New work item proposal: Information Container for Data Drop NEN Form 04

Document type: NP ballot

Date of document: 2016-01-14

Expected action: VOTE

Action due date: 2016-04-15

Background: Referring to Resolution 162 and information given at the SC 13 Plenary meeting in Singapore, please see the NWIP from NEN. Members are requested to use the ISO Committee Internal balloting system to cast their votes and submit comments.

Committee URL: http://isotc.iso.org/livelink/livelink/open/tc59sc13
Form 4: New Work Item Proposal

<table>
<thead>
<tr>
<th>Circulation date:</th>
<th>Reference number: Click here to enter text. (to be given by Central Secretariat)</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-01-15</td>
<td>(to be given by Central Secretariat)</td>
</tr>
<tr>
<td>Closing date for voting:</td>
<td></td>
</tr>
<tr>
<td>2016-04-15</td>
<td></td>
</tr>
<tr>
<td>Proposer</td>
<td>ISO/TC 59/SC 13</td>
</tr>
<tr>
<td>NEN</td>
<td>☐ Proposal for a new PC</td>
</tr>
<tr>
<td>Secretariat</td>
<td>SN</td>
</tr>
</tbody>
</table>

A proposal for a new work item within the scope of an existing committee shall be submitted to the secretariat of that committee with a copy to the Central Secretariat and, in the case of a subcommittee, a copy to the secretariat of the parent technical committee. Proposals not within the scope of an existing committee shall be submitted to the secretariat of the ISO Technical Management Board.

The proposer of a new work item may be a member body of ISO, the secretariat itself, another technical committee or subcommittee, an organization in liaison, the Technical Management Board or one of the advisory groups, or the Secretary-General.

The proposal will be circulated to the P-members of the technical committee or subcommittee for voting, and to the O-members for information.

**IMPORTANT NOTE:** Proposals without adequate justification risk rejection or referral to originator.

Guidelines for proposing and justifying a new work item are contained in Annex C of the ISO/IEC Directives, Part 1.

☒ The proposer has considered the guidance given in the Annex C during the preparation of the NWIP.

**Proposal** (to be completed by the proposer)

<table>
<thead>
<tr>
<th>Title of the proposed deliverable.</th>
<th>English title:</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>Information container for data drop (ICDD)</td>
</tr>
<tr>
<td></td>
<td>French title (if available):</td>
</tr>
<tr>
<td></td>
<td>Click here to enter text.</td>
</tr>
</tbody>
</table>

*(In the case of an amendment, revision or a new part of an existing document, show the reference number and current title)*
Scope of the proposed deliverable.

This proposed ISO standard provides a data exchange and storage mechanism by means of a container or envelope for BIM related data/information which can be represented using multiple existing ISO-IEC standards.

The standard provides a semantic model comprising a small core information model which can be extended with reference information models and object libraries for specific domains.

Further support is provided for meta data notation and version management of exchanged data.

The standard provides functionality to integrate data structures which are a combination of RDF formatted, non geometric data structures and standardized geometric data structures like IFC and GML by deep linking to data structures of these types, object type libraries and non structured documents.

Doing so, the standard enables data drop as one information package with multiple data formats.

By using the mechanism of extensions with reference models, support can be added for various methods of version management including PLCS. Together with object type libraries, it offers capabilities to exchange data defined by information models that cover Systems Engineering, BIM, GIS and Life Cycle information management.

The elaboration of this standard will harvest the work done on COINS in NL and will include the existing examples of it.

The intended users and implementers of this standard includes software vendors and IT individuals, working in the field of buildings and infrastructure assets, offering software for procurement, design, construction, delivery, operation and maintenance. It also includes suppliers of project hotels and asset management databases.
The purpose of the standard will be to provide a neutral mechanism for exchange and storage of BIM information between partner in the building and construction supply chain. Whereby the information will be kept in a container with information modelling structures ensuring complete, correct and consistent information.

BIM has been recognized as a global digital construction technology and will be deployed in every country in the world. This technology will enable information delivery and process integration in the supply chain of client/asset manager, client/project organization, contractors, suppliers and consultants in the world of building and construction.

There is an increasing need to organize the flow of different kinds of information in the construction chain on the basis of open standards. Information deliverables in practice concerns geometric data related to geometric data and combinations of structured and unstructured data. Portions of the information will be recorded in accordance with various standards and object type libraries are used to specify data structures. In this environment there is a great need to be able to clarify to partners in the construction chain how information should be delivered with respect to the divers kind of data types.

