

# OIIE Australia Working Group

## Post Break Session

# How The OIIE Delivers Business Value

- 1<sup>st</sup> Session was focused on Business Value provided by OIIE, discussing WHAT it is and WHY it is of business value
- 2<sup>nd</sup> Session will discuss HOW the OIIE is implemented to deliver this business value

# MIMOSA and OpenO&M OIIE Concepts and Methods

**Australian OIIE Working Group**

April 21, 2020

ISA-95/IEC 62264 define an Operations Management Reference Architecture based on the Purdue Reference Architecture.

Primary business process:  
ETP, UWA, UniSA

ERP

Secondary business process:  
Establish and Maintain Operations Capability  
UniSA and QUT/ Asset Institute

Production Operations

P2B Stack:  
Automation system

The OpenO&M Initiative, led by MIMOSA, extended the architecture to fully address life-cycle asset management in conjunction with Construction Industry Institute (CII). Collectively, this provides the basis for the Open Industrial Interoperability Ecosystem (OIIE) and ISO 18101 (ISO OGI TS).

Level R4

Level R3

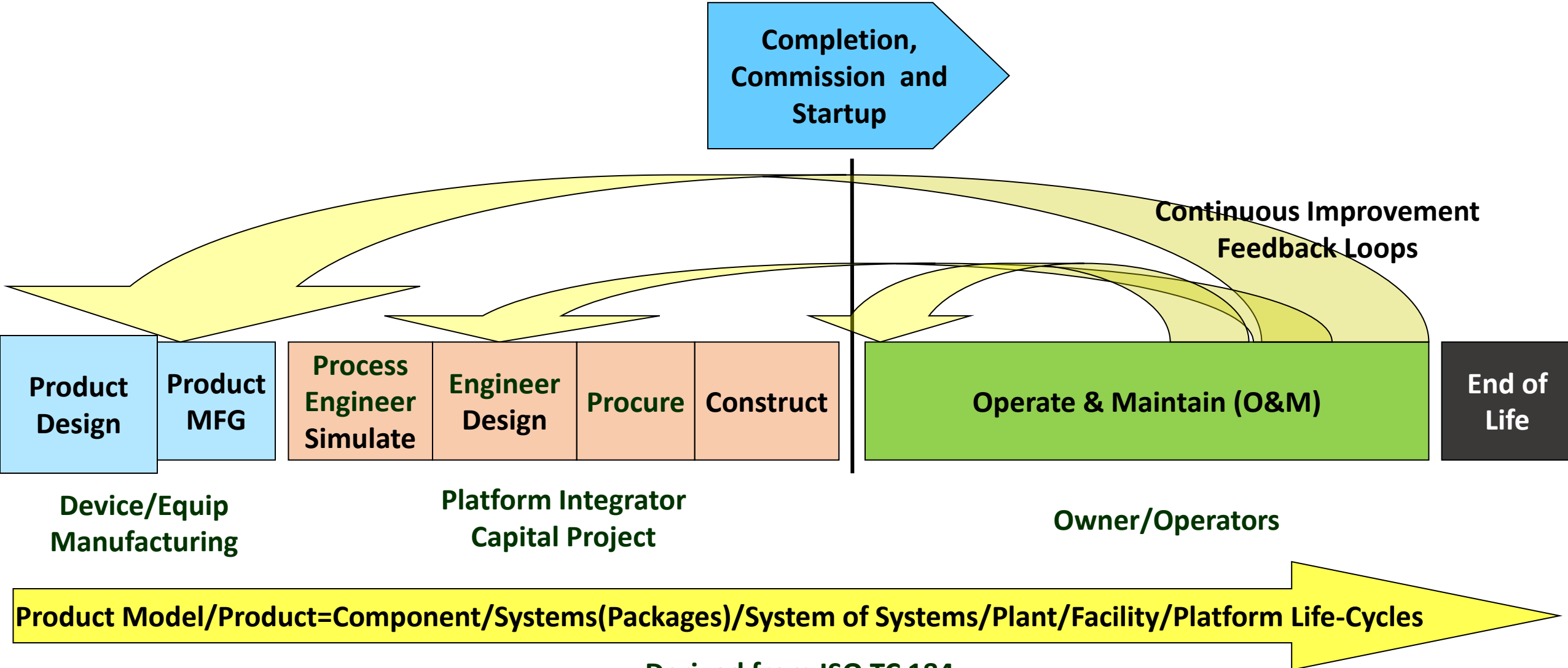
Level R2

Level R1

Level R0



# Full Asset Life-cycle Management

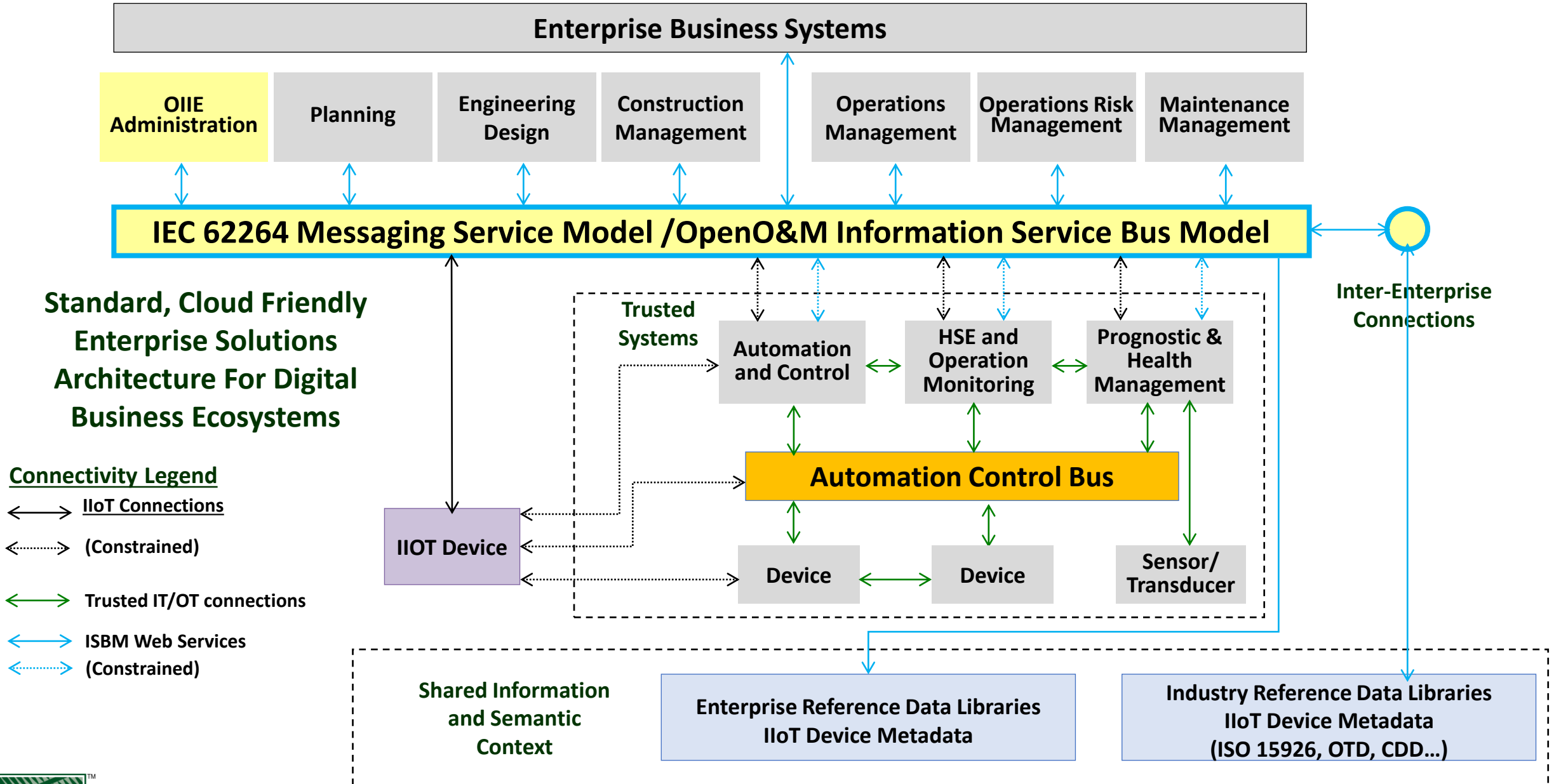


Derived from ISO TC 184

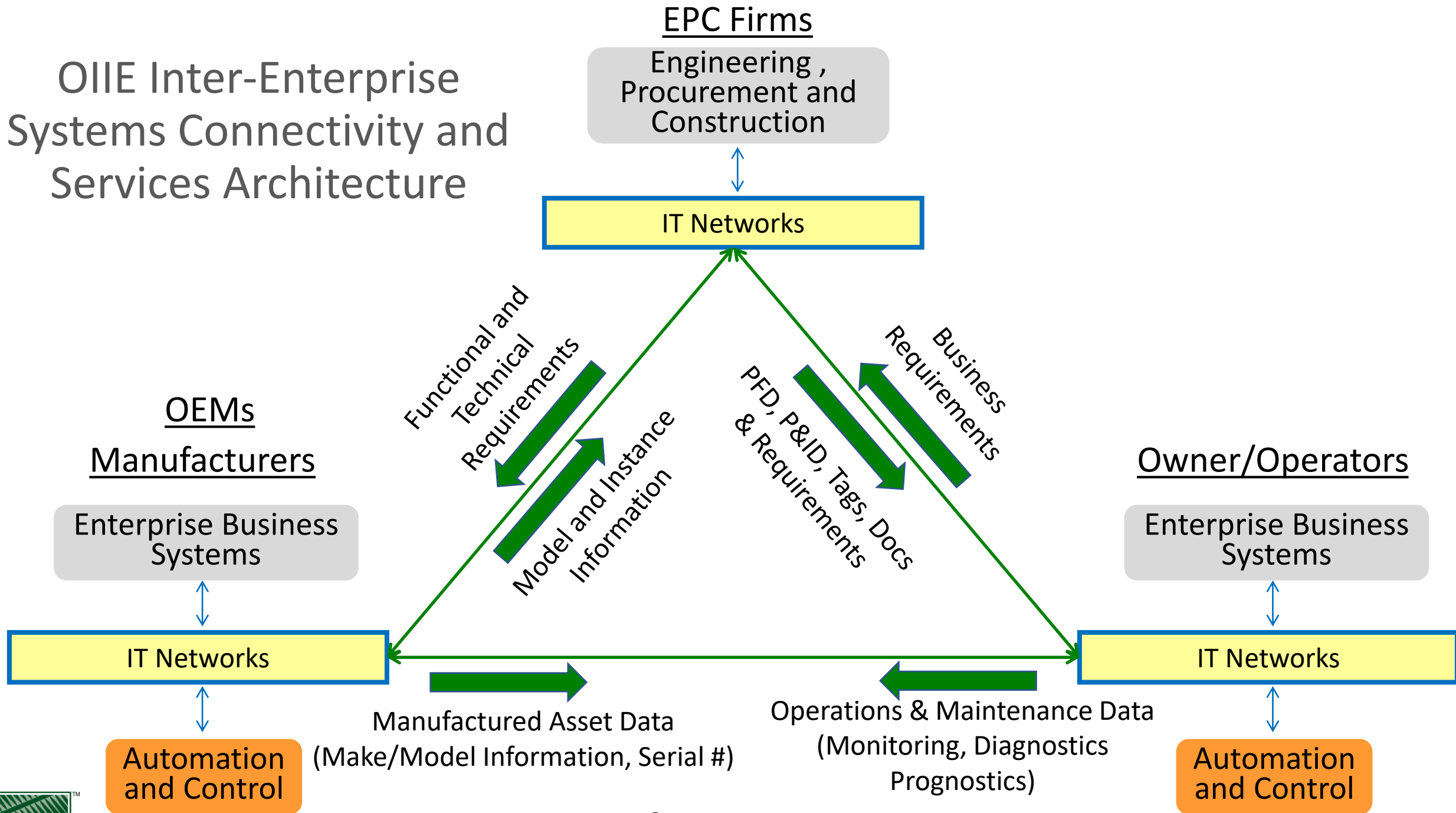
Manufacturing Asset Management Integration Task Force Final Report



