

Framework 18.5

Product Conformance Certification Report

Sigma Systems **Sigma Catalog v7.1**

October 2019

Version 1.1

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1 Introduction

1.1 Executive Summary

This document provides details of Sigma Systems' self-assessment and TM Forum's Conformance Assessment of **Sigma Catalog v7.1** product, against the following Framework components:

- Information Framework (SID) version 18.5

The assessment was based on a review of:

- The methodology approach to information modeling against the TM Forum's information Framework Release 18.5 according to the specific documentation submitted in scope for the Assessment.

The following figure provides a high level illustration of the conformance certification process.

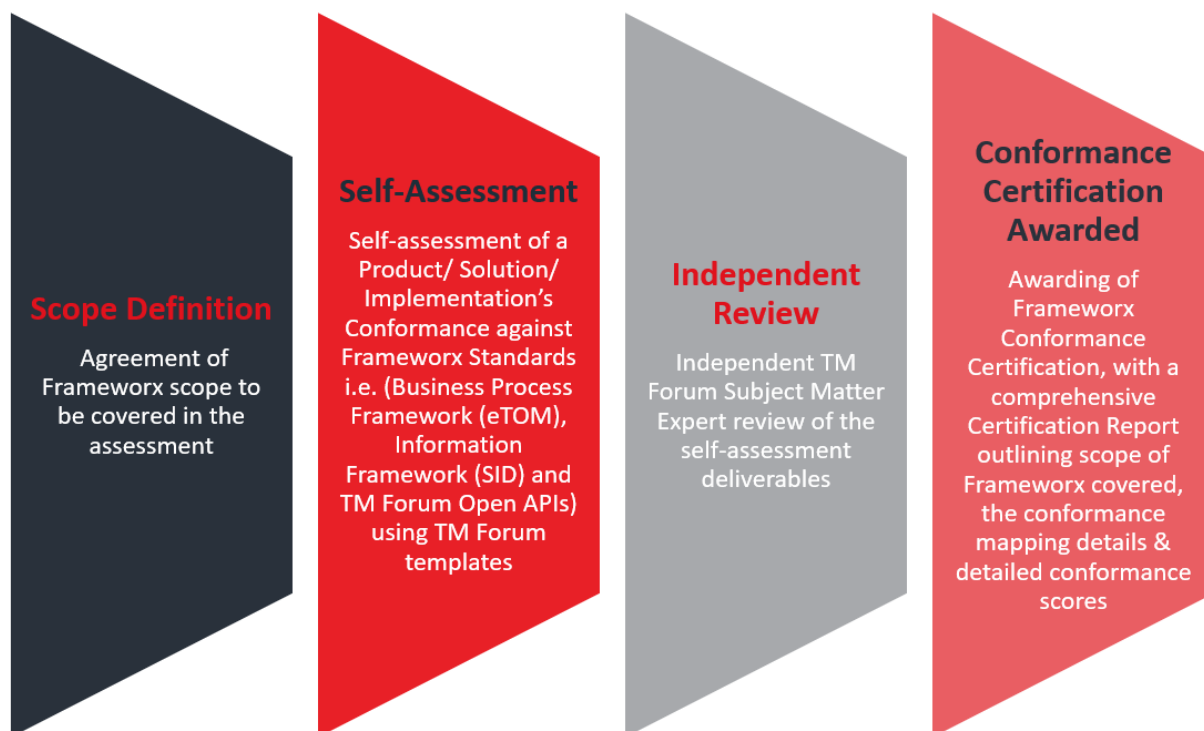


Figure 1 – Conformance Process Steps

2 Product Functionality/Capability Overview

2.1 Sigma Catalog v7.1 – Product Overview

Critical to the ability of communication service providers (CSPs), media and high-tech companies to operate successfully and profitably in an increasingly competitive and convergent marketplace is the capability to introduce and manage effectively a portfolio of products that are relevant to customers, released at the most opportune time, and done so at a low cost. The Sigma Catalog solution is designed specifically to manage the end-to-end processes and product data relevant to the product development, product launch, and in-life product management activities of an organization. In so doing, Sigma Catalog enables true product management transformation. Sigma Catalog provides organizations with the essential components of a full product lifecycle management (PLM) framework and product data management (PDM) capability. Sigma Catalog is an automated, packaged solution that asserts centralized business control over the product management process by forming the product management platform at the heart of the enterprise. Sigma Catalog synchronizes the product management process and corresponding data into a single, automated, error-resilient stream through:

- **A centralized product and service catalog**, providing master data management (MDM) for products and services that are controlled and reusable throughout their lifecycle.
- **Best-practice PLM**, with products and services managed through a defined, repeatable, and measurable process.
- **Seamless, automated integration**, because Sigma Catalog knows the product ecosystem across the applications and has an open, standards- and service oriented architecture (SOA)- based integration framework, enabling inter-operation with different platforms and applications.
- **Sophisticated reporting and analytics** through the Sigma Catalog reporting system for the review and tracking of products and services throughout the lifecycle.
- **A 360-degree view and single-point-of-truth for products**, with a global system of record for all product information, reducing inconsistencies across the enterprise.
- **Multi-purpose configuration and build capability** delivered by the set of workspaces and tools needed to perform both core component build in the factory, namely in IT and engineering, as well as product packaging and offer creation by marketing, including product managers and business users.

The Sigma Catalog product suite provides the core components necessary to centralize, configure, integrate and maintain the product and service portfolio across the enterprise. At the heart of the solution is the central product and service catalog, which brings together into a single master all of the commercial and technical elements that define the reusable product and service building blocks and resulting offers.