Relevant standards for Building and Infrastructure are developed and maintained through ISO/TC 59/SC 13 and TC 184/SC 4/JWG. However, the existing BIM standards do not meet the requirement to be able to combine several information structures each according to a different standard within one single data package resp. data container or envelope. The proposed standard fills the gap and will enable partners in the construction chain to specify and exchange information container deliveries according to current practices and future needs. The standard is not proposing another building information model such as IFC but is especially complementary to IFC.

In October 2013 during the buildingSMART summit meeting in München the Dutch COINS standard was discussed. In a resolution the Infra Room welcomes the initiative to forward a New Work Item to bring the Dutch COINS standard in a ISO standard. Other chapters/countries were encouraged to join this initiative. In September 2015 a meeting was held by the Dutch national standards committee where it was confirmed to make maximum use of existing international ISO-IEC standards in realizing the proposed standard.

The COINS standard is mandated by Rijkswatestaat in the Netherlands from 2012 in large DBFM projects. It is implemented by Rijkswaterstaat, the province of Gelderland, contractors, consultants and IT-companies. Also commercial software that supports the standard is available.

Consider the following: Is there a verified market need for the proposal? What problem does this standard solve? What value will the document bring to end-users? See Annex C of the ISO/IEC Directives part 1 for more information.

See the following guidance on justification statements on ISO Connect: https://connect.iso.org/pages/viewpage.action?pageId=27590861
**Preparatory work** (at a minimum an outline should be included with the proposal)

- ☐ A draft is attached
- ☒ An outline is attached
- ☐ An existing document to serve as initial basis

The proposer or the proposer's organization is prepared to undertake the preparatory work required:

- ☒ Yes
- ☐ No

**If a draft is attached to this proposal:**

Please select from one of the following options (note that if no option is selected, the default will be the first option):

- ☒ Draft document will be registered as new project in the committee's work programme (stage 20.00)
- ☐ Draft document can be registered as a Working Draft (WD – stage 20.20)
- ☐ Draft document can be registered as a Committee Draft (CD – stage 30.00)
- ☐ Draft document can be registered as a Draft International Standard (DIS – stage 40.00)

**Is this a Management Systems Standard (MSS)?**

- ☐ Yes
- ☒ No

NOTE: if Yes, the NWIP along with the Justification study (see Annex SL of the Consolidated ISO Supplement) must be sent to the MSS Task Force secretariat (tmb@iso.org) for approval before the NWIP ballot can be launched.

**Indication(s) of the preferred type or types of deliverable(s) to be produced under the proposal.**

- ☒ International Standard
- ☐ Technical Specification
- ☐ Publicly Available Specification
- ☐ Technical Report

**Proposed development track**

- ☐ 1 (24 months)
- ☒ 2 (36 months - default)
- ☐ 3 (48 months)

**Note:** Good project management is essential to meeting deadlines. A committee may be granted only one extension of up to 9 months for the total project duration (to be approved by the ISO/TMB).

**Known patented items** (see ISO/IEC Directives, Part 1 for important guidance)

- ☐ Yes
- ☒ No

If "Yes", provide full information as annex

**Co-ordination of work:** To the best of your knowledge, has this or a similar proposal been submitted to another standards development organization?

- ☐ Yes
- ☒ No

If "Yes", please specify which one(s):

Click here to enter text.

**A statement from the proposer as to how the proposed work may relate to or impact on existing work, especially existing ISO and IEC deliverables.** The proposer should explain how the work differs from apparently similar work, or explain how duplication and conflict will be minimized.

This work will complement and supplement the work already published and in development within ISO/TC 59/SC 13 IDM standard, ISO/TC 184/SC 4 - IFC standard, ISO/TC 211 - GML standard, ISO/TC 184/SC 4 - PLCS standard
A listing of relevant existing documents at the international, regional and national levels.