# OIIE Intra-Enterprise Systems Connectivity and Services Architecture

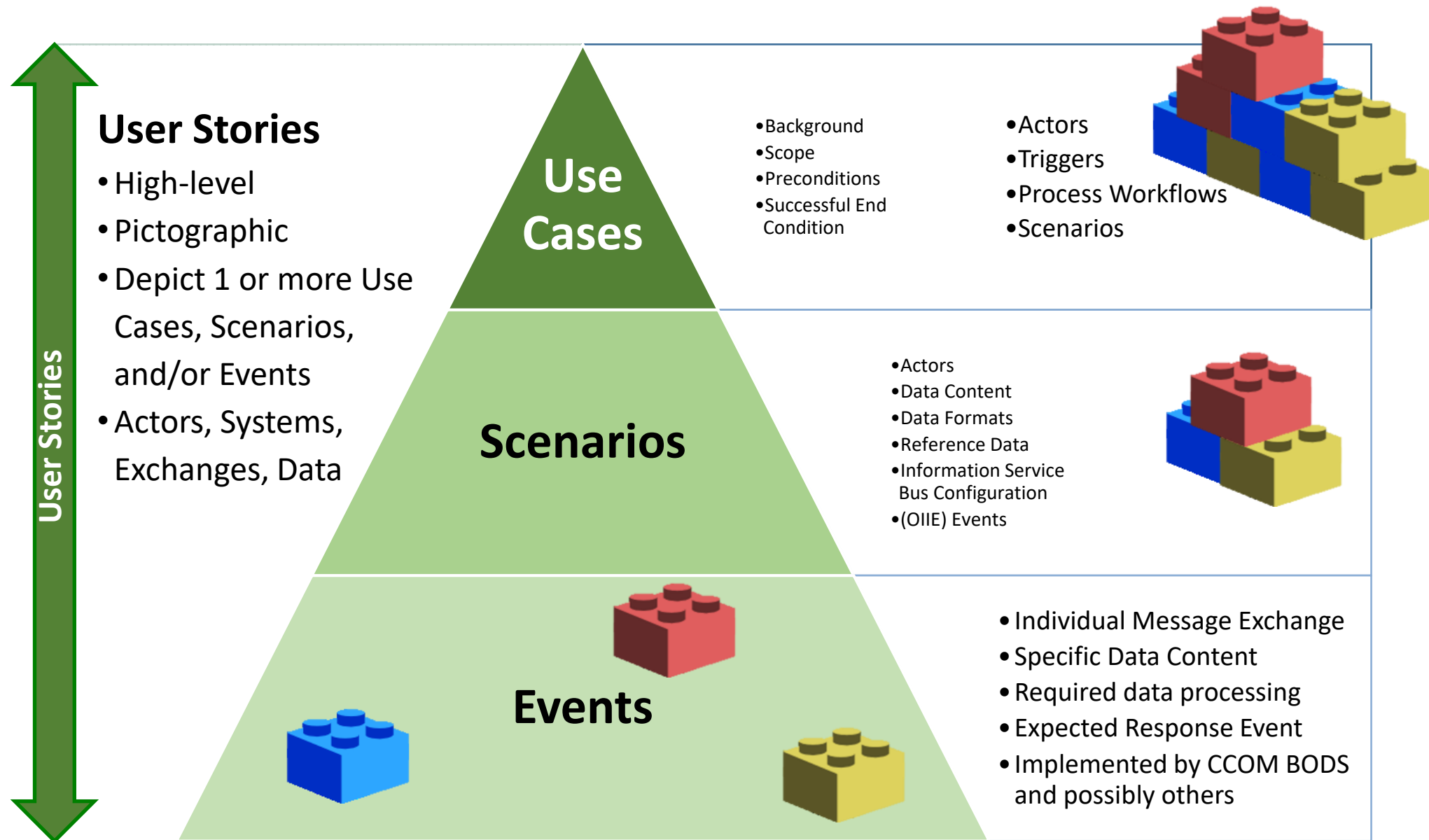


# OIE Inter-Enterprise Systems Connectivity and Services Architecture



# OIIE/OGI Standardized Use Case Architecture

Standardized Methodology to Define and Re-use OIIE Components





# OIIE Standard Use Case List

## Derived from OpenO&M Standard Use Case List – Circa 2007

OIIE Use Case 1 – Information Handover from EPC to O/O

OIIE Use Case 2 – Engineering Updates

OIIE Use Case 3 – Field Changes to Plant/Facility Engineering

OIIE Use Case 4 – Online Product Data Library Management

OIIE Use Case 5 – Asset Installation/Removal Updates

OIIE Use Case 6 – Preventive Maintenance Triggering

OIIE Use Case 7 – Condition-Based Maintenance Triggering

OIIE Use Case 8 – Early Warning Notifications

OIIE Use Case 9 – Incident Management/Accountability

OIIE Use Case 10 – Information Provisioning of O&M Systems

OIIE Use Case 11 – Enterprise Reference Data Library Management

OIIE Use Case 12 – RFI and RFI Response for Models Meeting Requirements (Greenfield & Brownfield)

OIIE Use Case 13 – Lockout-Tagout

OIIE Use Case 14 – Condition-Based Maintenance Data Acquisition

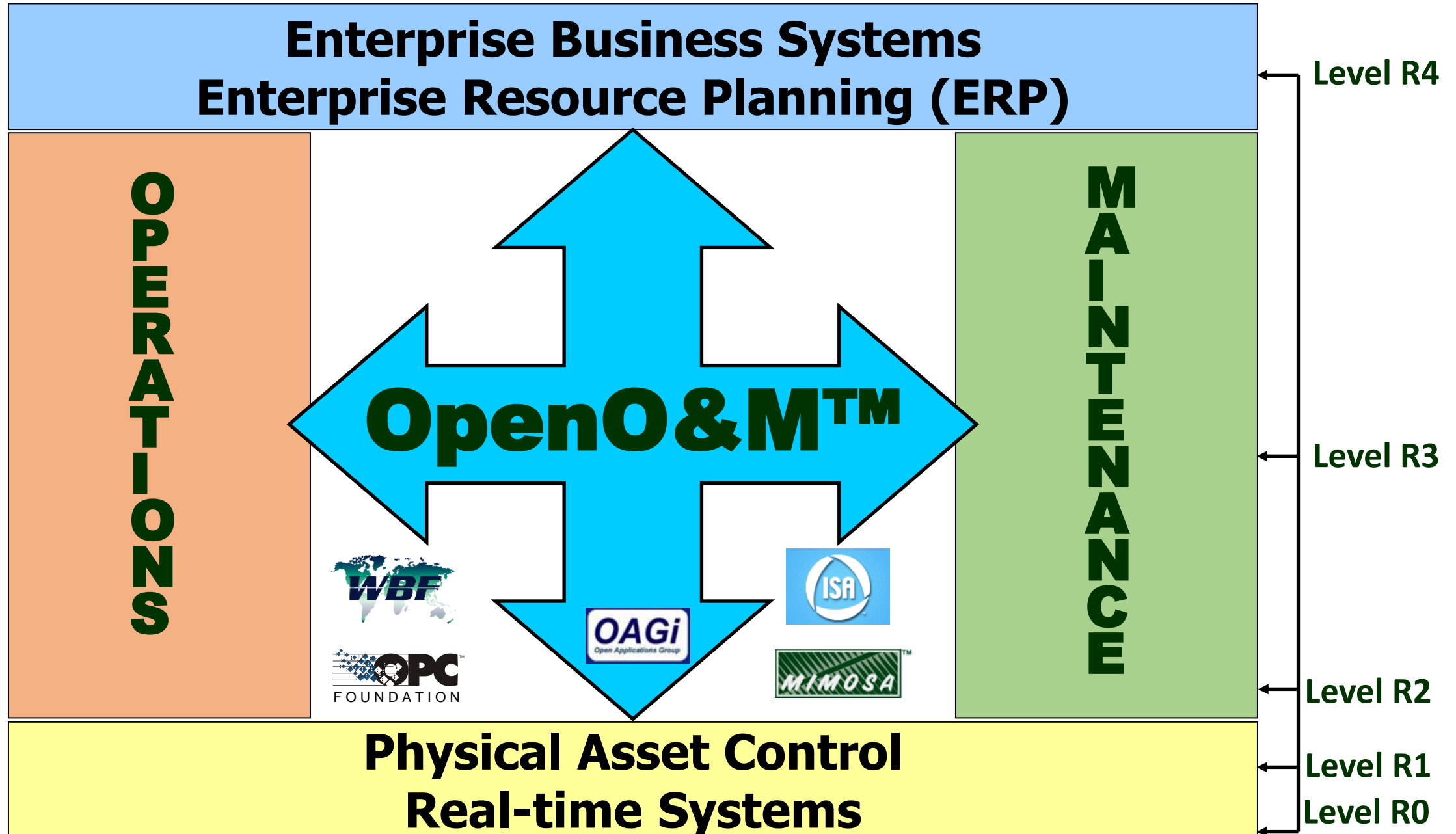
OIIE Use Case 15 – Capital Project Asset Installation

Current OIIE Use Cases Focus on Life-cycle Asset Management and OIIE Administration  
May be expanded into more of Operations Management in conjunction with FEnEx CRC

