

# IPA-MIMOSA OIIE Capital Projects Working Group Meeting #3

Deborah J. McNeil (Independent Project Analysis, Inc.)

Dr. Matt Selway (University of South Australia)

## OIIE Capital Project Working Group: 02-23-2021 Meeting Objectives

---

- Share the OIIE Capital Project Working Group Purpose
- Review Meeting #1 and # 2 Results - Highest Priority Needs
- Review the OIIE Methodology that will be used to gather Owner/ Industry input
- TEAMS Environment for
- Breakout Groups Formation
- Define OIIE Capital Project WG Next Steps

# OIIE Capital Project Working Group Leaders

## IPA



### Deborah J. McNeil

Director, IPA Capital Solutions  
And Digitalization  
[dmcneil@ipaglobal.com](mailto:dmcneil@ipaglobal.com)



### Luke Wallace

Senior Consultant  
[lwallace@ipaglobal.com](mailto:lwallace@ipaglobal.com)

## MIMOSA



### Alan Johnston

President, MIMOSA  
[ajohn@mimosa.org](mailto:ajohn@mimosa.org)



### Dr. Matt Selway

Research Fellow,  
University of South Australia  
[Matt.Selway@unisa.edu.au](mailto:Matt.Selway@unisa.edu.au)

## Open Industrial Interoperability Ecosystem (OIIE) Capital Project Working Group

---

Independent Project Analysis (IPA) and MIMOSA (industry trade association dedicated to the development and adoption of information technology and information management standards) are proud to announce the formation of the *Open Industrial Interoperability Ecosystem (OIIE) Capital Project Working Group*.

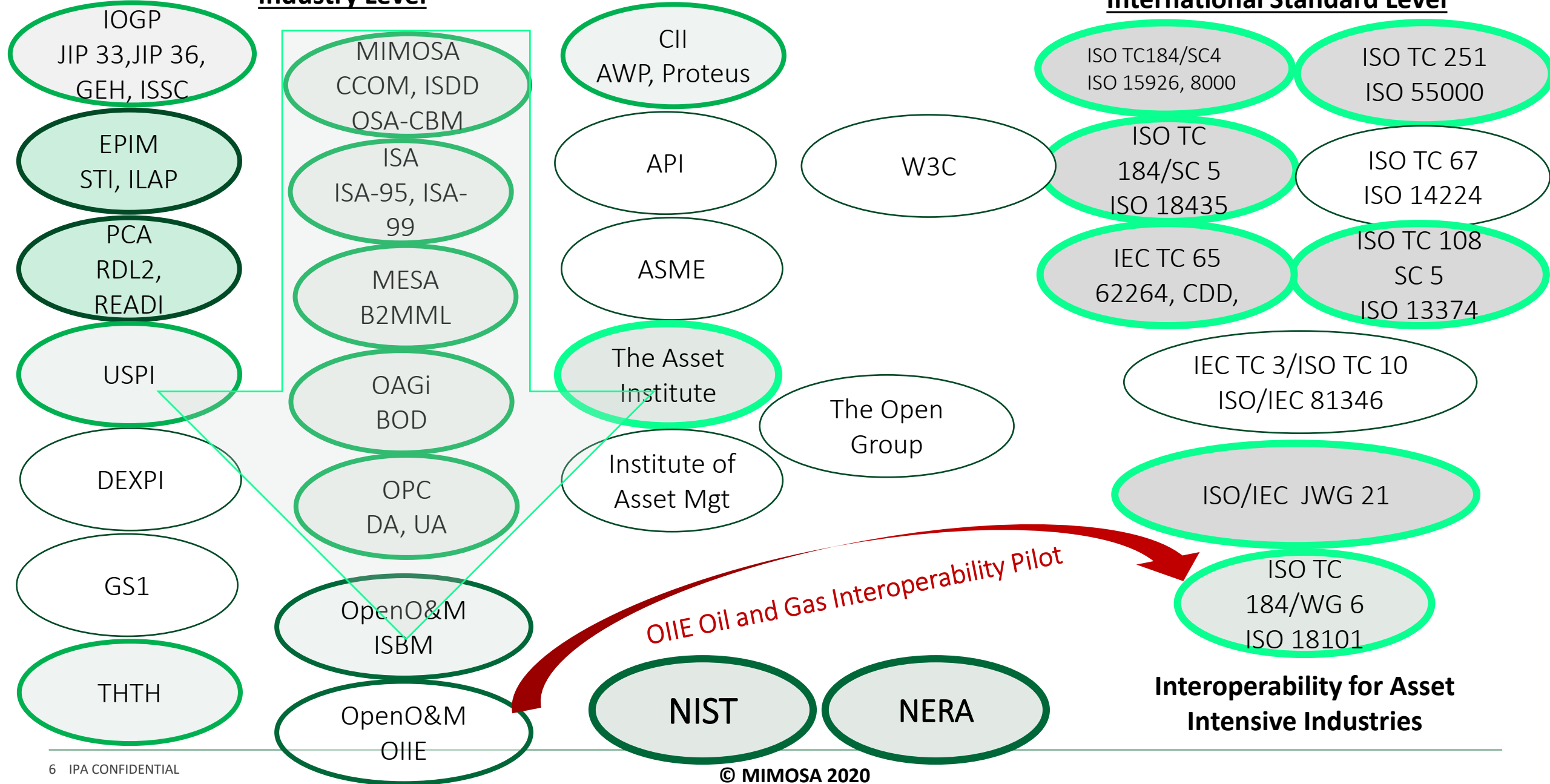
This working group will meet **monthly** to help align the efforts of owner companies; engineering, procurement, and construction (EPC) firms; industry standardization organizations (e.g., IOGP/CIFHOS, ISA, MIMOSA) and international standards organizations (ISO, IEC, etc.). All participants will work together to set the owner/EPC firm priorities for solution delivery to enable pragmatic industry digital transformation on a timely basis.

