Solution Conformance Certification Report

Business Process Framework (eTOM)
&
Information Framework (SID)

For:

Jio Platforms Limited

Jio Integrated Inventory Manager (JIIM)

Incorporating ODA Components TMFC008 & TMFC012

August 2024

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1 Introduction

1.1 Executive Summary

This document provides details of JIO's Self-Assessment of JIO Integrated Inventory Manager (JIIM), <u>incorporating ODA Components TMFC008 & TMFC012</u>, against the following ODA Core Frameworks:

- Business Process Framework (eTOM) version 24.0
- Information Framework (SID) version 24.0

The assessment included a review of the methodology approach to process and information modeling, respectively against the TM Forum's Business Process Framework (eTOM) and the Information Framework (SID) according to the specific processes and entities submitted in scope for the Assessment.

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2 Solution Overview

2.1 About JIO

Reliance Jio Infocomm Limited (Jio) is India's largest telecom operator with over 470 Mn subscribers. Jio's advance 4G network is future ready and can be easily upgraded to support advance technologies of 5G, 6G and beyond.

Jio has revolutionized the telecommunication sector by democratising access to high-speed internet and digital services. This empowered millions of people across India and bridged the digital divide and fostered inclusive growth. Jio has brought transformational changes in the Indian digital services space to enable the vision of Digital India for 1.3 billion Indians and propel India into global leadership in the digital economy.

Jio has been focused on developing in-house applications spanning various technology domains to support all industry verticals from education to healthcare, are designed to streamline processes, enhance efficiency, and improve accessibility. These carefully crafted strategic plans to leverage digital transformation for the benefit of the Indian population at large have been, alongside company growth, proactively addressing societal needs.

Jio has created an eco-system comprising of network, devices, applications and content, service experience and affordable tariffs for everyone to live the Jio Digital Life. Since launch of its commercial operations in 2016, it has been redefining benchmarks, setting new milestones, inspiring unprecedented adoption, usage, and service metrics that are among the best in the industry.

For more information on our products and services, visit our website at: www.jio.com

2.2 Solution Functionality / Capability

JIO Integrated Inventory Manager (JIIM), aims to be a solution for all Inventories including Physical, logical, and administrative, all the telco network information at a single point of instance. It is completely Object Oriented and can be used to model/customize any network as per requirement, whether it is an ISP, a carrier, or an individual with large IT infrastructure. JIIM is an unique product mix of new cutting-edge technologies such as:

- Cloud native with dynamic scaling of database and servers which gives flexibility to both big and large-scale telco operators to maintain their dynamic inventory.
- Predefined modules such as: Template Manager, Data Model Manager, Query Executer, Service Manager, Topology Designer, Task Manager, IP Management, User and Group Management including audit Trail functionality.
- JIIM also provides all the CRUD operation APIs on both REST, SOAP, async via Kafka to work on any automation for ease of the operations.

JIO Integrated Inventory Manager (JIIM), is a centralized control application/component handling multiple telecom inventories for Planning, Building, Provisioning, Assurance & IP management with abilities to address existing challenges faced by Telcos such as:

- Delays in customer service delivery caused by the complex integration of multiple systems,
- Limited scalability in the legacy system to match the rapid network expansion rollout.
- Legacy system not supporting a federated architecture, causing a single system failure to result in nationwide downtime.
- Customisation in legacy system being highly dependent on skilled developer.
- The legacy system not supporting editing on both web and mobile platforms.

JIIM supports TM Forum's Business Process Framework (eTOM) followed to identify, design, and develop automated business processes to run as an efficient and agile cloud native IT digital platform. It helps to increase the overall operational efficiency, driving down project cost and reducing the integration time frame.

JIIM supports TM Forum's Information Framework (SID) enabled building the canonical data model to streamline the business processes. The SID provides standard information vocabulary, framework, and model, which helps reduce time to market, integration cost, and management time and cost.

ODA Components' design approach was adopted to align the JIIM system with TMFC008 and TMFC012 components.

JIIM is Compliant and Conforms with following TM Forum Open APIs:

- TMF 639 Resource Inventory Management API
- TMF 638 Service Inventory Management API
- TMF 634 Resource Catalog Management API
- TMF 633 Service Catalog Management API
- TMF 632 Party Management API
- TMF 637 Product Inventory Management API

2.2.1 Key Features:

The key features offered by JIIM are as follows:

- **#Single Map based Inventory Management System:**
  Manage Inside Plant & Outside Plant inventories, including physical, logical, service, and assurance components.

- **#GraphDB powers:**
  Graph Database enables automatic Topology Analyzer functionality, including Graph view.

- **# Enhanced Inventory API performance:**
  Boost Inventory API performance by 50% over traditional RDBMS-based systems.

- **# Cutting-edge Architecture:**
  Fault-tolerant Microservice and Multizone Inventory architecture minimizes service impact during DB or Application Server failures.

- **# Robust Reporting:**
  Reporting Functionality out of the box.

- **# Template-driven inventory creation:**
  Template-driven creation for both Physical and Logical Inventory.

- **#Very low TCO:**
  Minimal licensing and datacenter footprint.

- **#Web and mobile suite:**
  Web and mobile app for Inventory CRUD.

