IPA-MIMOSA OIIE Capital Projects Working Group Meeting #8 – 7/20/2021 Meeting Minutes

Deborah J. McNeil (Independent Project Analysis, Inc.)
Alan Johnston (MIMOSA)
Dr. Matt Selway (University of South Australia)
Dr. Karamjit Kaur (University of South Australia)
Von Gusa (GUSA Consulting Services)
Luke Wallace (Independent Project Analysis, Inc.)

OIIE Capital Project Working Group: 07-20-2021 Meeting Agenda

- Share the OIIE Capital Project Working Group Purpose

- Brief Overview of where we've been - Review Meeting #1 - #7 Results

- Sub-team updates:
  - Cost Estimating
  - RFI/ RFI Response
  - Asset Installation

- Key Issue Discussion:
  - Defining Success
  - Clear Project Objectives

- Define OIIE Capital Project WG Next Steps

OIIE Capital Project Working Group Leaders

IPA

Deborah J. McNeil

Director, IPA Capital Solutions
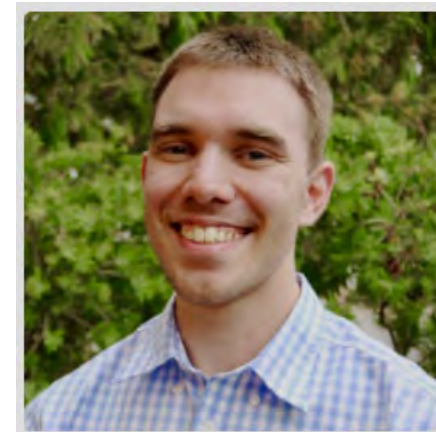And Digitalization
dmcneil@ipaglobal.com

Luke Wallace

Senior Consultant
lwallace@ipaglobal.com

MIMOSA

Alan Johnston

President, MIMOSA
ajohn@mimosa.org

Dr. Matt Selway

Research Fellow,
University of South Australia
Matt.Selway@unisa.edu.au

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

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 interoperability solution delivery to enable pragmatic industry digital transformation on a timely basis.

Activities To Date

Began Monthly Meetings

Kick-off 11-4-20	Meeting #2 12-17-20	Meeting #3 2-22-21	Sub-Team Meetings 3/9/21	Meeting #4 3-16-21	Meeting #5 4-20-21

Participation	#
Invited	380
Registered	218
Attended	103

Participation	#
Invited	380
Registered	79
Attended	34

Participation	#
Invited	380
Registered	188
Attended	111

Participation	#
Invited	290
Registered	111
Attended	40

Participation	#
Invited	290
Registered	152
Attended	39

Participation	#
Invited	290
Registered	100
Attended	38

- Charter Review
- Challenge Description
- Methodology Overview
- Initial Opportunity Identification

- Detailed Methodology Presentation
- Detailed Brainstorming Breakouts
- *180 Opportunities ID'd*

- Detailed Methodology Presentation
- *Began work on Top 3 Opportunities* (Breakouts)

- *Continued work on Top 3 Opportunities in Sub-teams*

- *Dug Deeper on Business Use Case Deliverables*

- Shared sub team progress
- Discussed scope of OIIE OGI Pilot Phase 3.3

Meeting Slides For all Previous Meetings Can Now be Found on:
https://www.ipaglobal.com/event/digitalization-ipa-mimosa-oiie-capital-project-working-group-meetings/

Activities To Date

Meeting #6 5-18-21		Meeting #7 6-15-21		Meeting #8 7-20-21							
Participation	**#**	**Participation**	**#**	**Participation**	**#**	**Participation**	**#**	**Participation**	**#**	**Participation**	**#**
Invited	290	Invited	290	Invited		Invited		Invited		Invited	
Registered	100	Registered	110	Registered		Registered		Registered		Registered	
Attended	33	Attended	22	Attended		Attended		Attended		Attended	

- Sub-team Update
- Deliverables Discussion
- Next Steps

- Sub-team Update
- *MIMOSA Pilots 3.3 and 3.4 Update*
- Next Steps

- Sub-team Update
- *MIMOSA Pilots 3.3 and 3.4 Update*
- Key Issue Discussion
- Next Steps

Meeting Slides For all Previous Meetings Can Now be Found on:
https://www.ipaglobal.com/event/digitalization-ipa-mimosa-oiie-capital-project-working-group-meetings/

2021 MEETING SCHEDULE

- November 4, 2020 – View Meeting Minutes
- December 17, 2020 – View Meeting Minutes
- February 16, 2021 – View Meeting Minutes
- March 16, 2021 – View Meeting Minutes
- April 20, 2021 – View Meeting Minutes
- May 18, 2021 – View Meeting Minutes
- June 15, 2021 – View Meeting Minutes
- July 20, 2021
- August 17, 2021
- September 21, 2021
- October 19, 2021
- November 17, 2021
- December 21, 2021

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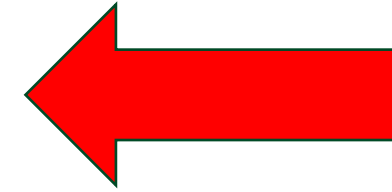
Sub- Team Report Outs

Subteams 1&2 – Cost Estimating – (Von Gusa/ Luke Wallace)

The intent of this teams focused effort is to create a "strawman" of the industry good practice regarding the cost estimating process at a level of detail (granularity) to allow for identification of data and data management that can be improved (both internally to the company or industry and externally).

At the same time these industry good practices need to be at the right level to allow for adoption across the industry and represent what your company's, industry, group or other entity you are presently doing regarding practices and processes. Therefore, this group will be leveraging the individual team members and publicly available representations and existing industry good practices and processes to develop the strawman.

Will use AACE work process as the framework – Tiger team Framework development

Status: Tiger Team to develop framework kicked off on June 25

User cases- parametric estimating, PDRI, all to all mapping

Large group will restart in September

Sub-Team Updates as of 7/20/21

Subteam 3 – RFI/RFI Response- Capital Supply Chain   (Karamjit Kaur)

Meeting every other Tuesday

Slide showing current Business
 Use Cases Following this one.

OIIE Purchasing Use Case Scope

In Scope

✓ Process of Purchasing up to the point where Purchase Order (Digital version) is submitted and ACK is received containing estimated shipment date etc.

✓ Identify contents to be sent as part of the RFI and RFI responses
  ✓ Any documents (both machine interpretable and otherwise) to be sent as part of these RFI and RFI responses

✓ Include the data exchanged as part of RFI process as part of Purchase Order

**Out of Scope
(separate OIIE Use Cases)**

× Make/model matchup process
× Logistics aspect of Purchasing
× Receiving process
× Inspection processing
× Cost estimation(Pricing) aspect of Purchasing
  × RFP/RFP response
× Payment processing
× Change(s) in Purchase Order
× Evaluation and Selection of quote
  × After receiving RFQ Responses
× Supplier Management
  × Managing list of preferred suppliers etc.