# OIE Australia Working Group

## Industry Associations, SDO and NGO Alignment

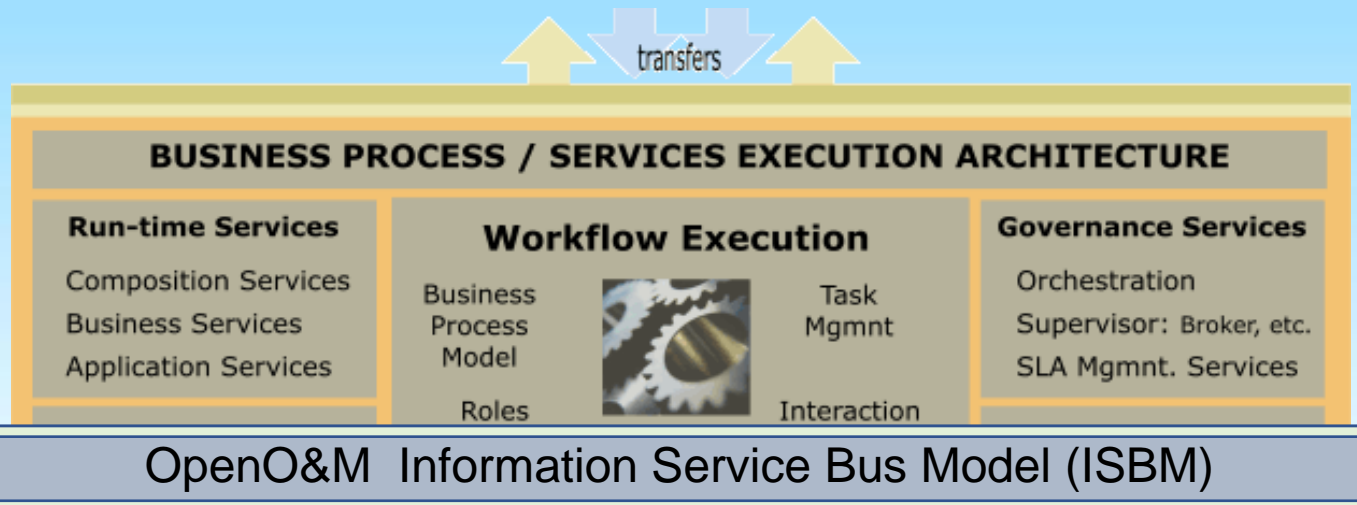
# OpenO&M Initiative – Formed 2004



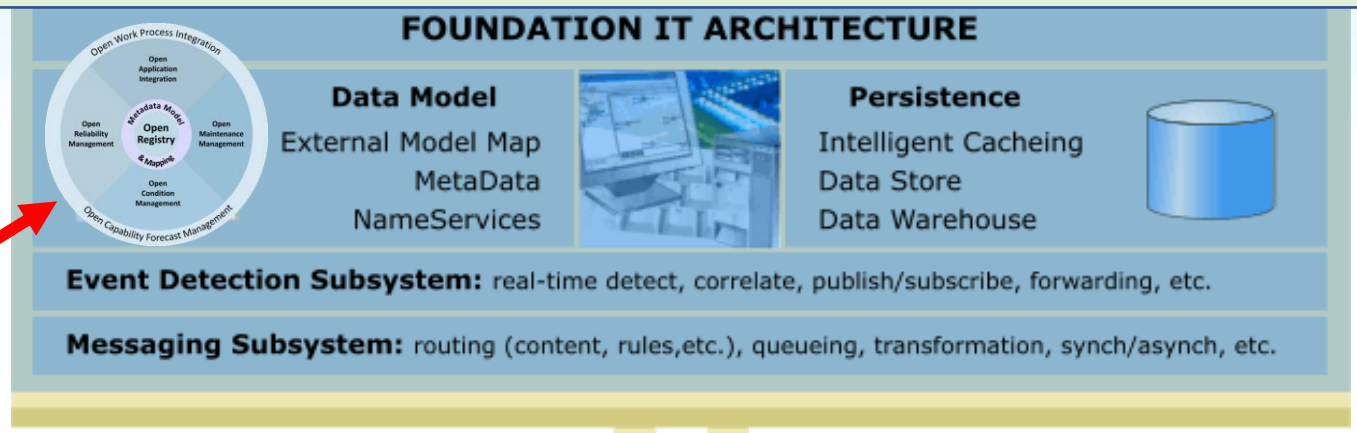
# Owner/Operators Objective Shared Industry Foundation Architecture

**From:**  
OpenO&M Owner/Operator  
Leadership Team  
(BP, Chevron, Dow, Dupont,  
Nova Chemical, Saudi Aramco  
Suncor)  
Circa 2008

