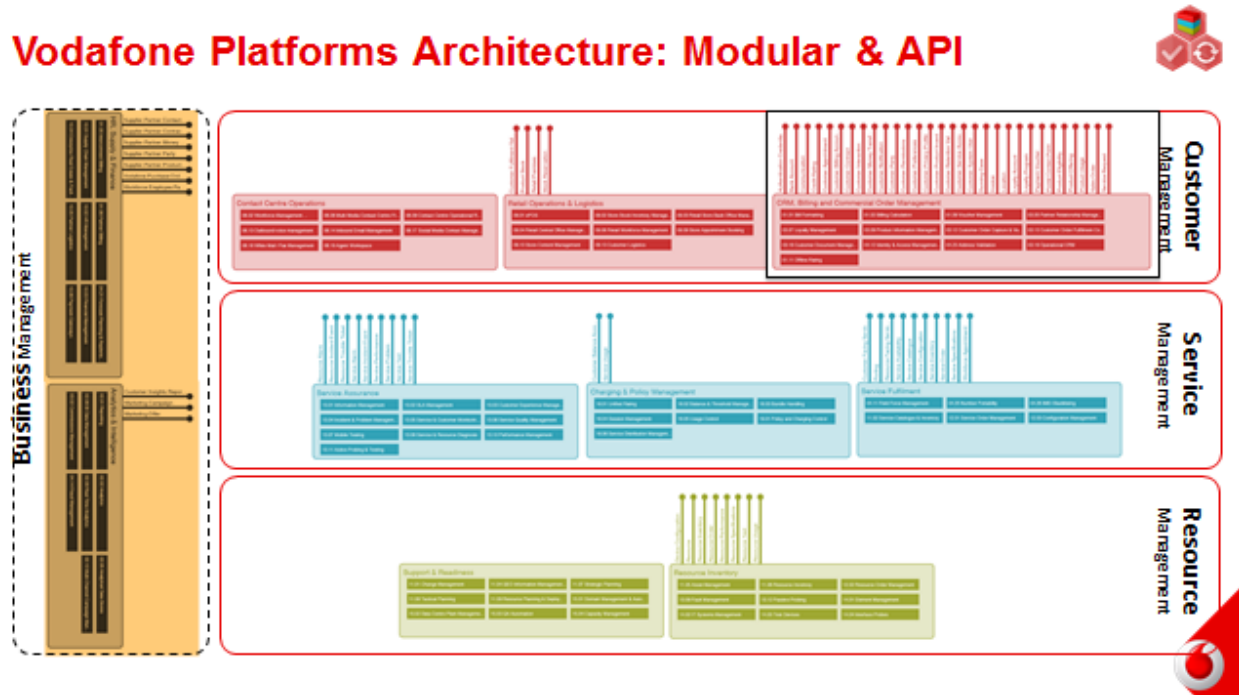


Figure 15 – Vodafone Platform Architecture

A number of platform instances have been established in Vodafone which:

- can be implemented differently in different company
- But expose the same business capabilities and realised using the same APIs
- Enable agility across the companies by re-use of the same APIs and platform capabilities.

In Vodafone Platform Architecture:

- Customer Management layer includes CRM, Billing and Order Management platform, Retail Operations and Logistics, Contact Centre Operations platform
- Service Management layer includes Service fulfilment, Service Assurance, Charging & Policy Management platforms
- Resource Management layer includes Resource Inventory & Lifecycle Management, Resource activation & Configuration, Resource Fault & Performance platforms

The 'Deployment view' of the API Map is organized in multiple levels:

- Level 0: the platform layers, 4 business abstraction layers : customer & product management, service management, resource management, business management
- Level 1: The main TM Forum APIs, typically the primary resource
- Level 2: the component resources exposed within the API

5.1.1 Level 0 of API Deployment View

The deployment view of the API's is aligned with the Customer/Service/Resource view as the overall business abstractions as below:

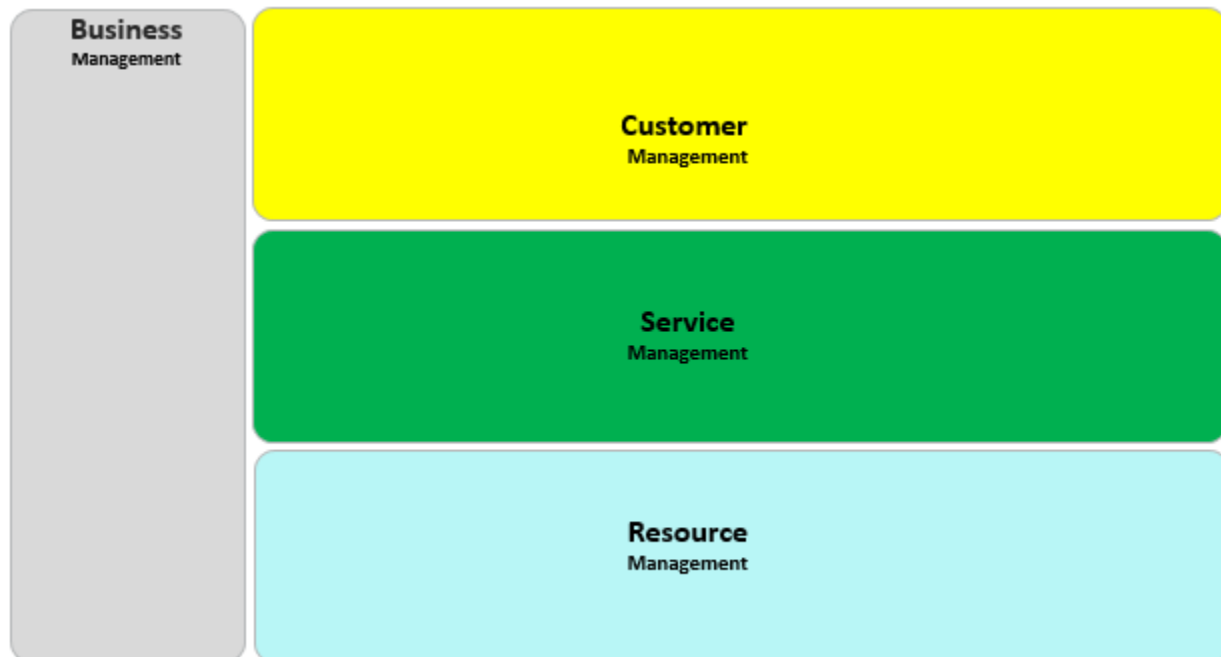


Figure 16 – Level 0 Deployment view

5.1.2 Level 1 of API Deployment View

In this Level 1 depiction, the API' from the API Map are mapped to the platform layers above

The Level 1 of API Deployment view is as the following:



Figure 17 – Level 1 Deployment view

Here are the current APIs in the deployment view:



Figure 18 – Level 1 Deployment view (Current APIs)

The APIs in the planned or future status can be mapped on the deployment view as the following:

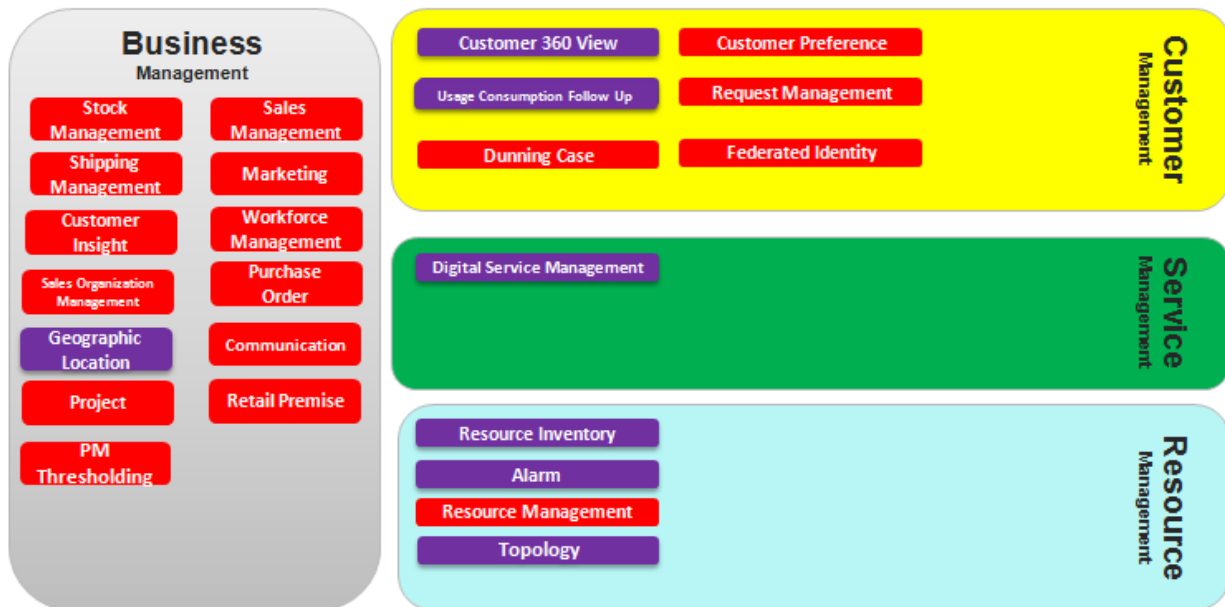


Figure 19 – Level1 Deployment view (Planned & Future API's)

5.2 API Deployment View in BT

BT's business functionality has been partitioned into a set of cooperating IT platforms that enables:

- Reusable common capabilities (SDK's/API's) – keeping engineering costs down
- Reusable process blocks – consistent customer experience

BT has 26 platforms and 700 systems which drives simplicity and ruthless standardization and is intended to minimise whole life costs, reduce cycle time for launching new capabilities and facilitate business agility.

