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Driving Digital Transformation
with TMForum Open API:
DNext's Role

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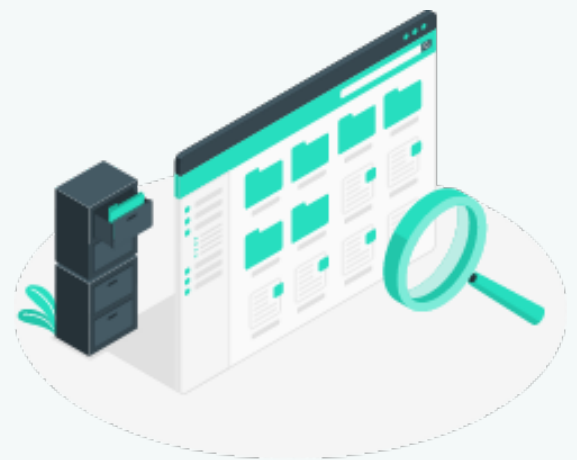
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Supporting TM Forum Open API

Digital adoption has taken a quantum leap at a personal, organizational, industry, and governmental level.

The most notable driving forces of this boom are irreversible changes in consumer behavior, specifically the shift to online channels, which have caused the telecoms industry and enterprises of all sizes to rapidly accelerate their digital transformation plans. This acceleration signifies a broader shift towards a digital economy and society which means telcos need to act now to capture a share of the new value being created.

Enterprises across different industries are addressing this once-in-a-generation challenge by reinventing their operating model and processes, go-to-market and partnering approaches, company culture, and ways of working. All these change programs are underpinned by the systems that support them, but many legacy systems are still in use that lock in legacy processes and behaviors.



Enterprises need to move now to an open, modern, software-based architecture like those used by the OTTs and other technologically driven new generation rivals they so admire. Businesses understand that to stay not only relevant in the market but continue to survive, they need their IT architecture to be modular, reusable, cloud-native, AI-ready, and made of standardized components. Without it, they will not be able to implement new customer delights, concept-to-cash cycles, or co-innovate with partners, or operate at the cost point and with the flexibility demanded by the market. Given the speed of change over the last years, industry leaders are reviewing transformation plans and questioning how their change initiatives can be delivered faster.



Historically, systems integration is an expensive process for companies. By using non-standard interfaces, enterprises are forced to reinvent and reintegrate with every innovation they take onboard. This is a highly laborious process, requiring definition, design, agreement, and construction on both sides.

In the enterprise space, telcos are already supplying more than just communications. They are trying to extend their coverage with Cloud solutions, Internet of Things (IoT) offerings, eCommerce, financial/payment transactions, and on-site managed services. To do so, they are relying on buying products and services from multiple other wholesale providers, which requires them to continuously integrate further, to connect to each provider's individual API. This is an immense amount of work. So much so, integration often only happens when the volume is high enough to warrant the effort – leaving enterprises with a largely manual business still.



TM Forum is a global industry association for service providers. It provides an international industry standard. We as DNext closely follow TM Forum standards to be relevant to the globally accepted integration approach. We believe that following these standards will not only benefit DNext development effort but also will open multiple ways that our partners and other customer domains will be integrating with us; to the extent that plug & play or replacing services with more technical and capable ones will be possible. This reduces product stickiness and increases efficiency and flexibility by far.

For these reasons, DNext focuses on the Open API Framework as it is the most mature API standard across different industries. It should be noted that DNext intends to follow other standards where maturity became de facto coming from any industry such as PCI DSS for Payment Card Industry Data Security Standard compliance coming mainly from the financial industry. Therefore, DNext intends to be a multi-industry product taking advantage of different mature industry standards. However, in this paper, the intention is to focus on TM Forum Open API specifically.

TM Forum Open APIs Framework

TM Forum Open APIs Framework is a comprehensive, collaboratively developed suite of standardized 60+ REST-based Open APIs modules with rapid, repeatable, and flexible integration among operations and management systems. Open APIs are now widely adopted by the industry, with more than 500,000 downloads by 32,000 software developers from 2,300 organizations. The framework makes creating, building and operating complex innovative services easier. In this aspect, Open API is there to enable end-to-end seamless connectivity, interoperability, and portability across complex ecosystem-based services.

Before focusing on Open APIs, a step back to look at overall ODA (Open Digital Architecture) as the big picture is needed as depicted in Figure 1.



Figure 1 ODA Functionality Architecture – High Level

The ODA comprises five key functional blocks as shown in the diagram above, summarized as follows:

Engagement Management (EGM)

- Responsible for interactions by people, organizations, and things that are powered by front ends and secure APIs.

Party Management (PM)

- Responsible for interactions and data associated with entities or actors involved with the enterprise and providing support for identification processes that are required to validate parties and manage party relationships.

