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V-Con

Virtual Construction for Roads
What is **V-Con**?

V-Con is an EU-funded project which runs over 4 years (start 2012)

V-Con consists of two parts:
- Research and developing
- Pre Commercial Procurement

V-Con consists of two road authorities and two research institutes

V-Con works together with bSI on Alignment and IFC4Rads
Why V-Con?

Adequate information regarding the network and the assets is of vital importance for the management of road infrastructure.

Both road authorities aim to modernise their information management (including introduction of BIM) using open information exchange standards and have formally joint forces to break out of a circle of ICT-standstill by working together in The Virtual Construction for Roads (V-Con) project.

V-Con aims at enabling national road authorities to introduce IT technology based on open standards for exchanging/sharing comprehensive road (highway) information with commercial parties in the sector and applying them in their life-cycle processes.
What does **V-Con** mean for the Infra sector?

A more effective exchange of information in the construction industry

The V-Con solution will enable information transfer from a BIM-project to systems for asset management

Let the market develop solutions that enables open information and data exchange between a Client software and the Project management (organization)

V-Con contributes to further development of open standards for the infra sector
What are the results from V-Con?

**CSA part approach in GREEN**
- Agree scope of the tools to be procured between national Road Administration Authorities
- Agree modeling approach between national Road Administration Authorities; select information exchange/sharing standards to be selected, integrated and extended. Some are ready to use; some need further development.
- Develop the not ready for use standards
- Develop specification for the ICT tools, compliant to the selected exchange/sharing standards

**CP part approach in RED**
- Use the specifications from CSA part
- 3 phases procurement process
  - Pre-selection
  - Prototyping
  - Testing
- General part (dissemination of results, evaluation of PCP)

Integration and test

Standards and specifications

Implementation
What is the business scope for V-Con

<table>
<thead>
<tr>
<th>Generic</th>
<th>Market</th>
<th>Segment</th>
<th>Product</th>
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<tbody>
<tr>
<td></td>
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<td>Civil Infrastructures</td>
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<tr>
<td>Infrastructure Management</td>
<td>Asset Management</td>
<td>Project Management</td>
<td>Asset Management</td>
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<td>Focus: Roads</td>
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**Life-cycle Phase**

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<thead>
<tr>
<th>Supply-chain Level</th>
<th>Program</th>
<th>Design</th>
<th>Plan</th>
<th>Build</th>
<th>Operate</th>
<th>Exploit</th>
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<tbody>
<tr>
<td>Geospatial Area</td>
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<td>Construction</td>
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<td>System</td>
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<td>Component</td>
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<td>Material</td>
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**International** | **Continental** | **National** | **Organisation** | **Project**
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</thead>
<tbody>
<tr>
<td>‘localised’</td>
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<td>‘made company-specific’</td>
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Conclusions in V-con project

The new approach V-con assumes is a world where:

- There 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.
Which are the challenges for V-con?

For a national road administration authority, who procures design, construction, operation and/or maintenance of road infrastructure from contractors, the V-Con Solution supports the Linked Data approach and open information exchange/sharing between stakeholders using various software solutions, tools and open standards during the various life cycle stages.

Unlike the available solutions that exist today, the V-Con Solution enables integration of different tools and open standards that are used within the whole lifecycle of the road infrastructure in a vendor neutral fashion.

These tools and open standards may concern areas such as building information model (BIM) data, geographic information system (GIS) data and Systems Engineering (SE) data.
What solution is provided by V-con?

V-Con focuses on supporting the road authorities project management primary with translation and transformation of datasets based on a (finite) set of semantic and syntactic standards and concepts (should be extendable)
Key Challenges for V-Con standardization

• Select a comprehensive set of existing information exchange standards
• Extend IFC with IFC for roads
• Develop methodology, guidelines and tools to develop semantic web technology based libraries
• Develop object type libraries (regional, national, company):
  – Common context neutral ”core” model – basic semantics
  – Context specific models/semantics
  – Mapping and transformation of semantic and syntactical information
Key Technical Challenges for V-Con solution

Given the V-Con approach towards information exchange for road authorities, V-Con has defined the key technical challenges to be fulfilled by the V-Con Solution (VCS):

1. Support ontology based information exchange
2. Support information exchange for open domain standards
3. Support exchange of other data formats
4. Manage and store data structures and data
5. Connect information from different domains
6. View (connected) information
7. Ease of use
8. Future proof system
Why Ontology based information exchange?

• Fundamental for business agreements, data sharing etc is common understanding i.e. a need for translation between different semantics - supported by IT

• No one sits on the one and only vocabulary - there are many and they are "in the cloud"

• Semantic web technology supports linking data "in the cloud" and translation/transformation of as well concepts (semantics) as data in different formats (syntax).

• Semantic web technology is successfully applied within other areas, e.g. Oil and gas, based on STEP like IFC(BIM).

• Semantic web technology is on its way to be implemented in GIS (ISO 19150-X)
What happens after V-Con?

V-Con project

Lots of pices yet to put in place by:
• Some "body" maintaining the result
• New projects
• …
Thank you for showing interest!!

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