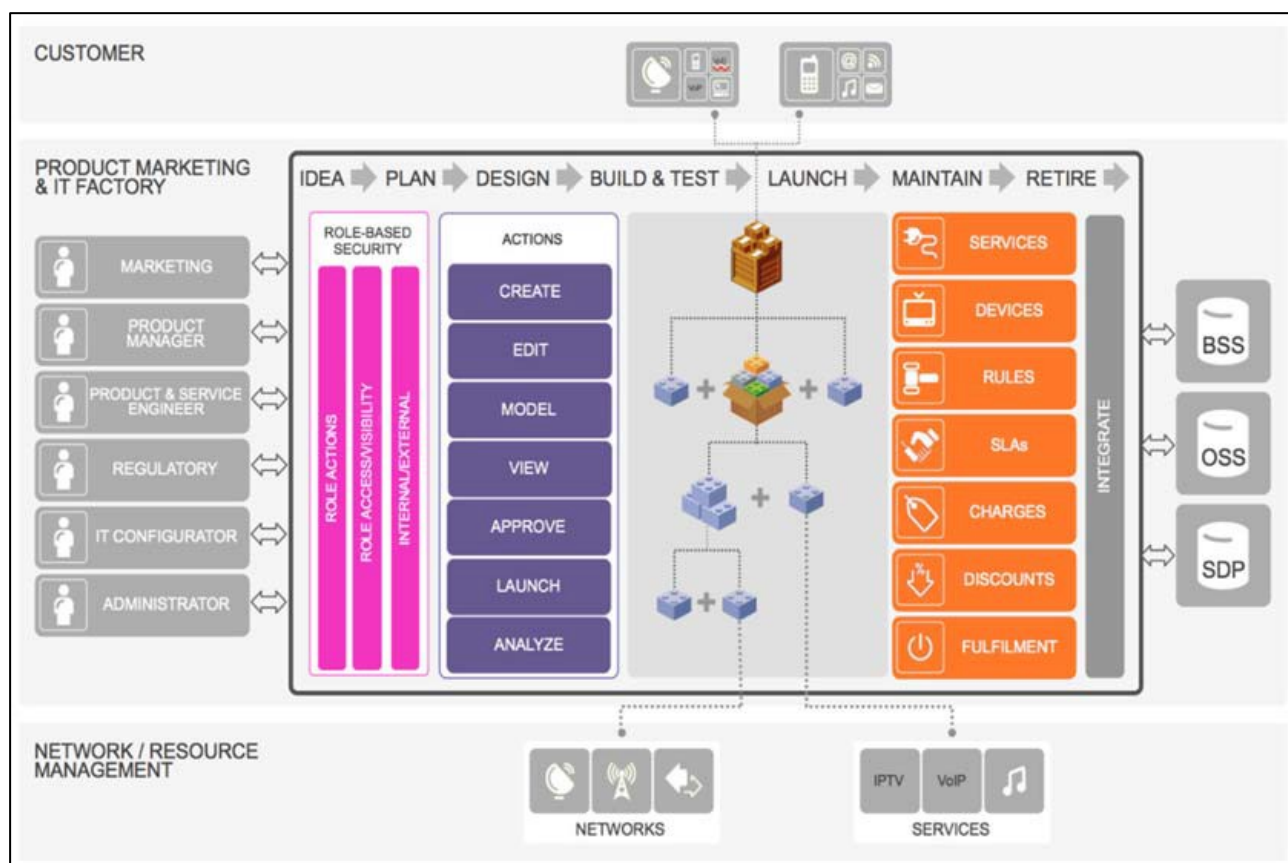


Figure 2 Sigma Catalog Solution

The Sigma Catalog user interface provides a single point-of-entry and single point-of-access to the master product and service data, through which users can perform all the activities necessary to manage the full catalog of product offerings and underlying services, including the creation, modification, reuse, launch, maintenance, and retirement of products and services. The open, standards- and SOA-based Sigma Catalog integration framework provides the necessary infrastructure to interface product and service data to BSS and OSS systems in an automated and efficient fashion, including order-capture, CRM, billing, order-management, mediation, and provisioning systems, online portals, and more. Key features of the Sigma Catalog suite include:

- Collaboration environment for both business and IT users
- Cross-function, role-based user definitions and security:
- Multi-dimensional, role-based management access to the functions and catalogs in the application
- End-to-end PLM process and activities:
 - Project definition and tracking
 - Configurable and automated workflow
 - Tasks lists with impact and notification reporting to manage the change process tightly
- Centralized MDM for the product and service catalog:
 - Componentized data model for offers, products, services, devices, pricing, target system rules, and processes

- Simple and complex product and service structures
- Definition of commercial and technical aspects of product and service components
- Convergent / N-play, cross-product-line *bundles*
- Sharing of product *components* across different product and market categories
- Cloning and modification of product structures or individual entities to enable rapid product modeling
- Business and technical modeling of product offers and underlying *component* specifications
- Highly configurable capability for defining rating attributes for *charges* and *discounts*, to support attribute-based, tiered, threshold, and flat rating and discounting, variable across product lines
- Channel-, market-, and customer-specific price lists to manage the reuse of products across target markets through different offers
- Enterprise and business-to-business (B2B) products, contracts and service-level agreements (SLAs) can be constructed from reusable assets in the product catalog
- Support for E2E, order-to-install and fulfillment processes
- Fully inter-operable inbound/outbound integration framework, including a SOA-web-services-based integration framework and application connector sets to expedite integration configuration between Sigma Catalog and target applications
- Comprehensive reporting and business intelligence capabilities, including native reporting and search functions plus a product-performance analytics framework

2.1.1 About Sigma Systems

Sigma Systems is an award-winning solutions provider and a valued partner to over 80 of the world's leading service providers in 40 countries. Every day, our high-demanding customers put our people and our software to work to launch new digital products and deliver a frictionless omni-channel product-selling experience to more than 350 million globally.