Whether your company's digitalization goals are productivity improvements, capital efficiency, advanced work packaging, facility hand-off to operations, or digital twins, etc., **interoperability between the many players in the asset life cycle is a key success component**. Historically, **interoperability has been difficult to achieve** due to a lack of alignment throughout the industry between owner/operators, EPC firms, material and service suppliers, and subject matter experts. The IPA-MIMOSA hosted initiative **seeks to solve this issue** for the benefit of all industrial sectors moving forward.

# Interoperability for Physical Asset Management-Associations and Activities

## Industry Level

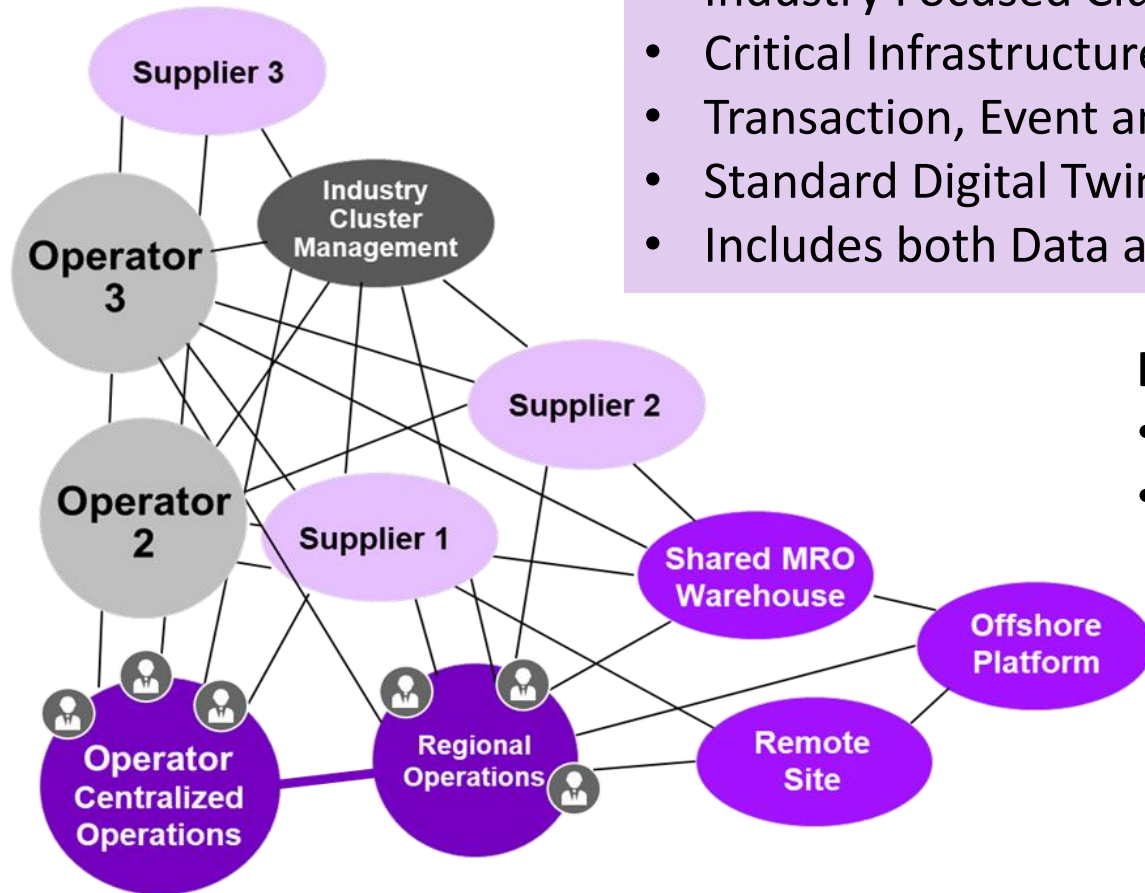