OIIE Use Case for Purchasing of Equipment

Karamjit Kaur
Industrial AI Research Centre
University of South Australia
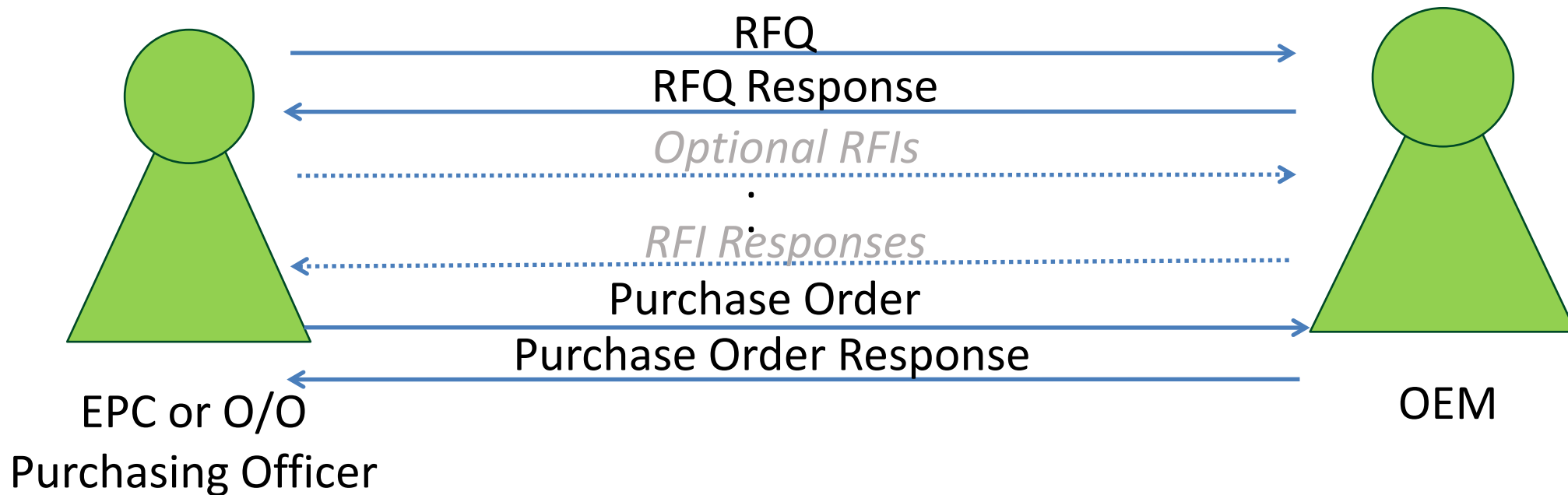
OIIE Purchasing Use Case Scenarios, where are we?
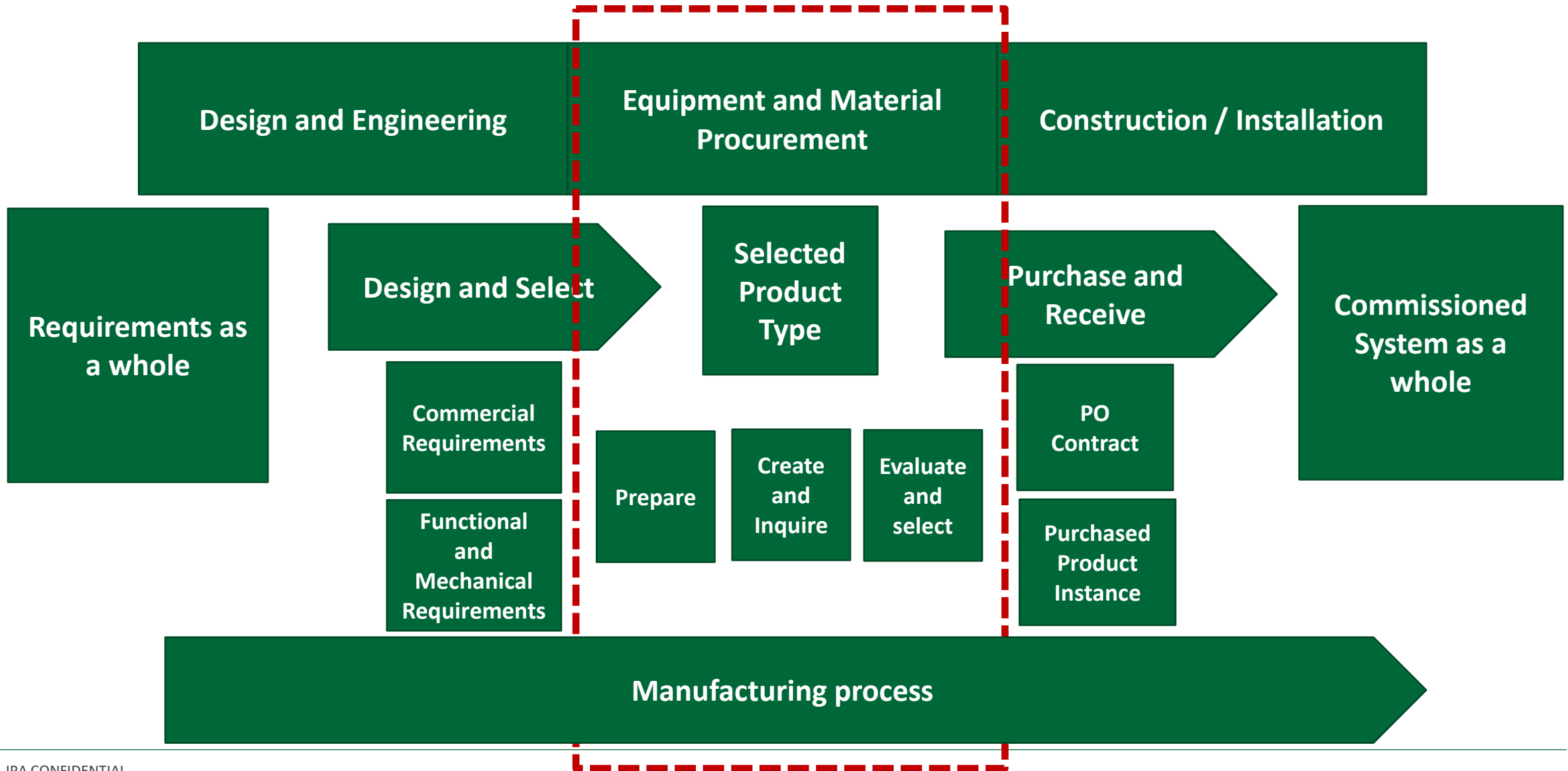
OIIE Purchasing Use Case Scenarios Matrix

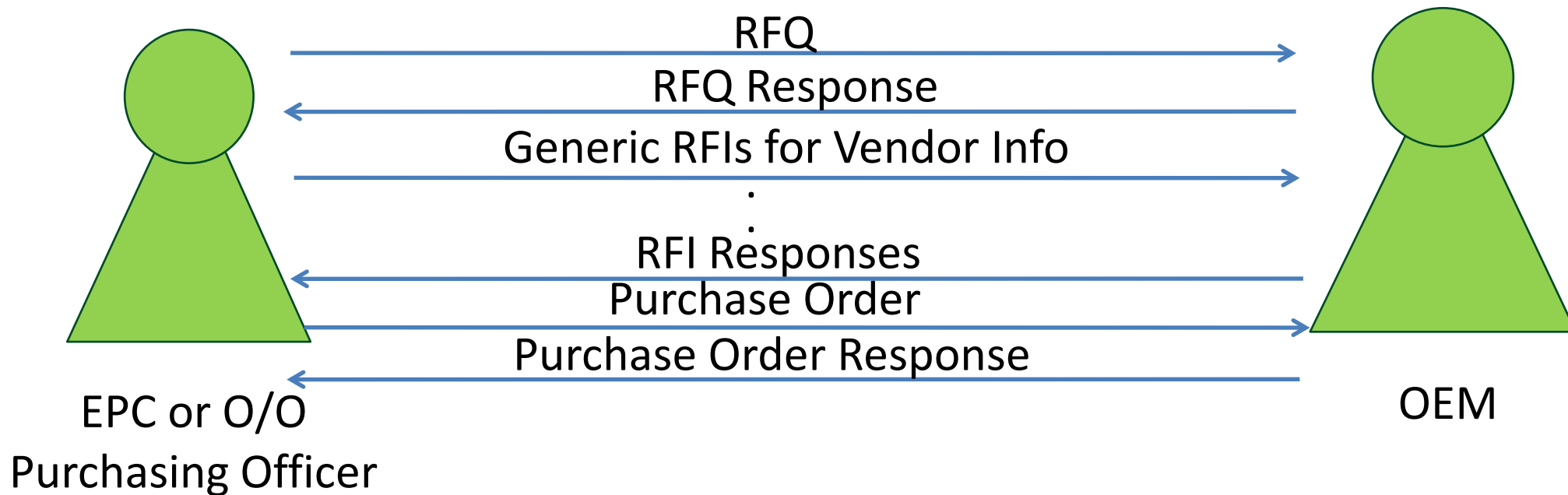|	**OEM already a preferred/qualified Supplier**	**OEM NOT already a preferred/qualified Supplier**
Purchasing Off the Shelf or from a Catalogue	Scenario 1 Option 1	Scenario 1 Option 2
Purchasing Custom Designed Equipment	Scenario 2 Option 1	Scenario 2 Option 2

OIIE Purchasing Use Case Scenarios (s1 o1)

- Scenario 1 – Purchasing Off the Shelf or from a Catalogue
    - Option 1 – *OEM already a preferred/qualified Supplier*

RFQ

RFQ Response

Optional RFIs

.
.

