

Interoperability Standards - the I-VLab Standardization Group

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Standardisation Group Workshop

In conjunction with the INTEROP-VLab General Assembly
Brussels, June 27 , 2012

Group Objectives

Create awareness of I-VLab standardisation efforts and related work in standards organisations:

- Promote EI standardisation results via workshops and conferences
- Cooperate in R&D Projects (MSEE) and with EI initiatives
- Coordinate the standards TF in the FInES Cluster
- Participate in SDO working groups

Resources: An expert group composed of members of the I-VLab Poles

Agenda

1. Access and contribution to standards – WP74 MSEE project (M. Zelm)
2. Enterprise Interoperability Framework in CEN TC 310 and ISO TC 184 (D. Chen)
3. Proposal for a Manufacturing Ontology (R. Young)
4. FInES Cluster Standardisation Task Force (M. Zelm)
5. Discussion (All)
6. Workplan

Access and contribution to Standards

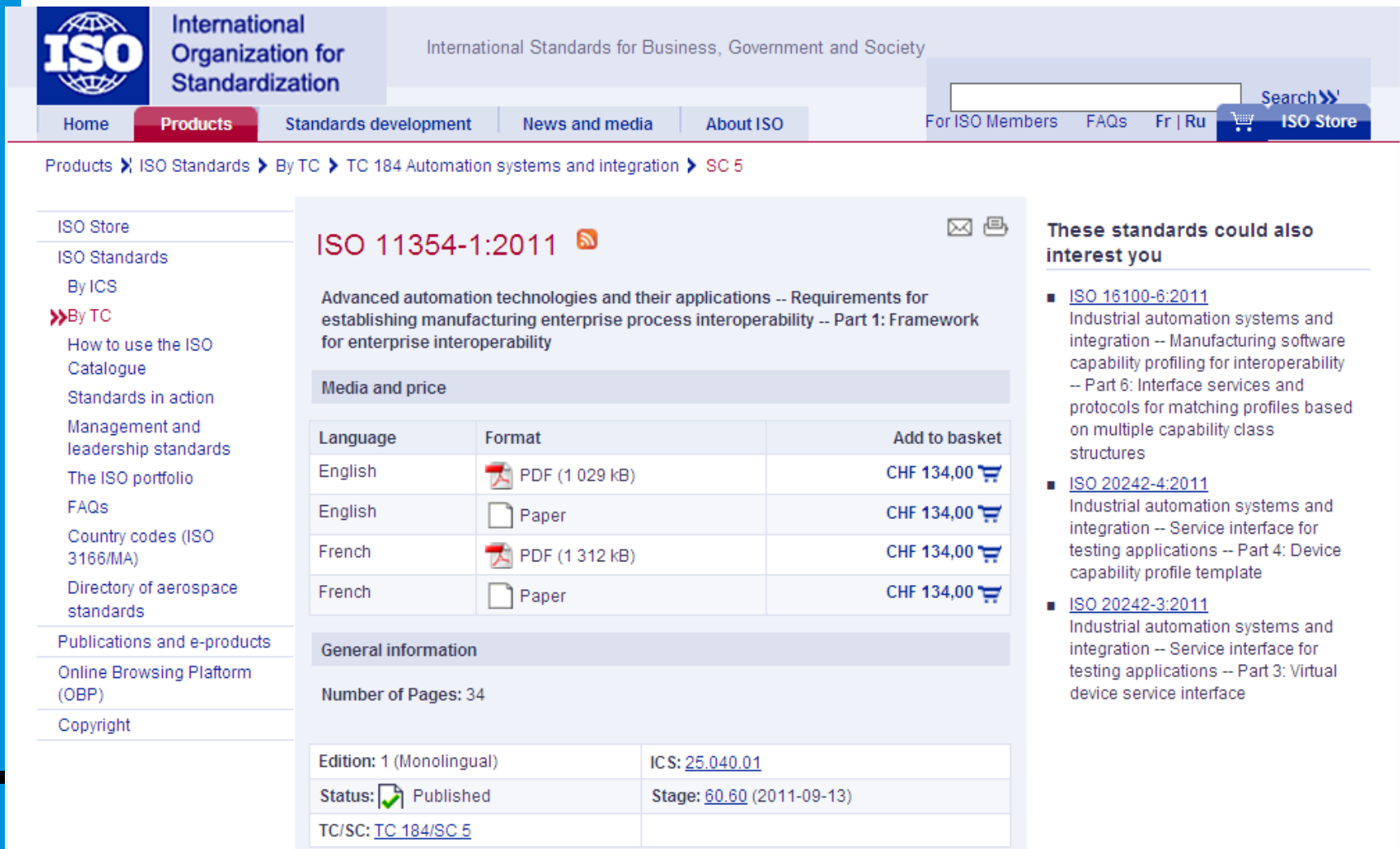
- Survey of standardisation in WP 74 of the ongoing MSEE Project (Manufacturing Service Ecosystems)
 - Title: Standardisation of upcoming Enterprise Services – a questionnaire to build a common knowledge base

