Business Plan for the CEN Workshop on Standards for Electronic Reporting in the Engineering Sector (WS SERES)

Approved during the kick-off meeting on 2012-02-28

1. Status of the Business Plan

Approved during the kick-off meeting in Brussels on 2012-02-28.

2. Background to the Workshop

The proposed new CEN Workshop SERES builds on the success of CEN Workshop ELSSI-EMD (Economics and Logistics of Standards-compliant Schemas and ontologies for Engineering Materials Data), acting on the key recommendations reported in CWA 16200:20101, and leveraging procedural Standards in the engineering materials sector to encourage stakeholder engagement and ‘buy-in’.

Having proven the efficacy of deriving Standards-compliant formats for engineering materials test data from procedural standards, the CEN Workshop ELSSI-EMD identified requirements for (1) a Standards-based unified information architecture for engineering materials test data and (2) a business process evolution that accommodates an efficient and effective transition to eReporting in the engineering materials sector. The new CEN Workshop SERES responds to the former through work that will deliver a Standards-based framework for representing and reporting engineering materials test data. For the latter, the Standards and their integration into the business models of the stakeholders will be validated in a proof of concept to establish the feasibility of a transition to eReporting in the engineering materials sector.

The prenormative ICT Standards for engineering materials test data will occupy two categories, one being concerned with the representation of engineering materials test data and the other with the reporting of engineering materials test data.

The prenormative ICT Standards for representing engineering materials test data will build on long-running efforts by the engineering materials and information engineering

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1 CWA 16200:2010 “A Guide to the development and use of standards-compliant data formats for engineering materials test data” available at:

communities, and will deliver a platform independent model that unifies existing technologies (including the MatML\textsuperscript{2} and MatDB\textsuperscript{3} schemas, and TC 184/SC 4\textsuperscript{4} standards, such as ISO 10303 Part 235 and ISO 15926). Technology-specific reference implementations,\textsuperscript{5} including XML Schema, ISO 10303, and RDF/OWL2, will then be derived from the model, together with example data sets that combine the data formats delivered by the CEN Workshop ELSSI-EMD with those of Workshop SERES.

The work to deliver prenormative ICT Standards for reporting engineering materials test data will be framed within the context of existing reporting Standards, delivering machine-readable versions of those Standards.

### 3. Workshop proposers and participants

The proposed Workshop is supported by a broad representation of material suppliers and manufacturers from the UK, Sweden, The Netherlands and Finland. As well as independent research centres and technical universities from the Czech Republic, Italy and the UK, VAMAS (Versailles Project on Advanced Materials and Standards) and national research centres from the US, Japan, Germany, and the UK are also supporting the proposal.

The number of organisations originally supporting the proposal was 23, with a corresponding country representation of 10, as follows:

**Suppliers**—IncoTest (UK), Special Metals Wiggin Ltd (UK), Exova (UK), and Tata (NL).

**Manufacturers**—Alstom Power Systems (UK), Volvo Aero (SE), Doosan-Babcock (UK), and Rautaruukki Oyj (FI).

**Software services**—SOASYS Ltd (NL) and Ferroday Ltd (UK).

**Standards fora and consortia**—OASIS-Open (US), VAMAS, HTMTC, UK HTPPF, and ECCC.

**Research sector**—DG JRC (BE), ORNL (US), NPL (UK), BAM (DE), NIMS (JP), VZLU (CZ), Rtm Breda Srl (IT), and Imperial College (UK).

The Workshop is open to any interested parties by prior registration to the Workshop secretariat. A list of participants will be maintained by the Workshop secretariat after the kick-off meeting.

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\textsuperscript{2} Material Markup Language, Public Review Draft 01, 06 June 2006.  
[http://docs.oasis-open.org/materials/materials-matml-spec-pr-01.htm](http://docs.oasis-open.org/materials/materials-matml-spec-pr-01.htm).

\textsuperscript{3} [https://odin.jrc.ec.europa.eu/MatDB_XMLschema/matdb.html](https://odin.jrc.ec.europa.eu/MatDB_XMLschema/matdb.html).

\textsuperscript{4} ISO - Technical committees - TC 184-SC 4 - Industrial data.  

\textsuperscript{5} In the software development process, a reference implementation (or, less frequently, sample implementation or model implementation) is the standard from which all other implementations, with their attendant customizations, are measured, and to which all improvements are added.  
4. Workshop scope and objectives

The scope of CEN Workshop SERES is to establish a unified Standard representation for engineering material tests and their results together with a proof of concept to establish the feasibility of a transition to eReporting in the engineering materials sector.

These efforts could be linked in a tangible way through a cooperation with ECISS/TC 100 aimed at contributing to existing reporting standards, such as EN 10168 and EN 10204.

A unified information architecture for engineering materials has been long sought, resulting in a number of standards-based (MatDB), prenormative (MatML), and normative (ISO 10303 Part 235) technologies. SERES will aim to deliver a unified Standard representation in the form of models (UML) and accompany reference implementations. To complete the information architecture, there is also a requirement to deliver an accompanying ontology on materials test data.

