

The way forward for Infraroom?

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6. V-Con Scenario

This chapter presents V-Con scenario, as the third scenario. It firstly clarifies V-Con rationale, secondly describes V-Con scenario with the way buildingSmart and COINS are combined. Thirdly, the chapter identifies the potential actions need to be taken for building V-Con scenario upon the strengths of two existing scenarios. Fourthly, the chapter reports the assessment of V-Con scenario and concludes with the advantages

6.1 V-Con Rationale

Traditionally ICT-development is done linearly: identify a problem, define a solution, develop software functionalities and data structures to enable support that specific solution. The result of this traditional approach is that each process/problem has its own unique information structure, often fixed in standards. Past attempts to define one common reality all fail in the end, because reality is too complex for that.

The new approach V-con assumes a world where:

- The exist no one unique view on reality but different perspectives on reality are desirable;
- Not one process is leading for a data structure but data structures should support multiple processes;
- Communication between processes and data standards need mapping and transformations by adding intelligence provided by semantic information structures;
- There will not be just one unique data source, organizing all concepts and perspectives on concepts. Therefore there will be distributed collaborative ontologies/libraries, preferably based on semantic modelling to ease connectivity and alignment.

Current examples of standards modelling 'a world' relevant for civil infrastructures are BuildingSmart IFC, OGC CityGML, COINS CBIM, COBie and LandXML. When gathering information for asset management, RWS identified nine external sources of information, each with their own communities, processes, information standards and supporting software. The challenge for V-Con is to provide an approach that has the potential to integrate these different 'worlds'.

The "Semantic Web" with its key component the Web Ontology Language (OWL) is seen as the highest potential to do just that. Where the 'normal' Web (on top of the Internet) integrated so many human-interpreted informal, unstructured, information in the world, the 'Semantic' web promises to do the same (again with the Internet as base communication infrastructure) for the formal, structured, information handled by todays software applications like for BIM and GIS. Also for software-vendors it is more interesting to invest in interfaces for such a future-proof system, than to invest in systems based on old, not web-aware technologies.

In the previous chapters the buildingsSmart and COINS scenarios have been discussed in detail. Both scenarios showed important strengths that V-Con should be able to foster and combine. But they did inherent some shortcomings. As explained in the rationale behind the 31

V-Con approach (section 6.1), combining different worlds and their information structuring standards, is the main challenge for V-Con.

6.2 Description

An important goal for V-Con scenario is to develop a future-proof system that supports dynamic library structures. This can be done using the W3C 'semantic web' approach, that is using OWL as fully international, generic and well-defined open standard for the libraries, actually called 'ontologies' here.

"Using OWL" here means that modelling mechanisms directly available in this language are reused as much as possible. It also means that needed modelling functionality that is not in

this language like 'archetypes', 'decomposition', 'measures/units' and 'requirements' are added as "cleanly" as possible by an upper ontology. TNO is already involved in the development of such an upper ontology in their running European projects Odysseus and Proficient (which goes even a step further, by generating geometry instead of linking, from the semantic information). This upper ontology is called Concept Modelling Ontology, or CMO.

One consequence of using OWL is that on the conceptual level we have 'classes' (sets), instead of 'types'. This has serious consequences for the way specialization is to be interpreted: an instance of a subclass is by definition a member of a superclass. Having that in mind, an often used (Dutch) term such as OTB - 'Object Type Bibliotheek' (Eng.: 'Object Type Library') is not really appropriate. Therefore it is better to use the terms from the Semantic Web world being "Classes" combined in "Ontologies". Figure 6-1 shows how the approach described above can be positioned in the V-Con framework.