Questions and answers
IMF Launch 24.3.2021

The following are questions posted by the audience, and answers given by the project team during the webinar.

Q 1. Which parts of ISO 15926 is the IMF utilizing / based on - all 14 parts?

Yes part 14 is what it is based on, but it is compatible with other parts. Reference Data standardized as part of ISO 15926 (i.e. Part 4) can also be utilized.

Q 2. How does a functional breakdown fit with requirements engineering principles? outlined in [ISO/IEC/IEEE] 29148?

One of the main goals of READI is to provide a method for capturing and structuring requirements so that machines can understand and reason over them. A method has been developed where a central element is that every requirements can be expressed according to the following schema: Scope (What the requirements is about) – Condition (When the requirement applies) – Demand (What happens when the condition applies). The "Scope" part can for example be an element in a functional break down structure.

This video gives some more insight to this: https://peertube.semweb.pro/videos/watch/playlist/476a0732-196d-4ef9-b60e-51b3e56f00d5?playlistPosition=11&resume=true .

The method is compliant with the INCOSE guidelines – based on among others ISO/IEC/IEEE 29148.

Q 3. To an end user, what happens under the lid might look complex. What will the interfaces for engineers/end users look like?

We understand and agree that under the lid it's complex. The interface for engineers will be an easy to use interface, in modern design. We show this to make an understanding of what is happening under the lid, to hopefully give a better understanding of all the possibilities READI gives.

Q 4. Which markets are currently aiming for READI? E.g. is it Power generation plant owners or Oil and gas or Industry?

READI was initiated for the oil and gas industry, but the framework, methods and tools are generic and applicable to other industries as well. For example, offshore floating wind, power generation etc.

Q 5. Which parts of a digital twin is today covered in READI?

The whole life cycle is supported.

Q 6. Can you comment on the connection to CFIHOS?

READI has a Memorandum of Understanding with CFIHOS. We have run a pilot together where the IMF was applied.

Q 7. Is there an OWL ontology behind the diagrams that are shown? is it published?

The RDS O&G has been represented as an OWL ontology. It has not yet been published in the public domain.

Q 8. Has a company done a meta model of ISO/IEC 81346 for a PLM solution like Teamcenter, Windchill?

Not that we are aware of.

Q 9. Are there any tools / converters to create the READI structure from e.g. CAD programs, P&ID programs, requirement management tools, etc.?

Work is ongoing for developing a tool for "building" RDS structures (for engineers) and convert this to ontologies (integrated asset models). The IMF has described mechanisms for linking the ontologies to data contained in different systems. Further tooling probably needs to be done by the software vendors.

Regarding requirement management, READI aims at establishing an industry service for management of digital requirements. The basis for this service will be a tool, READI TIRC; governance of the requirements (owner of the requirements) and management of requirements in the supply value chain, i.e. between operator, contractor, and suppliers.

Q 10. Will the "live" stream be available after this meeting?

Yes, it will be published on the READI-JIP website (https://readi-jip.org)

Q 11. In the model specification slide, what are the names of the hierarchies?

Yellow = Function

Blue= product (physical)

Magenta = location

Q 12. Is the IMF implemented in other READI deliverables, e.g. TIRC, Z-001. If so, at what maturity level?

The READI TIRC (READI Technical Information Catalogue) will be a service for management of digital technical requirements. It will be delivered as an MVP version in April, 100% compatible with IMF.

Requirements from the NORSOK Z-018 delivered by the Standards Initiative (STI) project will be part of the MVP. This makes it possible to apply automatic reasoning and validation on the requirements, something which will improve the quality (consistency and precision) significantly.

Requirements from NORSOK Z-001 are in the process of being updated and structured according to the IMF recommendations, but they are not yet ready to be included in the READI TIRC service.

In general, the complexity of requirements for design and operation of O&G assets makes it impossible for humans to do complete validation/consistency checks of the relations between various requirements. Digital requirements defined and structured according to the READI methodology allows computers to do automated validation of requirements to avoid inconsistency and quality breaches in the design, construction, and modification.

Q 13. How will the IMF document be published for use? As a RP?

The IMF report will be available on the READI JIP webpage soon. Initial dialogue with DNV has taken place, but no decisions have been made regarding converting IMF to a DNV Recommended Practice. It is an option that will be further investigated.

Q 14. Different disciplines, may use the same name with functional meanings?

The RDS O&G defines names for functions at two levels (O&G systems and O&G technical systems), the lowest level (component systems) is generic and part of ISO/IEC 81346 part 2. RDS O&G is for now available here https://readi-jip.org/reference-designation-system-for-oil-and-gas/

Q 15. Which projects are using the IMF now?

Krafla (Equinor) and NOA (AkerBP) which are two new field development projects. Both aim at high degree of automation of field operation processes.

Q 16. Are any pilots planned in addition to the one on steel structures?

One for subsea was planned, but the JIP did not have capacity to execute the pilot. It is on the agenda when we now plan for extension of the JIP into a new phase. It is important that we run pilots and learn from application of the IMF and the RDS O&G system and feed that experience back to the IMF and RDS framework for further improvements.

Q 17. I guess for those of us who are very new to this, if nothing else we can start with ISO/IEC 81346 as a standard for naming and describing Systems?

This is correct, and it should be noted that tools for supporting this is on its way.

Q 18. When a supplier delivers e.g. a motor or pump, and the supplier delivers the physical product and a digital representation, AAS, with sub-models like Technical Data, Documents, Identification etc. The data elements in the sub-models may have semantic references to dictionaries like eCl@ss. Will it be possible to seamlessly connect this AAS with the sub-models as aspects for the same product in the integrated asset model? Must the supplier deliver the AAS serialized as OWL?

The vision is that this should be supported, but the details of how this will work have to be developed, including the question about serialization.

Q 19. Who is asking the contractor to make/send an asset specification model?

Initially it will probably be the Operators who recognize the value of the Asset Specification Model as a means of transferring asset information from contractor, and therefore will be requesting it to be delivered. As contractors gain familiarity with the IMF, they will likely recognize the value it offers over conventional documentation and adopt it for their own purpose.