RFI Responses

Purchase Order

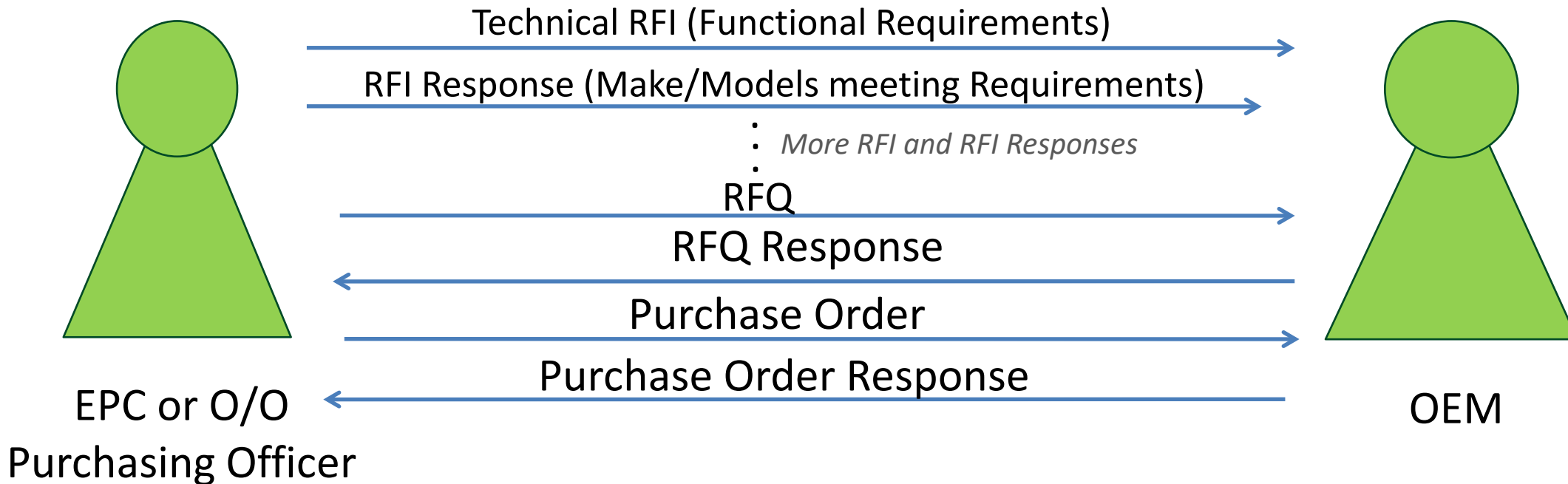Purchase Order Response

EPC or O/O
Purchasing Officer

OEM

OIIE Purchasing Use Case Scenarios (s1 o2)

- Scenario 1 – Purchasing Off the Shelf or from a Catalogue
  - Option 2 – *OEM **NOT** already a preferred/qualified Supplier*

EPC or O/O
Purchasing Officer

RFQ

RFQ Response

Generic RFIs for Vendor Info

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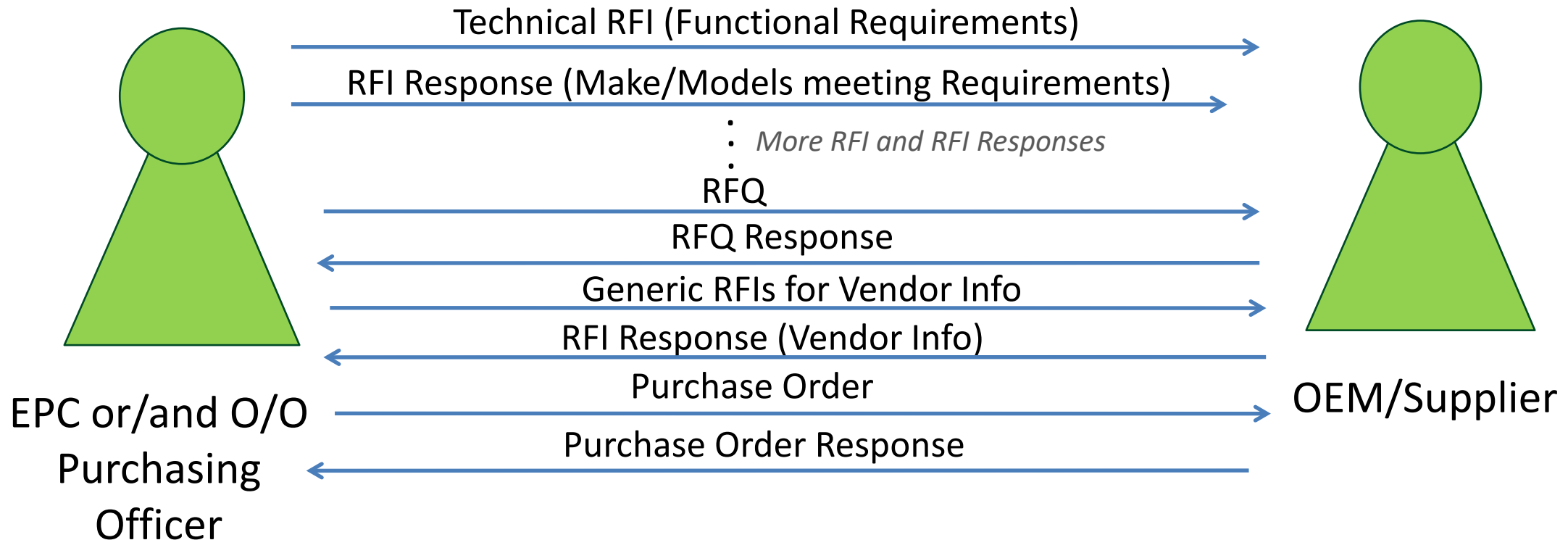
RFI Responses

Purchase Order

Purchase Order Response

OEM

OIIE Purchasing Use Case Scenarios (s2 o1)

- Scenario 2 – Purchasing Custom Designed Equipment
  - Option 1 – *OEM already a preferred/qualified Supplier*

Technical RFI (Functional Requirements)

RFI Response (Make/Models meeting Requirements)

