



**2021**  
Annual **INCOSE**  
international workshop  
Virtual Event  
January 29 - 31, 2021

# Knowledge Management & Ontologies

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[www.incose.org/IW2021](http://www.incose.org/IW2021)

## CO-CHAIRS

Jean Duprez (Airbus)

Robert Nilsson (Volvo Cars Corporation)

## INCOSE WEB PAGE



<https://connect.incose.org/WorkingGroups/KnowledgeManagement/Pages/Home.aspx>

## INCOSE CONNECT ADDRESS



Not updated

# Charter Summary



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## **WG PURPOSE/MISSION**

The purpose of the Knowledge Management (KM WG) is to expand and promote the application, education and theory of knowledge management (in the form of all possible knowledge representation schemas, including Ontology) for Systems Engineering as a means to reduce or eliminate existing barriers in the SE practice.

## **WG GOAL(S)**

We propose the application of knowledge management (using ontology and other knowledge representation structures) as a driver within systems engineering practice to enable processes, methods and tools harmonization. More specifically, the intention of this working group is to create outcomes that enable the harmonization and interoperability of initiatives, processes or activities and to remove or overcome existing barriers (computational, social, linguistic, etc.) among them.

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## WG SCOPE

Activities relating to best practices for Knowledge Management:

- Application of the knowledge management process activities to concrete implementations in industry.
- Knowledge Organization Systems (KOS)
- Ontologies Definition, Construction and Representation
- Models and knowledge information Indexing and Retrieval
- Knowledge Comparison, Visualization, Access and Trace
- Ontologies Management and Evolution
- Ontologies Verification and Valid

## OUTCOMES (PRODUCTS/SERVICES)

The Knowledge Management working group will realize the following outcomes:

- ? Disseminate the value of Knowledge Management and Ontologies in the application of Systems Engineering.
- ? Promote and evolve the knowledge management process within the SE Standards, Handbook and SEBoK
- ? Support standard activities relevant to knowledge and ontology engineering
- ? Contribute to the development of the Information-related portions of the SE handbook and SEBoK in collaboration with the Digital Artifact WG.
- ? Enable accurate and targeted access to relevant SE knowledge, reducing costly duplications and errors
- ? Promote ontologies and KOS as the means for real knowledge interoperability within the Systems Engineering lifecycle
- ? Study the implications of Ontologies and Knowledge Management in model-based environments (MBSE), specifically their common and variant aspects.
- ? Build and maintain a summary description of the techniques utilizing ontologies in Model Based System Engineering (MBSE)
- ? Analyze the common approaches between SE modelling languages (e.g. UML/SysML/OPM/IDEF0/AADL and others) and Knowledge representation languages (OWL, RDF, SKOS, RSHiP, ORM, DOGMA, FCO-IM, CogNIAM, etc.)
- ? Promote (and contribute to) the development of SE ontologies
- ? Formulate guidance for the development of ontology-based approaches within the SE Lifecycle processes and activities for all kinds of purposes (e.g. Model Based System Engineering (MBSE), tool interoperability, traceability, Quality and V&V, Reasoning, Decision making, etc.)
- ? Maintain the working group charter
- ? Maintain the KM WG's digital platform

# IW Outcomes



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## IW OUTCOMES

- Presentation of the group
- Refreshed Charter
- Status review and collaborative work on the "Knowledge Management & Ontology Primer"
- Open discussion of principles and case of applications
- Exploration of concepts & principles associated with Model Based Knowledge Management
- Practicle sessions to explore use of Knowledge Management & Ontology in the frame of Systems Engineering

## PLANNED ACTIVITIES AFTER IW

WG Meetings

WG projects/experiments

## PLANNED WORK PRODUCTS AFTER IW

- 1.TPP for ?primer? filed - *Jean D lead*
- 2.Primer released
- 3.TPP for ?knowledge map? filed ? *Eric B lead*
- 4.Knowledge map parts released
  - use cases
  - operational scenarios
  - meta-model (concept INCOSE upper ontology)
  - prototype
- 5.New MBKM practical example:
  - experiment based on ?guide to 42020?- *Robert N lead*
  - experiment to map ? (15288)/Competencies/INCOSE-WG ? *Bill H lead (sync 3-4)*