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A New Era for Standard Interfaces

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We have all heard that B/OSS can be built on standards, but if there is one characteristic that categorizes a B/OSS application, it's the interface. Frameworks like the TM Forum's New Generation Operations Systems and Software (NGOSS) define processes, data structures and application characteristics in a technology-independent manner. Recently, technology-specific interface specifications like Multi-Technology Network Management (MTNM), Multi-Technology Operations System Interface (MTOSI), OSS through Java (OSS/J), and Internet Protocol Data Record (IPDR) have been built using, or in harmony with, the NGOSS frameworks.

Now the TM Forum Interface Program (TIP) is consolidating those specifications and standardizing OSS interface definitions across fulfillment, assurance, and billing. As service providers migrate away from one-off and internally developed applications to commercial off-the-shelf (COTS) applications, they still encounter high cost and complexity in systems integration and maintenance. One of the most effective solutions is the use of open interfaces, which can be adopted by application vendors or used as a "common denominator" by systems integrators. But open interfaces come with a price – they need to be specified, designed, implemented, tested, and supported – preferably in a neutral environment. TIP offers a unified approach that is expected to catalyze widespread adoption of open interfaces in the communications, information, and entertainment industries. This article examines TIP and its NGOSS foundations, through recent innovations in NGOSS contracts, into the Prosspero ecosystem.

To understand the significance of TIP, let's begin at the roots. NGOSS is an ambitious and largely successful effort to describe and relate, from four complementary viewpoints, four critical aspects of management systems: process, information, application, and systems integration. NGOSS calls these four aspects the Business Process Framework (eTOM), Information Framework (SID), Application Framework (TAM), and Systems Integration Framework (TNA). Each aspect is developed as a framework, beginning with the business viewpoint, and then working through the remaining viewpoints: system, implementation, and deployment. Taken together, the NGOSS frameworks lay the groundwork for B/OSS integration, as shown in figure 1.

The eTOM starts by describing the highest-level divisions of the business process

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universe: planning and lifecycle management, operations management, corporate and support management. Cutting across those process areas are the highest-level functional processes, from market, product and customer through service and resource, to suppliers and partners. These high-level vertical and horizontal process divisions are further subdivided into process groupings. These groupings include horizontal, functionally-oriented views like Customer Relationship Management and Service Management & Operations, as well as vertical, business-oriented views like Product Lifecycle Management, Operations Support & Readiness, as well as the familiar Fulfillment, Assurance and Billing. The interplay between these horizontal and vertical process groupings is a matrix that allows the eTOM to categorize processes in both functional and business terms. The high-level process groupings are further subdivided: for example, Customer Relationship Management contains Order Handling, Problem Handling, and nine other processes. Further decomposition identifies still lower level processes: for example, Order Handling comprises Authorize Credit, Issue Customer Orders, and five other processes. In this manner, the eTOM identifies a large number of basic processes that can be further broken down into tasks that are reusable across many process flows.