We are the global leader in catalog-driven software solutions for communications, media and high-tech companies. With over 20 years of serving the world's leading CSPs, the company's portfolio spans enterprise-wide Catalog, Configure Price Quote (CPQ), Order Management, Provisioning, Insights and Portfolio Inventory products, and offers a core set of services including professional services, cloud services, and managed services.

Today, with offices in North and South America, Europe and the Asia-Pacific region, Sigma Systems utilizes an agile approach to implementing its B/OSS products for its customers.

2.1.2 What the industry says

Over the years, we have been recognized in a number of areas. These are our market-leading solutions, our executive leadership and being an employer of choice in both Canada and the UK:

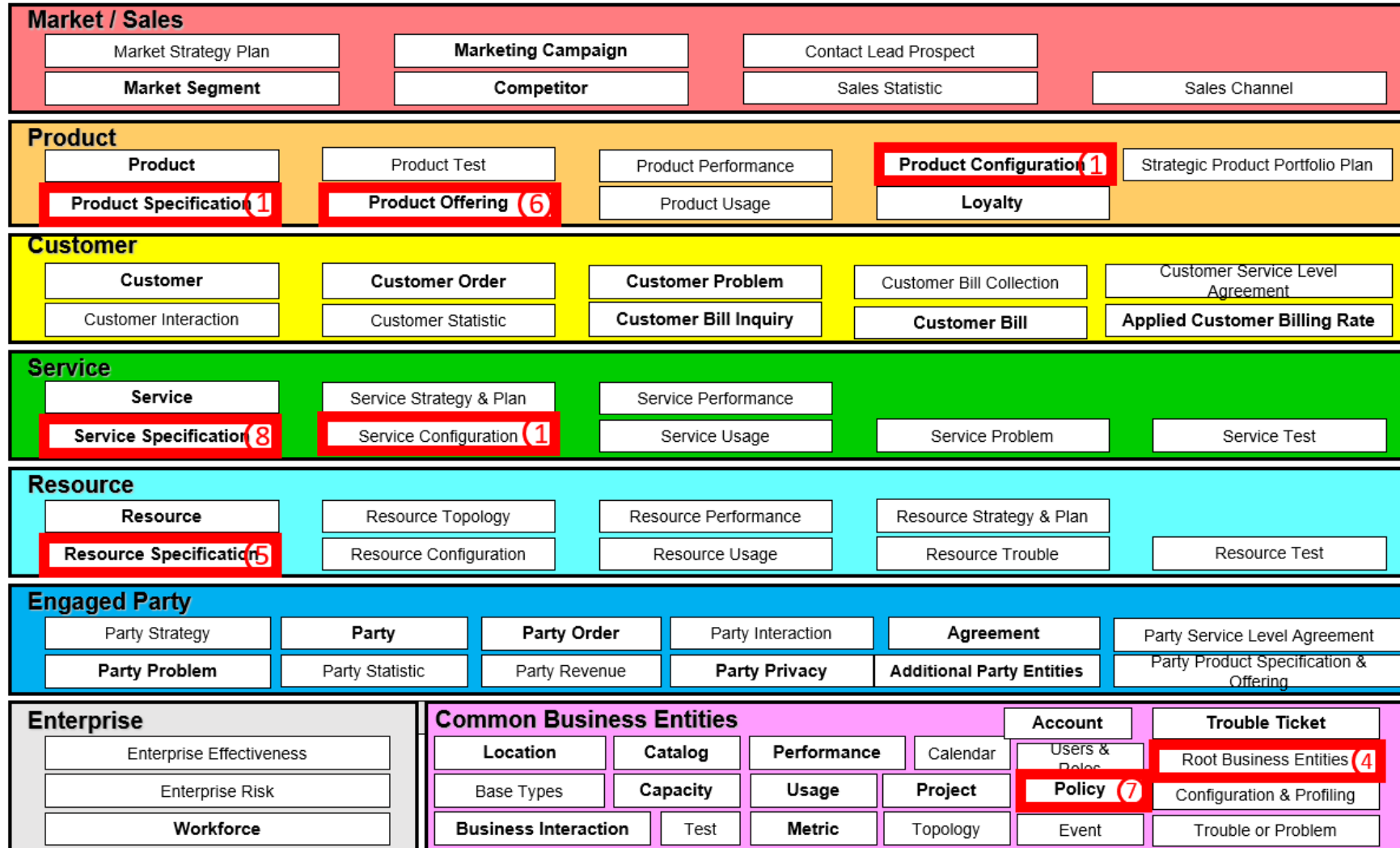
- Featured in the 2018 Gartner Magic Quadrant for Configure-Price-Quote Application Suites.

- Shortlisted for two awards at the 2019 TM Forum Excellence Awards.
- Winner in the 'Innovation in Business Support Systems' category at the 2018 Pipeline Innovation Awards.
- Winner in the Outstanding Digital Enablement Vendor of the Year' category at the 2018 Leading Lights awards.
- Named one of Canada's top 25 software companies by the Branham Group.
- Winner of the Mayor's Challenge Award for Aging Population at the Global Smart City Summit in Liverpool.
- In 2019, Sigma Systems secured the Gold Standard in the category of Canada's Best Managed Companies from Deloitte.
- Recently named among 30 Top Companies to Work For in Wales.
- Recognized as one of Greater Toronto's Top Employers by *The Globe and Mail*.

2.2 Information Framework ABEs Scope

The following figure represents the Information Framework ABEs that were presented in scope for the assessment. The total number of ABEs certified is 33.

SID Information Framework v.18.5 Sigma Systems - Sigma Catalog v7.1 - Conformance Footprint



Number of ABEs or sub-ABEs submitted for conformance certification

Figure 3 – SID ABEs coverage for Sigma Catalog v7.1 Assessment

2.3 Sigma Catalog v7.1 Benefits

Communications, media and high-tech companies gain significant benefits through the adoption of an enterprise-wide, centralized, product-management capability. An enterprise product-management solution yields more highly competitive products with stronger profit margins and greater customer satisfaction. Sigma Catalog delivers these benefits, improving the bottom line through faster time-to-market and lower cost-to-market, enabling innovation and improving quality across PLM.

