Journée de l'interopérabilité des données et des connaissances en construction

Le 29 mars 2004 à Lyon

Comité d'organisation :

Parisa GHODOUS, Lionel MÉDINI

Programme

09h15-10h00	**Accueil des participants**
10h00-10h15	Introduction, par Parisa Ghodous (Université Lyon 1) et Celson Lima (CSTB)
10h15-11h00	Présentation de l'ISO TC 184, par son président, Jean-Marc Chatelard (Vice-Président de Schneider Electric)
11h00-11h45	Présentation du projet PRODAEC, par Parisa Ghodous (Université Lyon 1) et Celson Lima (CSTB)
11h45-12h30	Modélisation contextuelle et interopérabilité des données, par Patrick Brézillon (CNRS)
12h30-14h00	**Déjeûner**
14h00-14h45	PSL : des standards pour la construction, par Anne-Françoise Cutting-Decelle (Université d'Evry)
14h45-15h30	Interopérabilité en construction, par Alain Maury (Alliance Internationale pour l'Interopérabilité)
15h30-15h45	**Pause café**
15h45-16h30	Les catalogues électroniques, par Frédéric Grand (BBS SLAMA)
16h30-17h15	Table ronde

Remerciements à Catarina Ferreira Da Silva, Samer Abdel Ghafour et Patrick Hoffmann pour leur participation à l'organisation de cette journée.

Présentation de l'ISO TC 184, Jean-Marc Chatelard

PRODAEC INTEROPERABILITY

ISO TC 184

« Industrial Automation Systems and Integration »

LIRIS Laboratory - LYON

March 29th, 2004

Jean Marc Chatelard
ISO TC 184 Chairman
FR-ISO-chatelard@mail.schneider.fr

GENERAL OVERVIEW of ISO TC 184

« Industrial Automation Systems and Integration »

-Organization,
-Programs,
-Benefits,
-Collaboration.

Some words about Global ISO : International Organization for Standardization (www.iso.org)

- legal association supported by a Central Secretariat (Geneva Switzterland)
- with 146 nationals members
- 188 Technical committees
- about 3000 technical bodies involving 35000 experts around the World
- responsible for all sectors excluding Electrotechnical(IEC) and Telecoms(ITU)

The main deliverable of ISO is the INTERNATIONAL STANDARD

- which embodies the essential principles of Global openness and Transparency, Consensus and Technical Coherence
- Total IS published: 13700 (900 in 2002)
  In progress: 4400

SCOPE OF ISO TC 184 "Industrial Automation Systems and Integration" was created in 1982.

· "Standardization in the field of industrial automation and integration concerning discrete part manufacturing and encompassing the applications of multiple technologies, i.e. information systems, machines and equipments and telecommunications"
Excluded: electrical and electronic equipment (IEC/TC 44) and programmable logical controllers for general applications (IEC/TC 65)

The scope of ISO TC184 means that its standards are :

. applicable to manufacturing and process industries.

. applicable to all sizes of business.

. and extending exchanges across the globe through e.business

The market: Industry has to face competitive challenges.

- reduce costs of design,production,support,etc..
- improve quality and reliability.
- improve customer satisfaction.
- reduce lead time
- build alliances to rapidly meet markets needs.
- provide their markets with new and innovative products and services.
- move away from traditionnal process-oriented to an overall performance-related approach.
- A major impact: The Industrial use of Internet with the associated technologies.

Industry business response includes Investment in Industrial Automation and Exploitation of electronic business

ISO TC 184 STANDARDS ADD VALUE/BENEFIT TO SUCH AN INVESTMENT.

- Clear need for standards for the interfaces to simplify and reduce cost of integration.
- Information is a major asset in the supply chain : standards allow to protect information through the evolution of application.
- There is strong commercial pressure to exploit existing investments : standards facilitate the integration of new elements
- Change of business requirements demands flexible configuration of resources : standards ease configuration changes
- In the interactions of separate organizations : standards allow rapid creation or modification of alliances particularly for global supply chain.

TC 184 STANDARDS are required for such areas as Enterprise modeling and Systems Architecture,Communication,Data,Information processing control, Human,Mechanical and System operational aspects

OVERALL BENEFITS EXPECTED FROM ISO TC 184 WORKS

· The main benefit expected is to accompany the Economic and Industrial Growth by delivering IT standards that support Application Integration and BtoB Electronic commerce.

· TC184 works will facilitate the development of Manufacturing industries with regard to the New Economy based on IT innovation.

· Our works also will support the G8 dot.force initiative to open the global electronic market to developing countries.

MAJORS PLAYERS IN THE ISO TC 184:

- "ISO TC 184 customers"
  - Industrial enterprises and their products suppliers.
  - Suppliers of elements of industrial automation systems.
  - Systems integrators providing services.

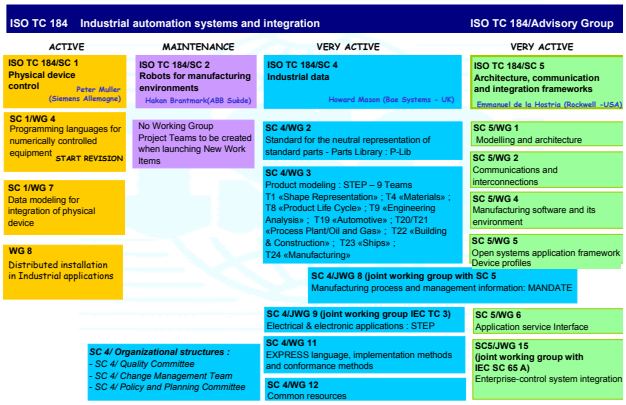
All the major international companies from Automotive,Aeronautics,Space & Defense,Electric Device, Energy,Oil,Gas,Automation, IT and Software participate in ISO TC 184 works.

-TC184 Advisory Group: 40 recognised representatives from leading industries

- "Academia, Research Institutes" represent a major participation in the ISO TC 184 works.
  - Advisers, Consultants
  - Major National Bodies participate and support ISO TC 184 works (21 Participating countries, 22 Observer countries)

- ISO TC 184 has many liaisons/collaborations with others ISO TCs and organizations as CEN(TC 310),IEC(SB3),ANSI,ISA,IEEE,NEMA,AECMA,ASAM, MoU on e.business,ITU,UN/ECE,etc…..

ISO TC 184 ORGANIZATION



ISO TC 184 AND ITS 4 SCs PROGRAMS

-SCOPE SC1: Physical Device Control (11 IS published)

.Standardization of progamming language dedicated to the applications of Numerical controlled Equipement.