Initial Findings

- 17 answers total from the 18 partners received
- 16 /17 answers consider standards important
- 8 /17 answers, nearly 50 percent have not yet been involved in standards development
- Focus of needs is on standards for Service Modelling Languages, SLC and Enterprise Interoperability Framework

Responsible: Martin Zelm

- EN/ISO 11354 – 1: Framework for Enterprise Interoperability, published in 2011
Responsible: David Chen



The screenshot shows the ISO website interface. The top navigation bar includes the ISO logo, the text 'International Organization for Standardization', and the tagline 'International Standards for Business, Government and Society'. Navigation links include Home, Products (highlighted), Standards development, News and media, and About ISO. A search bar and links for ISO Members, FAQs, and the ISO Store are also present.

The main content area displays the product page for ISO 11354-1:2011. The breadcrumb trail is: Products > ISO Standards > By TC > TC 184 Automation systems and integration > SC 5. The product title is 'ISO 11354-1:2011' with a red icon. The description is: 'Advanced automation technologies and their applications -- Requirements for establishing manufacturing enterprise process interoperability -- Part 1: Framework for enterprise interoperability'.

The 'Media and price' section contains a table with the following data:

Language	Format	Add to basket
English	PDF (1 029 kB)	CHF 134,00
English	Paper	CHF 134,00
French	PDF (1 312 kB)	CHF 134,00
French	Paper	CHF 134,00

The 'General information' section provides the following details:

- Number of Pages: 34
- Edition: 1 (Monolingual)
- ICS: 25.040.01
- Status: Published
- Stage: 60.60 (2011-09-13)
- TC/SC: TC 184/SC 5

On the right side, a section titled 'These standards could also interest you' lists related standards:

- ISO 16100-6:2011**: Industrial automation systems and integration -- Manufacturing software capability profiling for interoperability -- Part 6: Interface services and protocols for matching profiles based on multiple capability class structures
- ISO 20242-4:2011**: Industrial automation systems and integration -- Service interface for testing applications -- Part 4: Device capability profile template
- ISO 20242-3:2011**: Industrial automation systems and integration -- Service interface for testing applications -- Part 3: Virtual device service interface

The left sidebar contains a list of links: ISO Store, ISO Standards, By ICS, By TC (highlighted), How to use the ISO Catalogue, Standards in action, Management and leadership standards, The ISO portfolio, FAQs, Country codes (ISO 3166/MA), Directory of aerospace standards, Publications and e-products, Online Browsing Platform (OBP), and Copyright.