Time-to-Market

Faster time-to-market means:

- Reduced design, build, test and launch time for products through *component* reuse
- A reduced volume of data required to assemble and establish new offerings in the architecture
- A first-mover advantage
- Simplified and accelerated new product and service introduction through improved clarity around what to offer, which is critical in responding to competitors

Cost-to-Market

Lower cost-to-market means:

- Reduced operational and delivery costs through fewer disparate data points to manage
- Reduced complexity of business processes
- Structured components that maximize compatibility with long-term reference architecture

Innovation

Enabling innovation provides:

- Increased ability to support complex propositions due to simpler set-up from any channel
- Rapid monetization of data moving among people and systems through simplified definition of a unified product
- Improved customer satisfaction through better understanding of the product purchased
- Ability to compete with and support web-application and cloud-based solutions

2.4 Sigma Catalog v7.1 Products

The Sigma Catalog product suite comprises the following components:

- Sigma Catalog Manager
- Sigma Catalog Workbench
- Sigma Catalog Integration Services Framework
- Sigma Catalog Workflow Designer

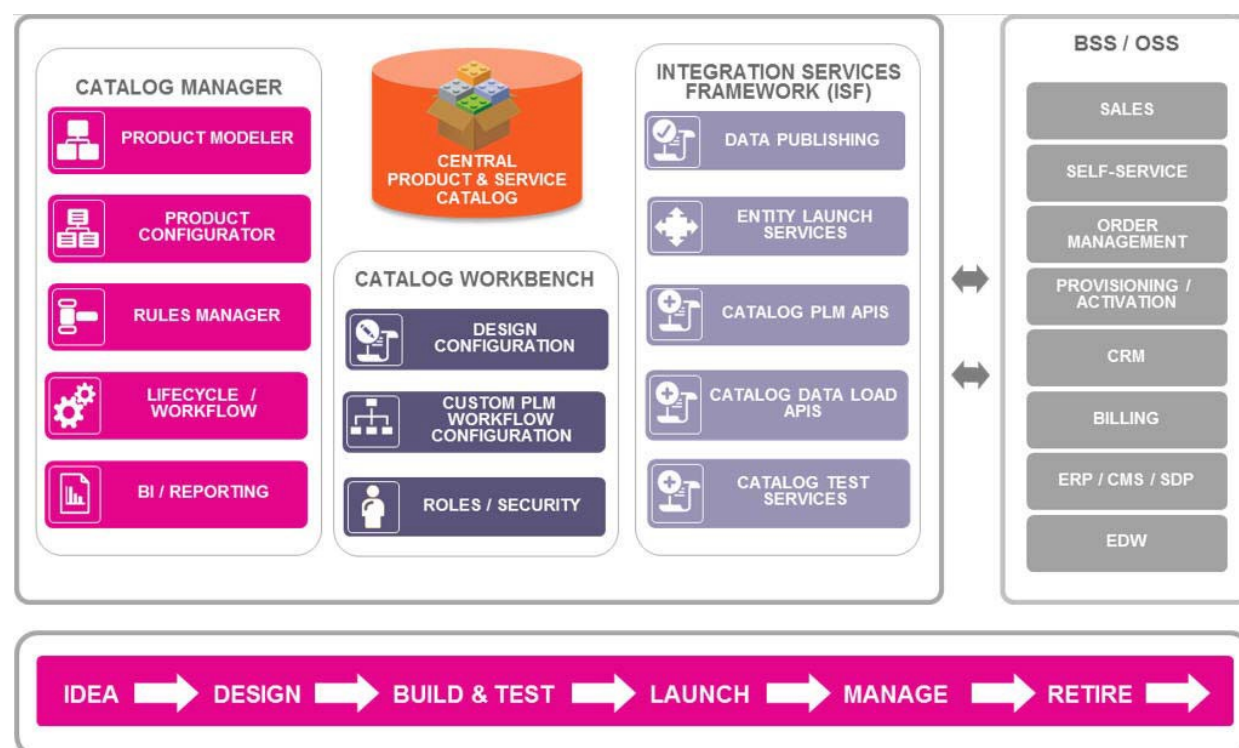


Figure 4 Sigma Catalog Solution Components

Sigma Catalog Manager and Sigma Catalog Workbench allow you to manage the central product and service catalog and the product-management process. Together, these applications provide centralized read and write access to the Sigma Catalog solution components for both factory and marketing creation of products and services.

The Sigma Catalog Integration Services Framework (ISF) provides the service-oriented architecture (SOA) framework for exposing and publishing product data from the centralized catalog into external applications.

The Sigma Catalog Workflow Designer is a visual tool for building workflows without coding. Sigma Catalog Workflow Designer supports custom workflows to enable the tailoring of Product Lifecycle Management workflows.

2.5 Sigma Catalog v7.1 Supported Installation Models

Sigma Catalog is deployed on dedicated servers that can be either Physical or Virtual. Virtual servers can be hosted in a data center or in the cloud.

Sigma Catalog is deployed on the Microsoft Windows platform and has a Multi-tiered architecture comprising presentation, application and data layers with secured access and physical separation between layers to provide a modular and scalable architecture. Sigma security and permission architecture integrated with Active Directory or a SAML based IDP provider provides user authentication and authorization.