-Key standards:

. Data Model for computerized numerical controllers:ISO 14649.

. Dimensional Measuring Interface(DMIS) ISO 22093

. Standardization on Distributed Installation in Industrial applications(Desina project) ISO 23570

- SCOPE SC2 : Robots for Manufacturing environment(18 IS published)
  - Key standards: Mechanical interfaces ISO 9409-1 and Safety ISO 10218
  - Redefinition of the SC2 scope in progress.

ISO TC 184 AND ITS 4 SCs PROGRAMS(continued)

-SCOPE SC4: Industrial Data (100 IS published)

. Standardization of information which is shared or exchanged in the area of industrial and manufacturing applications: representation of scientific, technical and industrial data.
. It includes organizational data, relation between enterprises and between components, supplier identification, personnel data for approvals identification.

-Key Standards:
. ISO 10303 STEP,13584 PLIB,15531 MANDATE,18629 PSL, 18876 Integration methodology.

-Key Achievements:
. STEP2 and PLIB completed,STEP modular architecture completed, Set of PDM modules completed.

-Future developments: Parametric/construction history, Component dictionaries based on PLIB, Interaction with other IT groups OAG,OASIS,OMG.

-Innovation: XML-based STEP repository, Opensource environment,Accessible through SC4online,Extracted into HTML for viewing and publication,Automated formating,hyperlinks and indexing(save 30% preparation time).

ISO TC 184 AND ITS 4 SCs PROGRAMS(continued)

-SCOPE SC5: Architecture,Communications,Integration,Framework (15 IS published)

. Standardization in the field of architecture,communication and processes to enable manufacturing system integration,interworking and interoperability.
. It includes Automation glossary, Process representations and requirements for a Global programming environment.

-Key standards:
.ISO 19439/CEN TC310 Enterprise modeling,15704 Enterprise Architecture
.16100/JTC1 Manufacturing soft capability profiling for interoperability,
.15745/IEC65 open systems integration framework(device profiles),
.20242/ASAM Service interface for testing applications,
.18629/SC4 Process spec's language,IEC62264 Enterprise-control system integration.

-Study groups: on glossary for industrial automation integration and on diagnostics and maintenance integration.

-Future developments/Initiatives:
. Inter-process interoperabilty schema.
. Integration of security in manufacturing systems.
. Simulation application integration framework.
. Supply chain integration across manufacturing operations.

ISO TC 184 AND ITS SCs FUTURE CONSIDERATIONS.(listed)

- Target a single unified definition for enterprise information.
- Standards for validating quality of products models and long term data detention.
- Standards to provide complete infrastructure for definition,selection and acquisition of material from digital libraries.
- Definition of an enterprise model and exchange,sharing of enterprise models.
- Requirements for IT security(as well as for manufacturing control system).
- Taxonomy for software capability profiling for interoperability.
- Standard structure for manufacturing asset definition and management.
- Integration profiles for different classes of equipment.

ISO TC 184/CONCURRENT ENGINEERING RELATIVE TO STANDARDIZATION

- In writing Standards, "Concurrence in Development" has to be managed:
- within a technical committee and its sub-committees
- within an International standards organization
- within a dedicated industry

- In using Standards, "Concurrence in Application" has to be managed:
- within a manufacturing application life cycle
- within a product life cycle
- within an enterprise life cycle
- within a supply chain life cycle

ISO TC 184/CONCURRENT ENGINEERING RELATIONSHIP

- A good Standard is the result of a successfull co-operation with high consensus of Suppliers, Users and Researchers.

- In Europe, CEN encourages research related to standards, CEN/STAR makes the evaluation of the projects.
CEN/STAR has defined 2 approaches: a pre-standard research and a co-standard research.

- Pre-standard research: we expect that the result lead to the development of a standard. Ex:In TC184 FunStep & Vamas have been submitted to CEN/STAR.
- Co-Standard research: Necessary works to be conducted in order to complete a standard program. Also submitted to CEN/STAR

ISO TC 184/CONCURRENT ENGINEERING RELATIONSHIP

Certainly we have common interest working together

What do Research and Academia bring to Standardization?

. Large resources contribution to the standard developments.
. Upgrading the standard development to the most advanced technical works.
. Advanced support to standard technical development.

What do Standard bring to Research and Academia?

. Knowlegde of the Industrial needs,methods and environment.
. Make the research works valuable and applicable to the industry
. Enlarge the audience beyond the Scientific Community

"RESEARCH and ACADEMIA" have a large contribution to the ISO TC 184 OVERALL OBJECTIVES :

- MARKET RELEVANCE : deliver the expected standards to the Industry.

Your technical coherence

- TIME to MARKET : improve our development performance.

Your tehnical expertise

- CO-OPERATION/JOINT WORKING GROUP "Taking on board all good work".

your experience in international cross-fertilization

- RESOURCES MANAGEMENT : clear priorities and remain focused on target.

your team involvement

- PROMOTION of TC 184 WORKS: Standards not enough used in the industry.

Through the Education and Research community

ISO TC 184/CONCURRENT ENGINEERING RELATIONSHIP

As a conclusion:

- ISO TC 184 is very pleased to have a large participation of members from Research Institutes and from the Academia in the different Sub-Committees.

- With Academia and Research, we share the same ethics and principles required by central ISO for developing Standards: Openness, Transparency, Consensus and Technical coherence.

- Your contribution is really a key factor for the publication of the right standard at the right time.

- ISO TC184 is totally open to explore new ways to improve our partnership

Annexe 1

Plus d'information sur:

- PLIB - Parts Libraries (ISO 13584)
- STEP - Product Model Data (ISO 10303)
- Manufacturing Management Data - MANDATE (ISO 15531)
- Process Specification Language (ISO 18629)
- IIDEAS (ISO 18876)

Parts Library (PLib)

As a exemple

•Scope

– To develop a computer-interpretable representation parts library data:
"Represent as data the whole content of usual component paper catalogues"

•Objective

– To provide a **neutral mechanism capable of transferring** parts library data

– To define a **basis for implementing and sharing databases** of parts library data

Parts Library (PLib)

•Content: Two major parts

– *Dictionaries:*
To capture and to identify (Globally Unique Identifiers) product categories and properties that have the "same semantic meaning"
  - *Joint development with IEC SC3D*

– *Libraries / catalogues:*
To represent content of component libraries and catalogues
  - *population,*
  - *selection process,*
  - *component behaviour*
  - *component representation (e; g., geometry)*