## International Standard Level



# THE OIIE AND ISO 18101 INTEROPERABILITY FRAMEWORK FOR ASSET-CENTRIC CONNECTED DIGITAL ECOSYSTEMS – INDUSTRY CLUSTERS

## Key Functional Areas

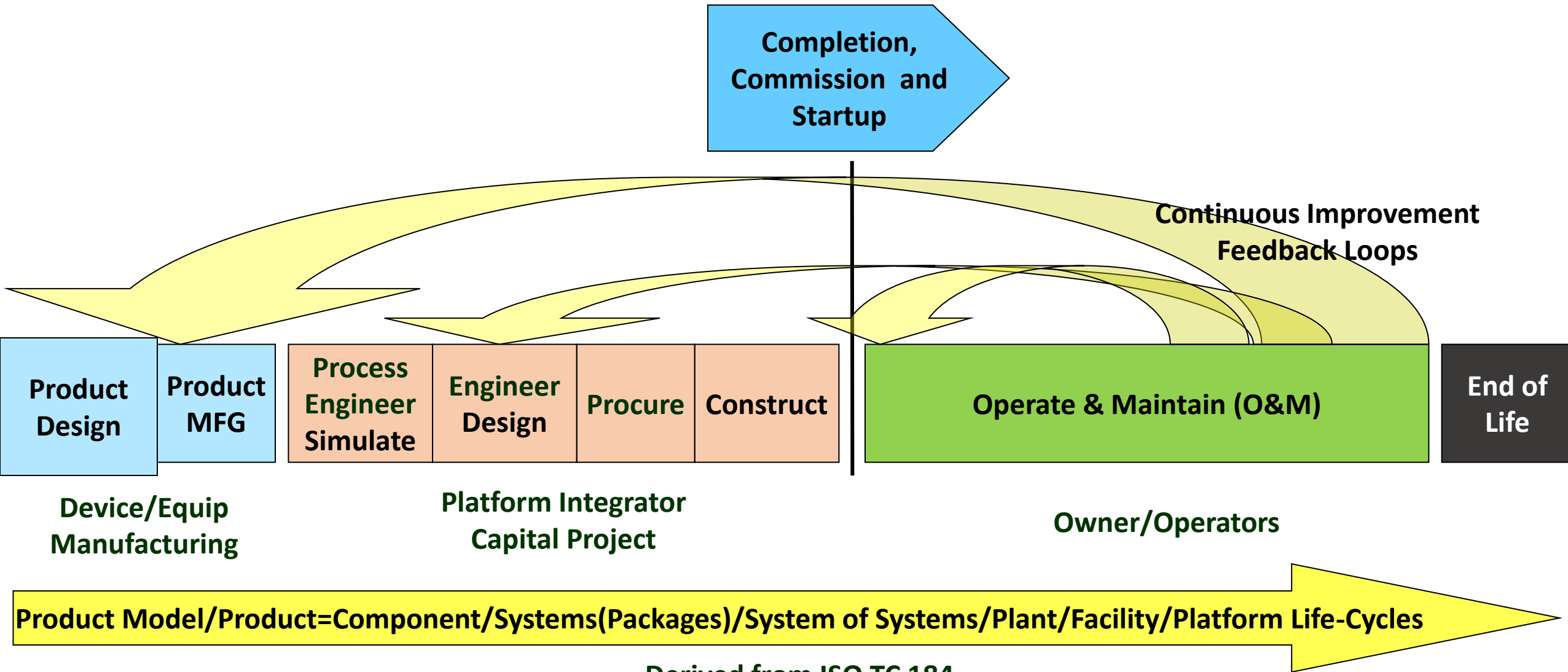
- Interrelated Supply Chains – CAPEX and OPEX
- Industry Focused Clusters: e.g. Hydrogen Clusters
- Critical Infrastructure Management
- Transaction, Event and Sensor-based Activities
- Standard Digital Twins (synchronized across the lifecycle)
- Includes both Data and Required Documents



## Key Information Technology Features

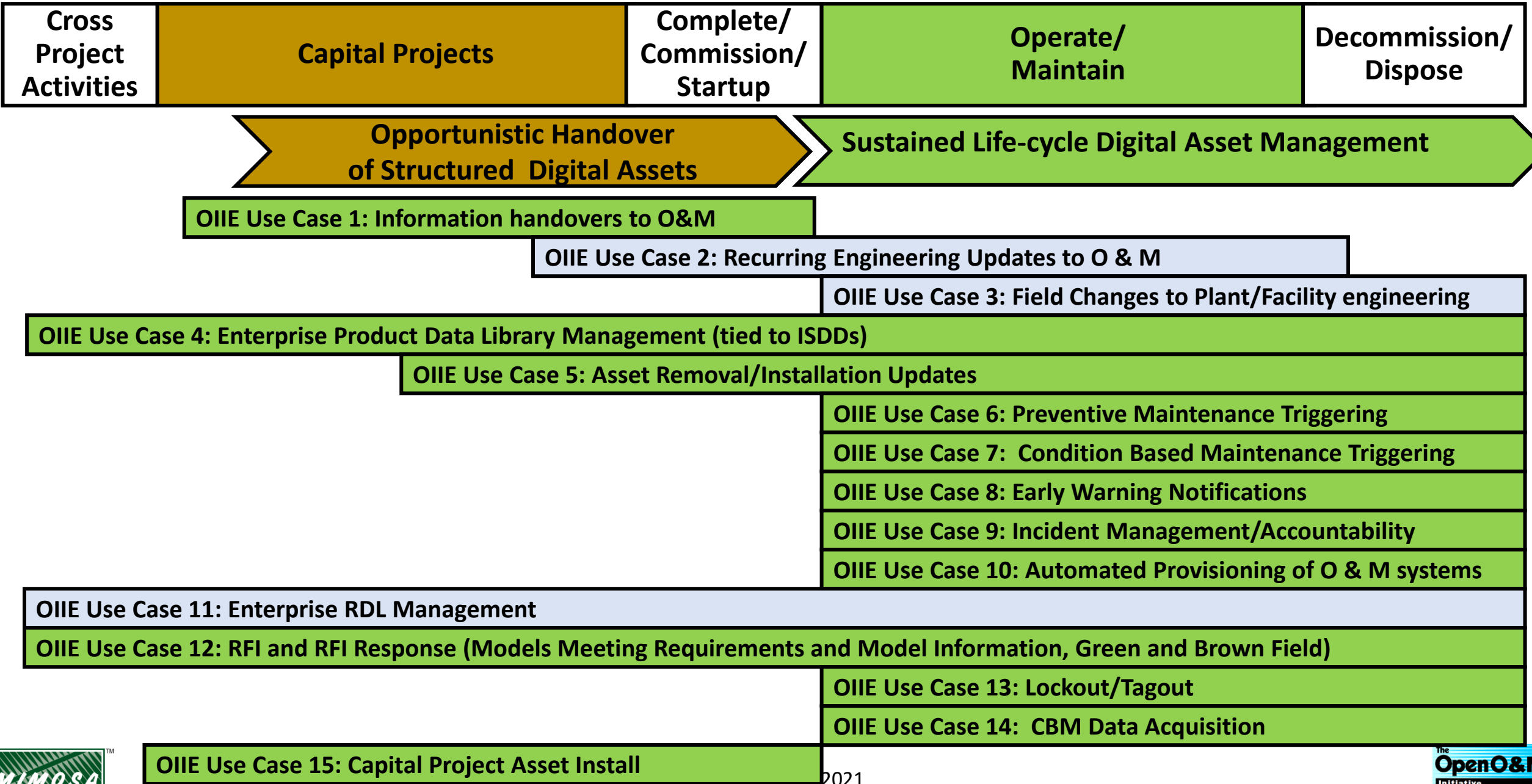
- Specifies Vendor Neutral Industrial Digital Ecosystem
- Includes:
  - Critical Infrastructure and Asset Intensive Industries
  - Standard ID Management
  - Industry Standard Digital Utility Services
  - Interoperating Functional and Geo-Clusters