2.2.2   Architecture

An overview of JIO Integrated Inventory Manager (JIIM) component level architecture is as follows:

JIIM Component Level Architecture

JIIM Overall Architecture Diagram:
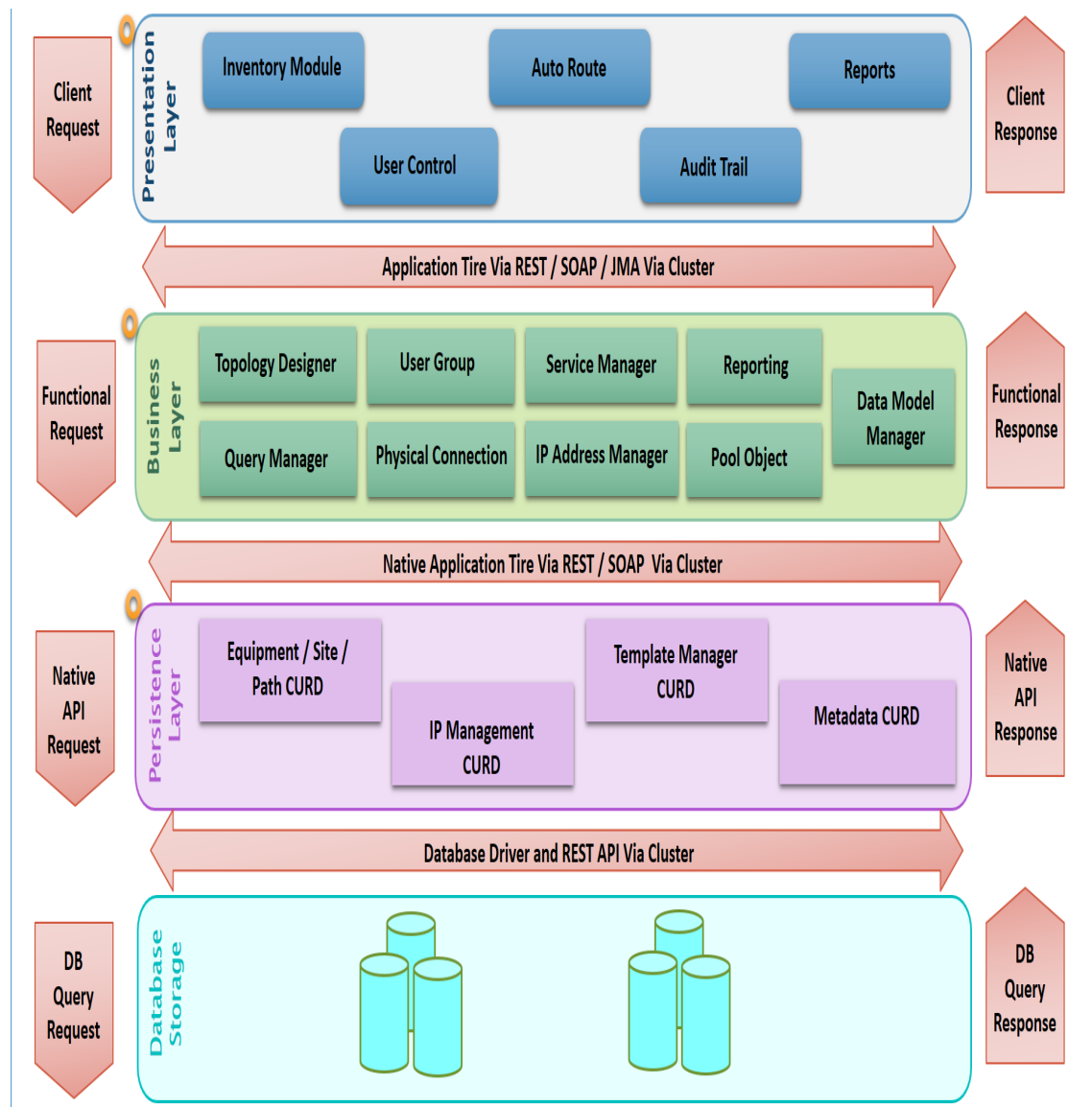
Figure 1 – JIIM Component level Architecture

- JIIM Platform architecture is engineered for unlimited scalability to accommodate the rapidly expanding network. Fault-tolerant Microservice and Multizone Inventory architecture minimizes service impact during DB or Application Server failures.
- JIIM has 4 Major modules named Presentation layer, Business layer, Persistence layer and Database layer.
- Presentation layer encompasses of interface where users interact with the application.

- Business layer implements the core functionality and business logic of the application. It consists of different components such as Topology Designer, Query Manager, Service Manager, IP address manager etc.
- Persistence layer manages the interaction between the business layer and the database storage layer. It is build using components such as Data access objects, Repositories, Transaction Management, and caching.
- Database storage stores and manages the application's data. It is made up of components like Database management system, Data schemas, Back up & recovery management Etc.
- Every request to JIIM passes through structured modules including client request, functional request, native API request, and DB query request, ensuring data security from external threats.

2.3 JIO's Integrated Inventory Manager (JIIM) – Benefits

As new business models emerge, and the networks start to evolve and consolidate, there is a need for the future operations model.