More RFI and RFI Responses

RFQ

RFQ Response

Purchase Order

Purchase Order Response

EPC or O/O
Purchasing Officer

OEM

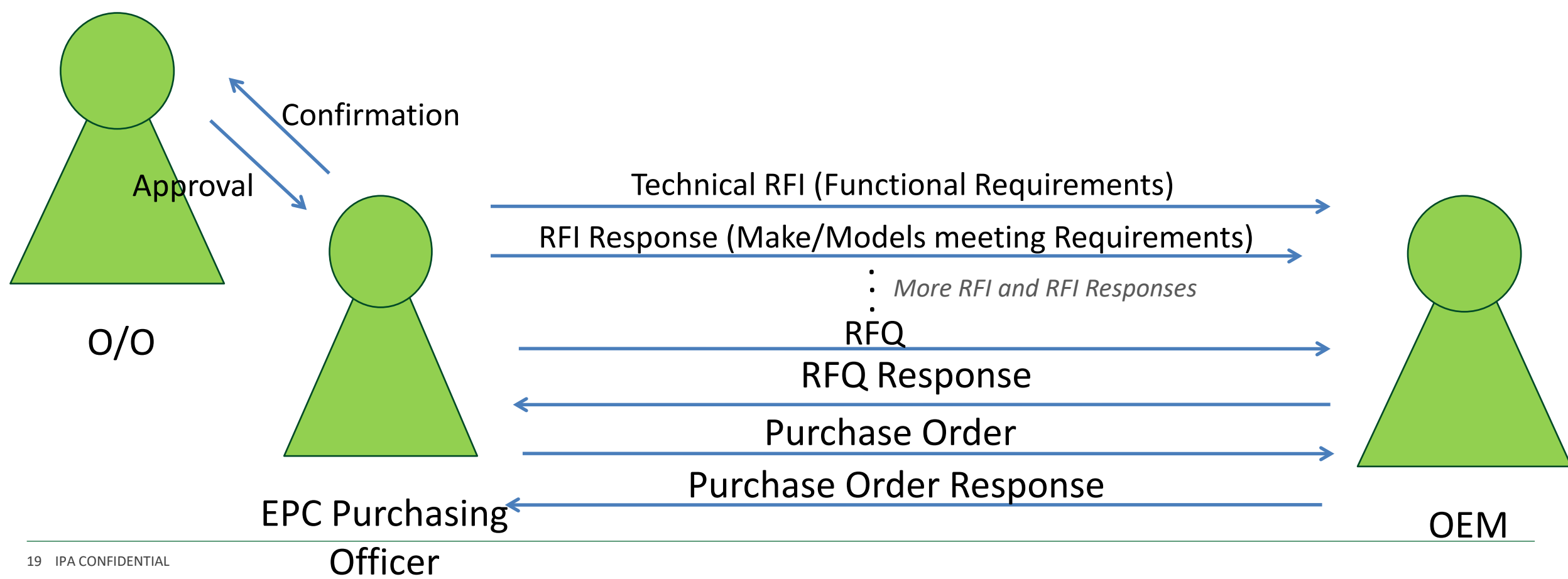# OIIE Purchasing Use Case Scenarios (s2 o2)

- Scenario 2 – Purchasing Custom Designed Equipment
  - Option 2 – *OEM **NOT** already a preferred/qualified Supplier*

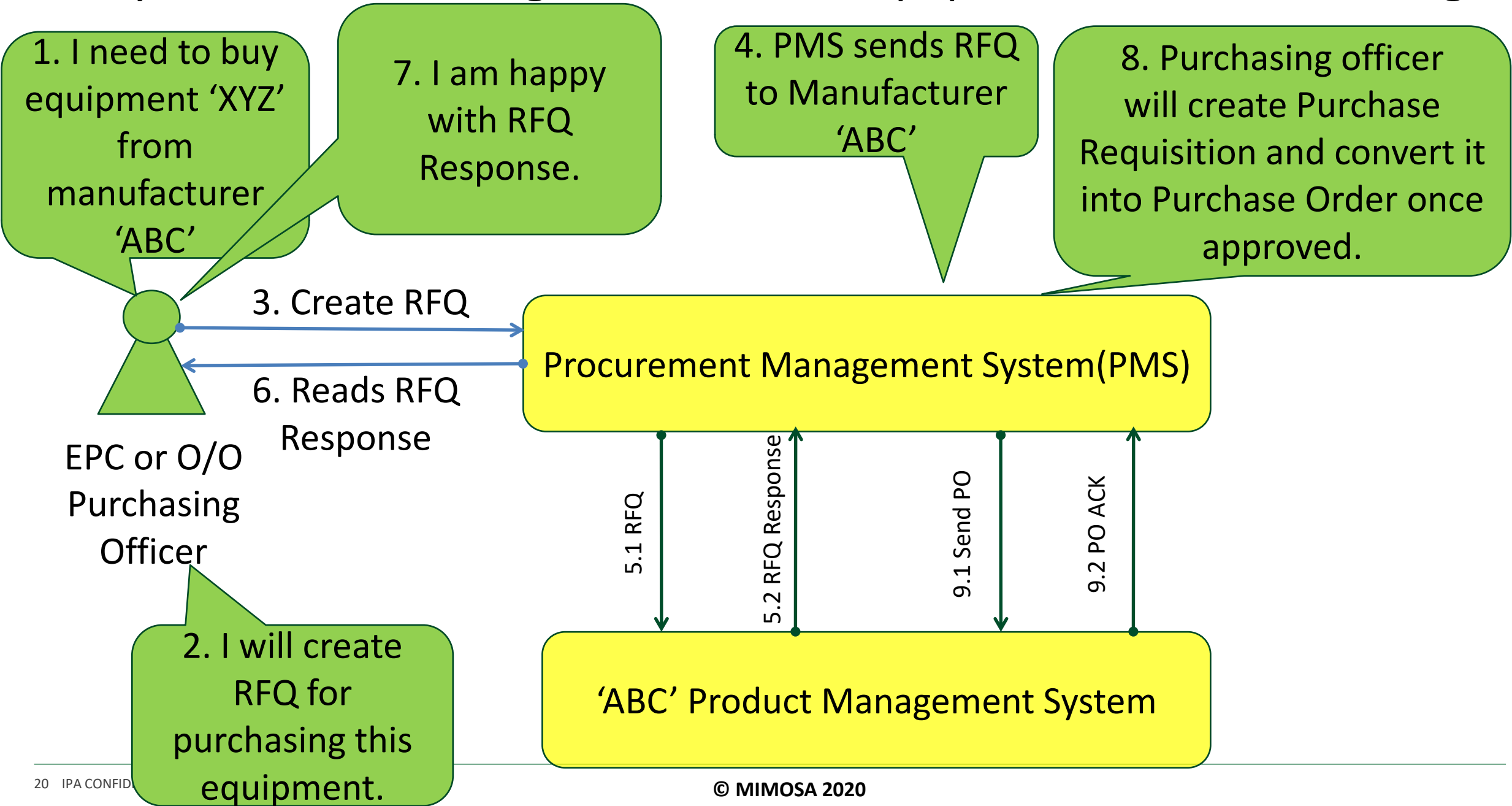
Technical RFI (Functional Requirements)

RFI Response (Make/Models meeting Requirements)

⋮ *More RFI and RFI Responses*

RFQ

RFQ Response

Generic RFIs for Vendor Info

RFI Response (Vendor Info)