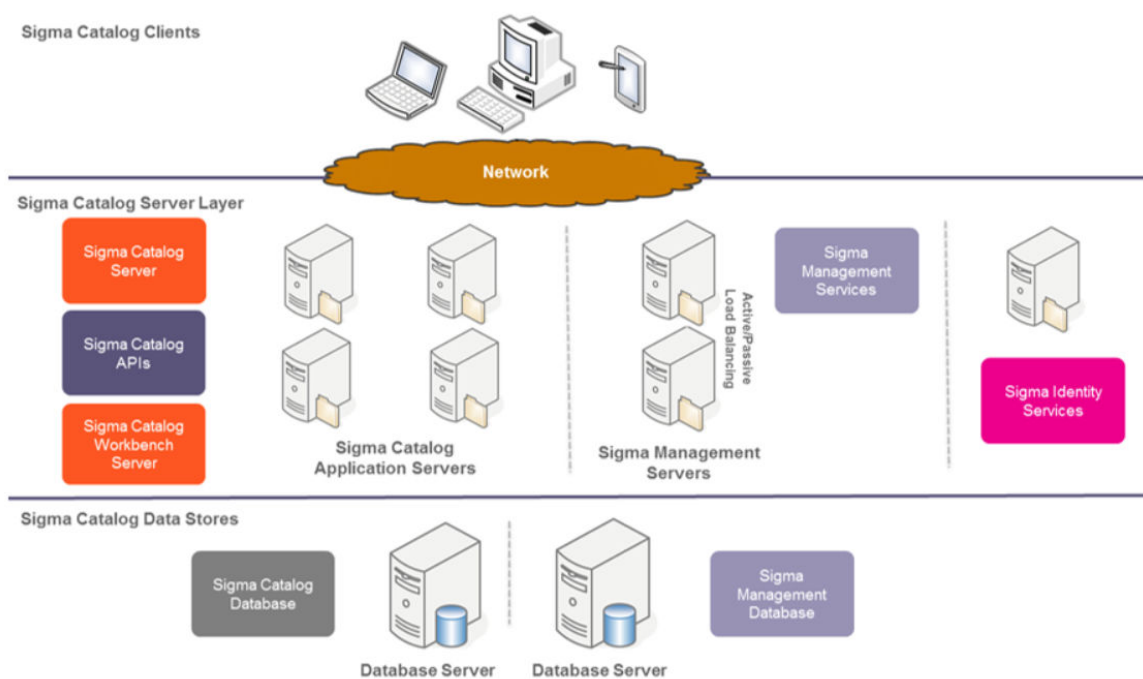


Figure 5 Sigma Catalog Installation Models

3 Information Framework Assessment Overview

3.1 Mapping Technique Employed

The certification scope defines the list of Information Framework (SID) ABEs (Aggregate Business Entities) for which mapping support is reviewed during the assessment. For each of the ABEs defined in scope for the assessment, the organization undergoing the assessment must map their information model to the core entities and dependent entities and the required and optional attributes for each entity, as defined in the SID model, according to what is supported for the product/solution under assessment.

For a view of the ABEs that were submitted in scope for conformance certification, please refer to **Error! Reference source not found.** on page **Error! Bookmark not defined.**

3.2 Information Framework Conformance Result

This Section details the Scores awarded to reflect Conformance of the Sigma Systems - Sigma Catalog v7.1 to the Information Framework components of Framework 18.5.

1.1.1 Information Framework – Scoring Rules

Between 2013 (Framework 14.0) and the end of 2017, TM Forum applied a combined scoring method based on two different categories of conformance scoring:

1. Information Framework Maturity
2. Information Framework Adoption

Starting on the 1st of January 2018, only one method has been retained instead of these two scoring methods (Maturity + Adoption). The use of two different methods made interpretation and understanding difficult and ambiguous for many of our members, on the ground of such experience, the TM Forum decided to keep only the “Adoption” scoring method and discard the “Maturity” scoring method.

Adoption scoring ensures a good balance between qualitative and quantitative criteria on SID conformance criteria. The adoption scoring method consists of a range of scores from 1 to 10 which makes it intuitive and fair, it is also based on weighted criteria e.g. core element, dependent, required, optional, etc.

This section provides further details about the **Adoption** scoring method.

1.1.2 Information Framework Adoption Conformance Scoring Methodology

As of Framework 14.0 based Conformance Assessments, to recognize the overall adoption of the Information Framework SID Information model, the Information Framework Adoption Scoring system was introduced to complement the Maturity Levels that have been used since the launch of the Framework Conformance Program.

Information Framework Adoption scores are granted based on the detailed scoring guidelines outlined in Table 1 below.

Adoption conformance is based on an accumulative scoring system - i.e. scores are awarded for each element of an ABE to give an overall total Adoption score for the ABE – with elements in this context defined by core & dependent entities and required and optional attributes for both category of entity.

The scores for each element are calibrated according to relative weightings, according to the significance of each element e.g. core entity having higher weighting than dependent entities and required attributes having higher weighting than optional attributes. The relative weightings for each ABE ‘element’ are indicated in Table 1 - TM Forum Information Framework Adoption Conformance - Scoring Rules Table 1 below.

Table 1 - TM Forum Information Framework Adoption Conformance - Scoring Rules

Information Framework Adoption Conformance Scoring Guidelines						
SID Component			Weighted Scoring Calculation			
Lowest Level ABE			Equivalent – 1 score point			
Core Entity			Equivalent – 2 score points			
Core Entity Required Attribute			% equivalent * 2 [Must support min 50% of Required Attributes]			
Dependent Entity			% equivalent * 1.5			
Dependent Entities – Required Attributes			% equivalent * 1.5			
Core Entity – Optional Attributes			% equivalent * 1.2			
Dependent Entity – Optional Attributes			% equivalent * 0.8			
Adoption Conformance Score Graduation						
Non Conformance [Score = 1 to 3]	Very Low Conformance [3.0 < Score <= 4.0]	Low Conformance [4.0 < Score <= 5.0]	Medium Conformance [5.0 < Score <= 6.0]	High Conformance [6.0 < Score <= 8.0]	Very High Conformance [8.0 < Score < 10.0]	Full Conformance [Score = 10.0]
<p>NOTES:</p> <p>1. The score values for each SID component are added together to get the overall Adoption Conformance score.</p> <p>2. If 50% of of the required attributes of Core entities are not supported, scores for following components are not applied as Adoption Conformance requires conformance to 50% of the required attributes of Core entities.</p> <p>3. Adoption Score versus Maturity Level: Using the scoring category to recognise SID adoption, an assessed ABE for which there is equivalence to 2/3 required core attributes and 8/10 dependent entities would be awarded Maturity Level Score = 2.5 (Very Low Conformance) & Adoption Conformance score = 5.2 (Medium Conformance).</p>						