Following are the benefits of JIO Integrated Inventory Manager (JIIM).

- Support PAN India Network Inventory – 70 million sites & 50 million Equipment with more that 10 million circuits.
- Resource auto provisioning in ~2 minutes.
- 25 times faster loading of CPE data for whitelisting that leads to faster rollout of customer service.
- Spawn a new container within few minutes based on increased capacity trigger from upstream applications.
- Object Reservation automated testing that facilitates faster rollout of new business requirement.
- JIIM supports CI/CD which significantly reduces Deployment time and effort.
- AI/ML based log analyser which helps in troubleshooting for close loop actions.
- Chatbot integration to help user find and act on objects in faster way.

2.4 Business Process Framework Level 2 Process Scope

The following figure represents the Business Process Framework Level 2 processes that were presented in scope for conformance certification.

Business Process Framework (eTOM) – v24.0 – JIO's Integrated Inventory Manager (JIIM) – Conformance Footprint

Figure 2 - Level 2 process coverage for JIO's Integrated Inventory Manager (JIIM) Conformance Certification

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2.5 Information Framework Assessment - ABE Scope

The following diagram illustrates the Information Framework ABEs that were presented in scope for Certification.

Information Framework (SID) - v24.0 – JIO's Integrated Inventory Manager (JIIM) – Conformance Footprint

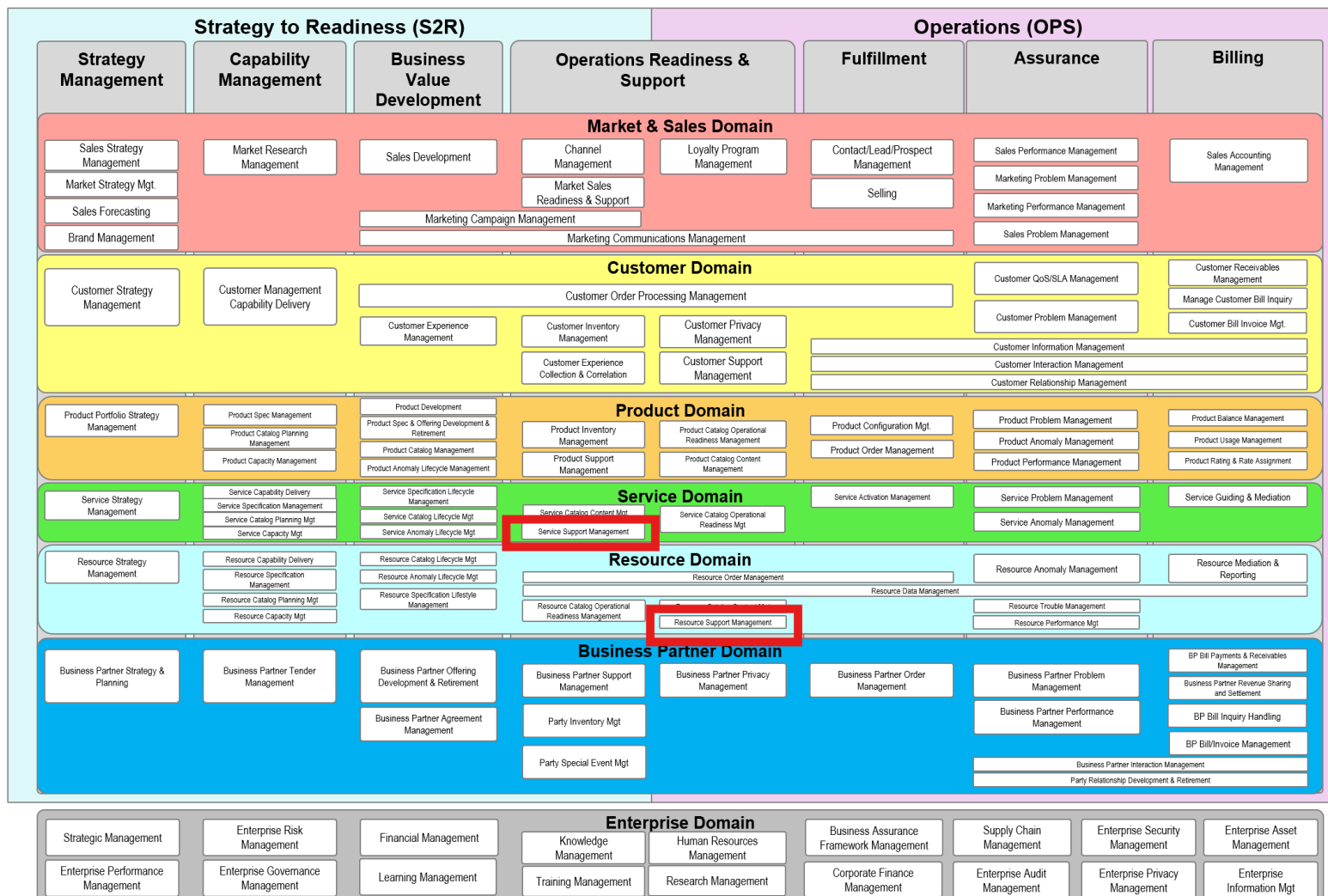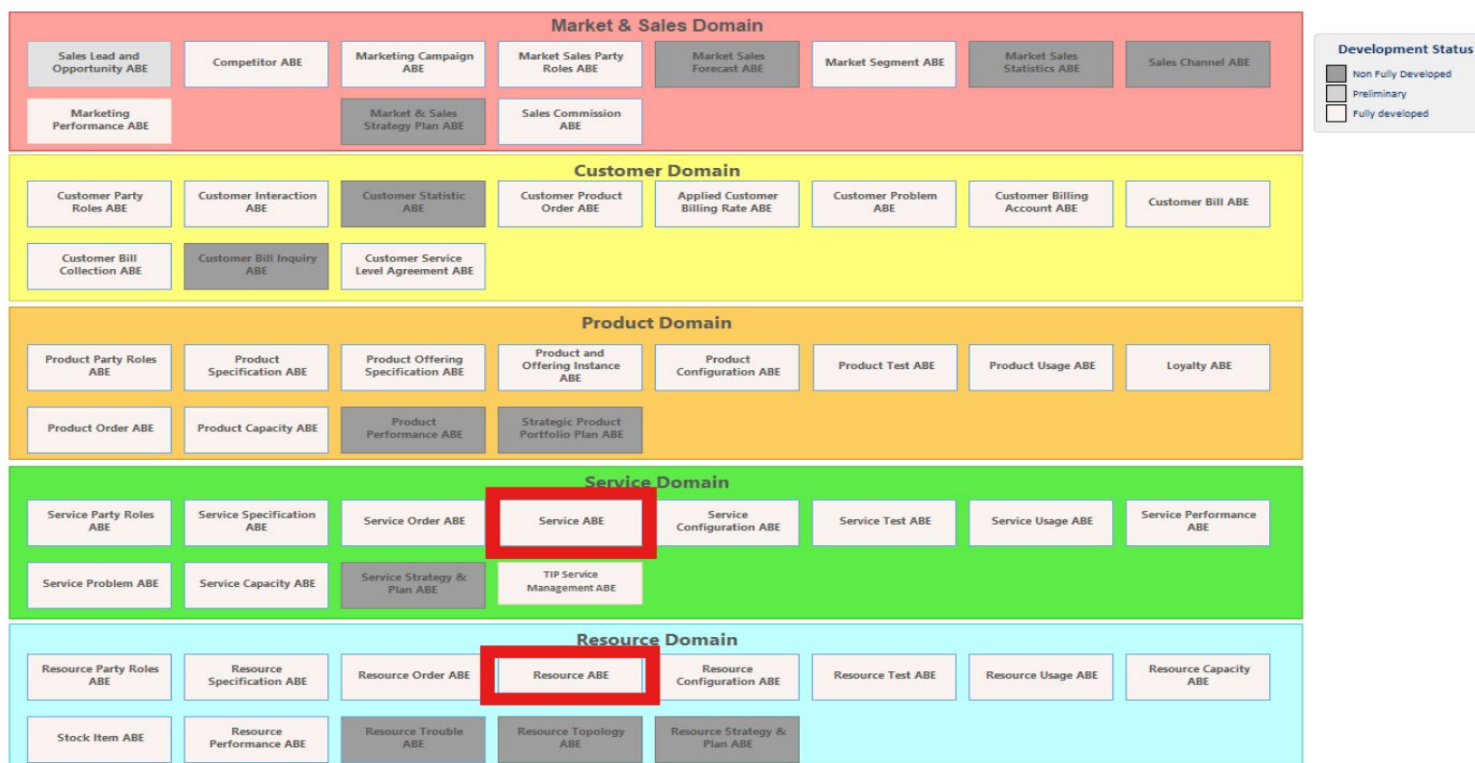Figure 3 - Level 1 ABEs - SID coverage for JIO's Integrated Inventory Manager (JIIM) Conformance Certification