BT's Platform Architecture

26 platforms

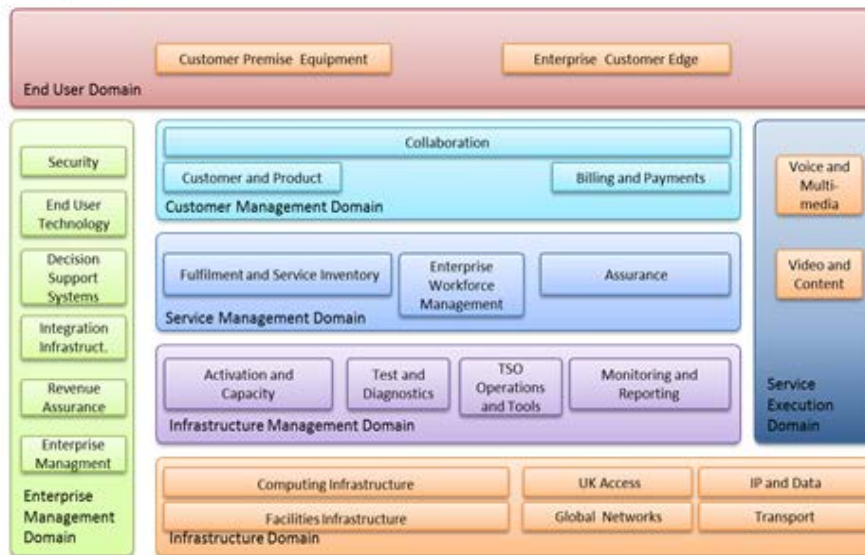


Figure 20 – BT Platform Architecture

5.2.1 Level 0 of API Deployment View

The deployment view of the API's is aligned with the Customer/Service/Resource view as the overall business abstractions as below:

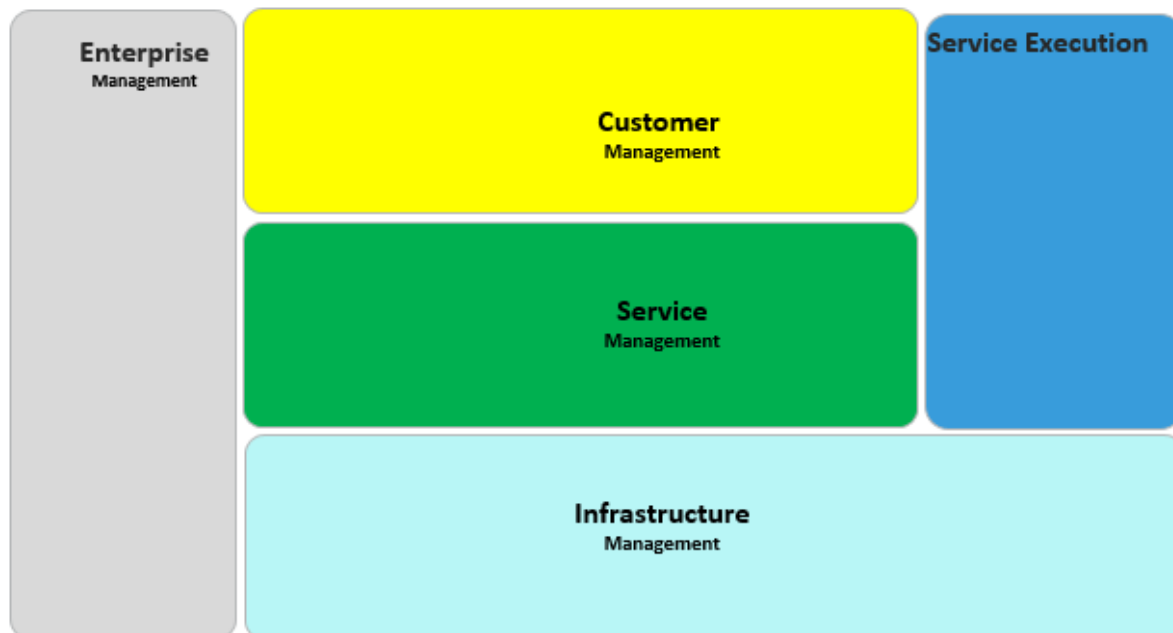


Figure 21 – Level 0 BT API Deployment view

5.2.2 Level 1 of API Deployment View

In this Level 1 depicted, the API' from the API Map are mapped to the platform layers above
The Level 1 of API Deployment view is as the following:

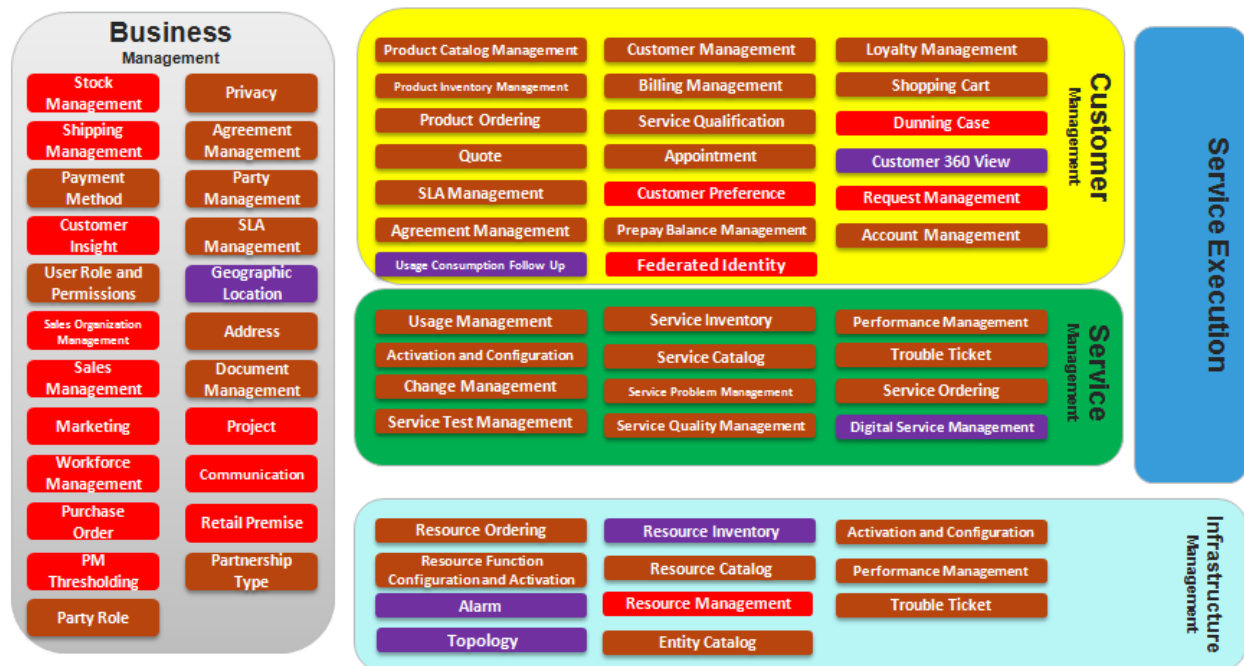


Figure 22 – Level 1 BT Deployment view

Here are the current APIs in the deployment view:

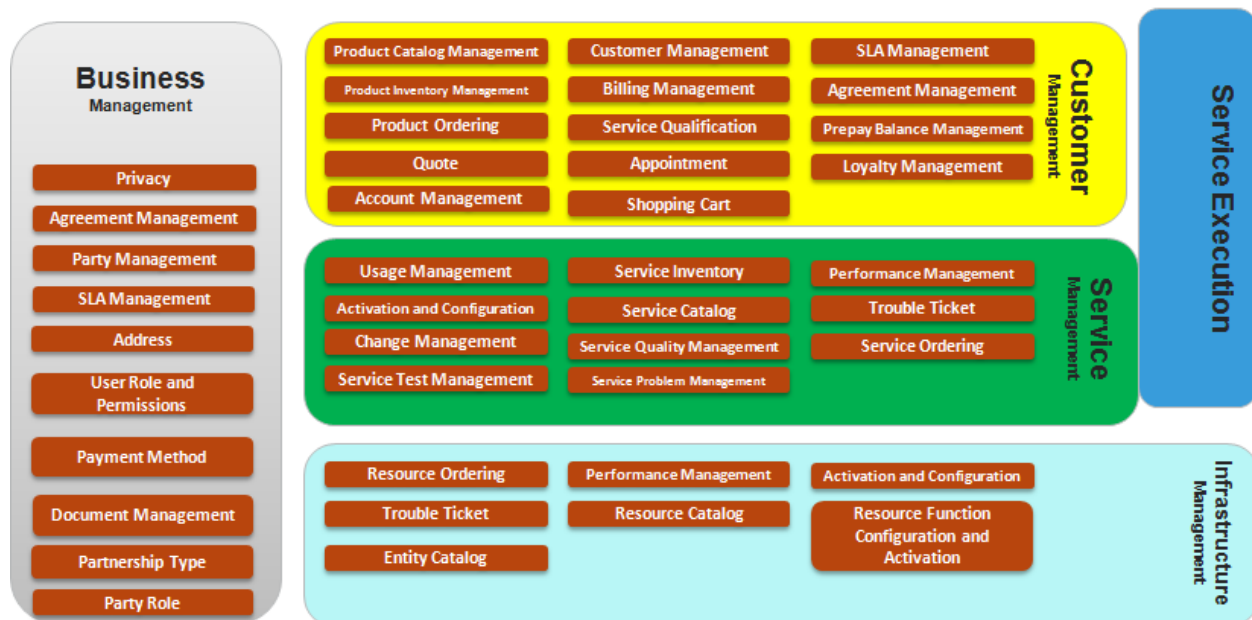


Figure 23 – Level 1 BT Deployment view (Current API's)