Additional Notes on Information Framework Conformance Adoption scoring:

1. For each level, according to what is required, a value is calculated based on the percentage of entities/attributes supported - as appropriate. This will result in a decimal figure (rounded to one decimal place).
2. Adoption Scoring is based on the progressive scoring schema from the former "Maturity" scoring, however it provides additional flexibility in-so-far as it allows to score all attributes and entities in an assessed ABE. In the former "Maturity" scoring, when not all required attributes of the Core Entity were supported, the Maturity Level score would not progress to the next level, regardless of conformance to other "subordinate" components of the ABE (e.g. dependent entities, optional attributes). "Adoption" scoring fixes this constraint as it provides a weighting mechanism to score all elements supported, regardless of the absence of the core entity or/and required attributes.
3. A **core business entity** is an entity upon which other entities within the ABE are dependent. For example, Service in the Service ABE. A model should strive to attain as high a level of Information Framework (SID) conformance as possible. A core entity is also an entity whose absence in the ABE would make the ABE incomplete.
4. A **dependent entity** is one whose instances are dependent on an instance of a core entity. For example, a ServiceCharacteristic instance within the Service ABE is dependent upon an instance of the Service entity.
5. The score values for each SID component are added together to get the overall Adoption Conformance score.
6. If 50% of the required attributes of Core entities are not supported, scores for following categories are not applied as Adoption Conformance requires conformance to 50% of the required attributes of Core entities.

1.1.3 Information Framework – Conformance Result Summary

The following sections provide the summary results of the Information Framework Adoption scores granted to the ABEs presented in scope for the Sigma Systems - Sigma Catalog v7.1 Framework Assessment.

Each ABE was measured using the Information Framework (SID) conformance scoring guidelines as described in section 1.1.2 above.

3.3 Information Framework – Detailed Conformance Results

Table 2 - Information Framework: Detailed Conformance Result

TM Forum Framework 18.5 - Assessment Scoping Document - Information Framework (SID)					
Member:	Sigma Systems			Conformance Certification Final Scores Achieved	New versus Recertified ABEs
Product:	Sigma Catalog v7.1				
Assessment Type:	Product				
ABEs in Scope:	33				
Level 1 ABEs	Level 2 ABEs	Level 3 ABEs	Level 4 ABEs		
Product Domain					
Product Configuration ABE	Product Configuration ABE			4.8	New
Product Offering ABE	Product Offering ABE			10	Re-certification
Product Offering ABE	Pricing Logic Algorithm ABE	Pricing Logic Algorithm ABE		10	Re-certification
Product Offering ABE	Pricing Logic Algorithm ABE	PLA Spec ABE		10	Swapped against the 'Policy Framework' ABE in 'Policy' from CBE domain
Product Offering ABE	Product Catalog ABE			10	Re-certification
Product Offering ABE	Product Offering Price ABE			10	Re-certification
Product Offering ABE	Product Offering Price Rule ABE			10	Re-certification
Product Specification ABE	Product Specification ABE			10	Re-certification
Service Domain					
Service Specification ABE	Service Specification ABE			10	Re-certification
Service Specification ABE	Customer Facing Service Spec ABE	Customer Facing Service Spec Role ABE		10	Re-certification
Service Specification ABE	Customer Facing Service Spec ABE	Customer Facing Service Spec Role ABE		10	Re-certification
Service Specification ABE	Customer Facing Service Spec ABE	Service Package ABE	Service Package ABE	10	Re-certification
Service Specification ABE	Resource Facing Service Spec ABE	Resource Facing Service Spec ABE		10	Re-certification
Service Specification ABE	Resource Facing Service Spec ABE	Resource Facing Service Spec Role ABE		10	Re-certification
Service Specification ABE	Resource Facing Service Spec ABE	Service Bundle ABE	Service Bundle ABE	10	Re-certification
Service Specification ABE	Service Catalog ABE			10	New
Service Configuration ABE				10	New
Resource Domain					
Resource Specification ABE	Resource Specification ABE			10	Re-certification
Resource Specification ABE	CompoundResource Specification ABE			10	Re-certification
Resource Specification ABE	LogicalResource Specification ABE	LogicalResource Specification ABE		10	Re-certification
Resource Specification ABE	PhysicalResource Specification ABE	PhysicalResource Specification ABE		10	Re-certification
Resource Specification ABE	Resource Catalog ABE			10	New
Common Business Entities Domain					
Policy ABE	Policy Structure ABE	Policy Structure ABE		10	Re-certification
Policy ABE	Policy Structure ABE	Policy Action ABE		10	Re-certification
Policy ABE	Policy Structure ABE	Policy Condition ABE		10	Re-certification
Policy ABE	Policy Structure ABE	Policy Event ABE		10	Re-certification
Policy ABE	Policy Structure ABE	Policy Statement ABE		10	Re-certification
Policy ABE	Policy Structure ABE	Policy Value ABE		10	Re-certification
Policy ABE	Policy Structure ABE	Policy Variable ABE		10	Re-certification
Root Business Entities ABE	Root Business Entities ABE			10	Re-certification
Root Business Entities ABE	Association ABE			10	Re-certification
Root Business Entities ABE	Characteristic ABE	Characteristic ABE		10	Re-certification
Root Business Entities ABE	Root Entity Group ABE			10	New