# Full Asset Life-cycle Management



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

# Standard OIIE OGI Use Cases





# Breakout Groups

Early  
Project

Mid  
Project

Late  
Project

## Early Approval Processes

1. Cost Estimating
2. Basic Engineering & Simulation

## Supply Chain/Procurement

- ✓ RFI/RFI Response
- 1. Purchasing

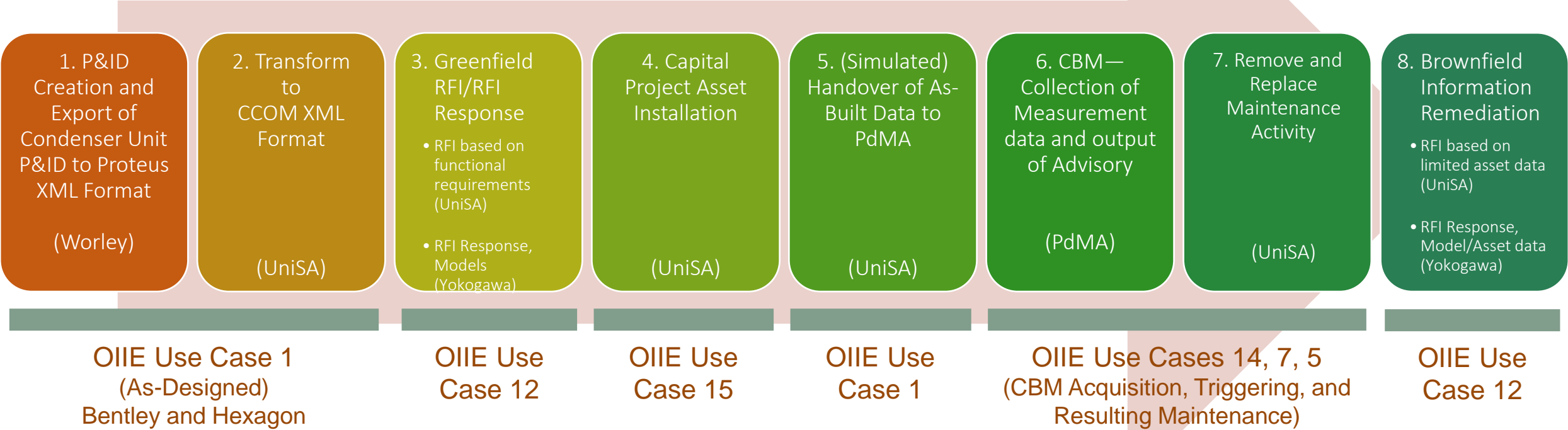
## As-Built Digital Twins

- ✓ Capital Project Asset Installation
- AWP CWP and IWP?