Parts Library (PLib)

•Applications: 4 domains:

– Electronic exchange of supplier catalogues (switching from document to data)

– Define IT infrastructure of the extended entreprise:
PDM + Component repository + Applications

– Fundamental capability for e-business: to characterize product by unambiguous characteristcs

– To generate Web site for product description and selection

Parts Library (PLib)

•Applications: 4 domains:

– **Electronic exchange of supplier catalogues (switching from document to data)**

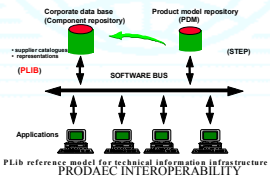
```
ISO-10303-21;
HEADER;

/* DICTIONARY BSU for reference */
/*BSU for supplier */
#20 = SUPPLIER_BSU ('80///A123ER456YT',

/* BSU for component_class */
#60 = CLASS_BSU ('PAW', '001', #20);

/* BSU for properties */
#90 = PROPERTY_BSU ('d_in', '001', #50);
...
```

– **Define IT infrastructure of the extended entreprise:**
PDM + Component repository + Applications



Parts Library (PLib)

– Fundamental capability for e-business: to characterize product by unambiguous characteristcs

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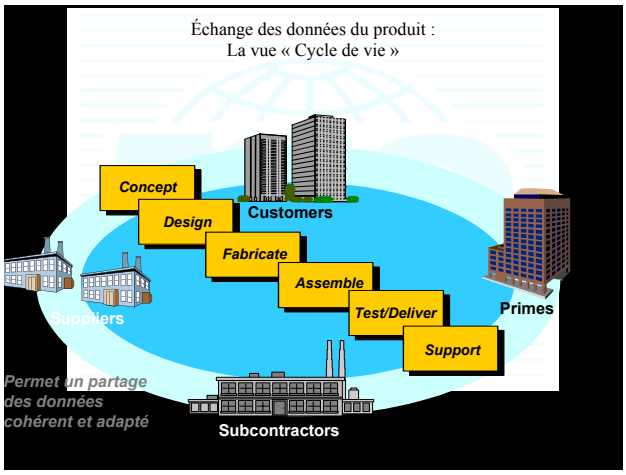
factor of permeability of magnetic material at specified frequency...

– To generate Web site for product description and selection

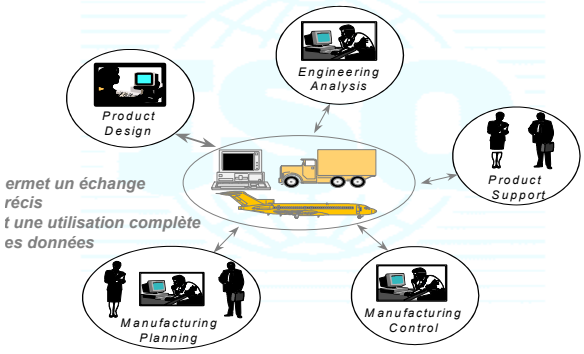
PLIB - Parts Libraries (ISO 13584)

- Description of supplier part library structure
  - Supporting automatic integration into user libraries
- Representations of lists of "similar parts" - related by geometry, part of same product, etc
  - defined explicitly or implicitly
  - dictionary data exchange (developed jointly with IEC 61360-2)
- API for generating geometric models
- Structuring for part family definitions
- Supplier codes
- View exchange protocols
  - Parametric programs
  - ISO 10303 compliant models
- Some shared resources with STEP

Échange des données du produit : La vue « Cycle de vie »



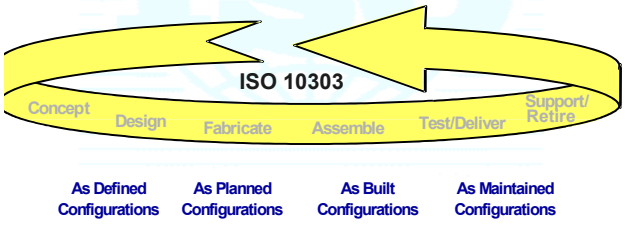
Échange des données du produit : La vue « fonctionnelle »



Domaine d'étude de STEP

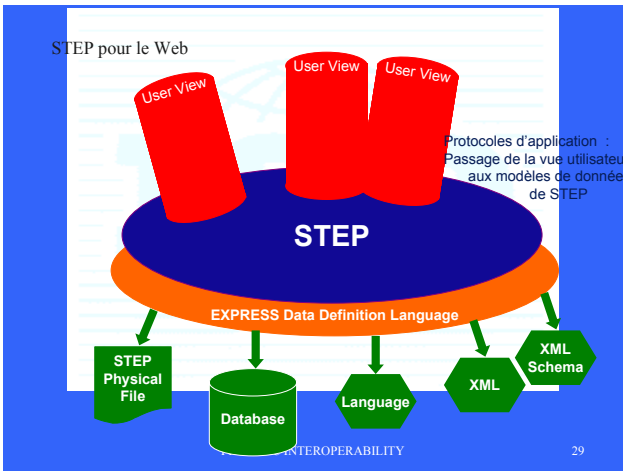
STandard for the Exchange of Product Model Data

Décrit les données de produit tout au long du cycle de vie du produit.

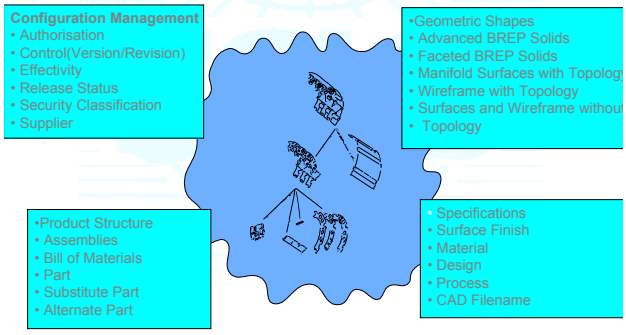


As Defined Configurations | **As Planned Configurations** | **As Built Configurations** | **As Maintained Configurations**