<table>
<thead>
<tr>
<th>ISO 29481 - IDM standard</th>
</tr>
</thead>
<tbody>
<tr>
<td>ISO 16739 - IFC standard</td>
</tr>
<tr>
<td>ISO 19136 - GML standard</td>
</tr>
<tr>
<td>ISO 10303-239 - PLCS standard</td>
</tr>
<tr>
<td>ISO 15926 - Data integration for process plants</td>
</tr>
<tr>
<td>ISO 1583 - 6 Dublin Core metadata element set</td>
</tr>
<tr>
<td>NL National standard COINS - <a href="http://www.coinsweb.nl/wiki">http://www.coinsweb.nl/wiki</a></td>
</tr>
</tbody>
</table>

Note: Background documentation on the earlier Dutch COINS standard v1 and v1.1 are available from the COINS website. The latest released version of the standard is version 1.1 of December 2014. This NWI is about the transformation of COINS 2.0 which is expected in late 2015 into an international ISO standard format. The documentation will be set up in accordance with ISO guidelines.

A simple and concise statement identifying and describing relevant affected stakeholder categories (including small and medium sized enterprises) and how they will each benefit from or be impacted by the proposed deliverable(s).

Primary stakeholders are partners in the construction supply chain as Client Asset management, Client project organization, Contractor and Consultant who use the standard to specify required information deliveries. Further stakeholders are software vendors that supply the construction sector with e.g. BIM software and who need to implement the standard.

Liaisons:
A listing of relevant external international organizations or internal parties (other ISO and/or IEC committees) to be engaged as liaisons in the development of the deliverable(s).

Click here to enter text.

Joint/parallel work:
Possible joint/parallel work with:

- IEC (please specify committee ID)
  
  Click here to enter text.

- CEN (please specify committee ID)
  
  TC 442
  
  Click here to enter text.

- Other (please specify)
  
  Click here to enter text.

A listing of relevant countries which are not already P-members of the committee.

Click here to enter text.

Note: The committee secretary shall distribute this NWIP to the countries listed above to see if they wish to participate in this work.

<table>
<thead>
<tr>
<th>Proposed Project Leader (name and e-mail address)</th>
<th>Name of the Proposer (include contact information)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Henk Schaap  <a href="mailto:h.schaap@gobar.nl">h.schaap@gobar.nl</a></td>
<td>Mr. Jan Rietveld</td>
</tr>
<tr>
<td></td>
<td>NEN</td>
</tr>
<tr>
<td></td>
<td>POBox 5059</td>
</tr>
<tr>
<td></td>
<td>2600 GB Delft</td>
</tr>
<tr>
<td></td>
<td>The Netherlands</td>
</tr>
</tbody>
</table>
**This proposal will be developed by:**
- ☒ An existing Working Group (please specify which one: WG 8 )
- ☐ A new Working Group (title: Click here to enter text.)

(Note: establishment of a new WG must be approved by committee resolution)
- ☐ The TC/SC directly
- ☐ To be determined

**Supplementary information relating to the proposal**
- ☒ This proposal relates to a new ISO document;
- ☐ This proposal relates to the adoption as an active project of an item currently registered as a Preliminary Work Item;
- ☐ This proposal relates to the re-establishment of a cancelled project as an active project.

Other:
- It is proposed to add this standard to the work of ISO TC 59/SC 13/WG08 as it, in a very generic way, gives shape to an actual information delivery

- ☒ Annex(es) are included with this proposal (give details)
  - A. Outline proposed standard
  - B. COINS Introduction - presentation sheets November 2015
Outline proposed standard

Annex A to NWI proposal ICDD

Outline is based on documentation which is developed for the Dutch COINS standard

5 Parts:

1  Fundamentals
2  Core Model
3  Reference Frameworks
4  Version Management
5  Exchange Format
<table>
<thead>
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<th>Contents</th>
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<td>Foreword</td>
</tr>
<tr>
<td>Introduction</td>
</tr>
<tr>
<td>1    Scope</td>
</tr>
<tr>
<td>2    Normative References</td>
</tr>
<tr>
<td>3    Terms and Definitions</td>
</tr>
<tr>
<td>4    Clauses</td>
</tr>
<tr>
<td>5    Tables and Figures</td>
</tr>
<tr>
<td>6    Annexes</td>
</tr>
<tr>
<td>Bibliography</td>
</tr>
</tbody>
</table>
### Part 1 - Fundamentals

