ISO/IEC JTC 1/SC 32

Data Management and Interchange

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<td>Gerald Radack – ISO TC 184/SC 4</td>
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ISO TC184/SC4
Industrial Data

ISO JTC1/SC32 Meeting
Berlin, Germany
2005-04-18

Gerald Radack
Concurrent Technologies Corp.
SC4 Mission

- The mission of SC4 is to
  - develop and promulgate standards for the representation of scientific, technical and industrial data,
  - to develop methods for assessing conformance to these standards, and
  - to provide technical support to other organizations seeking to deploy such standards in industry
What is Industrial Data?

- **Product Definition Data**
  - Long life span - 30-50 years
  - Large, complex products, needing configuration management

- **Component Libraries**
  - Different views - geometry, metadata
  - Different forms of lists - explicit, algorithm, class

- **Data Warehousing**
  - Simpler model, data driven

- **Manufacturing Management Data**
  - Factory resource and control

- **Process Specification**
Product Data Exchange/Sharing

- Industry requires complete, accurate and timely data exchange and use
  - Between all the participants in a value chain
  - Throughout the entire life cycle
  - Across all business functions

- Consistent models
- Common vocabulary
- Consistent reference data
- Information quality
Participation

- 20 P-members
- 13 O-members
- 42 A-liaisons

- Approximately 200-250 experts, attending three working meetings a year with average attendance of 120

- Increasing profile in large industry
  - Commitment by US DoD, UK MoD
  - Industrial seminars
  - Links to major initiatives, such as DoD UID
# ISO TC184/SC4 Standards

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<td>STEP</td>
<td>ISO 10303</td>
<td>Product data representation and exchange Standard for the exchange of product model data</td>
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<td>PLIB</td>
<td>ISO 13584</td>
<td>Parts library</td>
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<td>MANDATE</td>
<td>ISO 15531</td>
<td>Industrial manufacturing management data exchange</td>
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<td>OIL &amp; GAS</td>
<td>ISO 15926</td>
<td>Integration of lifecycle data for process plants including oil and gas production facilities</td>
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<td>PSL</td>
<td>ISO 18629</td>
<td>Process specification language</td>
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<td>IIDEAS</td>
<td>ISO 18876</td>
<td>Integration of industrial data for exchange, access, and sharing</td>
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<td>OTD</td>
<td>ISO 22745</td>
<td>Open technical dictionary</td>
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## ISO TC184/SC4 Standards

<table>
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<th>ISO 20542</th>
<th>Reference model for systems engineering</th>
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<td>ISO 22720</td>
<td>ASAM Open Data Services</td>
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<td>IFC</td>
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<td>IFC</td>
<td>Industry Foundation Classes</td>
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STEP – ISO 10303

- An International Standard for the computer-interpretable representation and exchange of industrial product data.
- The objective is to provide a mechanism that is capable of describing product data throughout the life cycle of a product, independent from any particular system.
Application protocols provide a standard data definition for a business function, process or application.
Application Protocols map the user view into the STEP data models.
STEP current major thrusts

- Shipbuilding (APs 215, 216, 218)
- Manufacturing - STEP-NC/Process Plans (238,240)
- Materials (AP235)
- Computational Fluid Dynamics (AP237) on hold
- Systems Engineering (AP233)
- Furniture (AP236)
- Printed circuit assemblies (AP210 Modular ed 2)
- Building and construction
- XML Schema support (Part 28 ed 2)
PLIB – ISO 13584

- Covers dictionaries and component libraries
- Dictionaries being developed for
  - Fasteners (ISO 13584-511)
  - Environmental measuring equipment (ISO 13584-501)
  - Cutting tools (ISO 13399)
- Some potential updates to data model identified
OIL & GAS – ISO 15926

- Representation of information associated with engineering, construction and operation of plants, supporting:
  - information requirements in all life-cycle phases
  - sharing and integration of information

- Includes:
  - a generic, conceptual data model
  - a reference data library of common information rules for developing and maintaining additional reference data libraries
  - testing for conformance
MANDATE – ISO 15531

- External communications
  - Basic principles for ordering and controlling manufacturing flows - closely linked to e-commerce

- Manufacturing Resource usage
  - Monitoring the usage of manufacturing resources for planning purposes

- Flow control
  - Data to control and monitor flow of material in an enterprise
PSL – ISO 18629

- Provides a generic language for describing a discrete manufacturing process throughout the entire production process
- Enables the interoperability of manufacturing processes between software applications that utilize different process models and process representations
- Is based on a core which defines axioms for the concepts of activity, activity-occurrence, timepoint, and object which can be shared between two process-related applications
- Under development jointly with TC184/SC5
IIDEAS – ISO/TS 18876

- Integration of industrial data for exchange, access and sharing
- Information integration architecture
  - integration of data from different sources, different data models, and in different modelling languages
  - enable sharing of the same data between different applications
  - resolution of structural conflicts between models developed with different objectives
  - translation of data and data models between different encodings and modelling languages
- Technical Specifications:
  - Architecture overview and description
  - Integration and mapping methodology
**OTD – ISO/TS 22745**

- Goal is to lower costs and improve quality by enabling cataloging at source
  - Eliminate most manual aspects of cataloging
  - Eliminate data mapping
- Open Technical Dictionary of properties for cataloging
  - Use existing ISO and IEC terminology where available
  - Harmonization process to ensure synchronization with ISO and IEC terminology
  - **Is a metadata registry as defined in ISO/IEC 11179**
- Implementation guide on integration of catalog data in STEP
  - Document guidelines for the use of dictionary elements defined in the OTD as reference data for the incorporation of cataloging information into ISO 10303 product data files
  - Enable automated extraction of catalog descriptions from STEP files
- Current status: NWI accepted but with many comments
Success Stories

- Eurofighter
- Lockheed Martin
- Boeing
- Raytheon
- Rockwell Collins
- IBM
- Ford
- GD Electric Boat
- Pratt & Whitney
- NASA
- Japanese Construction Industry
Key Issues

- Other groups modeling industrial data
  - Forming effective liaisons early enough
- Harmonizing standards
- Making standard publicly available, free of charge
- Links to eTrading Data
Topics with SC32

- Clarification of the relationship between ISO 13584 (PLIB) and ISO/IEC 11179
- Publication of ISO 22745 (OTD) data as an ISO/IEC 11179-compliant metadata registry
## Upcoming Meeting Schedule

http://www.tc184-sc4.org

**select: “meetings”**

<table>
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<tr>
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<th>Year</th>
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<tr>
<td>Spring</td>
<td>2005</td>
<td>Valencia, Spain</td>
</tr>
<tr>
<td>Summer</td>
<td>2005</td>
<td>Hangzhou, China</td>
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<tr>
<td>Fall</td>
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<td>Brazil</td>
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Backup Slides
Links to eTrading Data

- Address overlaps with information content of eTrading standards
- New UN/CEFACT Business Collaboration Framework closely aligned with STEP approach
- CEFACT TBG17 recognised by MoU/MG as focus for XML data element harmonisation – resourcing issue
- Need new TC184 link to TC154