STEP pour le Web

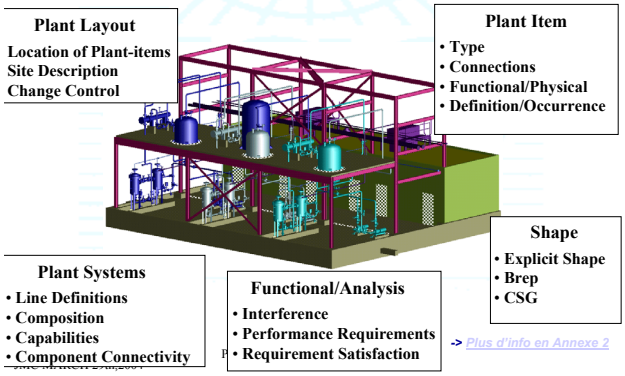


AP 203: Configuration Controlled Design of Mechanical Parts



AP 214: Core Data for Automotive Mechanical Design Processes

AP227: Plant Spatial Configuration



-> Plus d'info en Annexe 2

STEP – Résumé et conclusions intermédiaires

- STEP est plus qu'un format neutre pour échanger la géométrie des pièces. Il s'appuie sur la technologie Web et permet l'utilisation des données de produits où et quand cela est nécessaire :
  - au sein de l'entreprise étendue,
  - tout le long du cycle de vie du produit.
- STEP est un moyen normalisé de structurer l'information pour soutenir les processus utilisés et faciliter la mise en oeuvre de nouveaux processus tels que :
  - Ingénierie concourante,
  - e-procurement et gestion de la chaîne d'approvisionnement.
  - Soutien logistique du contractant.
- STEP est indépendant de la technologie. Il s'attache au contenu sémantique et pérenne des données des produits.
- STEP fournit un mécanisme l'archivage, et au-delà, les données légales.

Impact économique de STEP dans les industries aéronautique, automobile et navale aux US

- La mise en œuvre de STEP dans ces industries :
  - Potentiellement 928 million d'économies annuelles à l'horizon 2010 dans les seules applications de CAO et CFAO (Hors PDM) aux Etats-Unis.
  - 50% des économies dans l'industrie automobile (27% dans l'aéronautique), et TRES majoritairement chez les sous-traitants (niveau 1 et au delà)
- L'échantillon final de l'étude:
  - 100 entreprises (66% de réponses représentant 4% de l'emploi industriel du secteur)
- Questions :
  - Quid des résultats d'une étude équivalente en Europe ou en France ?
  - Quid de la mise en œuvre d'autres applications industrielles basées sur STEP (PDM) ?
  - Quid du Protocole d'Application 214 (Non pris en compte dans l'étude) ?
  - Quid de la mise en oeuvre d'autres normes de l'ISO TC 184 (PLIB, MANDATE, …)?

Manufacturing Management Data - 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

Process Specification Language (ISO 18629)

- PSL provides a generic language for describing a discrete manufacturing process throughout the entire production process
- PSL enables the interoperability of manufacturing processes between software applications that utilize different process models and process representations
- PSL is based on a core which defines axioms for the concepts of activity, activity-occurrence, timepoint, and object such that any two process-related applications must share these axioms in order to exchange process information
- Under development jointly with TC184/SC5

IIDEAS (ISO 18876)

- Integration of industrial data for exchange, access and sharing
- Information integration architecture across multiple models
  - 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
- Standard (Technical Specification) comprises:
  - Architecture overview and description
  - Integration and mapping methodology

All the ISO TC 184 and its SCs warmly thank you for your total involvement in standards.

Présentation des projets PRODAEC, e-COGNOS et FUNSIEC, Parisa Ghodous et Celson Lima

French NIP : Parisa Ghodous (Lyon I University), Celson Lima (CSTB)
Project Manager : Manuel Martinez (AIDICO)

IST-2001-32035

prodAEC Goals

- Be the primary source of information for standards on data exchange and e-business in European AEC/FM sector
- Support and bring together national, local and industrial initiatives promoting standards development/use in AEC/FM
- Increase SME competitiveness by adoption/implementation of standards
- Provide an extensive process-based overview of proper modelling standards
- Promote harmonisation of standards in the AEC sector

prodAEC project

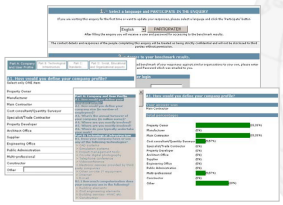
- Industrial Needs
  - Findings of past inquiries into ICT needs of European AEC
  - **prodAEC Benchmarker**
- ICT related Standards in AEC
  - State of the art, gap analysis, and roadmap for harmonisation
    - Procurement
    - 2D-CAD data exchange and Layering
    - 3D-CAD data exchange & Building Models
    - Metadata interconnecting EDM/PDM
  - **proMAP tool. Process-oriented**
- e-Business in AEC
  - State-of-the-art e-business in AEC
    - eMarket places
    - Software tools
    - B2A
  - e-Business Standardisation Initiatives
  - **Best practice cases**

Industry ICT requirements

- Summary on results of previous investigations into industrial requirements undertaken at a European level including:
  - eLSEwise, discussion workshop, 2 industry working groups, 3 projects
- prodAEC Observations on achievements of past initiatives
  - EC hosted Discussion Workshop 23rd Sept. 1999
  - Construction Competitiveness ICT WG Phase 2 (2003)
  - SCENIC (Best practice network in ESPRIT programme)
  - ECCREDI Working Group June 1999
  - ELSEwise ESPRIT Project #20876
  - CIMsteel EUREKA project (#130)
  - ICCI IST-2000-33022 Project

Benchmarking Service (I)

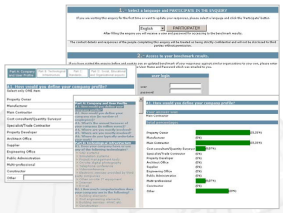
- Compare relative position in ICT use and awareness in AEC …
  - With companies of same profile/segment,
  - Without effort for collecting competitor's data
- Multilingual enquiry. Web forms
- Automated & personalised immediate report available.
- Useful hyperlinks to glossary.
- Information updated on-line and in a single international database



- Identify lacks in ICT awareness level and implementation at industrial level
- Updated knowledge about the actual awareness level and the status of ICT in AEC/FM. Keep track of the sector evolution

Benchmarking Users

- Industry
  - Designers
  - Contractors.
  - Supply chain.
- R/D community
  - Tech Needs
- Education
  - Training needs.
- Vendors
  - Product development strategies.
  - Country,discipline and topic specific reports.