**2**



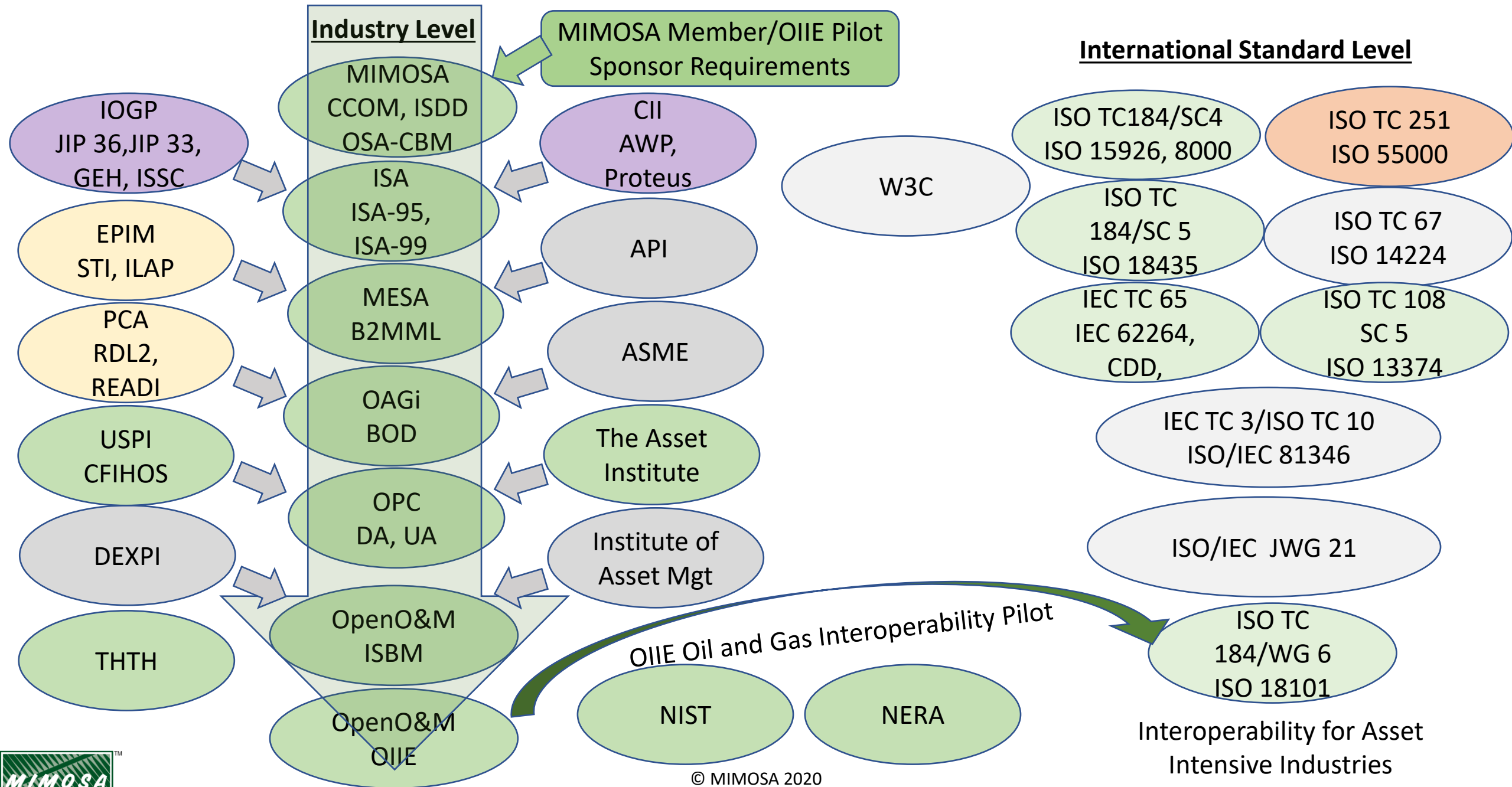
**1**



**OpenO&M**

Request for Standard  
Architecture for  
Interoperability

# Interoperability for Physical Asset Management-Associations and Activities



# ISO TS 18101-1

April 21, 2020

OIIE Australia Working Group

Alan T. Johnston

Convenor ISO TC 184/WG 6

President MIMOSA

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**Automation systems and  
integration — Oil and gas  
interoperability —**

Part 1:  
**Overview and fundamental principles**

*Systèmes d'automatisation et intégration — Interopérabilité entre les  
industries du pétrole et du gaz —*

*Partie 1: Vue d'ensemble et principes fondamentaux*



# ISO TS 18101-1 Foreword

## Paragraph 6

“This document was prepared by Technical Committee ISO/TC 184, Automation systems and integration.

This document provides an overview and outlines the fundamental principles of the ISO 18101 series. Future parts of the ISO 18101 series will be developed including sets of industry developed use cases, once the use cases have been documented using the Open Industrial Interoperability Ecosystem (OIIE) use case architecture and validated using the OIIE Oil and Gas Interoperability (OGI) Pilot, with the results captured in Technical Reports. These use cases will incrementally define industry prioritized elements of the secondary business process, which is the scope of the ISO 18101 series.”

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**Automation systems and  
integration — Oil and gas  
interoperability —**

**Part 1:  
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# ISO TS 18101-1 SCOPE

This document provides requirements, specifications and guidance for an architecture of a supplier-neutral industrial digital ecosystem. It includes a standardized connectivity and services architecture, and a standardized use case architecture with methods to specify atomically re-usable scenarios and events, which can be used to specify the characteristics of standardized industry use cases. NOTE 1 Examples of standard industry use cases included in the secondary business process are included in Annex A along with standardized use case architecture.

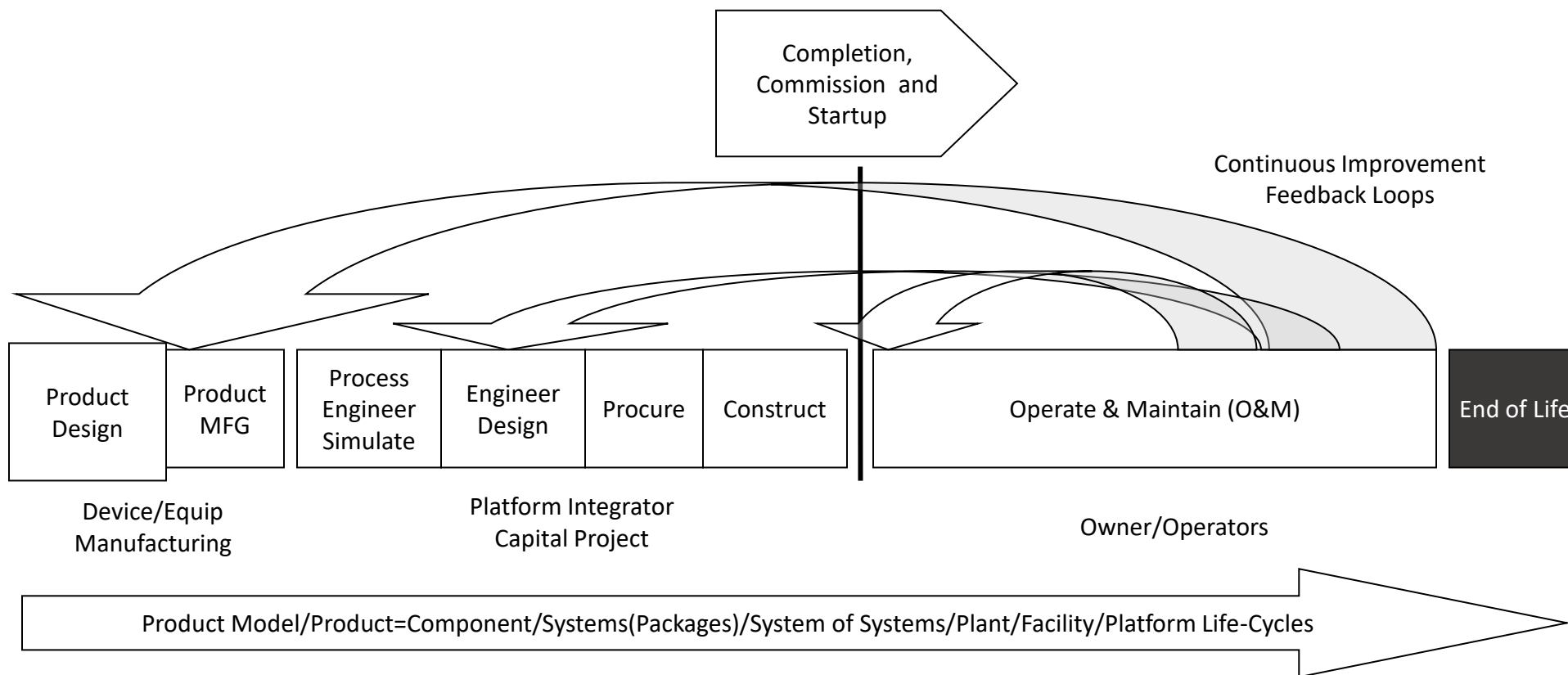
**This document gives:**

- guidance for an architecture applicable to the oil and gas, petrochemical, power generation, public utilities and other asset-intensive industries;
- requirements for interoperability among systems of systems, systems (including hardware and software) and components included in the secondary business process of a plant, platform or facility at any given time;
- guidance on how these interoperability requirements are to be achieved and sustained in support of operations in the same plant, platform or facility;
- specifications enabling the specialization of a digital ecosystem concept for the requirements of the secondary business process in included industries;
- guidance to industry participants, including owner/operators and their product and services suppliers, to support their secondary business process requirements using products, which interoperate based on the specifications included in this document.

NOTE 2 This document is focused on interoperability requirements for systems which play roles in the secondary business process, including those in domains identified in [Figure 7](#).