3.4 Information Framework - Adoption Conformance Result Summary

1.1.4 Product Domain

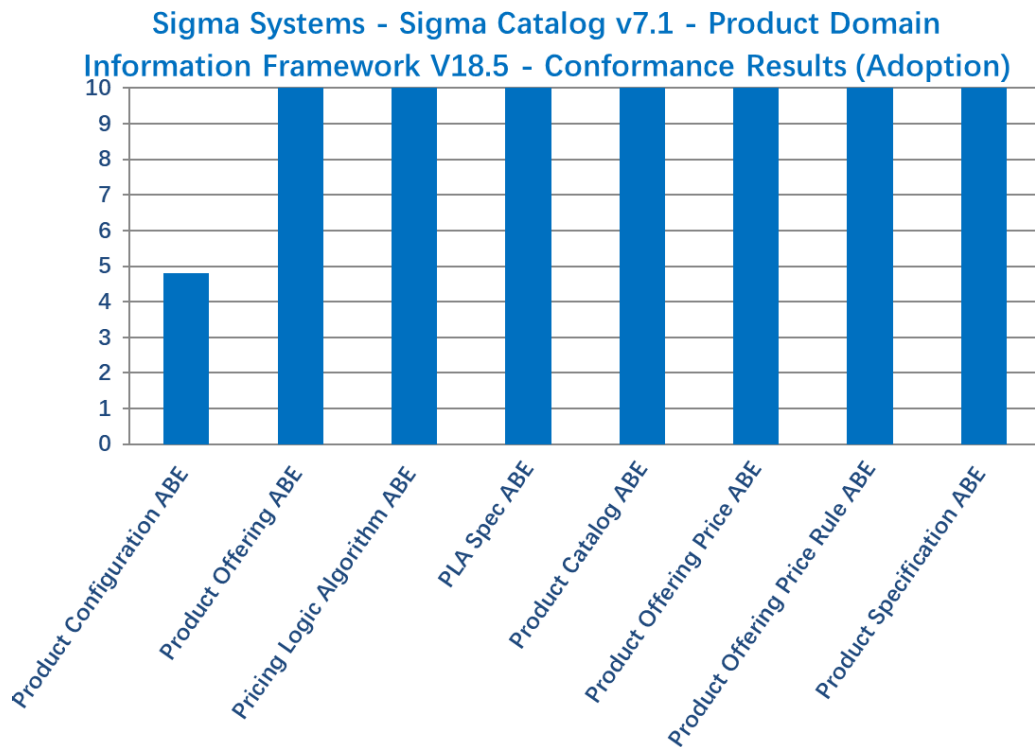


Figure 6- Conformance Scores SID – Product Domain

1.1.5 Service Domain

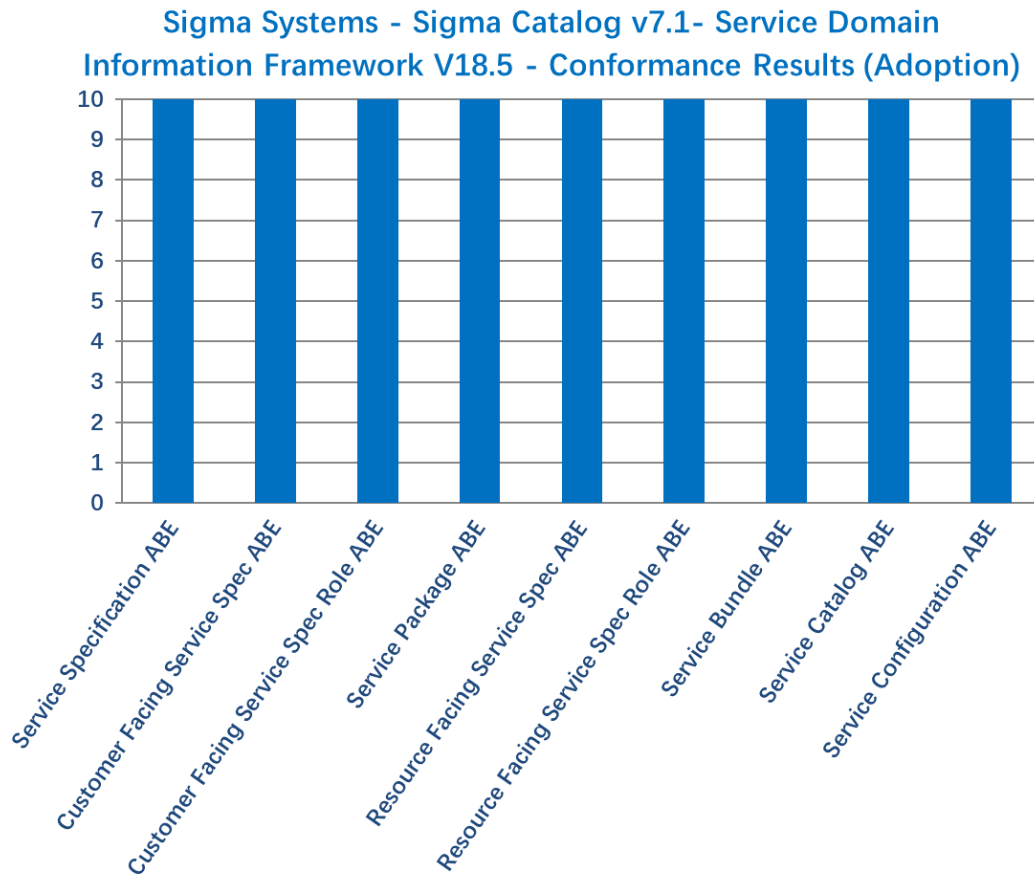


Figure 7- Conformance Scores SID – Service Domain

1.1.6 Resource Domain

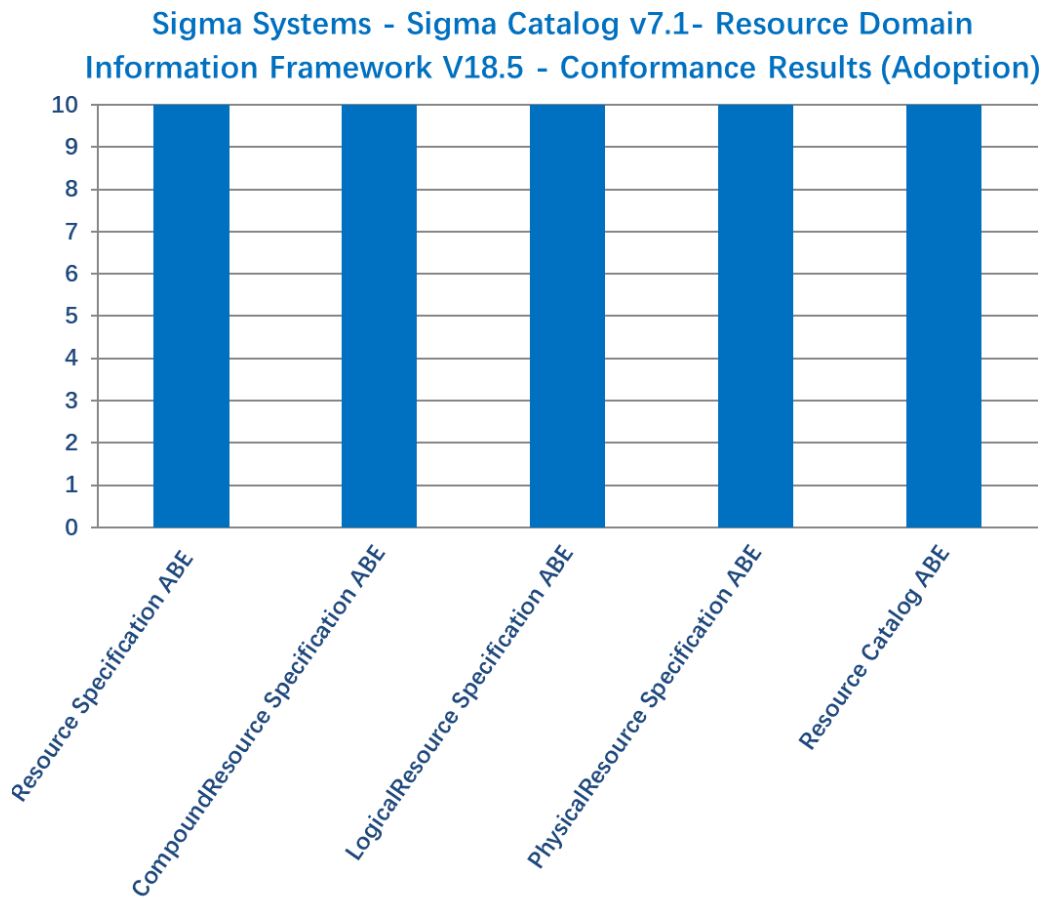