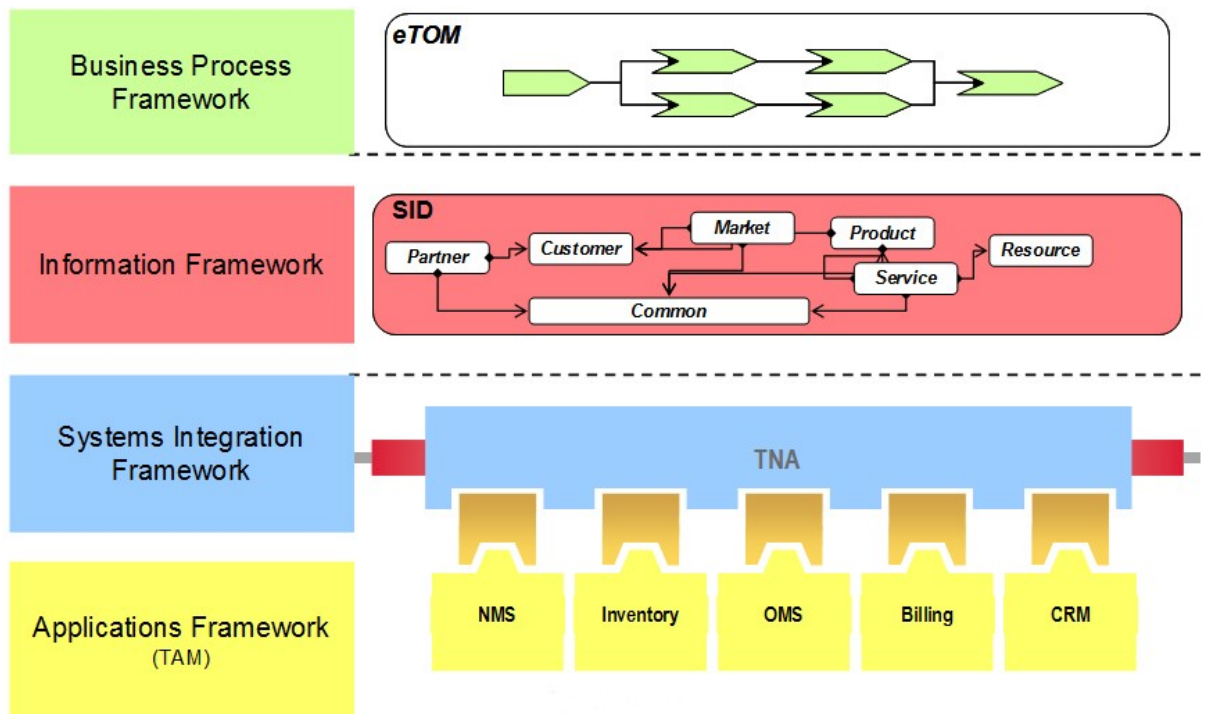


Figure 1 - NGOSS Frameworks

The SID begins with high-level information domains that are aligned with the high-level functional processes of the eTOM. SID domains like Customer, Product, and Service directly correspond to eTOM functional processes. Each SID domain contains Aggregate Business Entities (ABEs), which are collections of related business entities. Several levels of aggregation may be involved for large collections of entities, so that domain-level ABEs typically contain other, smaller ABEs: for example, the Service domain holds the Service ABE and eight other ABEs. The Service ABE contains two ABEs, CustomerFacingService and ResourceFacingService, each of which contains three low-level ABEs. The lowest level ABEs are cohesive collections of specifically related entities, in which each entity describes a thing or concept, such as a Customer or a Customer Account, and defines its essential attributes. ABEs and entities are mapped to eTOM processes at each level of decomposition, so that the relationships between business processes and affected data elements can be clearly understood. The SID is primarily an information model – the base from which a service provider, systems integrator or ISV derives, extends, customizes and details a specific data model.



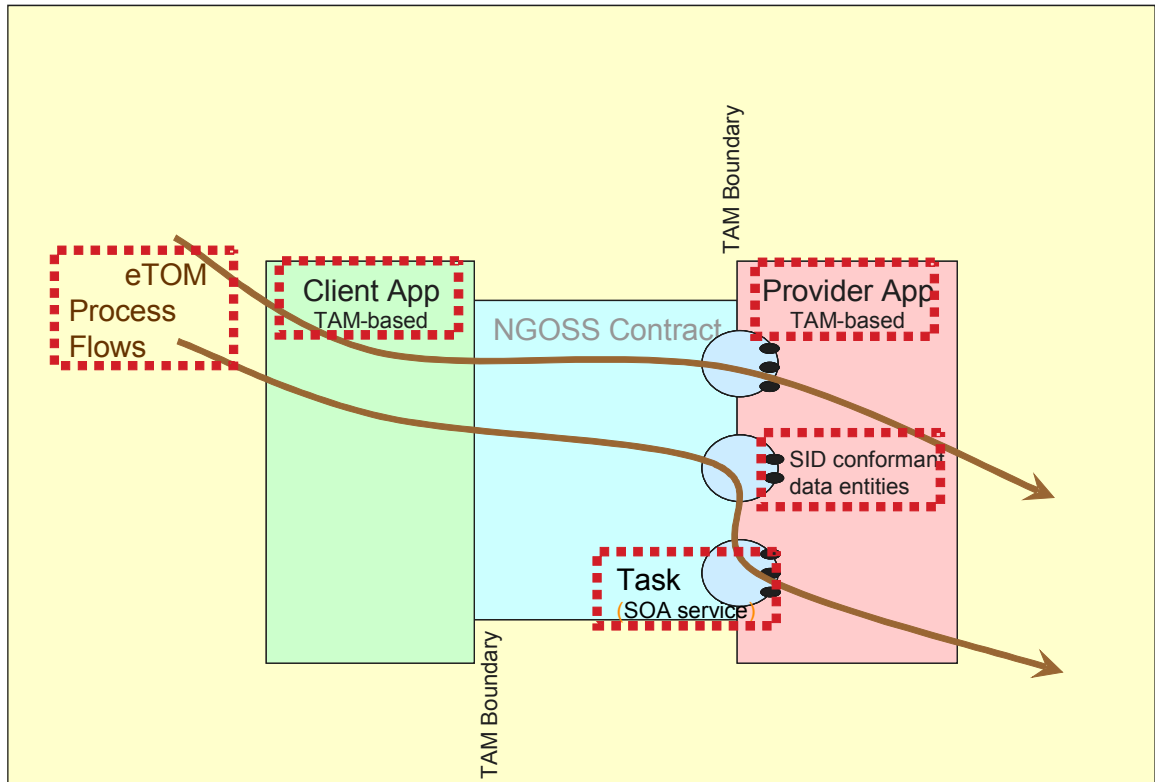
The TAM defines procurable applications that perform the processes defined in the eTOM and manipulate the information defined in the SID. The TAM subdivides applications into lower level functional units, and describes specific interactions that can occur between applications. These interactions effectively define application boundaries.