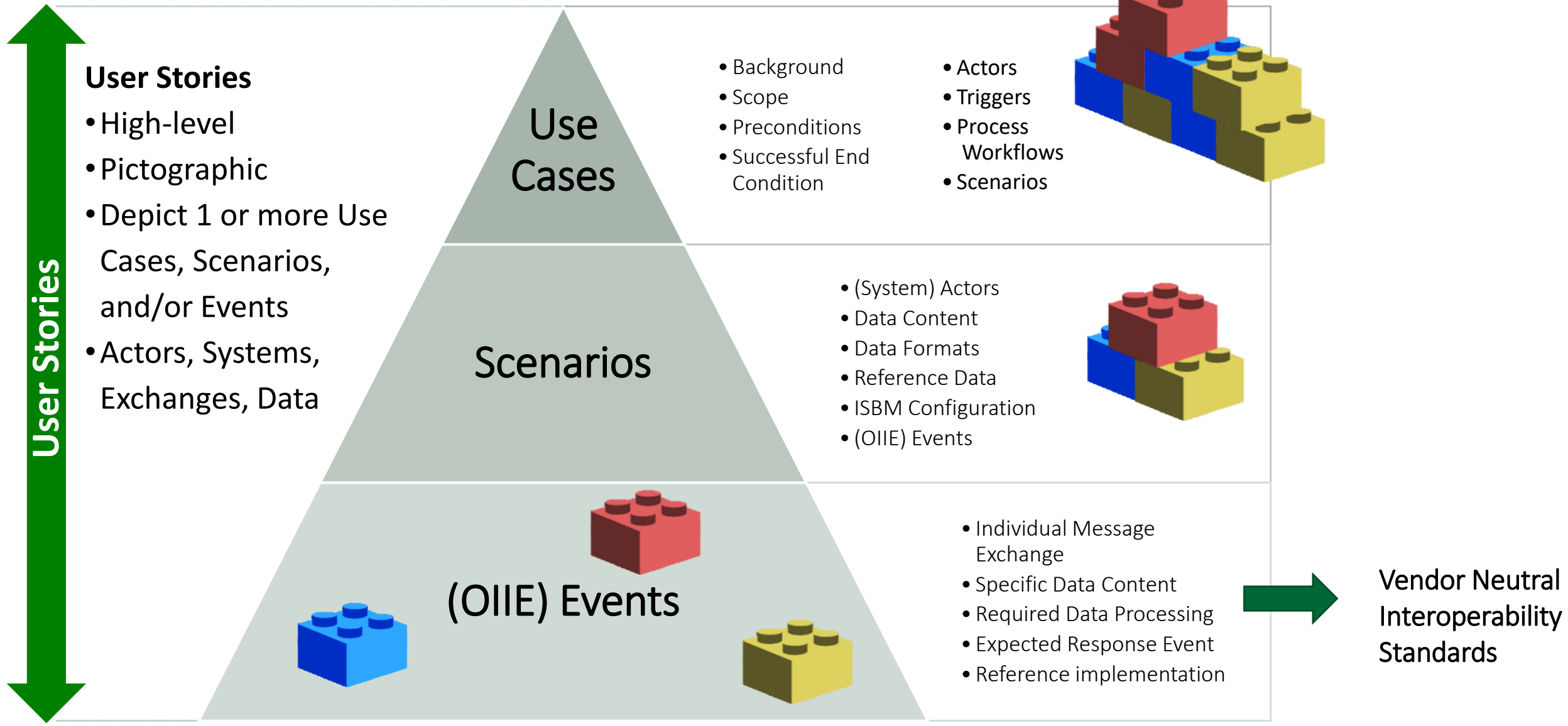
# Build on Success from OIIE OGI Pilot Phase 3.1

To See a Demo of Pilot Phase 3.1 – Visit the MIMOSA Website:

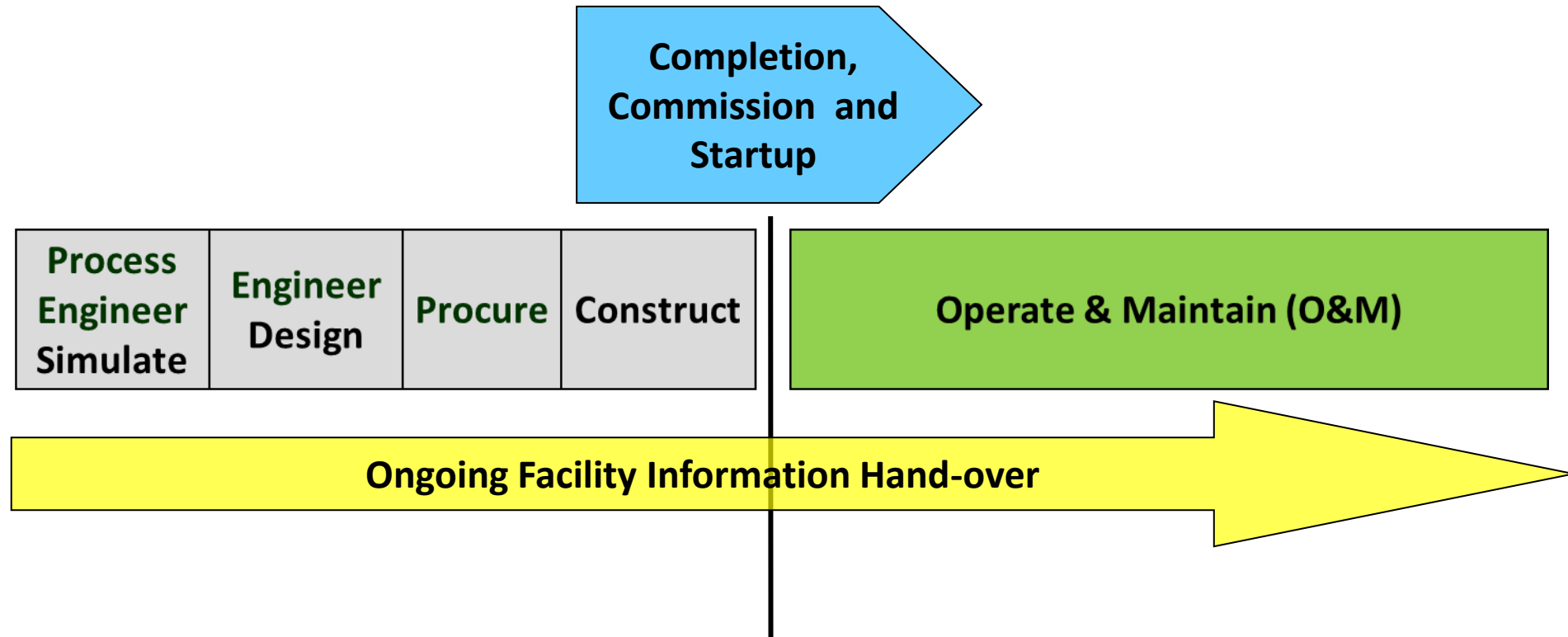
<https://www.mimosa.org/ogi-pilot/>



# Standard OIIE OGI Use Case Methodology



# Meeting #1 -Using Chat – Biggest Opportunity / Challenge in each area



Think horizontally (Across Disciplines and Functions)  
Think vertically (within a Discipline)