5. Workshop programme

The new CEN Workshop SERES is set up with a proposed duration of 21 months (March 2012 - November 2013).

The work plan is divided into several tasks hereunder described:

**Task 1: establish the conditions for sharing IPR concerning MatML**

This agreement shall in particular allow the use of the Materials Markup Language schema and accompanying documentation⁶ by the Workshop SERES.

*Deliverable (D1-1): agreement with OASIS on condition for the use of MatML.*

**Task 2: technology review with the objective to identify common features**

Technologies in the public domain, with particular attention paid to MatML, MatDB (and NMC MatDB), ISO 10303 Part 235, will be analysed in anticipation of formulating a domain model that represents an engineering material. This work will not only take into consideration the different technologies, but also the different materials categories, including metallic and other categories. Consideration will be given to how best to model the different materials categories, the options ranging between a separate model for each category or a hierarchy of subclasses that extends from a base class.

*Deliverable (D1-2): written specification for representing engineering materials test data, describing the main classes and the approach to modelling that is considered most appropriate;*

*Deliverable (D1-6): preliminary ontology for representing engineering materials test data.*

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Task 3: maintenance

To establish a framework for the continued maintenance, development, and alignment of new and existing ICT Standards for engineering materials, ensure alignment with international standardization organizations, fora and consortia in this area.

Task 4: To define platform independent models

Work will be carried out in two stages: first, a preliminary UML model based on the D1-2 deliverable will be formulated and then revise the UML models according to feedback.

Deliverable (D1-3): preliminary platform independent models both for representing engineering materials test data and for reporting engineering materials test data (the latter using the existing procedural reporting Standards as the software specification).

Deliverable (D1-4): final UML models both for representing engineering materials test data and for reporting engineering materials test data.

Task 5: To design the eReporting proof of concept (PoC)

The PoC will begin with a design stage to assess the impacts of the intervention and undertake requirements gathering in anticipation of proposing a suitable solution. The design stage will be followed by an implementation stage during which the software artefacts needed to integrate systems in the supply chain are developed. Finally, there will be a transition stage during which the solution is introduced into the business process. All these documents will be included in the final CEN Workshop Agreement.

Deliverable (D1-5)—a report based on the PoC that acts as a blueprint for integrating electronic test certificates into the business models of the stakeholders

Deliverable (D2-5)—a report summarising the operational aspects of the PoC that acts as a blueprint for integrating eReporting into the business models of the stakeholders

Deliverable (D2-6)—a report summarising the systems integration aspects of the PoC

Deliverable (D2-7)—source code corresponding to the software artefacts needed for systems integration.

Task 6: to define ontology and reference implementations

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7 It is recognised that recruiting organisations to participate in the PoC is a risk. Although organisations can expect to have a competitive advantage as a result of participating, in the case that recruitment proves impossible, an alternative to the PoC will be case studies to understand the impact and establish whether the concerns are justified and if the risks are too high. These case studies will involve dissecting every stage of the process and find out the details of the process by identifying all stages and interviewing people and examining documentation.

8 The source code may include high level declarative languages such as XSLT, Sparql or Spin.
Preliminary documents will be drafted for comments by the Workshop participants. Based on feedback received, final ontology and reference implementation will be written for inclusion in the CEN Workshop Agreement.

**Deliverable (D1-7)**—preliminary ISO 10303 reference implementation for representing engineering materials data.

**Deliverable (D1-8)**—preliminary XML Schema reference implementation for representing engineering materials test data.

**Deliverable (D1-9)**—preliminary computer readable reference implementations of the existing reporting Standards.

**Deliverable (D2-1)**—validated prenormative ontology and examples for representing engineering materials test data.

**Deliverable (D2-2)**—validated prenormative ISO 10303 reference implementation and examples for representing engineering materials test data.

**Deliverable (D2-3)**—validated prenormative XML Schema reference implementation and examples for representing engineering materials data.

**Deliverable (D2-4)**—validated prenormative computer readable reference implementations of the existing reporting Standards.

**Task 7: awareness and promotion**
During the lifetime of the Workshop, presentation will be given at external conferences/seminars to promote the Workshop to industry and other stakeholders. Towards the end of the Workshop, it is proposed to organise an Open Conference targeting industry to present the Workshop results.