<table>
<thead>
<tr>
<th>4.</th>
<th>Fundamentals</th>
<th>Clauses (DP2 Clause 6.3.3)</th>
</tr>
</thead>
<tbody>
<tr>
<td>4.1</td>
<td>Architecture</td>
<td>Clauses and subclauses form the main part of any standard. This is the section that tells users of the standard what they need to do to implement it.</td>
</tr>
<tr>
<td>4.2</td>
<td>Objects</td>
<td>Number clauses and subclauses to help people reference key parts of the standard.</td>
</tr>
<tr>
<td>4.3</td>
<td>Identification</td>
<td>In ISO we have the concept of normative and informative parts of a document. Normative parts contain requirements you need to comply with. Informative parts are there to help you do that.</td>
</tr>
<tr>
<td>4.4</td>
<td>Properties</td>
<td>In all clauses, you should be clear about what is a requirement and what is a recommendation or other statement. ISO uses the following words to make the distinction:</td>
</tr>
<tr>
<td>4.5</td>
<td>Version Management</td>
<td>- Requirements: shall, shall not</td>
</tr>
<tr>
<td>4.6</td>
<td>States</td>
<td>- Recommendations: should, should not</td>
</tr>
<tr>
<td>4.7</td>
<td>Document references</td>
<td>- Permission: may, need not</td>
</tr>
<tr>
<td>4.8</td>
<td>Reference Frameworks (short)</td>
<td>- Possibility and capability: can, cannot</td>
</tr>
<tr>
<td>4.9</td>
<td>Data Exchange</td>
<td></td>
</tr>
<tr>
<td>4.10</td>
<td>Catalogue Parts and Libraries</td>
<td></td>
</tr>
</tbody>
</table>
Part 2 – Core Model

4. **Base Elements**
   4.1 cbimEntity
   4.2 cbimVersionObject
   4.3 cbimObject
   4.2 Property

5. **Common Elements**
   5.1 Party
   5.2 Document Reference
   5.3 Locator and Vector
   5.4 Catalogue Part
Part 3 – Reference Frameworks

4. Coins Reference Frameworks
   4.1 Principles of Reference Frameworks
   4.2 Implementation

5. Example Reference Frameworks (informative)
   5.1 Window of Authorization
   5.2 Versioning (Branches)
   5.3 Lifecycle States
   5.4 Libraries
Part 5 – Data Exchange

4. Coins Data Exchange
4.1 Architecture
4.2 Coins Container
   - Export
   - Import
   - CheckSum
   - Document Reference
4.3 Delta container
4.4 Validation
The COINS standard

Introduction

November 2015
Agenda

• Summary
• Why COINS
• What is COINS
• Scope
• COINS container exchange format
• Integration examples
• Integration GIS
• Integration documents
• Integration IFC and CityGML
• In practice
• Documentation
COINS

- A flexible standard for the exchange of BIM information making use of multiple existing standards
- It provides a data exchange and storage mechanism by means of a container or envelope for BIM related data/information
Why COINS

- BIM is more than 3D
- Is an answer to the needs of practice in which information delivery often consist of combinations of various data structures
- Is an answer to the need of practice to combine BIM, GIS, Systems engineering and Life Cycle Information
- Enables data drop as one information package with multiple data formats
Scope / data exchange

Contractor

Client Project organization

Asset Manager

IDM

BIM container

IDM message

IDM
Information container for data drop

• Is a mix of:
  – Database structured information
  – GIS
  – Documents
    • Drawings
    • PDF
    • Text
    • Spreadsheets
    • Etc
  – 3D Models
Information container
Scope / audience

• Includes software vendors en IT individuals, working in the field of buildings and infrastructure assets, offering software for:
  – Procurement
  – Design
  – Construction
  – Delivery
  – Operation and maintenance
• Suppliers of Project hotels could implement the software
• Suppliers of Asset management databases could implement the software
Current implementations

• CBIS data management software by Infostrait
• Multiple contractors in the Netherlands added support for this standard in their design and construct information systems
Current implementations

- Rijkswaterstaat – DBFM project highway A1-A6
- Rijkswaterstaat – DBFM project highway A9 GDW
- Rijkswaterstaat – DBFM project highway A6
- Rijkswaterstaat – DBFM project highway A9 AMS
- Rijkswaterstaat – D&C project N31
- Rijkswaterstaat - D&C project Maas: construction sluice Limmel
- Province of Gelderland – D&C project traverse Dieren
- Province of Gelderland – DBM provincial government buildings

Rijkswaterstaat is planning 18 new projects in the coming years to support the flow of asset information from contractors on the basis of the COINS standard
Integration examples

- Physical objects
- Object types
- Terrain
- Traffic network
- Requirements
- Performance
- Built environment
- Object geometry 3D
- GIS representation
- Documents
Integration GIS - 1
Integration GIS - 2
Integration GIS - 3
Integration IFC
Integration IFC and CityGML
What is COINS -1

COINS is an open standard that provides a data exchange format by means of a container. This format enables the exchange of various datasets annotated by an OWL ontology with the following features:

• *Extendibility.* The kernel model can be extended with specialized models (reference frameworks) for various disciplines. These sub-models may address various areas of interest (company-wide, building sector, national) and therefore can be regarded as semi-standards in itself. A reference framework can also function as an incubation project to prototype new model concepts.