3 Business Process Framework Assessment Overview

3.1 Mapping Technique Employed

Business Process Framework Level 3 descriptions are analyzed by focusing on implied tasks also referred to as implied functional requirements. (This is similar to how process decomposition can use Semantic Analysis). Each Business Process Framework process is supported by descriptive text. In many cases, each process is aligned and mapped to appropriate company documentation references solution, methodology or modeling material.

Color coded text as highlighted below is used as part of the process mapping whereby highlighted text indicates the level of support for a Level 3 or a Level 4 implied task within a process element:

- `GREEN` is used to highlight key words or key statements that are fully supported
- `YELLOW` is used to highlight key words/key statements that are partially supported
- `GREY` is used to highlight key words/key statements that are not supported
- No highlighting is used for words/statements that are irrelevant, just for reference or needed to complete the sentence.

Manual and Automated Support

It is important to determine whether the implied task is supported by manual steps, automated steps, or a combination of both. In this document, "A", "M", or "AM" is used for each task to indicate that the step or steps is/are automated (A), manual (M), or both (AM).

TM Forum Note 1:

When process mappings are presented against Level 3 processes, such mappings are provided against the process' extended description. If an Extended Description is not defined, then the mapping is provided against the Brief Description.

3.2 Scope of Conformance Certification (eTOM)

This document conveys information about the Business Processes implemented by JIO's Integrated Inventory Manager (JIIM) in accordance to the TM Forum Business Process Framework. It also maps the processes with the Level 2 and Level 3 frameworks' business activities. The document covers the following L3 Processes in scope for certification.

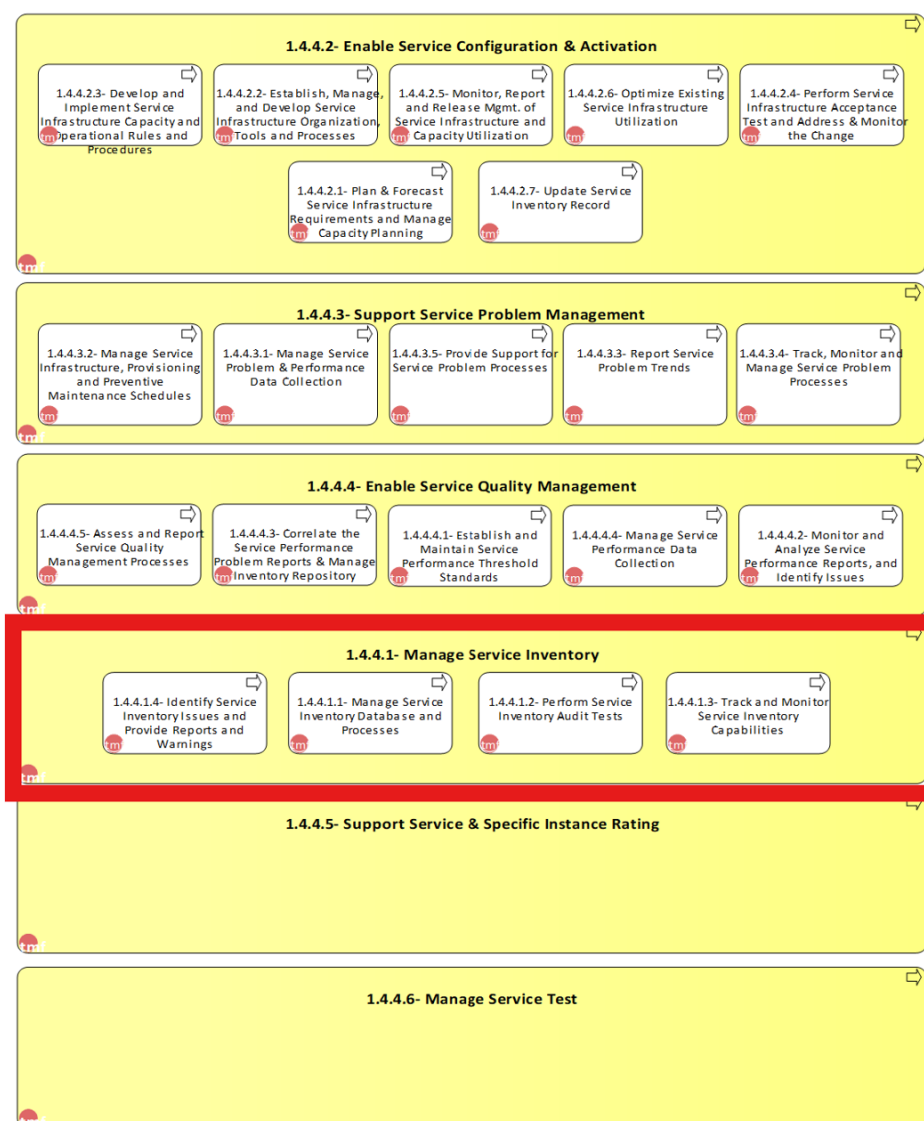## 3.3 Scope of Conformance Certification – Service Support Management