The APIs in the planned or future status can be mapped on the deployment view as the following:

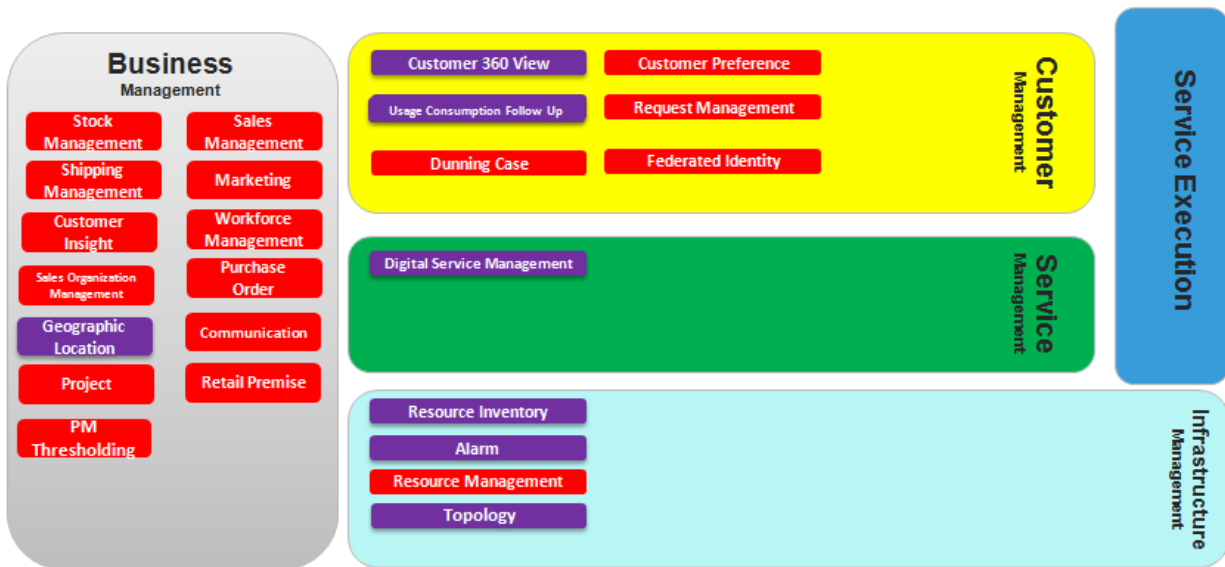


Figure 24 – Level 1 BT Deployment view (Planned & Current)

5.3 API Deployment View in Orange

Orange's business functionality has also been partitioned into a set of cooperating IT platforms depicted below.

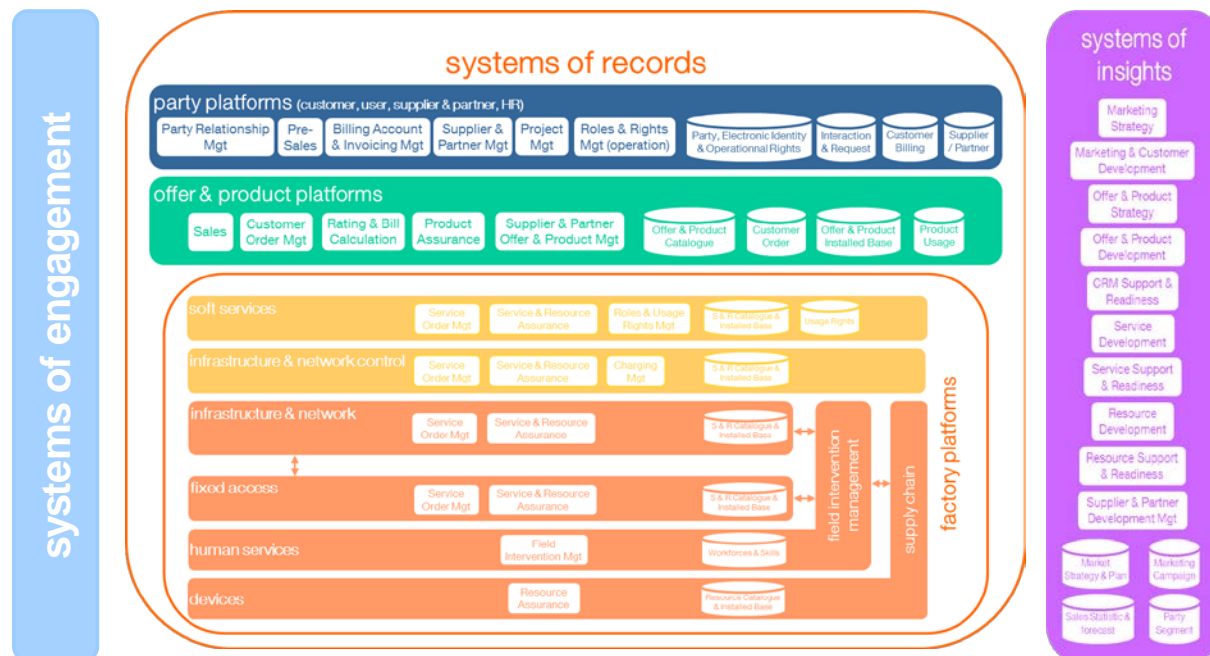


Figure 25 – Orange's business functionality

In Orange architecture:

- **Systems of Engagement** deals with User Interfaces (UI) sequences to carry out Party Interactions using APIs. They hold no business process. They are tied to fast evolving technologies to support Front End portals and Secured APIs exposed to 3rd party systems.
- **Systems of Record** deals with operational processes. They handle Offers & Products (WHAT?) built, run and maintained in a Factory (HOW ?) that provides the underlying Services (aka CFS) or physical products, involving Parties (WHO & WHY?).
- **Systems of Insights** deal with all non-operational and Analytical processes and support the strategy design. They process information produced by the enterprise to provide various insights on its activity (including BI, Financial Management, Fraud Management & Revenue Assurance,...). They perform complex event/data processing (e.g. eligibility assessment) and interwork with other systems through event publication.

System of record is composed of 3 platforms:

- **Party Platform** handles Persons (employees, customers, users), Parties (suppliers, partners, organizations, external systems); it includes all related data and repositories and the associated management functions. This includes CRM, Invoicing, Financial Management and all Human Resources functions. This platform holds the functions related to the Identity. It is therefore involved (by a function call) every time a process requires personal identification
- **Offer & Product platform** handles the commercial catalogue of Offers and Products, the installed base (with the link to the contract owner in the Party platform). It manages all the function required for the Customer Order Management (order capture to bill calculation), Product assurance, Product rating, QoS management. This platform is kept agnostic of the customer, since the data and functions it carries do not depend on which party is involved.
- **Factory Platform** handles the technical plan on which the Products rely. It holds the asset of technical solutions (CFS and resources) facing the Products defined in the Offer & Product Platform catalogue. This platform is responsible for the delivery of the CFS requested by the Customer Order Management. It makes the choice of the appropriate solution (set of resources), delivers it and then operates, repairs the service. This platform holds the technical repositories and installed Resource base (that is the installed CFS linked with the technical resources of the solution).

5.3.1 Level 0 of API Deployment View

The deployment view of the API's is aligned with the Party/Offer & Product/Factory view as the overall business abstractions as below:



Figure 26 – Orange's level 0 of API Deployment View

5.3.2 Level 1 of API Deployment View

In this Level 1 depiction, the API used by Orange are mapped to the platform layers above. They can be Orange Standard API (in black) or TM Forum standard API (in white).



Figure 27 – API used by Orange are mapped to the platform layers
In this Level 1 depiction, the API' from the API Map are mapped to the Orange platform layers.



Figure 28 – APIs are mapped to the platform layers

5.4 API Deployment View in Huawei

Huawei deployment view is composed of three main parts and infrastructure:

- Systems of Engagement are technologies that directly support customer interactions through software.
- Systems of Record are technologies that manage and store transactions, content, and processes.
- Systems of Insight are technologies that provide business analysis and statistics.
- Systems of Operation are technologies that intelligently manage physical products, networks, and infrastructure.