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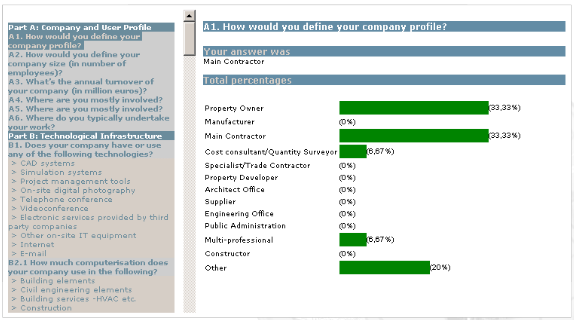
Benchmarking Service (II)



Part A: Company and User Profile
A1. How would you define your company profile?
A2. How would you define your company size (in number of employees)?
A3. What's the annual turnover of your company (in million euros)?
A4. Where are you mostly involved?
A5. Where are you mostly involved?
A6. Where do you typically undertake your work?
Part B: Technological Infrastructure
B1. Does your company have or use any of the following technologies?
A1. How would you define your company profile?
Your answer was
Main Contractor
Total percentages
Property Owner (33,33%)
Manufacturer (0%)
Main Contractor (33,33%)
Cost consultant/Quantity Surveyor (6,67%)
Specialist/Trade Contractor (0%)
Property Developer (0%)
Architect Office (0%)
Supplier (0%)
Engineering Office (0%)
Public Administration (0%)
Multi-professional (6,67%)
Constructor (0%)
Other (20%)

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Standards

- Current situation concerning ICT standards in European AEC sector
- Procurement
  - Existing standards and methods of procurement and related topics investigated in Europe
- 3D-CAD data exchange & Building Models
  - Current situation on use of building model related standards in AEC: **IFC, AP225**, but also CIMsteel, PSS, funSTEP, and other related ISO standards
- 2D-CAD data exchange and Layering
  - Standards for exchange of 2D design drawings with layering mechanisms
- Metadata interconnecting EDM/PDM
  - Identify standards, specifications and technologies relevant for exchanging metadata; evaluate usage and corresponding EDM systems in AEC/FM; implementation level by software

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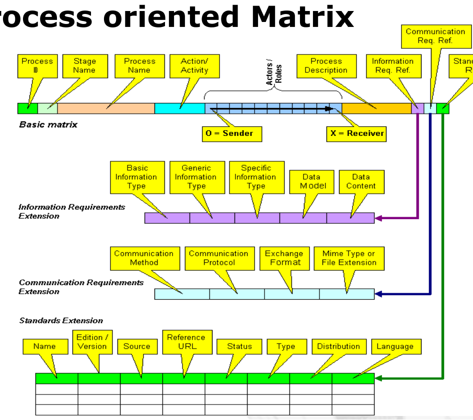
Process oriented Matrix



Communication Req. Ref.
Process #
Stage Name
Process Name
Action/ Activity
Actors / Roles
Process Description
Information Req. Ref.
Standards Ref.
Basic matrix
O = Sender
X = Receiver
Basic Information Type
Generic Information Type
Specific Information Type
Data Model
Data Content
Information Requirements Extension
Communication Method
Communication Protocol
Exchange Format
Mime Type or File Extension
Communication Requirements Extension
Standards Extension
Name
Edition / Version
Source
Reference URL
Status
Type
Distribution
Language

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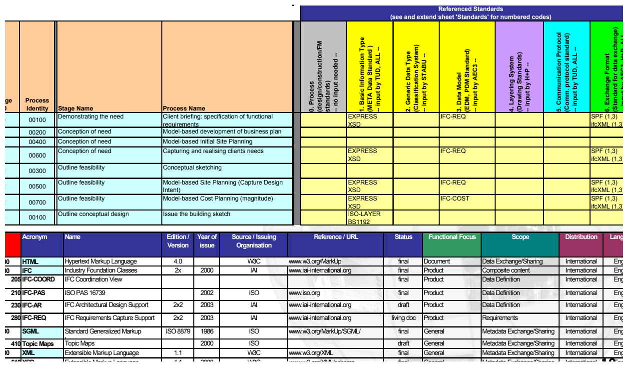
Standards-Process oriented Matrix



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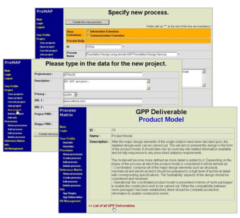
Service on standards. ProMAP

- Web engine enabling access to meaningful modelling, data-exchange standards represented in a process-oriented approach
- Direct link to accurate/structured information regarding standards
- Extensive construction process outline in processes/sub-processes
- Action identification with associated actors and roles



- Retrieve info concerning standards on AEC
- Reference framework describing project activities
- Aware of available standards process-oriented
- Use standard ways, not proprietary solutions
- Open path for project centred collaboration
- Identify clusters, gaps, coherencies, requirements
- Capture processes info and ICT requirements
- First step in the application development process

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eBusiness

- **Includes the electronic trading of physical goods and of intangibles such as information**
- **All the trading steps such as online marketing, ordering, payment, and support for delivery**
- **The electronic provision of services (after-sales support or online legal advice), electronic support for collaboration between companies (collaborative design)**

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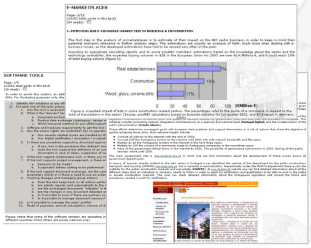
e-Business AEC in Europe

- E-Marketplaces (services, modus operandi, etc)
- Software tools for e-business (capabilities, costs, providers)
- Business-to-Administration (e-public services, competitors)

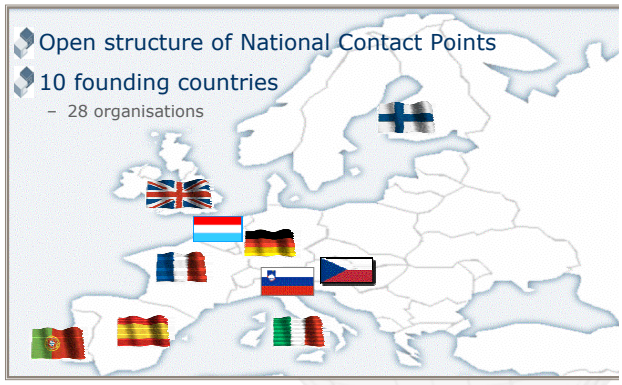


- eBusiness related standards
  - Analysis of standards
  - Applicability
  - Best practice cases
  - Recomendations

prodAEC — Information Society

National Contact Points

- Open structure of National Contact Points
- 10 founding countries
  - 28 organisations



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AEC-IT Projects Database

- Web based IT projects database on AEC/FM at National and European levels with sensible querying & filtering engine
- Project description, objectives, results and scope
- Scheduling facts (Project Start, Duration and Global Budget)
- Financing data (by Region, Kind of, Rate of)
- Categorisation by Area (e-Work, Legal issues, Procurement, ...)
- Partnership information (including contact information)

