Ontology Governance

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Need

Be able to develop and use the ontology in the community in a consistent and useful manner.

Similar to an open source software

Content

Steering Board for "management" decisions:

- objectives,
- priorities,
- approval of development plan,
- deployment plan,
- dissemination plan,
- legal aspects (IPR/licensing),
- roadmap,
- schedule (?),
- risk management (?)

Design authority for technical decisions:

- language,
- scope,
- development plan,
- development,
- validation, impact analysis
- tooling needs,
- tooling development,
- configuration management,
- baseline,
- maintenance

TRP/TDE OSMoSE

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Hans-Peter de Koning

Serge Valera

OSMoSE TRP/TDE preliminary 1

Objective   Develop the Skeleton of the Space System Ontology

ESA contract in Open Competition, 3 LSI work packages pre-negotiated

supported by the OSMoSE design authority including ESA, 3 LSI, National Agencies?

Constraint   Conceptual modelling language is ORM

Scope   What should the Skeleton include?

Inputs

- output of preceding activity: Capella reverse engineering in ORM [on-going]
- ECSS: E-ST-10*, M-ST*
- Glossary: eGlossary, ISO, others?
- Requirement management: ECSS MasterDB, others?
- Requirement engineering: ?
- MBSE: SysMLv2, others?
- E-TM-10-23A what versions of the MBSE model? E-10-23A Annex, VSD, RangeDB, EGS-CC CDM, SRDB Next, MARVL...
- E-TM-10-25A, QUDV, ISO/IEC 80000
- EDS which one?
- others?

OSMoSE TRP/TDE preliminary 2

Tasks	Model Global + main Stakeholders' views with NORMA/ORM
	Produce a requirements specification of the Space System Ontology in compliance with ECSS drafting rules the requirements are expressed in controlled natural language
	Generate ECSS Change Requests
	Website development
	Working meetings, review meetings
	Disseminate every 6 months in brainstorming workshops as of this week
outputs	the Skeleton of the Space System Ontology in NORMA
	the Space System Ontology requirements specification of the Skeleton of the Space System Ontology
Validation	By the OSMoSE design authority representative
Results	analyzed by the OSMoSE Steering Board for future development and deployment

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Toward Semantic Interoperability

The OSMoSE initiative

European Space Agency

The OSMoSE initiative

Model Based for System Engineering

MB4SE Advisory Group

Main Points of Contact

Industry
AIRBUS	Jean-Luc Marty
OHB	Pascal Vermeer
THALES	Gérald Garcia

Agencies
ASI	Alessia Sabatini
CNES	Nathalie Corcoral
DLR	Caroline Lange
ESA	Agnès Mestreau
UK-SA	Tony Forsythe

OSMoSE Steering Board

Overall Semantic Modelling for System Engineering

OSMoSE Governance

Main Points of Contact TBC/TBD

Industry
AIRBUS	?
OHB	?
THALES	?

Agencies
ASI	?
CNES	?
DLR	?
ESA	?
UK-SA	?

*Space System Ontology
1st Brainstorming Workshop
25 & 26/6/2019*

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Toward Semantic Interoperability

Ontology Definition language, methodology and tooling:

http://www.esa.int/Our_Activities/Space_Engineering_Technology/Shaping_the_Future/Semantic_Modelling_and_Semantic_Interoperability_-_FAMOUS-2

Fact Based Modelling Unifying System – What next?

THAG Systems Data Repository Roadmap / GSTP Compendium 2015

➔ A07 Applying the FAMOUS concept to implement ECSS-E-TM-10-23A

18/06/2019 ECSS-TA#66 - Proposal for publication of ECSS-E-TM-10-FBM

OSMoSE:

- TDE Space System Ontology, the Skeleton: OC + 3 LSIs

- OSMoSE Governance support – Assessing the Tooling's needs: TBC

- R&D: From ORM to OWL - Bolzano
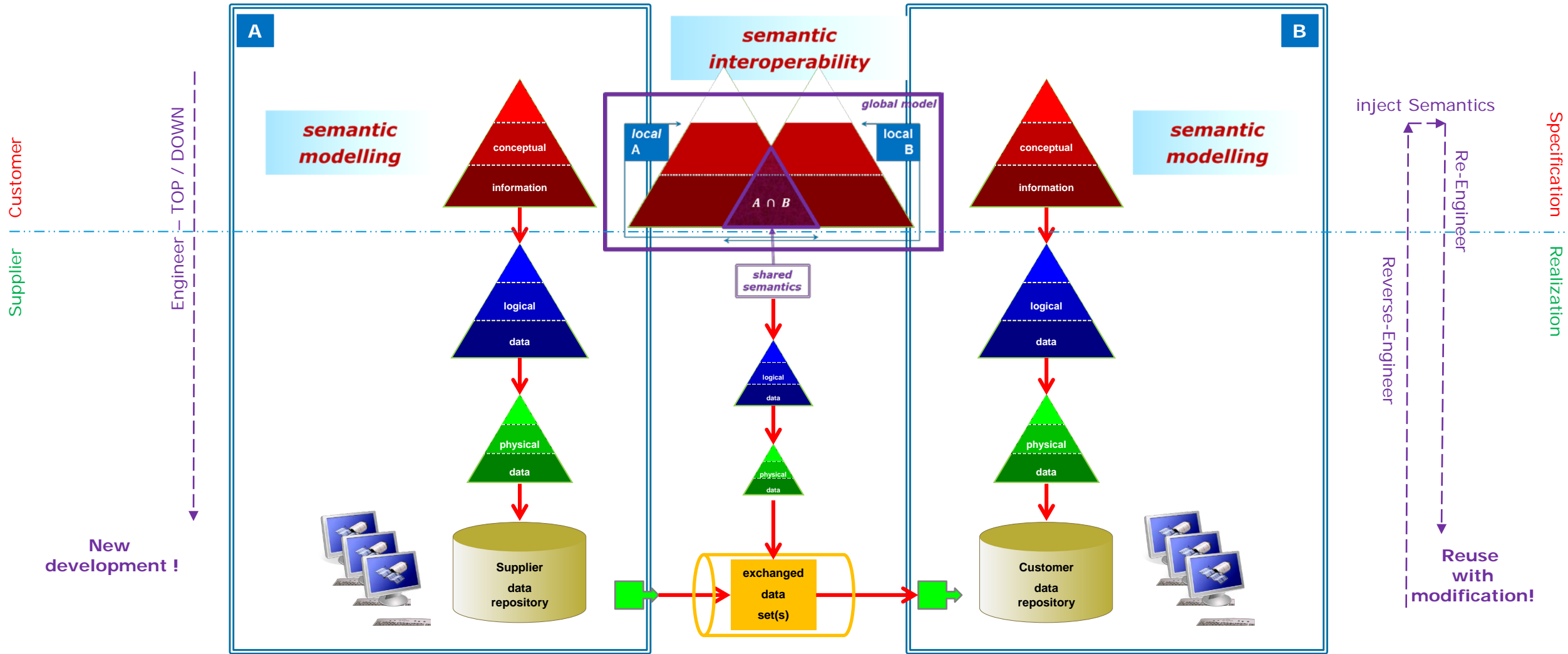
Toward Semantic Interoperability

Related:

- ECSS MasterDB development: OC

- TDE Data Hub : OC (include ground segment ontology)

- ESOC R&D on Ground Segment Ontology

- TDE Avionics Model Based Design Space Exploration Support : OC + 3 LSI

New brainstorming:

- Upgrading existing facilities/products for compliance with the Space System Ontology *starting by lessons learning and reverse engineering the implemented model to enable semantic compatibility assessment*

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Semantic modelling for Semantic Interoperability

