



Open Standards for Interoperability and Digital Transformation  
in Asset Lifecycle Management

# MIMOSA and OpenO&M 2023 R&D Summary Draft

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# Primary R&D Activities

- a. Future Energy Exports CRC
  - i. As of 2021 we have been able to leverage this CRC extensively to provide matching R&D funds
  - ii. We are approved for up to 150K\$ per year, but in the last 2 years we could only provide 50K\$/yr
  - iii. We need to maintain at least 100K\$ per year to properly fund our core work with UniSA which gains matching funds from Australia and UniSA
- b. OIIE OGI Pilot
  - i. We need to fund the pilot for the ongoing R&D proving grounds
  - ii. Part (about half) of this can be driven through the CRC
  - iii. Functional Areas to be Piloted and Resources to develop/Maintain
    - 1. Managed Clusters– Critical for most sectors in both CAPEX and OPEX, particularly energy
    - 2. Virtual Pilot Unit Specification – Start with existing Condenser System Specification, build back to complete fractionating tower
    - 3. Identify which prioritized objectives from September Shell Workshop can be included/demonstrated in this pilot phase
- c. Texas A&M effort to document basis for Interoperability in Asset lifecycle Management
  - i. Initial focus is to be mainly on data model
  - ii. What exists now?
  - iii. Assessment of path forward at high level
  - iv. Introductory course material/tutorial for general management
  - v. Multiple Operators
  - vi. Cooperation with University of South Australia
  - vii. Conversations initiated at ARC Forum

# Incremental Updates of Key Specifications

- a. MIMOSA CCOM
  - i. Will publish final version of 4.1 after Wrap-up of FEnEx Interoperable Analytics Project Work Year (end of Q1) and approval from MIMOSA TC and Board. This release has improvements resulting from the OIIE OGI Pilot Phase 3.1 including
    1. deprecation of the term 'Attribute' in preference for 'Property'
    2. Requests extended with RequestForInformation subtype and hierarchies of requests
    3. addition of Model Variants, alongside Model Revisions, to improve device model property sheets
    4. Current Status is Release Candidate 1
  - ii. JSON WIP version?
  - iii. WIP Development of 4.2 now underway with new/refined capabilities driven by OIIE OGI Pilot Phase 3.2 and 3.3 along with FEnEx CRC Interoperable Analytics Project and new FEnEx CRC project for Managed Clusters.
- b. OpenO&M ISBM – Collaborative Work on version 2.1 is underway with an expected deliverable of the Beta version by the end of Q1 and a RC 1 during the summer
- c. FEnEx CRC Interoperable Analytics Project Deliverables?
  1. OIIE Use Cases (Risk based analytics)?
  2. OpenO&M Service Directory Update
  3. Reference Data
- d. More OIIE Use Cases, Scenarios, and Events
  - i. Managed Clusters Project
  - ii. Transportation Sector Project (Automated Provisioning for O&M Systems,,,) )
- e. OpenO&M CIR – Should be updated to align with ISO 22745 and 8000 Standards-funding required
- f. Tutorials for specifications including CCOM-See Texas A&M above for possible cooperation

# Additional Specifications Under Development

- a. MIMOSA SDAIR – Current MIMOSA Draft Specification will be updated to Beta 1.0 with improvements gained from the Phase 3.2 and 3.3 Pilots. Release Candidate 1 will follow by end of year including improvements from Current FEnEx CRC projects and OIIE OGI Pilot Phase 3.4 (funding required)
- b. OpenO&M Services Directory-The current MIMOSA Draft Specification is being updated to be an OpenO&M joint specification. The new specification will have
- c. OIIE persistence specifications (CCOM, B2MML...)-EPC/Operators Exchange, CBM/Analysis,?
- d. Adapter Shell
  - i. 2022 – Basic Shell Spec for ISBM 2 using Java/Jakarta, Python
  - ii. 2023 – Will release .Net SDK, Extensible by Adding OIIE Scenarios and Events
    - 1. 2.1 Specification
    - 2. Open Source (License to be used?)

# ISO and ISO/IEC Updates

- a. NWIP for ISO TS 18101 Part 2 – Vocabulary
- b. NWIP for ISO TS 18101 Part 3 – OIIE Use Cases that have been successfully piloted in OIIE OGI Pilot
- c. We have succeeded in having Australia re-join as a voting member which will help in future ballots
- d. The AWI 18136 NDEF (Nuclear Digital Ecosystem Framework) has now agreed to align/cooperate with WG 6
  - a. This is critical for integrated energy and then has our coverage for fossil, hydrogen, and nuclear...
  - b. Globally, we are now likely to spend as much on nuclear as all other energy sources combined due to both the very recent fusion breakthroughs and the Small Modular Reactors that are now under construction in many nations.

# Asset Lifecycle Systems Interoperability hits the roads in Queensland

08/11/2022 The Asset Institute has begun work with the Queensland Department of Transport and Main Roads (TMR) to provide standards-based systems interoperability for a subset of QLD TMR asset lifecycle related applications and systems.

QLD TMR included the Open Industrial Interoperability Ecosystem (OIIE) and ISO 18101 in an open-market Expression of Interest (EOI) for the provision of an “Asset Data Interoperability Platform” to which an Asset Institute team responded. The EOI was followed by a competitive Invitation to Offer (ITO) and following a comprehensive evaluation process, the Contract was awarded to the Asset Institute Team, with the Discovery Phase now underway.

This project uses the (OIIE) specifications to enable Systems of Systems to be formed from interoperating Systems and Systems Elements as an emerging alternative to traditional systems integration or proprietary interoperability solutions. The OIIE is developed and managed by MIMOSA in cooperation with several other industry Standards Developing Organizations who are part of the OpenO&M Initiative. ISO 18101 is under development by ISO/TC 184/WG 06 “Asset intensive industry interoperability” and is also based on the OIIE.

The project will use standardized OIIE Agile methods, and produce additional OIIE Use Case, Scenario, Event, Primary Component and Adapter documentation. This will support continuous OIIE improvement, sustainment, and reuse within QTMR, as well as other parts of interdependent QLD, AU, and global critical infrastructure.

The Asset Institute’ team comprises Assetricity led by Alan Johnston; Synengco through services provided by Don Sands and Eddie Cabrero; Pitt and Sherry through Gavin Chadbourn; and the Australian OIIE Interoperability Laboratory at University of South Australia, led by Professor Markus Stumptner, Dr Matt Selway and Dr Karamjit Kaur.

## **This project will enable:**

- Sharing of digital services between (in-scope) systems where appropriate systems are nominated as the systems of record for relevant asset entity and attribute data.
- Accessibility to data supporting asset lifecycle engineering and maintenance planning processes.
- Consolidation of maintenance and reliability analysis, delivery and works management information.

**Enquiries:** <https://www.assetinstitute.com/asset-lifecycle-systems-interoperability-hits-the-roads-in-queensland/>

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