- State-of-the-art update information on AEC/FM IT
- Know about projects in a specific area and/or country
- Identify/contact people with experience in designated areas to share knowledge, experience and expertise
- Process data for statistical purposes: position each country against EU, retrieve the global EU picture of IT on AEC/FM and match with the world, obtain funding characteristics, etc

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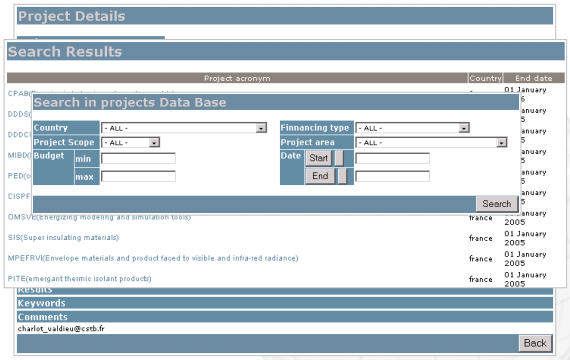
Web AEC-IT Projects Database



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Main deliverables produced

- Standards related
  - Standards Analysis. Current AEC Situation
  - Analysis of detected tendencies
  - Standardisation Roadmap for the AEC Sector
- eBusiness related
  - e-Business state-of-the-art in AEC
  - Analysis of e-Business standards applicability
  - e-Business Best Practices in AEC
- Industrial requirements related
  - Achievements of Previous European Projects & Initiatives
  - Requirements Analysis Report (Industrial Needs)
  - Enquiry Results. (Benchmarking service)
- National Contact Points
  - Countries Information Report

prodAEC — Information Society

prodAEC Details

www.prodaec.net

- Budget: ~1 Million €
- IST 2001-32035
- Start: February 2002
- Finish: February 2004

E-COGNOS Project Technical Overview

Methodologies, tools and architecture for electronic, consistent knowledge management across projects and between enterprises in the construction sector

nformation Society Technologies

Lyon, March 2004

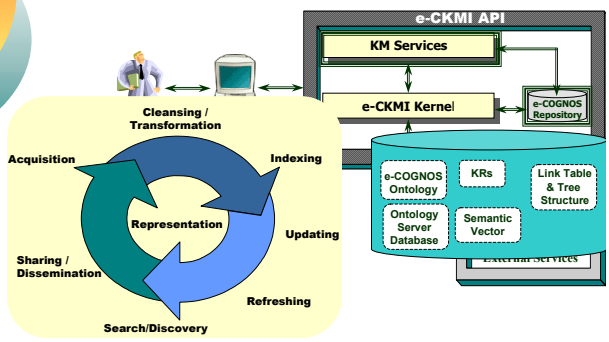
Outline

- ✓ Requirements
- ✓ The e-CKMI
- ✓ The end users Applications
- ✓ The Ontology
- ✓ The e-COSer
- ✓ Lessons Learned
- ✓ Open points

End Users' Requirements

- Approach: selection of "**Knowledge Intensive**" BPs
- Requirements identification
  - **Functional: human-centred**, easy to use, coverage, appealing, adaptive, **configurable**, rely on results/solutions already found, **flexible**, based on autonomous processes,
  - **Technical: Web-centred**, **ontology-based**, **push mechanisms**, autonomous processes, and interdependence among knowledge layers
  - **Architectural:** interoperability, **integration**, flexibility, scalability, sustainability, **heterogeneous inter-related knowledge sources**, and large knowledge sources

The e-CKMI Architecture



The e-CKMI Main Features

Capture and manage diverse organizational knowledge: documents, actors, projects, organisations, interests, user profiles

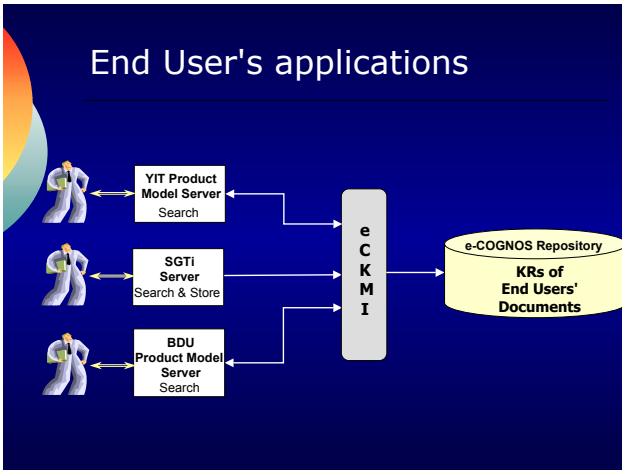
Provide support for knowledge acquisition, transformation, indexing, updating, refreshing, searching, and dissemination

"Service"-based, flexible, open framework (end-user chooses appropriate services)

Linguistic and semantic functionalities based on ontology-enabled mechanisms

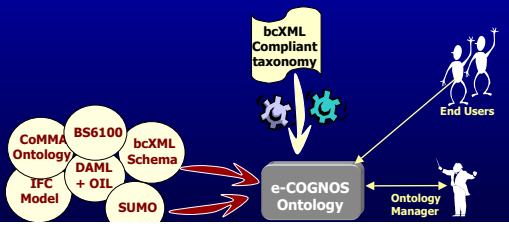
Human-centred, Web-based, configurable, API-based, ontology-based, open source

End User's applications

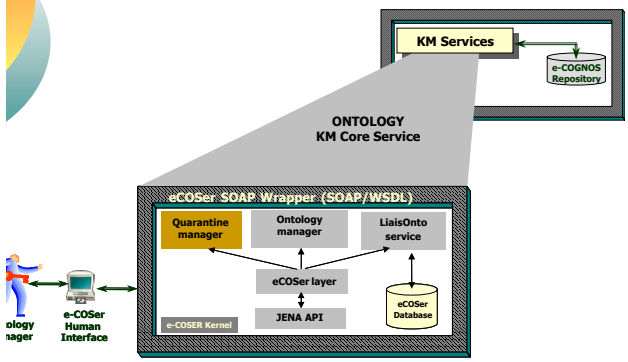


The e-COGNOS Ontology

- Sources of inspiration: IFC, bcXML, W3C, …
- Development process: iterative approach
- Current status: ± 15000 concepts
- Growing mechanism: bcXML based