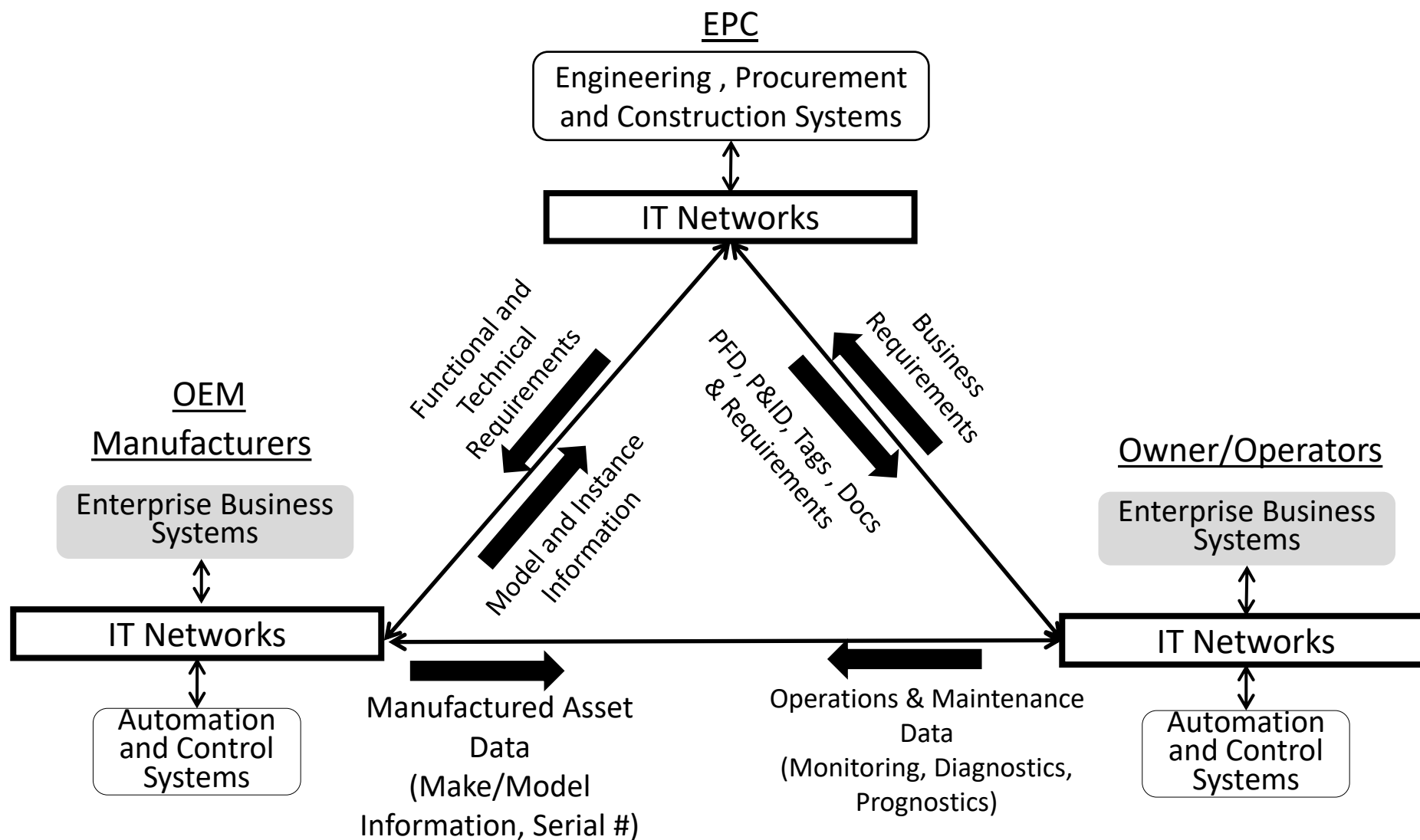


# Secondary Business Process

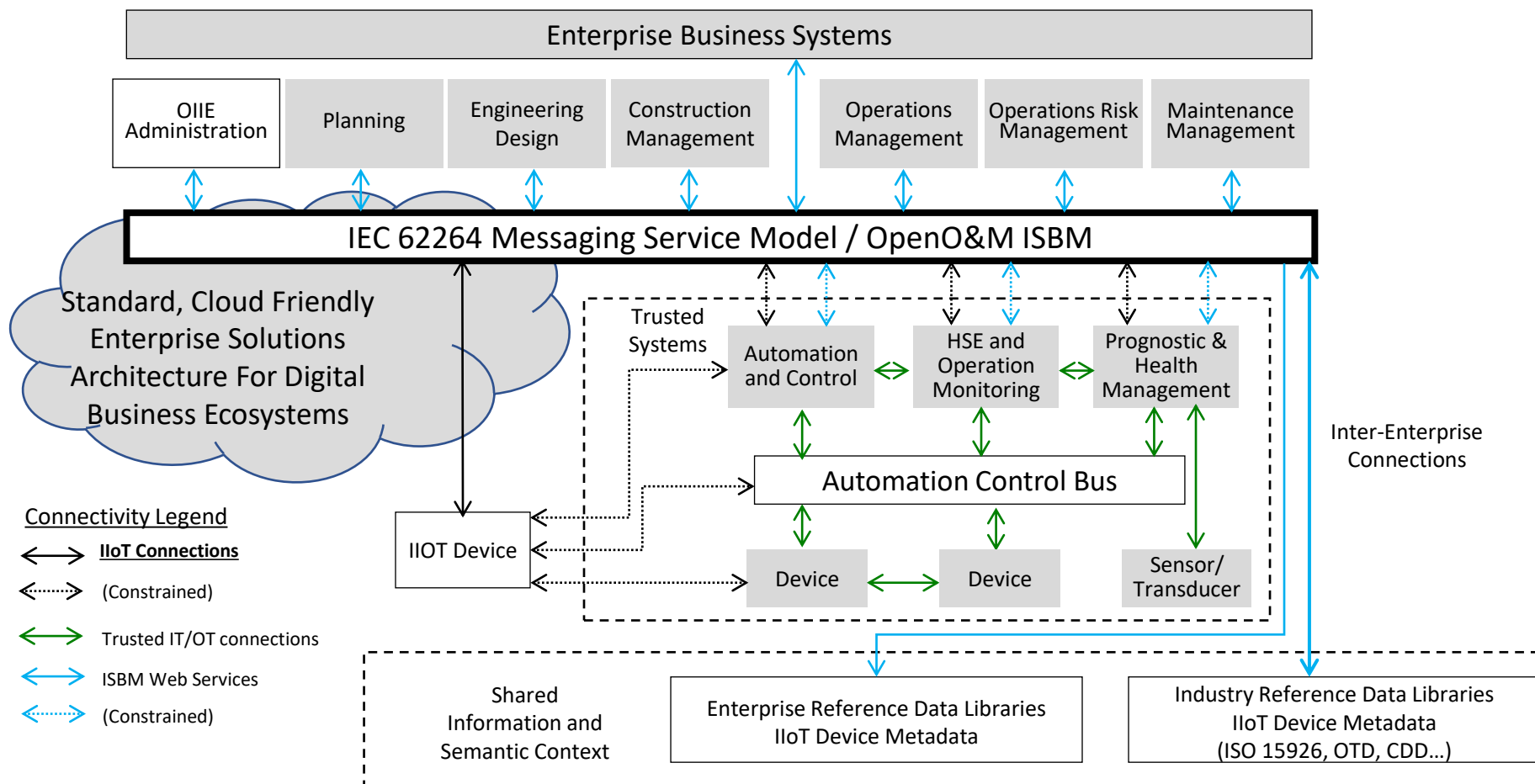


Derived from ISO TC 184  
 Manufacturing Asset Management Integration Task Force Final Report