Figure 4- Service Domain - Level 3 processes in scope for certification

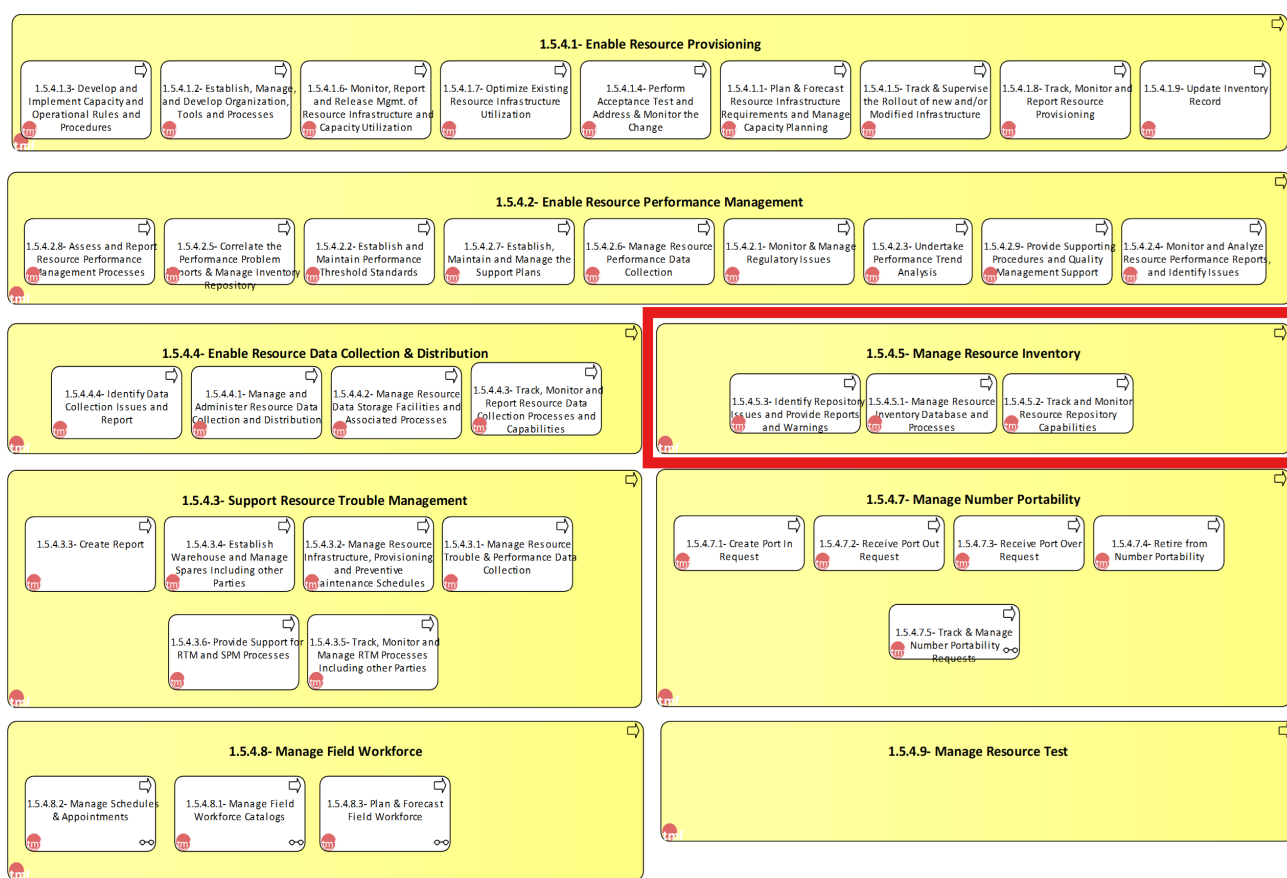## 3.4 Scope of Conformance Certification – Resource Support Management

1.5.4.1- Enable Resource Provisioning

- 1.5.4.1.3- Develop and Implement Capacity and Operational Rules and Procedures
- 1.5.4.1.2- Establish, Manage, and Develop Organization, Tools and Processes
- 1.5.4.1.6- Monitor, Report and Release Mgmt. of Resource Infrastructure and Capacity Utilization
- 1.5.4.1.7- Optimize Existing Resource Infrastructure Utilization
- 1.5.4.1.4- Perform Acceptance Test and Address & Monitor the Change
- 1.5.4.1.1- Plan & Forecast Resource Infrastructure Requirements and Manage Capacity Planning
- 1.5.4.1.5- Track & Supervise the Rollout of new and/or Modified Infrastructure
- 1.5.4.1.8- Track, Monitor and Report Resource Provisioning
- 1.5.4.1.9- Update Inventory Record

1.5.4.2- Enable Resource Performance Management

- 1.5.4.2.8- Assess and Report Resource Performance Management Processes
- 1.5.4.2.5- Correlate the Performance Problem Reports & Manage Inventory Repository
- 1.5.4.2.2- Establish and Maintain Performance Threshold Standards
- 1.5.4.2.7- Establish, Maintain and Manage the Support Plans
- 1.5.4.2.6- Manage Resource Performance Data Collection
- 1.5.4.2.1- Monitor & Manage Regulatory Issues
- 1.5.4.2.3- Undertake Performance Trend Analysis
- 1.5.4.2.9- Provide Supporting Procedures and Quality Management Support
- 1.5.4.2.4- Monitor and Analyze Resource Performance Reports, and Identify Issues

1.5.4.4- Enable Resource Data Collection & Distribution

- 1.5.4.4.4- Identify Data Collection Issues and Report
- 1.5.4.4.1- Manage and Administer Resource Data Collection and Distribution
- 1.5.4.4.2- Manage Resource Data Storage Facilities and Associated Processes
- 1.5.4.4.3- Track, Monitor and Report Resource Data Collection Processes and Capabilities

1.5.4.5- Manage Resource Inventory

- 1.5.4.5.3- Identify Repository Issues and Provide Reports and Warnings
- 1.5.4.5.1- Manage Resource Inventory Database and Processes
- 1.5.4.5.2- Track and Monitor Resource Repository Capabilities

1.5.4.3- Support Resource Trouble Management

- 1.5.4.3.3- Create Report
- 1.5.4.3.4- Establish Warehouse and Manage Spares Including other Parties
- 1.5.4.3.2- Manage Resource Infrastructure, Provisioning and Preventive Maintenance Schedules
- 1.5.4.3.1- Manage Resource Trouble & Performance Data Collection
- 1.5.4.3.6- Provide Support for RTM and SPM Processes
- 1.5.4.3.5- Track, Monitor and Manage RTM Processes Including other Parties