An example of an extension is Systems engineering

Instances of Reference frameworks are not included the COINS standard, only the mechanism
What is COINS -2

- **Dynamic semantics.** Semantics are typically recorded in libraries forming a dynamic means to add semantics to instance models. Since version 1.0 library structuring mechanisms form an integral part of COINS.

- **Integrating document oriented information with object oriented information.** The boundary between document oriented information and object oriented information areas can be moved over time. Offering parties an evolutionary path to develop in BIM maturity level.

- **Integrating adjacent standards.** COINS delegates specific modelling areas to existing standards as GML (GIS data) and IFC (3D building data). More general every relevant standard (open or not) may be used if parties involved agree mutually on using it in data exchanges.
What is COINS - 3

- *Library model.* The COINS 2.0 library model is fully OWL-class based and in line with standard OWL modeling features.
- *An off-line transaction-based information exchange.* COINS information exchange can be integrated with transaction-based information exchange as for instance supported by the IDM part 2 standard for process modelling.
- *Version management.* COINS offers features to record the history of the BIM
The focus of the COINS standard is on the semantic model comprising the core model and a mechanism for flexible extensions and object libraries. Also support is provided for metadata notation and version management.
Welcome to CoinsWiki,
The open standard for management and exchange of BIM data

COINS is an open BIM standard. It is complementary to standards issued by buildingSMART such as IFC, IFD Library and IDM. COINS supports the exchange of Systems Engineering information and ensures that an object tree, GIS data, 2D drawings, 3D models, IFC models and object type library can be stored in association in a database. It also provides a BIM-container interchange format. It is used by partners in building construction projects for the purpose of exchanging building information and managing building information. Use the links below to explore the site contents. It is made available as an open standard. The first edition was published in 2010 as COINS 1.0. A first update was released as COINS 1.1 in December 2014.

Use the links on this page to explore the contents of the site. Part of this site is in English. For general questions with regard to COINS, see the communication page.

This site offers information for project managers/users applying the COINS system in their project, for BIM specialists responsible for project implementation and support and for IT specialists charged with software implementation. The following table features useful links for the various target groups.

<table>
<thead>
<tr>
<th>Projectmanager/user</th>
<th>BIM Specialist</th>
<th>IT specialist</th>
</tr>
</thead>
<tbody>
<tr>
<td>Essentials</td>
<td>Introduction to the COINS-system</td>
<td>Introduction to the COINS-system</td>
</tr>
<tr>
<td>Introduction to the COINS-system</td>
<td>Reference frameworks</td>
<td>Reference Manual</td>
</tr>
<tr>
<td>Reference frameworks</td>
<td>Tools</td>
<td>COINS 1.0 specs (Release 01/07/2010)</td>
</tr>
<tr>
<td>Terms and definitions</td>
<td>BIM-Lab</td>
<td>COINS 1.1 specs (Release 15/12/2014)</td>
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<td>Terms and definitions</td>
<td>Tools</td>
</tr>
<tr>
<td></td>
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<td>Terms and definitions</td>
</tr>
</tbody>
</table>
COINS 1.1 (2014) technical specifications

• link
Summary

• COINS is a flexible standard for the exchange of BIM information making use of existing multiple ISO-IEC standards and semantic web technology

• It provides a data exchange and storage mechanism by means of a container or envelope for BIM related data/information

• The standard provides a semantic model comprising a small core information model which can be extended with reference information models and object libraries for specific domains

• The standard provides functionality to integrate data structures which are a combination of RDF formatted, non geometric data structures and standardize data structures like IFC and GML, object type libraries and non structured documents

• It is developed by a Dutch consortium of governmental bodies, contractors, consultants, ICT-providers and educational institutes.

• Its first edition (version 1.0) was released in 2010, followed with a minor maintenance update in 2014. Version 2.0 will be released in 2015.
The COINS standard

Thank you