On-going work

- CEN NWIP 11354 – 2: Maturity Model for Enterprise Interoperability
 - => Agreement with ISO TC184 SC5 WG1 (convener: Richard Martin: US)
 - => First, to accomplish the work by CEN TC310 WG1 as CEN TS (Technical Specification)
 - => Second, transform CEN TS into ISO 11354 – 2 by ISO TC184 SC5 WG1
- New convener of CEN TC310 WG1 nominated by CEN: David Chen in replacement of David Shorter
- Priority of work of CEN TC310 WG1 in 2012-2013: CEN TS Maturity Model for Enterprise Interoperability

Problem – multiple standards with multiple semantics

Component . [ISO-10303-1]

a product that is not subject to decomposition from the perspective of a specific application

Component -[ISO-10303-AP224]

The component specifies either a Single_piece_part or another Manufactured_assembly used to define an assembly

Component- [ISO 19439:2006]

⟨general⟩ entity that is part of, or capable of becoming part of, a larger whole-

Responsible: Robert Young



Part Versions

ISO 22745
Open
Technical
Dictionarie
s

ISO1030
3-AP239-
PLCS

Planned Part

STEP-ISO
10303

Manufacturing Information

Operation Sequence

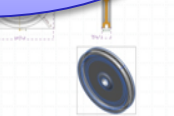
Time Line 3 Jan Feb Mar Apr

Scheduling

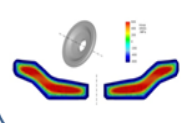
Process Plan



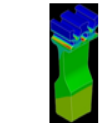
3D CAD Model



Engineering Drawing



Thermal Analysis

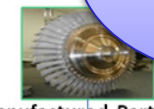


Stress Analysis

•Realised Parts



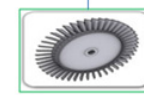
Product



Manufactured Parts



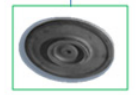
Service Part



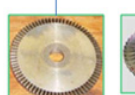
Prototype



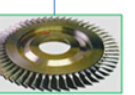
Rejection



Concession



Work In Progress



Finished Part

ISO 13584
PLIB

STEP NC
ISO
10303

ISO13399-
Cutting Tool
Standard

Features & Part Families

Manufacturing Method

Part Family Manufacturing Method

Feature Manufacturing Method

ISO
18629-PSL

ISO 15531
MANDATE (industrial
MANufacturing
management DATa)