1.5.4.7- Manage Number Portability

- 1.5.4.7.1- Create Port In Request
- 1.5.4.7.2- Receive Port Out Request
- 1.5.4.7.3- Receive Port Over Request
- 1.5.4.7.4- Retire from Number Portability
- 1.5.4.7.5- Track & Manage Number Portability Requests

1.5.4.8- Manage Field Workforce

- 1.5.4.8.2- Manage Schedules & Appointments
- 1.5.4.8.1- Manage Field Workforce Catalogs
- 1.5.4.8.3- Plan & Forecast Field Workforce

1.5.4.9- Manage Resource Test

Figure 5- Resource Domain - Level 3 processes in scope for certification

3.5 Scope of Conformance Certification – Chart (eTOM)

JIO's Integrated Inventory Manager (JIIM)
Business Process Framework - Level 3 Process Coverage

Legend:
■ Total # Level 3 Processes Defined in the eTOM ■ # Level 3 Processes in Scope for Assessment

Figure 6- Level 3 process scope for certification

3.6 Business Process Framework – Scoring Guidelines

This section provides the Process Mapping output from the self-assessment carried out by TM Forum Subject Matter Experts alongside supporting documentation made available for this purpose.

Business Process Framework - Conformance Certification Methodology		
Process Level	**Conformance Score**	**Qualifier**
Level 1 Process	*Not applicable*	Conformance Assessment shall not be carried out at this process level.
Level 2 Process	*Not applicable*	A conformance level is not awarded to Level 2 processes in Frameworx Certification. The Certification Report shall highlight the coverage within a Level 2 process submitted in scope for an Assessment, in terms of number of Level 3 processes submitted for assessment out of the total number defined in the Business Process Framework for the Level 2 process.
Level 3 Process	Conformance Score is awarded between 3.1 & 5.0	The Conformance Score is awarded for each Level 3 process submitted in scope for the Assessment. The Conformance Score awarded can be a value between 3.1* & 5 depending on the level of coverage & conformance to the Level 3 process based on the alignment to the level 3 Implied Tasks as decomposed in the Level 4 process definitions. If a Level 3 process has not been decomposed to Level 4 processes, the Level score is awarded according to alignment to the Level 3 defined Implied Tasks.
Level 4 Process	*Level of conformance is calculated as input to parent Level 3 Process Score*	Levels of conformance are calculated for Level 4 processes according to alignment to the individual implied tasks. Level 4 scores are summed and averaged to given an overall score for the parent Level 3 process.
* In earlier Conformance Assessments, scores were awarded to Level 1 & Level 2 processes using values 1 through to 3. For this reason, the Level 3 scores start from > 3.		
Additional Notes		
Note 1 - Level 1 processes shall be presented to define the assessment scope only. i.e. they shall not be assessed as self-contained processes since the level of detail is not considered sufficient. A conformance level shall not be awarded for Level 1 processes.		
Note 2 - Level 2 processes shall be presented to define the assessment scope only. i.e. they shall not be assessed as self-contained processes since the level of detail is not considered sufficient. A conformance level shall not be awarded for Level 2 processes. However, the Certification Report shall provide good indication of the coverage of the Level 2 process in terms of number of contained Level 3 processes submitted in scope for the Assessment.		
Note 3 - The Conformance Assessment shall be carried out at process level 3 (if there are no level 4 process elements defined for a specific level 3 in scope) or at level 4 (if there are level 4 process elements defined for a specific level 3 in scope). For each Level 3 process (when there are no level 4 processes available), conformance shall be deduced according to the documented support for the process implied tasks. For each Level 4 process (when available), conformance shall be deduced according to the documented support for the process implied tasks, as decomposed and described in the Level 4 process descriptions. The score awarded for a Level 3 process, is deduced according to the support mapped to the Level 4 processes/Implied Tasks.		
Note 4 - In evaluating conformance to the standards, manual intervention shall not impact the conformance score granted. However, any level of manual support shall be noted in the Conformance Report and Detailed Results Report. This note specifically applies to Product & Solution Assessments.		
Note 5 - Processes that are supported via manual implementation only, are not considered in scope for the Assessment. This note specifically applies to Product & Solution Assessments.		

Figure 7- TM Forum Business Process Framework: Conformance Scoring Rules

3.7 Business Process Framework – Process Mapping Descriptions

This section provides the mapping of Business Process Framework against the processes supported by JIO's Integrated Inventory Manager (JIIM).

The self-assessment was reviewed by TM Forum Subject Matter Experts alongside supporting documentation provided.

3.7.1 Mapping Details & Supporting Evidence

The documented mapping information for all Level 3 business processes in scope is available from the following links:

Service Domain:

https://www.tmforum.org/wp-content/uploads/2024/10/eTOM-24.0_Conformance_Mapping_Template-JIO-B2C-IIM-System-ODA-C-TMFC008-VFRF.pdf

Resource Domain:

https://www.tmforum.org/wp-content/uploads/2024/10/eTOM-24.0_Conformance_Mapping_Template-JIO-B2C-IIM-System-ODA-C-TMFC012-VFRF.pdf

3.8 Conformance Result

This Section details the Scores awarded to reflect Conformance to the Business Process Framework eTOM.