# IPA-MIMOSA OIIE CPWG Kick-off Meeting: 11/14/2020 – Biggest Opportunity List

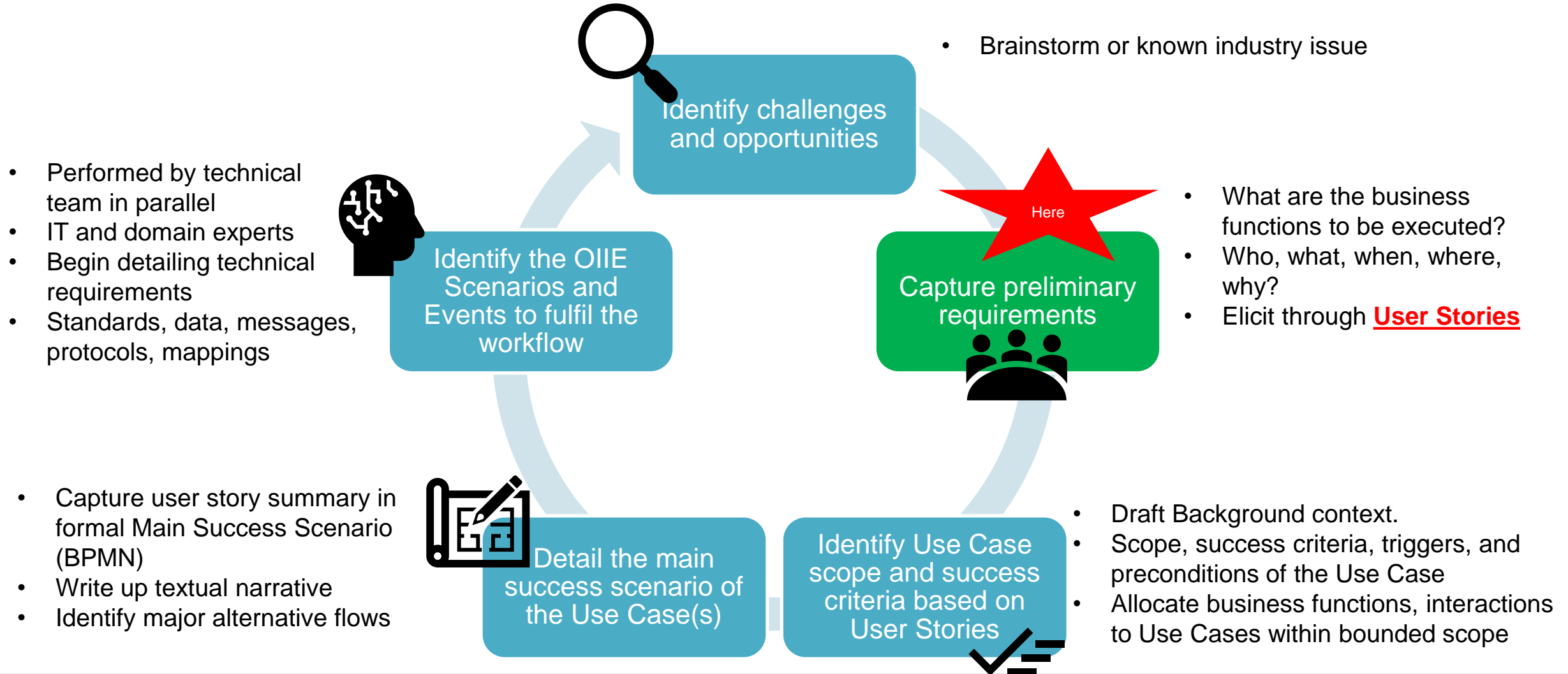
Process Engineering/ Conceptual Design/ Simulation	Detailed Design	Procurement	Construction	Commissioning and Start-up	Hand-over	Operate & Maintain
--	-----------------	-------------	--------------	----------------------------	-----------	--------------------

Over 180 Opportunities for Improved Interoperability within the capital Project work process were identified.

Based on Frequency of Input: Selected First 3 Business Use Cases to Start with...