Figure 8- Conformance Scores SID – Resource Domain

1.1.7 Common Business Entities Domain

Sigma Systems - Sigma Catalog v7.1 - Common Business Entities Domain
Information Framework V18.5 - Conformance Results (Adoption)

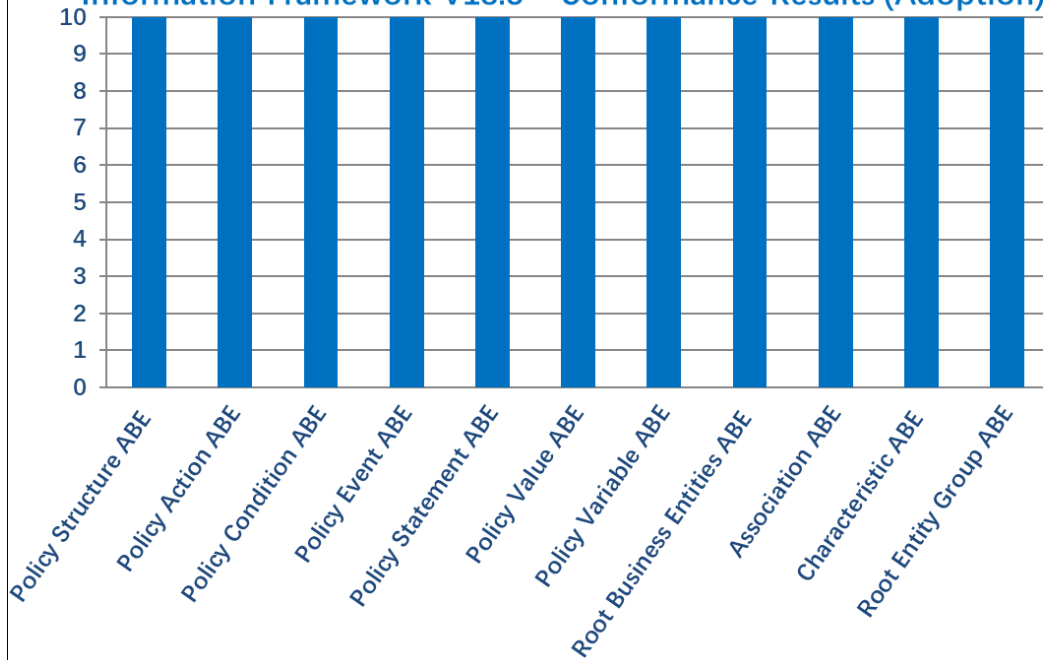


Figure 9- Conformance Scores SID – Common Business Entities Domain