5.4.1 Level 0 of API Deployment View

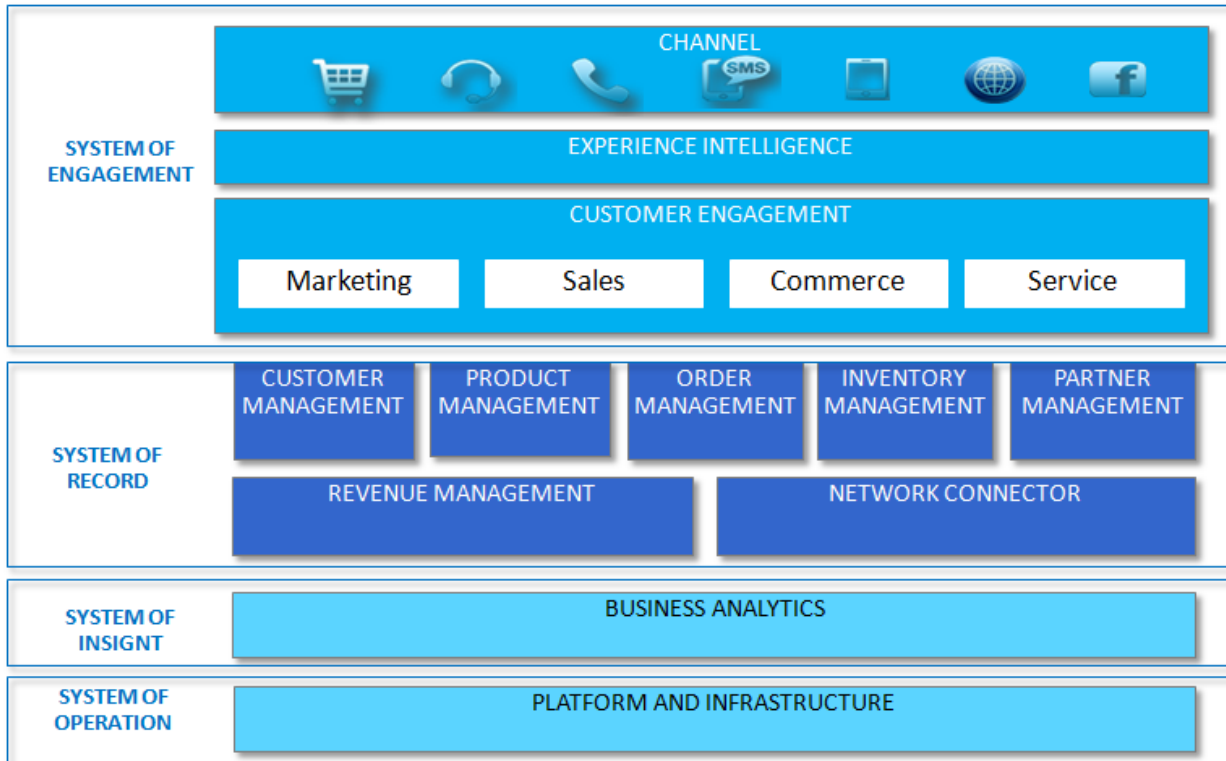


Figure 29 – Level 0 of Huawei's deployment view

5.4.2 Level 1 of API Deployment View

In this Level 1 depiction, the TMF APIs are mapped to the platform layers above.