The e-COSer Architecture

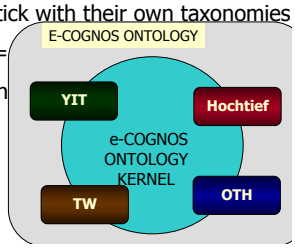


Lessons Learned - e-CKMI (1/3)

- Prototype as early as possible – exposure to new functionalities generates new requirements
- User Interface: not really required in the context of e-COGNOS but necessary to promote the e-CKMI functionalities
- Innovative visualization methods are required – very difficult to display the spectrum of knowledge in an accessible, meanningful way
- While organizations desire the benefits of KM, they remain protective of their knowledge assets – all end users have prototyped the e-CKMI within their corporate firewalls
- Must remain flexible and adaptable – the KM world is a rapidly changing environment

Lessons Learned - Ontology (2/3)

- Ontology Editor DAML+OIL compliant
- Bigger ontology = better ontology
- Standards: good idea, interesting approach, but …
- End users prefere to stick with their own taxonomies
- Ontological indexes >=
- The real challenge: con
- Current approach



Lessons Learned - Ontology (3/3)

- Ordinary users
  - Ontology: they don't want to hear about it! However …
  - It would be great to have richer indexes
  - They have to be convinced that the ontology can really help them
- Advanced users: willing to do more in order to get more
- The "poor" Ontology manager

Open Points

- Visualisation will allow the development of new KM possibilities
- Knowledge sharing culture – have organizations the confidence to open their knowledge 'doors'?
  - Forge tighter links with the Semantic Web initiative
- Extend the e-COSer functionalties to support
  - Capture of implicitly defined knowledge: Inference Rules, semantically structured KRs
  - Ontology: Migrate to OWL

eConten

FUNSIEC

Feasibility study for an **UN**ified
Semantic **I**nfrastructure in the
European **C**onstruction sector

CSTB ISI UNINOVA

Content

Outline

1. **Objectives**
2. **Results & Organisation**
3. **Framework**
4. **Deliverables**
5. **General Information**

Content

1. Objectives (1/2)

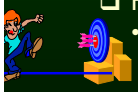
Study the feasibility to build an **O**pen **S**emantic **I**nfrastructure for **E**uropean **C**onstruction **S**ector (**OSIECS**) to support the development of **e-services**

OSIECS

- Semantic and linguistic e-resources devoted to the construction sector
- Exploit public results produced by international initiatives and European projects

Content

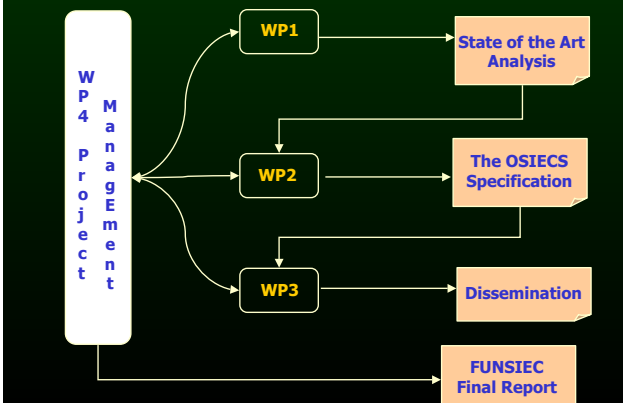
1. Objectives (2/2)



- FUNSIEC specific goals
  - Establish a technical framework that allows to gather **semantic and linguistic e-resources** to be used by **e-content providers** and **e-service suppliers** operating in the construction sector
  - Define guidelines for **partnerships** that allow the creation, evolution and maintenance of OSIECS and the semantic resources
  - Propose an **implementation plan** to help the adoption of OSIECS within the European construction sector
  - Contribute to the establishment of European standards (including reference linguistic resources) for construction while allowing the preservation of language diversity in Europe
  - Identify and characterize the **e-services** to be developed by e-service providers aiming at to capitalise the benefits of the OSIECS

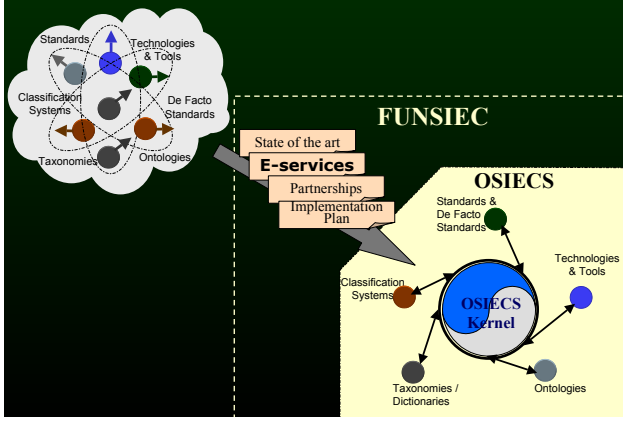
Content

2. Results & Organisation



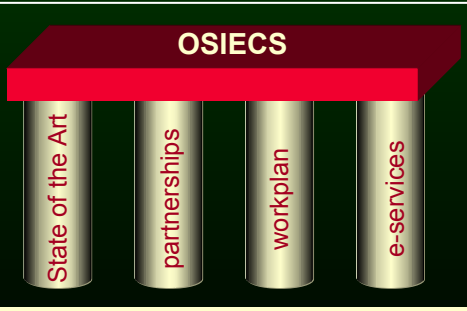
Content

3. FUNSIEC Framework (1/2)



Content

3. FUNSIEC Framework (2/2)



Partnerships: identification of the more representative organisations in Europe (skills / complementarity) that should work together in order to produce and deploy OSIECS
Workplan: the definition of the various actions required to foment the cooperation among key institutions from Europe
E-services: offered by the existing or to be developed (preferable freeware)

Content

4. Deliverables

	Deliverable title	Milestone	Dissemination level
D1.1	State of the art analysis	M4	Public
D2.1	The OSIECS Infrastructure	M8, M12	Public
D2.2	OSIECS Infrastructure – Assessment and validation	M12	Public
D3.1	FUNSIEC Web Site	M3	Public
D3.2	Dissemination, Exploitation and Business Strategy Plan	M12	Public
D4.1	Project Presentation	M3	Public
D4.2	Periodic Progress reports (PPR)	M6	Public
D4.3	Final Report	M12	Public
D4.4	Public Annual Report	M12	Public

Content

5. General Information

- Consortium
- Associated Partner: Fraunhofer Information Centre for Regional Planning and BuildingConstruction (IRB)
  - Information about market & semantic resources contruction-oriented in Germany
- Project Duration: 12 months
- Budget: 199 781€
- Focus: Semantic Resources web-based, Construction-oriented
- Contact
  - Dr. Celson Lima, project coordinator
  - Email: celson.lima@cstb.fr

Modélisation contextuelle et interopérabilité des données, Patrick Brézillon

CONTEXT MODELING: A CONTRIBUTION FOR DATA INTEROPERABILITY

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www-poleia.lip6.fr/~brezil

University Paris 6, France

Number of Web pages with the word "context"

1996	750 000
2001	3 000 000
2002	16 000 000
2003	19 000 000

Context of the presentation

CONTEXT OF THE PRESENTATION

(ALSO KNOWN AS INTRODUCTION)

Context of the presentation

Examples:
- need to switch between contexts
- inducing a false context
- the letter and the spirit of the law
- mismatch of contexts in History

Failures in AI

The SEPT application

Towards a definition of context

A UNIVERSAL DEFINITION OF CONTEXT?