Core Commerce Management (CMM)

- Responsible for formalizing business models, revenue generation, and business assurance processes.

Production

- Responsible for the delivery and lifecycle management of Customer Facing Services (CFS) and Resource Facing Services (RFS).

Intelligence Management

- Uses analytical processes to produce insights on business activity and to interact with operational processes through knowledge-defined automation.

Open APIs

- Open APIs are publicly available interfaces not only utilized in Figure 1 between TM Forum ODA architecture components but represent overall external interfaces to the system. Developers use Open APIs to gain access to other applications. In other words, they can be seen as “interpreters” between two data-sharing systems.

TM Forum Open API-related Q&As

What is the difference between Open APIs and TM Forum APIs?

While Open APIs are publicly accessible open programming standards, TM Forum presents a set of standard APIs called TM Forum Open APIs. These APIs consist of the core functions of a service provider’s business. The main objective is to present a standard set of APIs and a common language to simplify the integration of different systems together.

Are TM Forum standards only applicable to Telecommunication sectors?

Although TM Forum is the industry body specifically focused on the telecommunications sector, the APIs can be used by other digital service providers. Since other sectors are using generic operations that the telecoms industry has been doing for years.



How do you represent DNext Open API Compliance?

The Information Framework (SID) and the Open API program are working in a close relationship: the data models used in the various APIs of the Open API program take inputs from the SID, when appropriate. Thus, SID, eTOM (Business Process Framework), and TAM (Application Framework) of Framework information view of the Open API map are also organized at multiple levels. At the highest level there are the following domains where each suite of Open APIs positioned in a domain implies operations in a bounded context of tightly coupled business entities as defined in the specification of the relevant API:

- The Market & Sales Domain
- The Customer Domain
- The Product Domain
- The Service Domain
- The Resource Domain
- The Business Partner Domain
- The Enterprise Domain
- The Common Domain

DNext Open API Compliance is represented according to TM Forum – Open API main domains and business entities as shown in Figure 2.

DNext components provide (expose) their capabilities as micro-services compliant with TM Forum Open APIs. From an orchestration and integration perspective, DNext process management capabilities invoke integrated or project-specific customer-adapted tasks.

In this regard, standard **DNext tasks support** (utilize) externally provided such capabilities again via standard TM Forum APIs. Should there be any legacy applications or APIs that need to be customized, these can be managed/transformed/mapped via an API Manager.

MARKET/SALES	PRODUCT	Product Catalog Management Product Inventory Management Recommendation	Loyalty Management Promotion
CUSTOMER	SLA Management Customer Management Product Ordering Quote Management	Billing Management Payment Management Customer Bill Appointment Prepay Balance Management	Federated ID Product Offering Qualification
SERVICE	Service Inventory Activation and Configuration Service Quality Management	Change Management Service Catalog Service Ordering	Service Test Management Service Problem Management Service Qualification
RESOURCE	Activation and Configuration Resource Function Activation and Configuration	Resource Catalog Alarm Management Resource Pool Management	Resource Ordering Resource Inventory
ENGAGED PARTY	Party Management SLA Management Account Management Onboarding Management	Product Ordering Privacy Management Partnership Type Party Interaction	Agreement Management Payment Methods Party Role Payment Management
ENTERPRISE	COMMON	Performance Management Trouble Ticket Usage Management User Roles and Permissions Shipment Tracking Geographic Address Geographic Site	Geographic Location Entity Catalog Management Document Management Usage Consumption Communication Performance Threshold
INTEGRATION	Event Streaming	Process Flow Management	

Figure 2 DNext Open API Compliance

In the figure:

Provided: indicates that relevant TM Forum Open API is provided (served) as part of DNext functionality.

Supported: indicates that relevant TM Forum Open API is supported (consumed) as part of integration or customer adaptation.

Why does DNext use TM Forum APIs?

DNext is a general-purpose product that meets customers’ needs in various industries. Considering the benefits of TM Forum standards listed below, DNext uses more than 30 APIs to build its versatile multipurpose, flexible products.

What are the benefits of using TM Forum standards

TM Forum Standards:

- Provides superior business agility through providing a flexible, modular platform architecture that enables flexible deployment models based on infrastructure and Platform-as-a-Service capabilities.
- Enables partnership for new services,
- Reduces time-to-market, costs, and overhead associated with traditional point integration
- Lowers implementation and operational costs across the supply chain.
- Facilitates plug-and-play integration.
- Simplifies the IT estate.
- Drives developers to create innovative new products and services using extensible Open APIs.
- Enables a global feature value structure for developers and enterprise customers
- Enables highly automated operations and management of complex services from end to end across digital ecosystems.
- Facilitates a Global Wholesale Connectivity Ecosystem.

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*Citation: DNext Info Hub. "Driving Digital Transformation with TM Forum Open API: **DNext's Role**" June 2023.*