Purchase Order

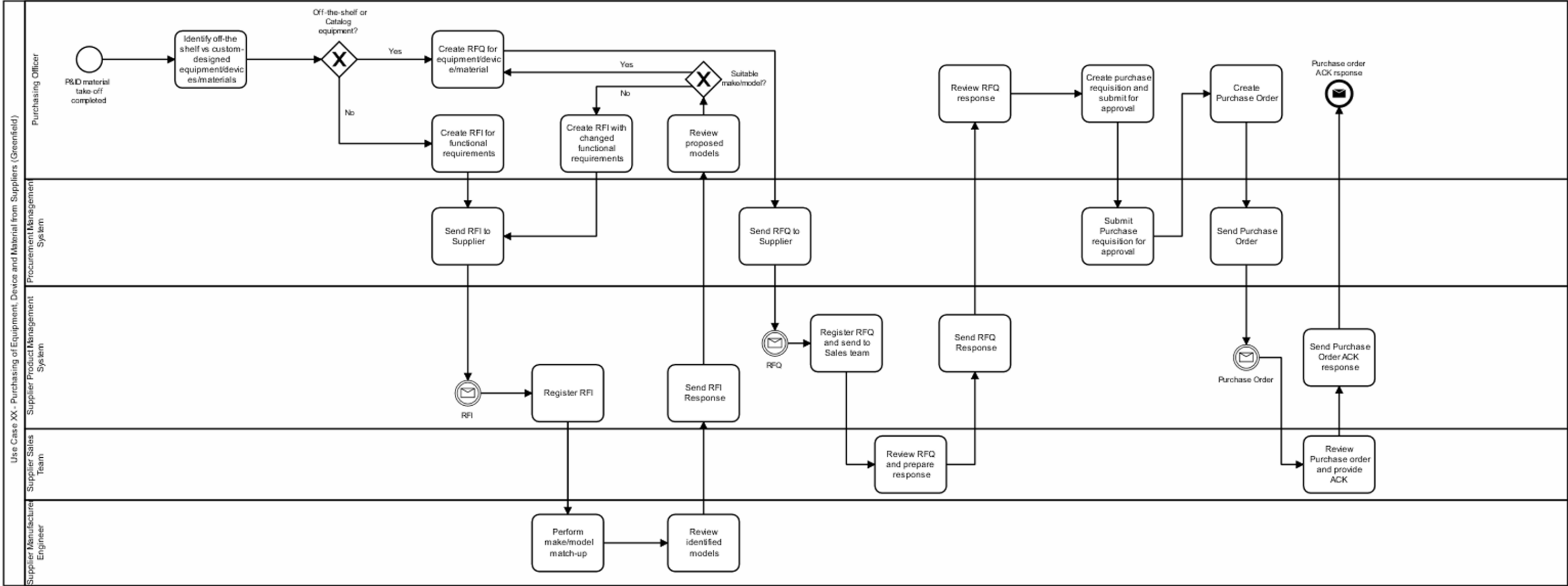Purchase Order Response

EPC or/and O/O Purchasing Officer

OEM/Supplier

OIIE Purchasing Use Case Scenarios (s2 o1 variant a)

- Scenario 2a – Purchasing Custom Designed Equipment (critical items)
  - Option 1a – *OEM already a preferred/qualified Supplier*

O/O

Confirmation

Approval

Technical RFI (Functional Requirements)

RFI Response (Make/Models meeting Requirements)

⋮ *More RFI and RFI Responses*

RFQ

RFQ Response

Purchase Order

Purchase Order Response

EPC Purchasing Officer

OEM

Story M130: Purchasing Off-The-Shelf Equipment or from a Catalog

1. I need to buy equipment 'XYZ' from manufacturer 'ABC'

7. I am happy with RFQ Response.

4. PMS sends RFQ to Manufacturer 'ABC'

8. Purchasing officer will create Purchase Requisition and convert it into Purchase Order once approved.

3. Create RFQ

6. Reads RFQ Response

EPC or O/O Purchasing Officer

2. I will create RFQ for purchasing this equipment.

Procurement Management System(PMS)

5.1 RFQ
5.2 RFQ Response
9.1 Send PO
9.2 PO ACK

'ABC' Product Management System

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Sub-Team Updates as of 7/20/21

Subteam 4- Asset Installation – Capital (Matt Selway)

- ✓ Have end to end workflow defined –

- ✓ Identified user stories across the flow

- ❑ Working through defining priorities –

- ❑ discussion underway on where to focus first

Tuesday – 8 am EST every other Tuesday

Back-End Sub Team Progress: Capital Asset Installation Use Case Update

Incorporating:
- IWP issuance as trigger;
- breakdown into daily work orders;
- scenarios for safety checks; and
- IWP evaluation and status updates

Investigating MIMOSA CCOM Work Requests and for representing IWPs in digital, system-system exchanges:
- conceptual mapping seems to match
- using existing models supports fast initial implementation of Use Case
- ongoing use may help move away from spreadsheets in CAPEX
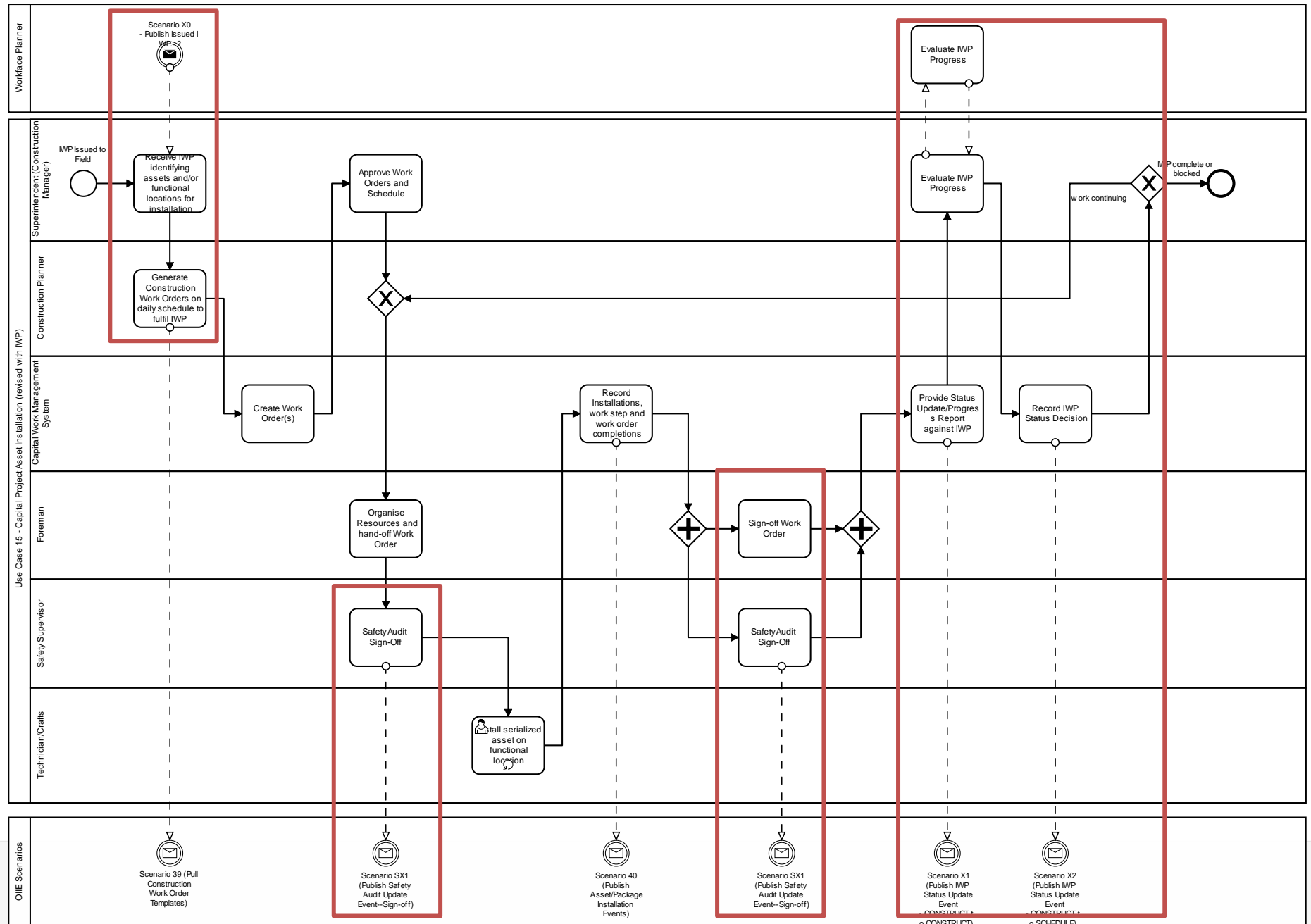
Back-End Sub Team Progress: Next Steps

- Revise the generalised process further to capture additional important system-system interactions (a.k.a. OIIE Scenarios)
- Detail out the newly identified OIIE Scenarios with data requirements, interaction expectations, etc.:
  - Safety Audit Updates—Sign-off
  - IWP Status Updates (construction-to-construction systems)
  - IWP Status Updates (construction-to-scheduling/planning systems)

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Open Industrial Interoperability Ecosystem (OIIE)™ OGI Pilot Phase 3.3 Overview