The TNA defines architectural concepts and requirements that provide a foundation for systems integration, including distributed information-oriented architecture and the use of NGOSS Contracts to define and manage the interaction between application components.

We can use these NGOSS frameworks to fully define the management environment – provided that we include the detailed relationships, or “mappings”, between eTOM, SID and TAM. Because the TAM was not as fully developed as the eTOM and SID, and because the inter-framework mappings were incomplete, pre-TIP TM Forum interface development did not fully account for all three frameworks or their mappings. Past TM Forum interface specifications also differed significantly in focus, granularity, protocol support, features, documentation, and certification. TIP builds on the best characteristics of its predecessors.

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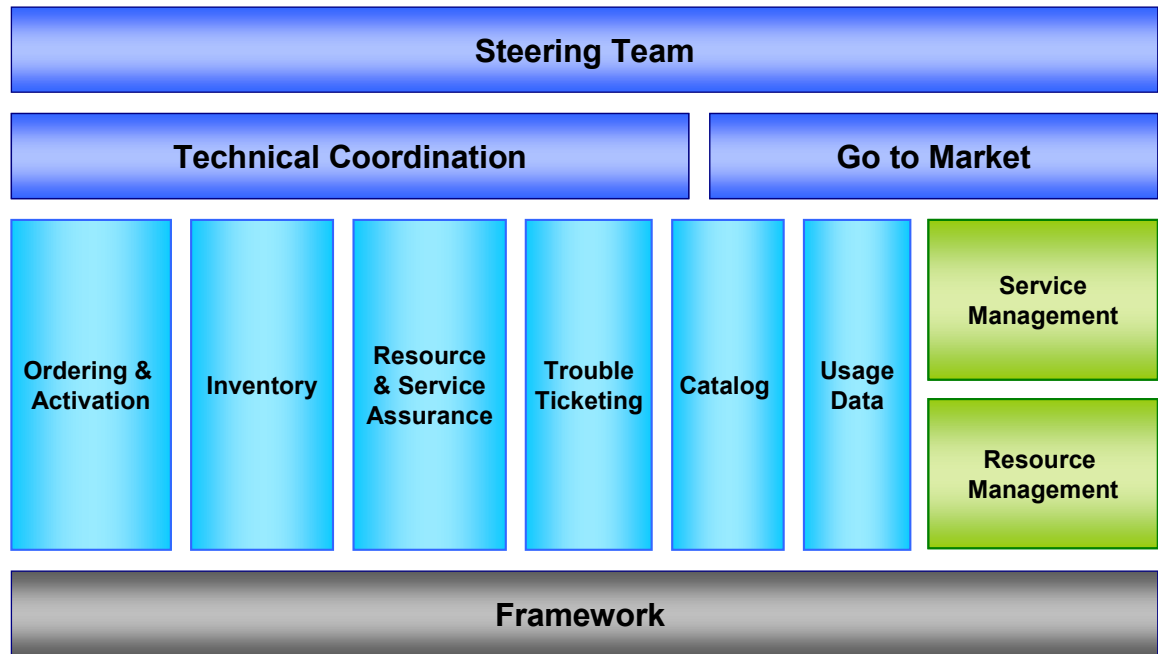
Figure 2 - NGOSS Contract (used by permission of TM Forum)

Recent intensive development of NGOSS Contract concepts has not only fleshed out contract contents (pre-conditions, post-conditions, constraints, service level agreements, and more) and contract lifecycles. It has also defined a method for the identification, sizing, and specification of the low-level services and operations that are essential to both systems integration and application design. As shown in figure 2, this method uses inter-framework mappings to identify the low-level eTOM processes that fall on TAM application boundaries, map them to specific services, describe their data responsibilities in terms of SID entities, optimize the size or “granularity” of services according to principles of cohesion and coupling, and define their contractual obligations in terms of interaction between specific applications. TIP interfaces take NGOSS Contract requirements and guidelines into account during the development process.

Launched with ten service provider sponsors and twenty systems integrators and ISVs, TIP brings together all current and future TM Forum interface programs under a common management structure and a single roadmap. TIP emphasizes a common approach to feature definition, documentation, implementation, technology support, testing, and certification. Over time, all implementations will share common frameworks, tooling and development processes. Another critical benefit of the TIP

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approach is earlier and closer coordination between interface development teams and NGOSS framework teams, strengthening the feedback loop between theory and practice, and improving the responsiveness of the NGOSS framework teams to the needs of the community.



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Figure 3 - TIP Organization (used by permission of TM Forum)

The TM Forum's Prosspero program provides a critical "reality check" on interface implementations. To achieve Prosspero branding, an interface must meet a significant set of minimum requirements: documentation, reference implementation, test kits, support, certified deployments, and service provider testimonials. As the primary pipeline feeding Prosspero, TIP will leverage NGOSS fundamentals to drive widespread use of open interfaces.

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