6. Workshop main deliverables:

- **Draft interim report** (December 2012) containing the draft CWA and progress report on activities

Interim report (D1)—will consist of a progress report and a draft CWA. The progress report will be framed in the context of the BP and ToR. It will identify possible risks in project implementation and propose corrective measures for consideration at the third plenary. The
draft CWA (entitled ‘ICT Standards in Support of an eReporting Framework for the Engineering Materials Sector’) will include the following:

- Proposal for a co-operation agreement between CEN and OASIS-Open subject to agreement by both organizations that describes the terms of use by CEN WS/SERES of the deliverables of the OASIS Materials Markup Language TC (D1-1).
- A review of the motivations for the work and examples of potential benefits and applications of ICT Standards for representing and reporting engineering materials data.
- Descriptions of the existing Standards and specifications relevant to the work to deliver a Standards-based unified information architecture for representing engineering materials, together with a description of the methodology adopted to unify the existing Standards and specifications.
- Prenormative written specification of the main classes (D1-2) together with platform independent (UML) models for the unified information architecture (D1-3 and D1-4).
- Beta version ICT Standards for representing engineering materials data (delivered as digital objects accompanying the CWA or with permanent identifiers referenced from the CWA):
  - Beta version ontology (D1-6).
  - Beta version ISO 10303 reference implementation (D1-7).
  - Beta version XML Schema reference implementation (D1-S).
- Description of the existing procedural Standards for reporting engineering materials data together with corresponding platform independent (UML) models (D1-3 and D1-4).
- Beta version computer readable reference implementations of the existing procedural Standards for reporting engineering materials data (D1-9) (delivered as digital objects accompanying the CWA or with permanent identifiers referenced from the CWA).
- Best practices for developing ICT Standards.
- Initial findings for governance and sustainability, including the preliminary findings of the work to establish the framework for maintaining the information architecture and for its promotion to normative status.
- Opportunities to integrate the Standards for representing and reporting engineering materials data with einvoicing and digital signing technologies.
- Procedure for integrating electronic test certificates into the business models of the stakeholders, including a critical assessment of the expected impacts of the business process intervention and the measures to minimise any adverse impacts (D1-5).

- Final report (November 2013) containing:

Final report (D2)—will include an activity report that summarises the achievements of the CEN Workshop SERES, and the final CWA. In addition to revised versions of above mentioned items, the CWA will include the following:
• Validated prenormative ICT Standards for representing engineering materials data (delivered as digital objects accompanying the CWA or with permanent identifiers referenced from the CWA):
  • Validated prenormative ontology and examples (D2-1).
  • Validated prenormative ISO 10303 reference implementation and examples (D2-2).
  • Validated prenormative XML Schema reference implementation and examples (D23).
  • Validated computer readable reference implementations of the existing procedural Standards for reporting engineering materials data (D2-4) (delivered as digital objects accompanying the CWA or with permanent identifiers referenced from the CWA).
  • Recommendations on governance and sustainability, including a framework for the continued maintenance, development, and alignment of new and existing ICT Standards for representing and reporting engineering materials data.
• Operational documents set out to constitute a blueprint for integrating electronic test certificates into the business models of the stakeholders (D2-5).
• Best practices on systems integration using the ICT Standards for representing and reporting engineering materials data (D2-6).
• Source code corresponding to the software artefacts needed for systems integration (made available under a suitable public license) (D2-7).
• Annexes describing work indirectly related to the delivery of the ICT Standards and the PoC, such as related activities in other sectors and activities consequent to liaisons.

- Final text of the CEN Workshop Agreement on “Standards for Electronic Reporting in the Engineering Sector” containing:
  o Overview of existing relevant specifications
  o Benefits and application of ICT standards for representing and reporting engineering materials test data
  o Specifications of the main classes for representing and reporting engineering materials test data
  o Validated ontologies, XML and ISO 10303 reference implementations
  o Recommendations on governance (including procedures) and maintenance
  o Best practices and example on systems integration using the ICT standards for representing and reporting engineering materials test data.

- Final Report on activities covering promotion, liaisons, maintenance, etc.

The CEN Workshop SERES will update CWA 16200:2010 if needed.
7. Workshop structure

The Workshop Chair is Dr. Chris Bullough, Alstom Power Ltd. The secretary is Jaap van der Marel, NEN (Dutch standardization body). The Workshop will be supported by a Project Team of eight experts. One expert will act as Project Team Leader.

The Project Team will report to the Workshop SERES.

8. Resource requirements

Funding for supporting the Workshop secretariat and the Project Team for a total of 460 man days is provided by the European Commission DG Enterprise and EFTA. A call for experts will be launched in January 2012 to appoint the project Team (URL: www.cen.eu).

Participants will cover their own travel expenses to attend Workshop meetings.

9. Related activities, liaisons, etc.

The CEN Workshop SERES will liaise with:
- OASIS Open
- ECISS/TC 100 + title
- CEN/TC 111 + title
- ISO/TC 184 SC4 + title
- The European Commission Joint Research Centre
- ISO/TC 164 + title
- ASD-STAN
- ISO/TC 229 + title
- CODATA
- NIST + Technical committee
- NIMS + Technical committee, Japan
- AIST + Technical committee, Japan
- VAMAS TWA35

The CEN Workshop SERES will also take into account the results of the CEN Task Force pilot using DOIs for CWA 16:200:2010 if the pilot takes place within the lifetime of the Workshop SERES.

10. Contact points

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