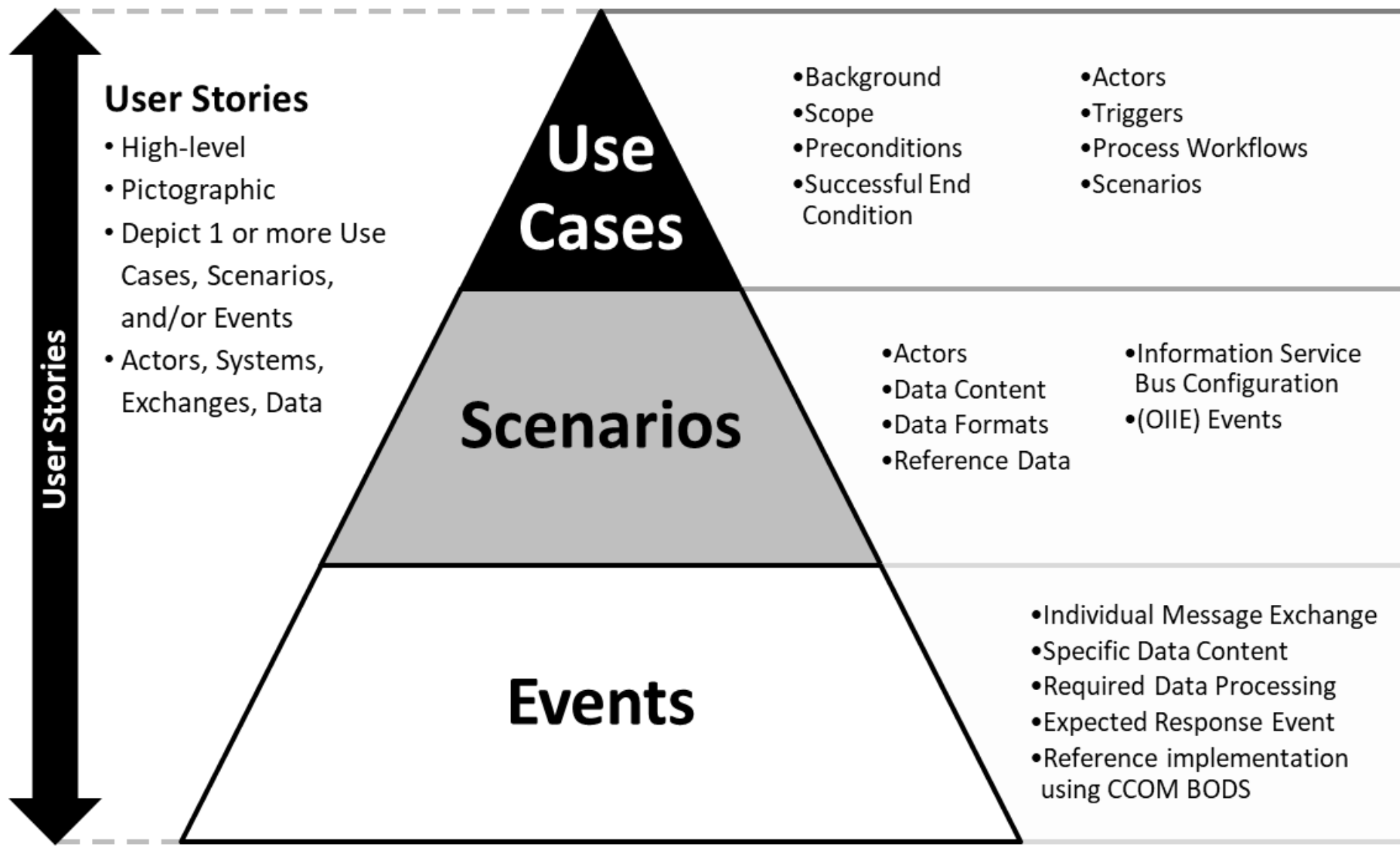
# Inter-Enterprise OIIE Digital Ecosystem



# Intra-Enterprise OIIE Digital Ecosystem



# OIIE Use Case Architecture - 1





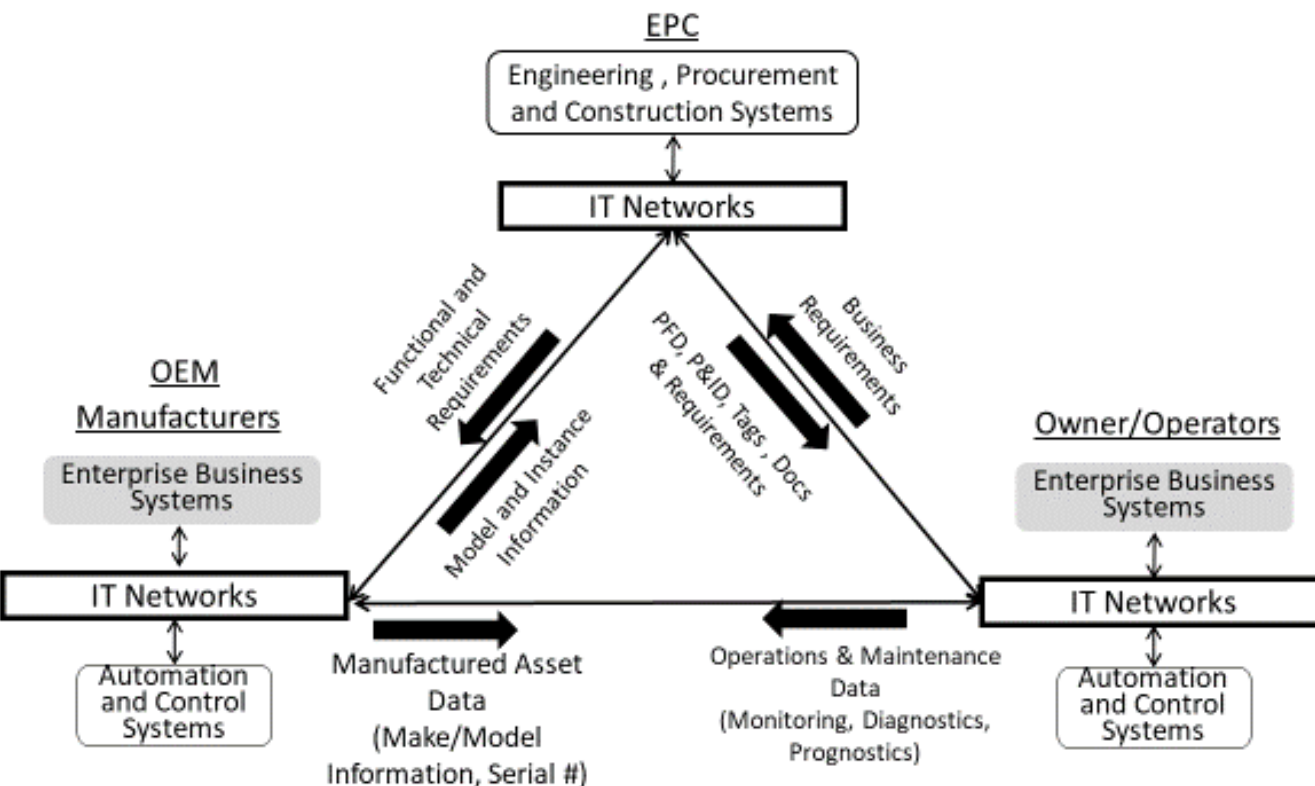
# WG6–Asset Intensive Industry Interoperability ISO 18101 Standardization Concepts and Features

**Objective: Move From Systems Integration to Systems Interoperability and Digitalization- Asset Lifecycle Focus**  
**Inter-Enterprise View**