For OIIE Capital Projects Working Group

June 15, 2021

OIIE OGI Pilot Phase 3.3 - Starts Adding AWP (IWP) and CFIHOS

The plan is to update 2 existing OIIE Use Cases and inserts a new OIIE Use Case focused on Purchasing, then follow the existing OIIE Use Cases shown here.
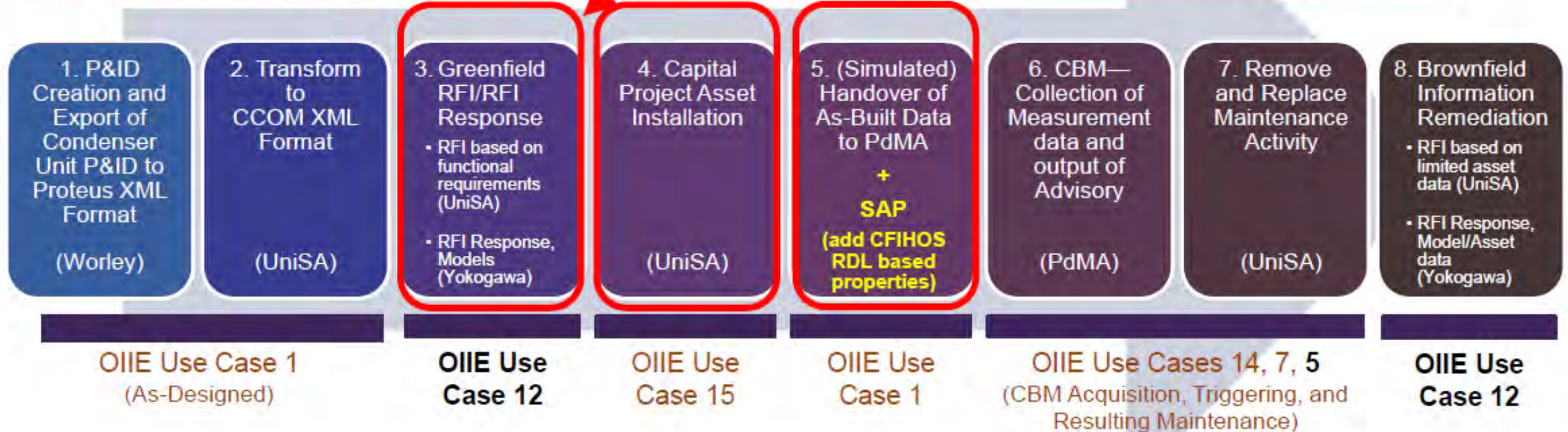**Relevant CFIHOS RDL is being added along with AWP requirements for IWPs.**

Insert New OIIE Use Case
1. Purchasing
IEEE Std 841/IOGP - JIP33 S-733D
Low Voltage Electric Motor and ISA Spec Instrument

1. P&ID Creation and Export of Condenser Unit P&ID to Proteus XML Format (Worley)	2. Transform to CCOM XML Format (UniSA)	3. Greenfield RFI/RFI Response • RFI based on functional requirements (UniSA) • RFI Response, Models (Yokogawa)	4. Capital Project Asset Installation (UniSA)	5. (Simulated) Handover of As-Built Data to PdMA + SAP (add CFIHOS RDL based properties)	6. CBM— Collection of Measurement data and output of Advisory (PdMA)	7. Remove and Replace Maintenance Activity (UniSA)	8. Brownfield Information Remediation • RFI based on limited asset data (UniSA) • RFI Response, Model/Asset data (Yokogawa)
OIIE Use Case 1 (As-Designed)		**OIIE Use Case 12**	OIIE Use Case 15	OIIE Use Case 1	OIIE Use Cases 14, 7, 5 (CBM Acquisition, Triggering, and Resulting Maintenance)		**OIIE Use Case 12**

CFIHOS
Capital Facilities Information HandOver Specification

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Planned Sprints

Sprint 0 Task	Status
2. CFIHOS RDL 1.4.1 Analysis done by MIMOSA	Awaiting CFIHOS review

Sprint #	Backlog Tasks			Task Short Description
Sprint 1 (June 2021)	1	4	3	1. Purpose of CFIHOS RDL for pilot
		9		3. Review CFIHOS RDL based ISDD for Diff. Press Trans.
				4. Generate CFIHOS RDL based ISDD for Motor
		10		9. Extend OIIE Handover Use Case for CFIHOS ISDDs
				10. Demo extended OIIE Use Case 1
Sprint 2 (July 2021)	7	6.1	8	6.1 ISBM 2.1 Specification update (AMQP)
				7. New OIIE Use Case for Purchasing
				8. Extend OIIE Use Case 15 with IWP
Sprint 3 (Aug 2021)	5		6.2	5. Generate JIP 33 based ISDD for LV Electric Motor
				6.2 Service Directory 2.1 Specification update (Capabilities and Cluster)

NOTE: Backlog tasks 11, 12, 13 will be covered in future sprints.

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Sub-Team Updates as of 7/20/21

New – Subteam 5 -- Prioritization and Value Case Definition – enablers – Deb McNeil
Goal- to stay focused on right priorities- identify economy of scale areas

Initial Meeting being scheduled in early August

See following discussion on objectives and value case

Access to MIMOSA TEAMS work area –

Anyone needing an invitation contact Matt Selway:
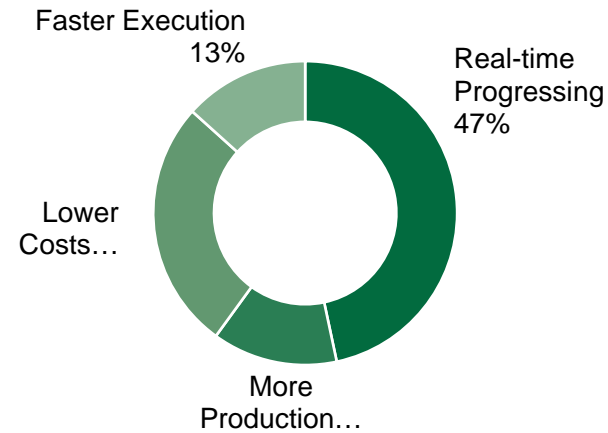
Matt.Selway@my.unisa.edu.au
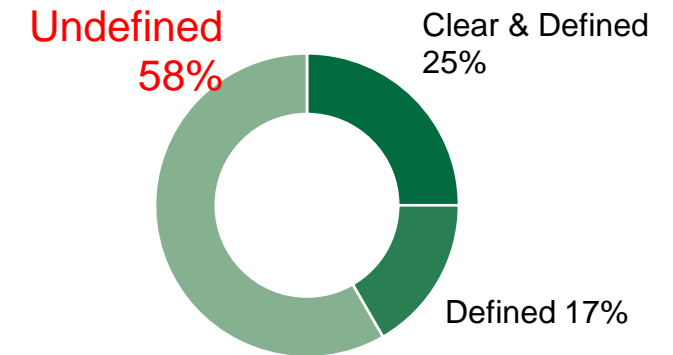
Key Issues

Capital Projects Industry – Digitalization Status

Digitalization Project Underway?

No
35%

Yes
65%
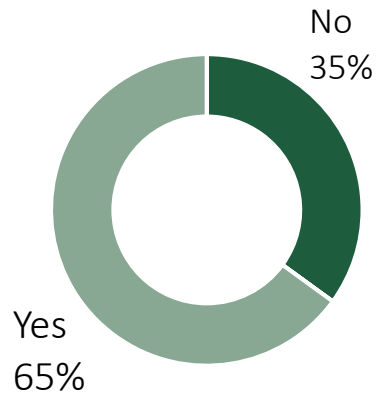
What Problem Are We Trying to Solve?

Faster Execution
13%

Real-time
Progressing
47%

Lower
Costs…

More
Production…

Are Digitalization Objectives Clear?

Undefined
58%

Clear & Defined
25%

Defined 17%

Clear: Objective has direct link toward business goals

Defined: Outlined objective, but indirect links to business objectives

Undefined: No specific objectives yet identified

We're struggling to get our Digitalization efforts focused and progressing.

We are fragmented on our digitalization focus...