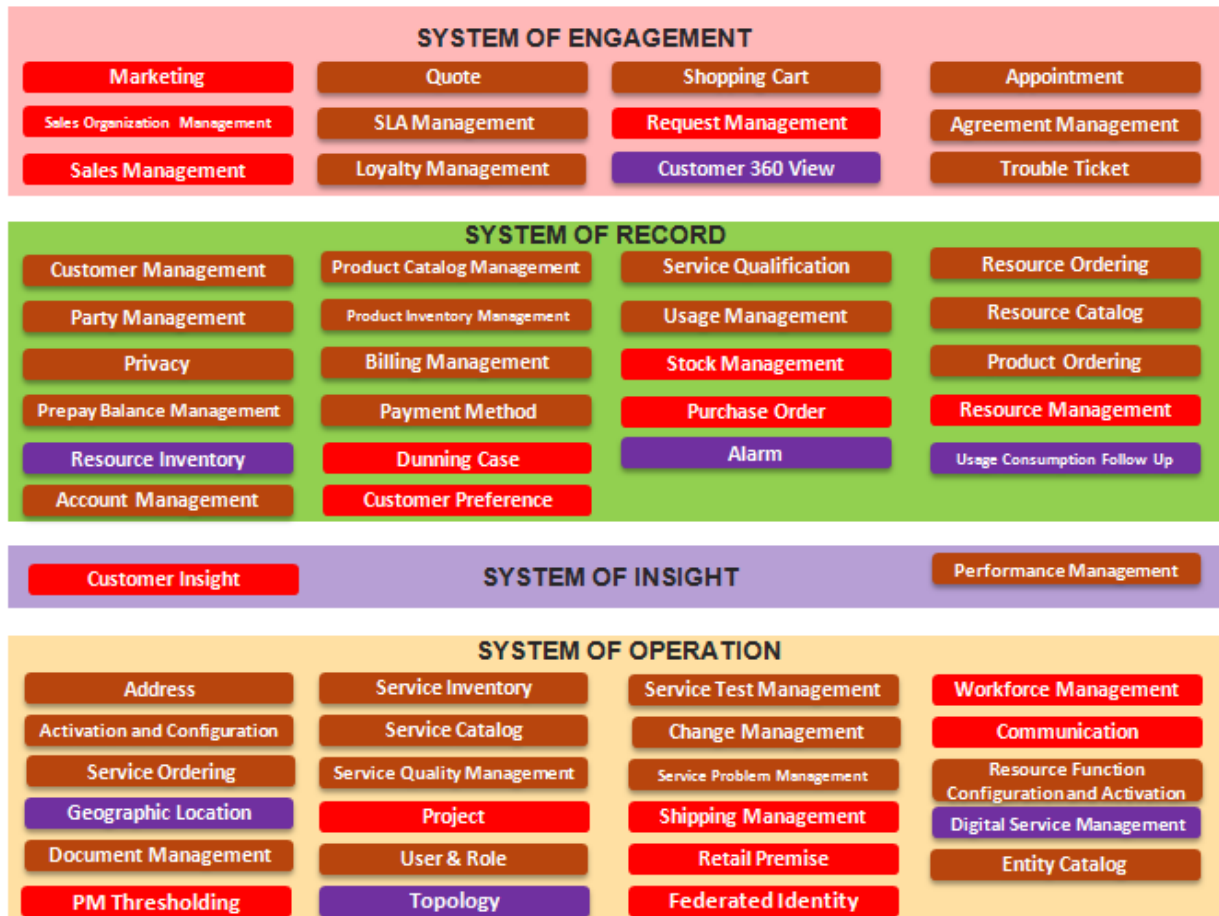


Figure 30 – Level 1 of Huawei's deployment view

6. API verification via Business Process (GB921D, PRELIMINARY)

The business process is the end to end line which organizes a group of activities for the certain purpose. When these activities collaborate together to support the accomplishment of the process, API is necessary for the interactions between the activities. By describing the API used in the steps of business process, the completeness and consistency of APIs can be verified.

There is wide range of business processes which are adopted in the different domains. The recommended selection for the process is based on TM Forum Process Framework (eTOM). In this document, API verifications will be built based on these published outcomes.

The Level 3 of TMF Process Framework is chosen as the benchmark of API verification. The Level 3 is the standard process which is also used in GB921D for process decomposition. The granularity of other levels appears improper because they are too high (Level 0/1/2) or too low (Level 4/5).

The section number of Level 2 and Level 3 process is kept in the mapping so the original TM Forum Process Framework content can be conveniently found for comparison.

The TMF API relevance to the TMF Process Framework is depicted in three types:

- ✧ **API name**
If the Level 3 Process has the corresponding API to support, the name of API is shown in the mapping table.
- ✧ **API is not defined**
If the process may be supported using API from IT system, but the API has not been defined in the API Map, it is indicated as "API is not defined" so API can be considered in future.
- ✧ **API is not required**
If the process does not require API to support, for example, this process is manually handled, this process is indicated as "API is not required"

Note: this assessment is based on the knowledge until TMF R16.5. New API may be induced in future for the process which is currently recognized as "API is not required"

Please refer to the spreadsheet for the *GB992 Addendum Mapping between API and Business_Process_Framework*. This is the addendum of this document to contain all the details of the mapping to support the API verification.

7. Administrative Appendix

This Appendix provides additional background material about the TM Forum and this document. In general, sections may be included or omitted as desired; however, a Document History must always be included.

7.1 About this document

This is a TM Forum Guidebook. The guidebook format is used when:

- The document lays out a 'core' part of TM Forum's approach to automating business processes. Such guidebooks would include the Telecom Operations Map and the Technology Integration Map, but not the detailed specifications that are developed in support of the approach.
- Information about TM Forum policy, or goals or programs is provided, such as the Strategic Plan or Operating Plan.
- Information about the marketplace is provided, as in the report on the size of the BSS/OSS market.

7.2 Document History

7.2.1 Version History

Version Number	Date Modified	Modified by:	Description of changes
1.0.0	12/06/2016	Pierre Gauthier	First issue of document
1.0.1	13/06/2016	Alicja Kawecki	Updated cover; minor formatting/style edits prior to publication for Fx16
2.0.0	01/12/2016	Pierre Gauthier	Updated for Fx16.5
2.0.1	09/12/2016	Alicja Kawecki	Updated cover, minor formatting/style edits prior to publication for Fx16.5
3.0.0	06/19/2017	Pierre Gauthier	Updated for Fx17
3.0.1	10-Nov-2017	Adrienne Walcott	Minor cosmetic edits prior to publishing

7.2.2 Release History

Release Number	Date Modified	Modified by:	Description of changes
1.0	12/06/2016	Pierre Gauthier	First release of document
2.0	01/12/2016	Pierre Gauthier	Second release for Fx16.5
3.0	06/19/2017	Pierre Gauthier	Third release for Fx17
17.0.1	10-Nov-2017	Adrienne Walcott	Updated to reflect TM Forum Approved Status

7.3 Company Contact Details

Company	Team Member Representative
TM Forum	Pierre Gauthier

Vodafone	Lester Thomas
Huawei	Jingyi Han
Orange	Jean-Luc Tymen

7.4 Acknowledgments

This document was prepared by the members of the TM Forum Agile Business and IT team:

- Pierre Gauthier, TM Forum, **Editor**
- Lester Thomas, Vodafone, **Author**
- Steve Harrop, Vodafone, **Author**
- Nicoleta Stoica, Vodafone, **Author**
- Jingyi Han, Huawei, **Author**
- Xu Ma, Huawei, **Author**
- Yiling(Sammy) Liu, Huawei, **Author**
- Yisong Jiang, Huawei, **Author**
- Jean-Luc Tymen, Orange, **Author**
- Cecile Ludwichowski, Orange, **Author**
- Andreas Polz, Infonova, **Author**