## WG 6 Status:

- **ISO TS 18101-1 Published June 2019**
- Asset Intensive Industries includes supply chains for CAPEX and OPEX Use Cases
- Includes ISO, IEC and Industry SDO inputs, digital twins for capital projects
- NWIP for Part 2 Terminology
- OIIE OGI Pilot Phase 3.2 In Progress
  - Per ISO TS 18101-1 Pilot Develops and Validates content for future parts of ISO 180101
  - Phase 3.2 formalizing set of OIIE Use Cases

**Participating National Committees: (11)**  
Canada, China, France, Germany, Italy, Japan, Korea Netherlands, Norway, United Kingdom, United States (Plus Experts from Australia)



# Australian TC 184 “P” Membership

- ISO 18101 is developed at the Technical Committee level rather than the Sub Committee level because it includes experts and standards from many Sub Committees, other Committees and IEC. ISO TC 184/WG 6 is almost a JWG.
- Direct input into ISO for ISO 18101 requires a “P” Membership in TC 184
- This is critical to help ensure both contents and ballots support OIIE Australia Working Group Requirements

# OIIE Australia Working Group

## OIIE Oil and Gas Interoperability (OGI) Pilot

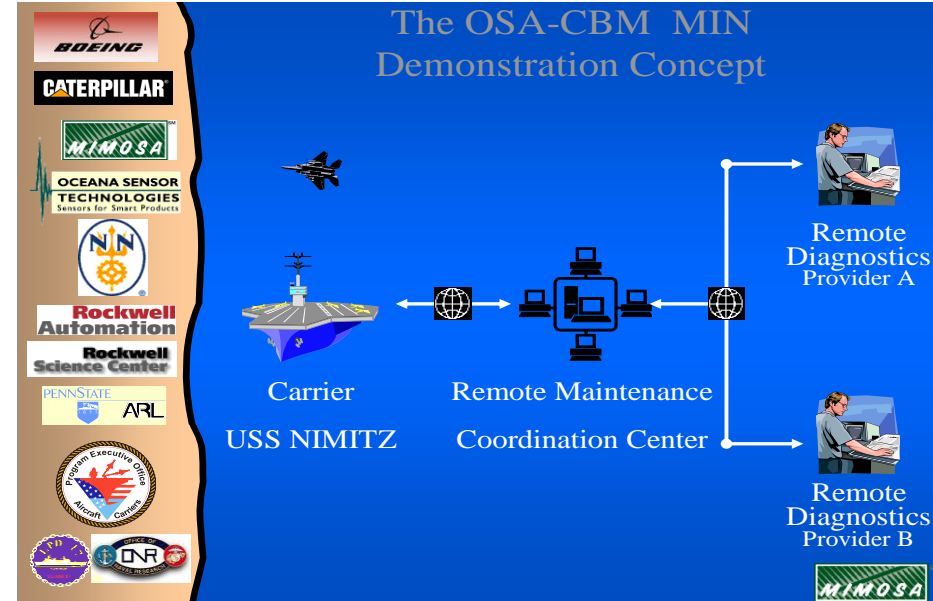
# OSA-CBM Dual Use Technology Program - Office of Naval Research

UNCLASSIFIED

## MIMOSA Information Network (MIN)

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June 21, 2000  
MIN-Viewer  
OSA-CBM Presentation  
Alan T. Johnston  
MIN Project Director



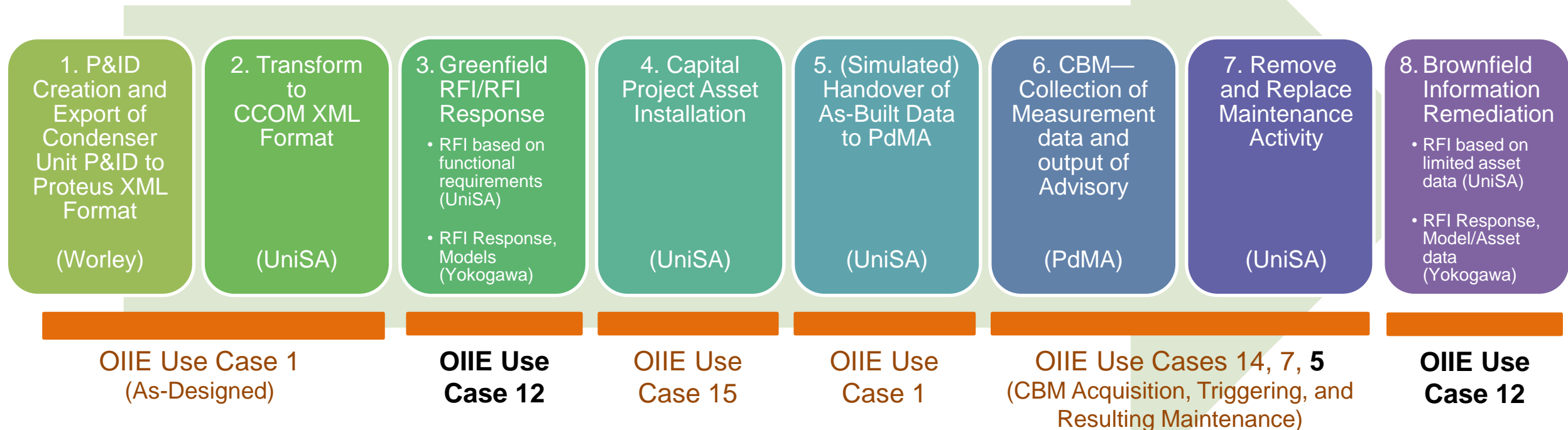
### MIN-Viewer Segment Navigation 1

User Interface Modeled On The Microsoft Windows Explorer

**MIMOSA Background:  
Modeling, Monitoring and  
Managing US Naval Assets  
circa 2000.**



# OIIE OGI Pilot Phase 3.1 and Beyond



15 OIIE Use Cases have been identified spanning the Asset Lifecycle. Details are developed and validated in the OIIE OGI Pilot. We intend to submit the set above (likely including others) in forthcoming TRs, to be included in ISO 18101-3.

# OIIE OGI Pilot Phase 3.2

- **Includes sponsorship by National Energy Resources Australia**
  - **Start capturing Australian Industry Priorities to be included in Phases 3.3 and beyond**
- **Scope**
  - Capture requirements for improved Inter-bus and Inter-enterprise features
    - Associated with OpenO&M ISBM 2.1 Specification Update (OpenO&M (ISA, OAGi and NIST))
    - Driven by OIIE Use Cases (starting with RFI/RFI Response)
    - Needed to better support Australian Energy Cluster requirements
  - Documentation for OIIE Use Cases developed and validated in Phase 3.1
  - Preparation for next steps with NIST, NERA, CII, THTH and IOGP

# Open Forum for Q&A

# Call To Action

- Opportunity for Australian Leadership
  - Freedom to innovate in a vendor-neutral digital ecosystem
  - Help shape the OIIE to meet Australia business requirements
  - Address global markets
- What is expected
  - Australia Requirements to be captured in formal OIIE Use Case(s)
  - Digital Collaboration between SMEs, O/Os and Academics using OIIE
  - Active Participation in OIIE OGI Pilot with NERA Sponsorship
  - Preparation for FEnEx CRC
- Interim Leadership Team – Don Sands – Acting Chair
- Schedule follow-up Organizational Meeting