STEP-ISO 10303-
AP224 Feature
Based Manufacturing

Design Feature

Standard Features

Manufacturing Feature

Design Part Families

Manuf Part Families

Blade Holding Groove

Temporary Fastening Feature

Axial Blade Slot

Cooling Hole Feature

Straight Hole

Drilling Feature

Aero Engine Families

Turbine Blade Family

Disc Part Family without projections on web

Mfg Part Family Manufacturing Method

Holding Devices:
• WorkPiece Holding
• Tool Holding

Machine Tools

Broaching Machine

Machining Centre

Centre Milling Machine

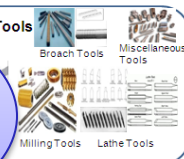
Enterprise

Factory

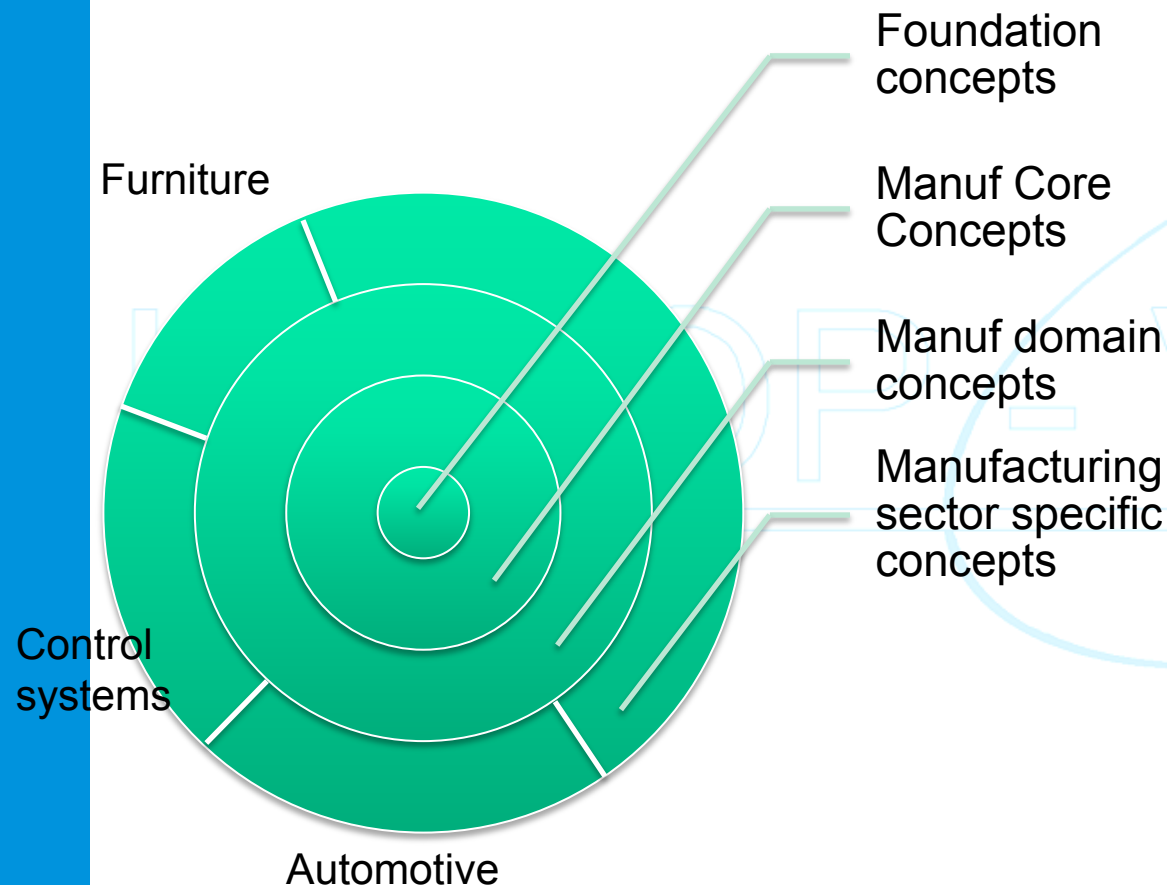
Cell

Shop

Station



Needs for a formal manufacturing reference ontology



ISO TC184/SC4 Industrial Data Integrated Ontologies and Models (IDIOM) is recognising the need for work of this type

Our work to date has shown that Common Logic (CL) provides a more appropriate modelling tool than OWL for modelling complex manufacturing relationships but we need more CL based tools.

FInES Standardisation Task Force Report *

(Version 2 Working Draft)

State of the Art on standardisation developments in Cloud Computing, Internet of Things and Semantic Enterprise Interoperability

Task Force Report recommendations

- Require all projects to have a **standardisation plan**, as this ensures a close relationship between projects and their relevant standardisation groups
- Research the requirements of an **interoperability eco-system framework** that can overcome the existing fragmentation of interoperability standards and **enable inter-standard interoperability**.
- Provide a funding model that enables the **exploitation of project results for standardisation**, but against standardisation timescales

* Editors: Stephen Pattenden, Bob Young, Martin Zelm (Rapporteur), Update July 2012

Discussion

Topics discussed:

- Problems to **engage in standards development**:
 - fear of losing knowledge to competitors
 - little visibility and recognition, compared to research
 - hard to afford for a (single) SME
 - long term process requiring building up of expert knowledge
- **Promotion** of standards very important to reach more motivation, acceptance and implementations
- **Multiple standards** with **multiple semantics**
- Establish common fundamentals, for instance via development of **formal reference ontologies**

Standardisation Group Action Plan

- Contribute to the development of Service oriented Manufacturing Standards (Survey and Follow-Up) in MSEE, WP 74 '*Access and contribution to Standards*', Deliverable D741 Sep 2012
- Establish a workgroup on Service Lifecycle (SLC) and reference ontology, YE 2012
- Continue development on EI Framework and Service languages (VDML)
- Finalise the Standardisation TF Report in the FInES Cluster, 3Q 2012
- Promote/disseminate upcoming EI standardisation in workshops, in MSEE and other tbd