July 2020 survey - 185 Digitalization projects are dispersed across the entire project life cycle

7% Portfolio Management

7% Engineering/ Design Tools Suite

Owner ←→ EPC

Procurement

Vendor Data

6% Construction Management

5% Purchasing; 4% Materials Management

5% Commissioning/ Startup (Hand-Over)

5% Operations

Maintenance

ERP Systems (Finance, HR, etc.)
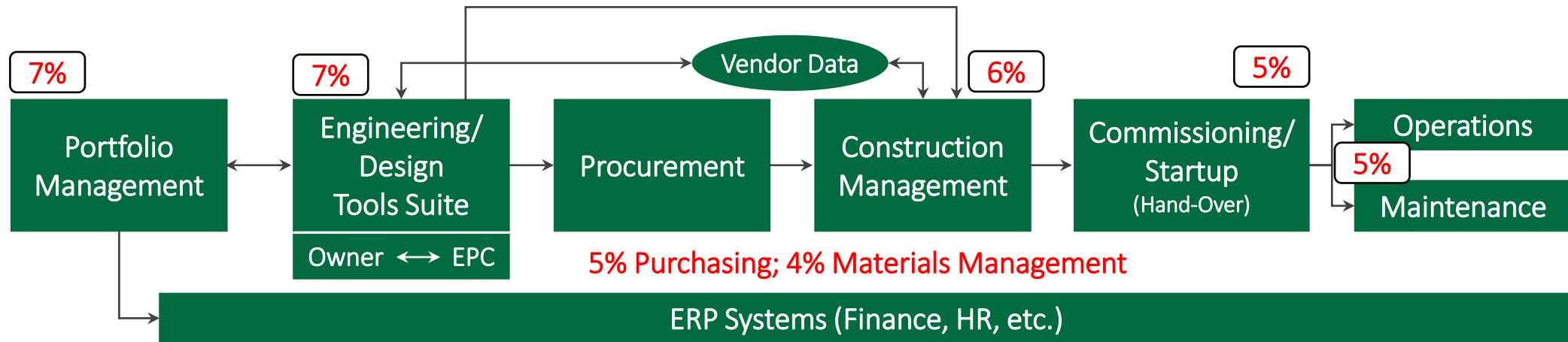
Key Support Systems

8% Document Management   **8%** Project Controls   **7%** Performance Metric Systems   **4%** ERP Systems

7% Project Management   **9%** Data Management   **7%** Data Exchange/ Interfaces   **5%** Digital Twins

Where / What impact ?

Where in the project lifecycle are you trying to make an impact? Drive value?	What value are you trying to achieve?

Next Steps

IPA – MIMOSA OIIE CPWG

Levels of Participation

General Interest

You'll be invited to join the TEAMS site.

Register for Large Group Meeting Minutes
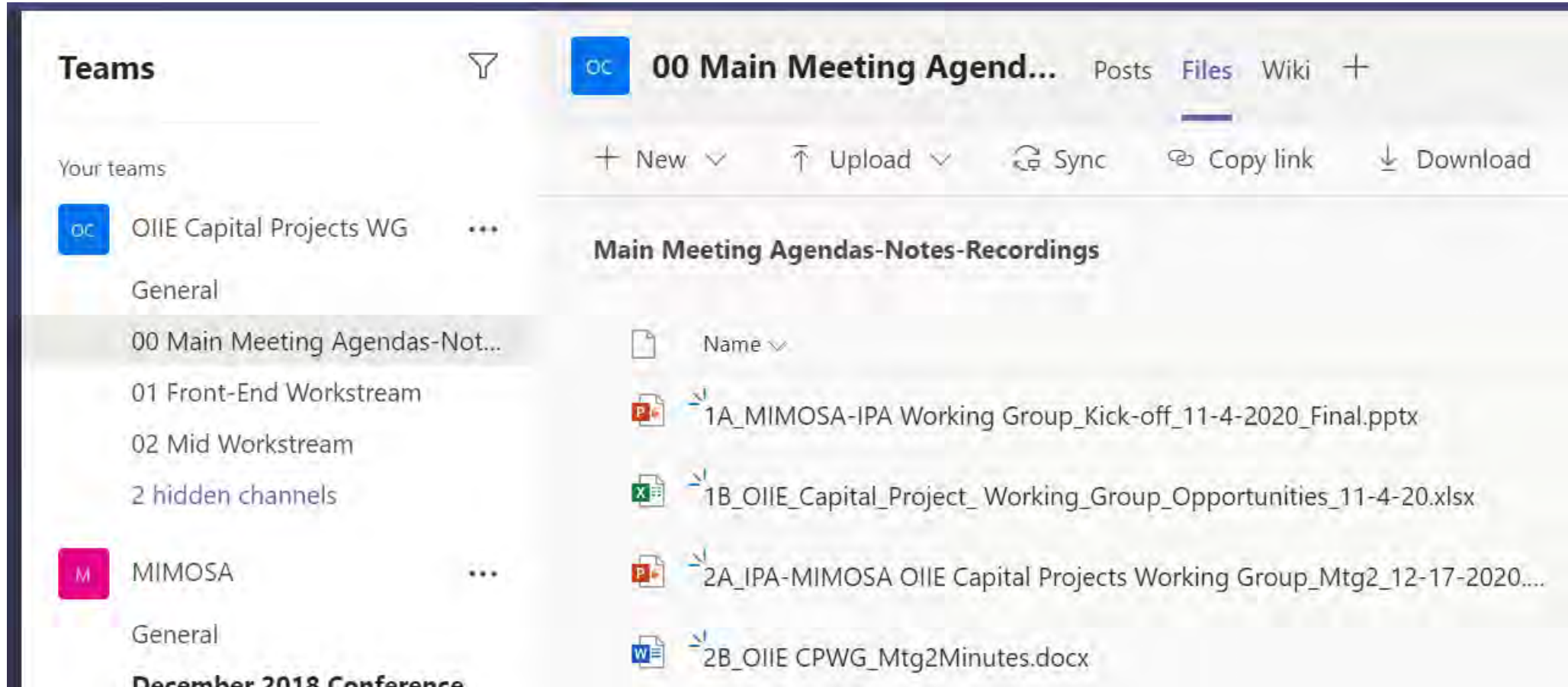
Attend the Large Group Meeting

Attend the Breakout Team Working Groups

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

Join us on TEAMS and let's get to work…
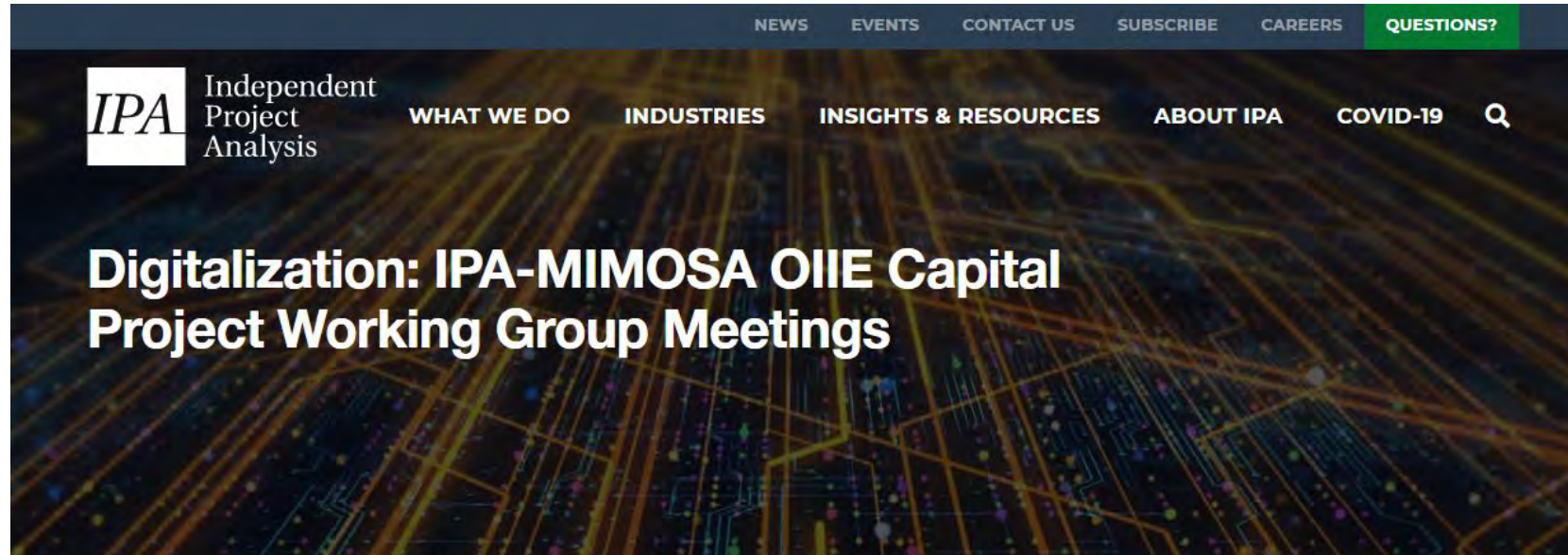
Sub-Teams-