Process Engineering/ Conceptual Design/ Simulation	Detailed Design	Procurement	Construction	Commissioning and Start-up	Hand-over	Operate & Maintain
AI including HAZOP/HAZID, Contract Management etc.	An integrated data management flow that clearly identifies who is responsible for what data at what point at an attribute level	Asset data is setup in a manner that allows easy transfer into O&M systems.	4D and 5D modeling	As built information generation	Alignment between Electrical and instrumentation deliverables.	3D Model update as constructed
Brownfield as built data	break down material by construction package	Contractual data	ability for remote observation and verification of construction progress	Checklist and punch list tracker	All system and configuration settings	3d models for immersive training
completion commissioning	Cost and schedule	contingency management	advance work packaging with fully integrated links to procurement data and fab shop data	Clear definitions between pre-commissioning pre-commissioning change or system level	Application of lessons learned to apply them in this phase	As built data sheets
Defining and committing on requirements (over different functions Business/Operations/projects/etc)	Data aggregation	Contractor/Owner procurement responsibility	As built information	commissioning sequence and completion status	As built - PFD, P&ID, 3D	As built P&IDs
Defining Handover Requirements	Data Analytics and dashboards application in Project Control Management	contractual data	Backshop schedule setting engineering, procurement, and traffic and logistics schedule	commissioning spares	as built data format	Asset information model
Engineering Design using QID requirements to develop appropriate OEMs to meet those requirements	data interface	Delivery schedule management dashboard	BIM	Completion and testing plan	asset tag	Baseline plant acceptance test records
Constructability	Data validation to identify single source of truth	Delivery schedule, inspection data, quality documents	Construction work package tracking	Consumables requirements	Civil Asset Integrity dataset	BOM completed and accurately input into ERP
Oil and Gas Projects - process engineering simulations produce Heat and Material balance. This H&MB data should be able to flow to hydraulics calculations.	Each QID has its own standard	Detailed and Estimated MTOs for all disciplines	Contract preference	Design advice and Operating Procedures	Closout and archiving of project data for O&M and for benchmarking against future projects	Cause effect troubleshooting guide
PFD data to detail engineering applications.	Early Supplier/Vendor data and scope quantities as soon as possible.	each EPC has its own system	Contractor manpower productivity analysis	Digital twin	data alignment with operation systems	clear use cases from operations to identify data content in the digital asset
Plan activity data with previous experience of cost, time, resource and associated risks from learning.	early Vendor data, early involvement and early integration	Expediting data	CWA/CWP scope and sequence	Document as built status	definition of critical devices to be maintained	consistent material code hand-off into O&M systems
Preliminary equipment sizing data	Engineering specifications, Equipment list, engineering data sheets, vendor data	fabrication schedule	Data sharing across contractors	Early system scoping, Preservation, spare part	Electrical relay settings	DCS soft tags data
problem occurs with the visibility and obtaining the information from the stake holders such as operability requirements and becoming a functional part of the project team... visibility to the stakeholders for information flow in both directions.	Equipment list, the list, especially for acquired assets	inspection status data	Engineering deliverables in proper sequence to match the construction story board	Handover data completeness	getting maintenance to use tools for very quick turn around (24 hour or less) activities managing data takes longer than the activity	Digital Threat / digital twin
Process Engineering Design Principles Handover for Ongoing Digital Twin operation and optimization	Feedstock, utilities and products parameters	Integration of vendor data into schedule and coordination with mod yard, site, etc.	Engineering not aligning and understood the concept of AWP	Integrating data from engineering tools to construction tools - identifying data that is acceptable for planning and what is acceptable for constructability	ICS	Early Modularization chunks needs to be identified quite early in order to digitize the project engineering design
Process packages, P&IDs, Equipment lists, instrumentation lists, specs, etc	Information verification by all project participants	Integration to CWP and Systemization within procurement dataset	Engineering, procurement and fabrication to lock in to AWP schedule	Integrating vendor data into master files.	Integrating project information into master docs	Finance depreciation
Sharing of Equipment and Instrument list early on to Construction, Commissioning and Maintenance	Integration of EPCm and construction contractor data	Material Procurement & Delivery Tracking System	For examples - integration with work permitting systems	management of change	Manufacturing record book	handle risks
Simulation work passed through to process deliverables and communicated to other disciplines	legacy data reconciliation	performance guarantees	fully integrated quality and fabrication validation	Managing simultaneous operations	Measurement of equipment	HAZOP/ LOPA
Storing data more effectively - what data can be shared earlier versus what needs to be finalized before pushing downstream	Management of Change of data	quality	Indirect Service Requirement	Operation and maintenance plans	Mechanical Integrity dataset	How can we tell it's safe to operate
Stream data management especially for projects that do not have a clean M&B. Having multiple tools to manage cases makes it very challenging to have a consistent data set to integrate downstream	MTO data consolidation	Quantity Based Work Package for specific scope	Inspection test plan observations	Operator Simulations	move from paper based to digital handover (3D Model)	how to idle an equipment safely
Transparent and ease of information flow between owner, engineering, procurement, potential equipment supplier, owner, etc	Networked data, consistent, connected and common basis	Subs information	installed quantity data that is visualized	preventive maintenance	Project close-out data	including project workflow data to master O&M documents
	No clear requirement statement to begin	supply chain resiliency	Material allocation status	providing construction status data to commissioning	S&P connections	OPW
	objective progress measurement of engineering design by linking to data library attribute population	Timely data	Material availability, resource availability	Punch point management	sensors and edge computing tied to ICS	Lessons Learned and Best Practices
	Oil & Gas - systemization, Constructability, Vendor Data.	vendor qualification	Materials Management, Material receipt and P&ID	Punchlist and safety action close-out status	spare strategy	Operate Training Requirement
	One big challenge in the engineering design is when we (the owner) creates a 3D model in the FE&L phase this model is in general lost in the next phase (detail engineering phase) because the EC in charge of this phase is unable to recover all our data	Warranty management	Physical progressing	service contracts	tag to document relationships in place	Operating performance versus design and opportunities for continuous improvement for the current asset, for future enhancements and for future projects.
	Package equipment data		pre commissioning	System completion status with 3d model and P&ID markups	warehouse plan	OT Cybersecurity requirement
	progress visibility		quantity surviving	Reliable planning based on the previous productivity, all data	Updated 3d model	Power System Analysis
	QA/QC			Resources requirement and forecast	vendor data	process safety management
	RFI or endorsement of deliverables ... including contractors					Quality of Data handed-over - consistency of TAG to Equipment Serial Number
	Spare Part Data requirements		RFI processing	Verifying As-Built data for completeness and correctness without physical field verification		understanding what the actual minimum data requirements are for M&O to do their daily work and identifying that consistently across different sites and businesses
	standards requirements		safety assessments, SHE Data			Virtual Walkthroughs for receiving operations
	Startup and operational spares		Strategic decisions around modular or offsite preassembly.			
	Translating design data to reliability models and future plans for O&U operations and maintenance digital twins.		System completion status with 3d model and P&IDs			
	Vendor data, material and equipment lists, data flow through the contractors and owners seamlessly		Systemization & priorities			
	Vendor and Contractor data		Timely and accurate Material Status report			
	Vendor data, Equipment, piping, and instrumentation specifications		turnover requirements			
			Visualization and Constructability			

# OIIE Use Case Development Process



# User Story Statements

Help guide the identification of activities and requirements:

As an <actor>, I want/need <activity / task / goal>  
so that <reason / benefit>  
[when <event / triggering condition>].