Semantic modelling for Semantic Interoperability
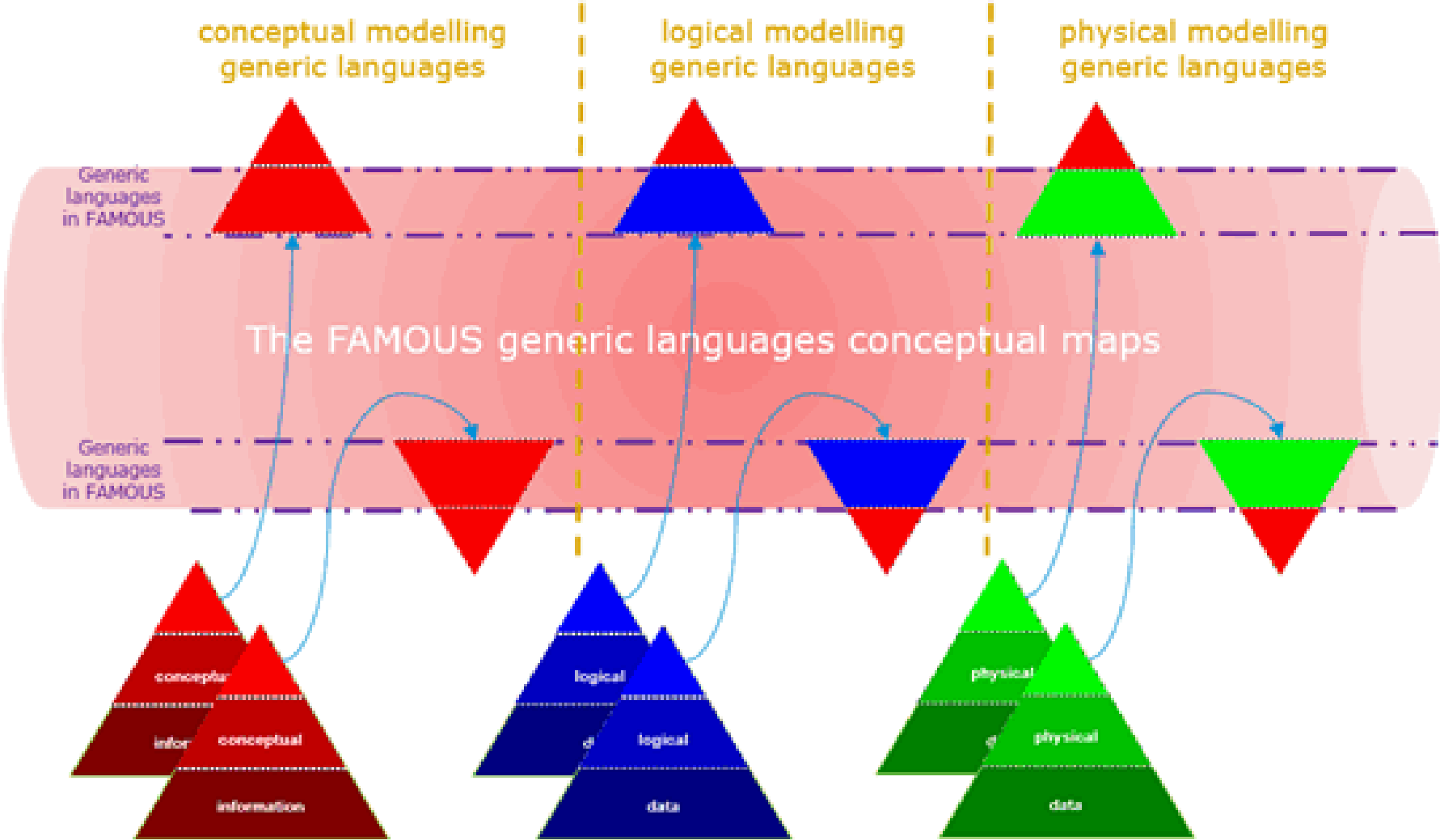
Wrap up

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Day 1

1. [Bolz] Formal ontology (Kinds, Roles, Mixin, etc.) We need a tool that checks continuously our ontology

2. [Bolz] Balance expressiveness/tractability, parsimony/convenience ➜ don't use OWL as a user, but let tools use OWL for you. ORM is preferred (expressive, graphical, concise)

3. [ADS] Common conceptual model is needed. BUT result must be concrete for the user. Skeleton + run-time categories, need to update (governance), need a reliable solution

4. [DLR] Core + base + external ontology. Do it by step, loosely coupled

5. [Strath] Ontology can be generated from text in "cake layers". Terms & synonyms already difficult! Need human validation but accelerate the process.

6. [SatS] Ontology for data sheet as support to e-business and business analysis

7. [Cnes] Data ontology must come with a corpus. Ontology encourage innovation

8. [IRT] EDS contributes widely to ontology and interoperability. Process to co-fill it with Supplier

9. [IRT] TeePee as an example of data hub using a slice of an ontology

Day 2

1. [Rhea] MARVL combines 10-25;VSD;EGSCC for an example of datahub. Connexion with ontology possible
CDP4 is an open source implementation of 10-25 (like OCDT for CDF)

2. [Kobl] very solid ontology of "requirement" concept; for skeleton? Question related to ontology architecture (foundation, core, domain)

3. [TasGor] Arcadia perceived as "the best method we have at the moment". Capella meta model reversed into 400 ORM facts. Candidate for skeleton

4. [Bolz] ORM is concise, possibility to derive semantics with reasoned to be at OWL level (sort of ontology assembler) QUELO validate ontology through examples

5. [Esa] SysMlv2 is the result of a large group; is exported in OWL; is validated; user-oriented; incl behavior; API for tool independence; EU experience; in 2 years; success depends on tool vendors, but no competitor

6. [Esa] JPL experience: IMCE ontology, OpenCAESAR, MSR project, OML, OpenMBEE; to be considered for commonalities, benchmark, reference

Achievement vs objectives

1. **converge** towards a Single European Ontology *what is it?* for Space Projects
➔ we have a better idea of what it is, what it is for ?

2. specify what is required in term of ontology definition **language**
➔ several presentations related to ORM
➔ no showstopper for the use of ORM ?

3. identify the **development steps**
➔ increased confidence in the scheme "skeleton" + something ?
➔ need consolidation of the ORM tool chain ?

4. overall, create the Space System Ontology **governance**
➔ identified way of creating this governance, need further support ?

Questions for the workshop

Visible in Sli.Do
Will stay there probably
Will include in potential report we may produce if we are brave

Will distribute load the presentation on indico (workshop website)

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Conclusion

Many thanks from the organizers for

- Your contributions

- Your attention

- The nice discussions during the breaks

- Your interest/enthusiasm in the matter

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