TM Forum Assessment Scoping Document - Business Process Framework (eTOM) v24.0			
Member:	*JIO*		Level 3 Process Elements Scores achieved
Product:	*JIO's Integrated Inventory Manager (JIIM)*		
Assessment Type	*Solution*		
# of L3 Processes in Scope:	2		
Level 1	*Level 2*	*Level 3*	
1.4 - Service Domain			
	1.4.4 - Service Support Management		
		1.4.4.1 - Manage Service Inventory	5
1.5 - Resource Domain			
	1.5.4 - Resource Support Management		
		1.5.4.1 - Manage Resource Inventory	5

Figure 8- - eTOM Conformance Scores Summary

4 Information Framework Assessment Overview

4.1 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.

4.2 Scope of Conformance Certification (SID)

This following list conveys information about the ABEs implemented by JIO's Integrated Inventory Manager (JIIM) in accordance to the TM Forum Information Framework (SID). The scope for certification includes the following ABEs.

SID Certification Scope JIO's Integrated Inventory Manager (JIIM) = 2 ABEs	
Level 1 ABEs	*Level 2 & Level 3 ABEs*
Service & Resource Domains	
Service ABE	
Resource ABE	

Figure 9- - eTOM Conformance Summary

4.3 Information Frameworx Conformance Result

This Section details the Scores awarded to reflect Conformance of JIO's Integrated Inventory Manager (JIIM) to the Information Framework.

4.3.1 Information Framework – Scoring Rules

Between 2013 (Frameworx 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.

4.3.2   Information Framework Adoption Conformance Scoring Methodology

As of Frameworx 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 Frameworx Conformance Program.

Information Framework Adoption scores are granted based on the detailed scoring guidelines outlined in Table 2 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]

NOTES:

1. The score values for each SID component are added together to get the overall Adoption Conformance score.

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.

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 Confomance) & Adoption Conformance score = 5.2 (Medium Conformance).

4.3.3 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.

4.4 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 assessment of JIO's Integrated Inventory Manager (JIIM).

Each ABE was measured using the Information Framework (SID) conformance scoring guidelines as described in section 4.3.2 above.

4.5 Information Framework – Detailed Conformance Results

JIO's Integrated Inventory Manager (JIIM)
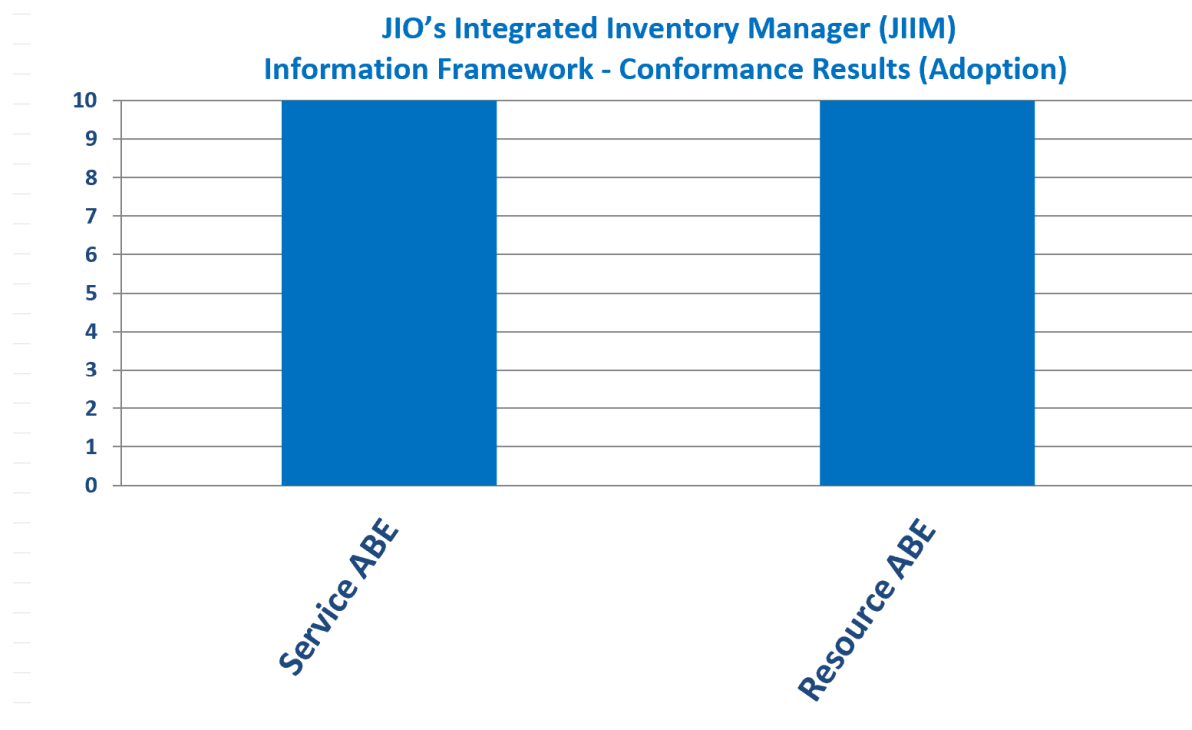**Information Framework - Conformance Results (Adoption)**

Figure 10 - Information Framework: Conformance Scores