- The “when” clause is optional
- The “activity” may include the “where” it (needs to) occur

# IPA – MIMOSA OIIE CPWG

## Levels of Participation

General Interest

Register for Large Group Meeting Minutes

Attend the Large Group Meeting

Attend the Breakout Team Working Groups

You'll be invited to join the TEAMS site.

You can then sign up for participation in one Or more of the Break-out Groups



# Overview of the MS Teams Environment



Open Standards for  
Physical Asset Management

## Overview of the MS Teams Environment

Matt Selway  
(University of South Australia)

February 16, 2021  
IPA-MIMOSA OIIE Capital Project Working Group- Meeting #3

13.33 x 7.50 in

# Join us on TEAMS and let's get to work...



**Teams**

Your teams

- OC

OIIE Capital Projects WG ...

General

00 Main Meeting Agendas-Not...

01 Front-End Workstream

02 Mid Workstream

2 hidden channels
- M

MIMOSA ...

General

**December 2018 Conference**

OC

**00 Main Meeting Agend...** Posts Files Wiki +

+ New v
↑ Upload v
 Sync
 Copy link
↓ Download

**Main Meeting Agendas-Notes-Recordings**

	Name <span style="font-size: 0.8em;">v</span>
	<span style="color: #0070C0; font-size: 0.8em;">v</span> 1A_MIMOSA-IPA Working Group_Kick-off_11-4-2020_Final.pptx
	<span style="color: #0070C0; font-size: 0.8em;">v</span> 1B_OIIE_Capital_Project_Working_Group_Opportunities_11-4-20.xlsx
	<span style="color: #0070C0; font-size: 0.8em;">v</span> 2A_IPA-MIMOSA OIIE Capital Projects Working Group_Mtg2_12-17-2020....
	<span style="color: #0070C0; font-size: 0.8em;">v</span> 2B_OIIE CPWG_Mtg2Minutes.docx

19 IPA CONFIDENTIAL

## Gathering Input on 3 Use cases

---

### Breaking into 4 Breakout Groups:

Front-End - Cost estimating group 1

Front-End - Cost estimating group 2

Middle - RFI/ RFI Response (Greenfield project)

Back end - Capital Project Asset Installation

---

### Break-Out Agenda

- Review previous session
- Planning of ongoing (weekly/fortnightly?) team meetings
- Plan next steps

## Gathering Input on 3 Use cases

---

### Breaking into 4 Breakout Groups:

Break Out Group	Meeting Link
Front-End - Cost estimating group 1	<a href="#">Click here to join the meeting</a>
Front-End - Cost estimating group 2	<a href="#">Click here to join the meeting</a>
Middle - RFI/ RFI Response (Greenfield project)	<a href="#">Click here to join the meeting</a>
Back end - Capital Project Asset Installation	<a href="#">Click here to join the meeting</a>

Please re-join the Main Meeting at 50 minutes past the hour...

## Next Steps:

---

1. You will be invited to a MIMOSA TEAMS workspace to continue development of the Use Cases
2. Please participate in the smaller team meetings to generate the industry input to the Pilot Project (each sub-team will set it's own meetings) and the Industry Standards work
3. Contact Alan Johnston ([atjohn@comcast.net](mailto:atjohn@comcast.net)) to get more info on MIMOSA membership and access to the solutions already in place for your company to use
4. This Larger team will meet once a month on the 3<sup>rd</sup> Tuesday from 7 to 8 am EST to report on progress, share industry knowledge, set priorities and continue the knowledge sharing and dialog

THANK YOU



#### United States

Independent Project Analysis, Inc.  
44426 Atwater Drive  
Ashburn, VA 20147  
USA  
+1 703 729 8300

#### Australia

Independent Project Analysis, Inc.  
Level 2, Suite 2  
192 High Street  
Northcote, VIC 3070  
Australia  
+61 3 9458 7300

#### United Kingdom

Independent Project Analysis, Ltd.  
Wellington House – First Floor  
Worton Drive  
Reading RG2 0TG  
United Kingdom  
+44 118 920 7800

#### Brazil

Independent Project Analysis Latin America  
Rua Deputado Heitor Alencar Furtado, 3415  
Edifício Montelig – 4o andar  
Campo Comprido  
Curitiba – Paraná 81200-528  
Brazil  
+55 41 3028 9028

#### Singapore

Independent Project Analysis, Pte Ltd.  
No. 1 International Business Park  
#10-02 The Synergy  
Singapore 609917  
Singapore  
+65 6567 2201

#### The Netherlands

Independent Project Analysis, Inc.  
WTC The Hague Business Center, Room 03.25  
Prinses Margrietplantsoen 33  
2595 AM The Hague  
The Netherlands  
+31 70 335 0707

**Deborah J. McNeil**  
Capital Solutions and  
Digitalization Director  
571-440-1300  
dmcneil@ipaglobal.com

**Luke Wallace**  
Capital Solutions Research Leader  
703-726-5309  
lwallace@ipaglobal.com

[www.ipaglobal.com](http://www.ipaglobal.com)