Cost Estimating – Will restart meetings in September
RFI and Asset Installation Teams – meeting every other Tuesday
8 to 9 am EDST – Next Meetings are 8/10/21

Break Out Group	Facilitator	Meeting Link
Middle - RFI/ RFI Response (Greenfield project)	Karamjit Kaur	Click here to join the meeting
Back end - Capital Project Asset Installation	Matt Selway	Click here to join the meeting

Next Main (Large)Group May Meeting – August 17, 2021 7 – 8 am EDST

New Member Registration

https://www.ipaglobal.com/event/digitalization-ipa-mimosa-oiie-capital-project-working-group-meetings/

Next Steps:

1. Identify Members willing to share your digitalization journey

2. Register on IPA Website:

https://www.ipaglobal.com/event/digitalization-ipa-mimosa-oiie-capital-project-working-group-meetings

   a) If not already a member, you will be invited to the MIMOSA TEAMS workspace to continue development of the Use Cases

   b) Please participate in the sub-team meetings to generate the industry input to the Pilot Project and the Industry Standards work
   (each sub-team will set it's own meetings)

   c) Contact Alan Johnston (atjohn@comcast.net) to get more info on MIMOSA membership and access to the solutions already in place for your company to use

   d) The Main Team will meet once a month on the 3rd Tuesday from 7 to 8 am EDST to report on progress, share industry knowledge, set priorities and continue the knowledge sharing and dialog.

   If you need new meeting invitation – please email dmcneil@ipaglobal.com or Register on the IPA Website

THANK YOU

Industrial Revolution Phases and Common Principals
Gaining Business Efficiency from Modularity, Interoperability and Standardization

Industry 4.0 — 2015

Industry 3.0 — 1969

Industry 2.0 — 1870

Industry 1.0 — 1784
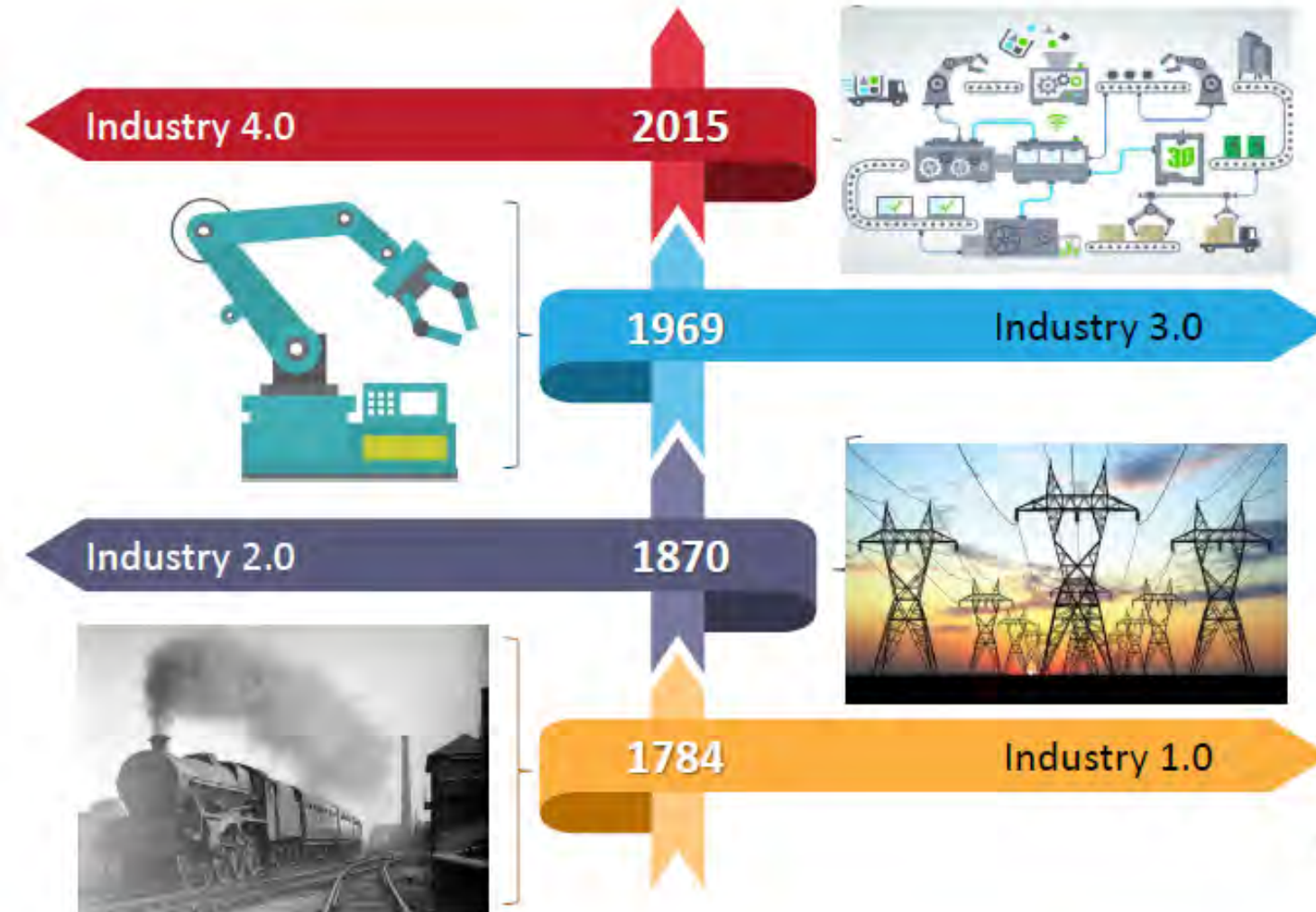
- **In Industry 4.0**
  - Supply chains need to be fully integrated across many industries
  - Sharing industrial internet and AI
  - Modular, standardized & interoperating industrial digital ecosystems

- **All industrial revolution phases** have included various aspects of modularity, interoperability & standardization enabling businesses to specialize, scale and cooperate for **major business efficiency gains**
  - Standard gauge railroads, screw thread
  - Electrical/Utility standards
  - Mechanical standards

- **Intermodal Transport** provides a useful physical analogy for what we are now doing in the digital world

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Interoperability Definition: ISO TS 18101-1
Paragraph 3.1 - Terms and Definitions

interoperability

capability of two or more entities to exchange items in accordance with a set of rules and mechanisms implemented by an interface in each entity, in order to perform their specified tasks

Note 1 to entry: Examples of entities include devices, equipment, machines, people, processes, applications, computer firmware and application software units, data exchange systems (3.2) and enterprises.

Note 2 to entry: Examples of items include services (3.7), information, material in standards, design documents and drawings, improvement projects, energy reduction programs, control activities, asset (3.5) description and ideas.

Note 3 to entry: In this context, entities provide items to, and accept items from, other entities, and they use the items exchanged in this way to enable them to operate effectively together.

[SOURCE: ISO 18435-1:2009, 3.12, modified — The word "respective" has been replaced with "specified", Notes 1 and 2 to entry have been modified and Note 3 to entry has been added.]