Towards a definition of context

Two opposite views
A number of definitions
Our experience in studying context:

Towards a definition of context

Our experience in studying context:
- a working definition
- context and knowledge
- three types of context
- an example
- context construction
- heterogeneity of context

Towards a definition of context

A working definition:
Context is what constrains problem solving without intervening in it explicitly

Example in the SART application:
The occurrence time of an incident on a subway line is not relevant by itself, but the methods observed for incident solving are different at rush hour or not.

Our definition of context

Three types of context:
- external knowledge,
- contextual knowledge, and
- proceduralized context.

The dynamic dimension of context

Our definition of context

The proceduralized context is a part of the contextual knowledge that is invoked, structured and situated according to a given focus.

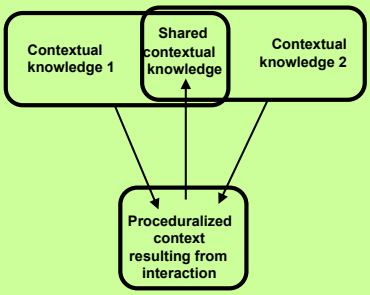
The proceduralized context may be compiled but can generally be elicited with the usual techniques of knowledge acquisition

An example

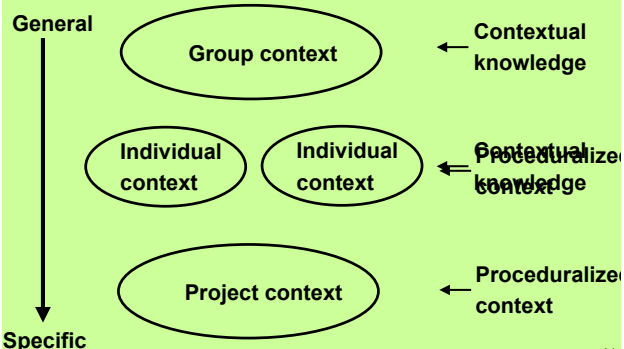
Suppose I say to a person that knows me:
CK° : "In my lab this morning, I heard a lion roar."

What is unusual is the link between the two CKs:
CK-a: I work in a CS department
CK-b: I heard a lion roar

Building of the proceduralized context



Layers of context



Contextual graphs

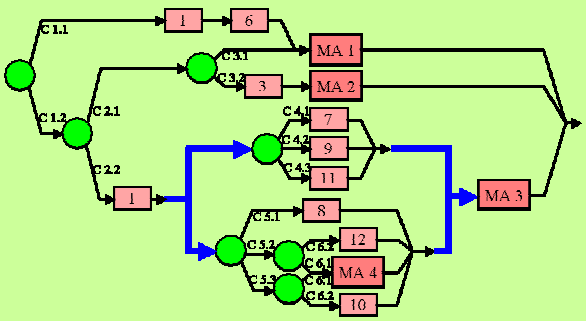
Contextual Graphs

Formalism: for what?

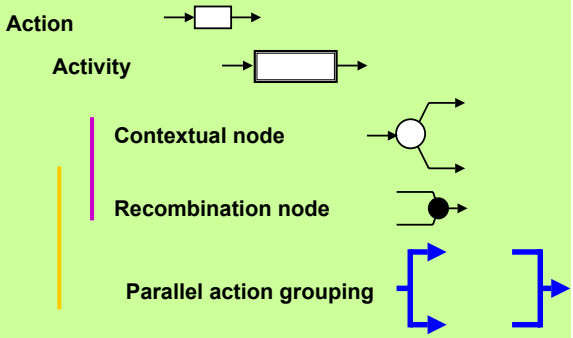
Contextual graphs represent:

- a temporal sequence of diagnosis and actions
- the different ways to reach a goal
- the elements for choosing the right action sequence

Formalism: An example



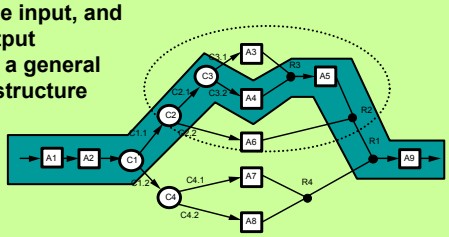
Formalism: The symbols



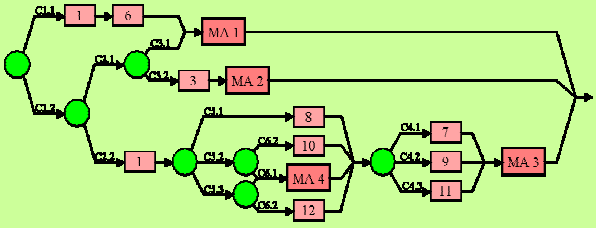
Formalism: Characteristics

Contextual graphs are:
- directed,
- acyclic,
- with one input, and one output

and with a general spindle structure



Formalism: Parallel action grouping



Key points

KEY POINTS

Key points

Context is relative to:
--> something (e.g. an item, a focus)
--> a point of view (observer, a goal)

Key points

A working definition:
Context is what constrains a reasoning without intervening in it explicitly

Key points

Three types of context:
External knowledge,
Contextual knowledge, and
Proceduralized context.

Key points

Context has a granularity with:
- contextual knowledge at one level and
- proceduralized context at a lower level

Key points

The dynamic of context is a movement between the contextual knowledge and the proceduralized context

Static and dynamic aspects of the context are intertwined

Key points

Contextual graphs constitute:
- a formalism tailored to the reality of the enterprise (procedures and practices, incremental learning capability)
- corporate memory: capitalization and multi-uses
- a basis for intelligent system development

Key points

Parallel action grouping: a limit of the representation or a problem of interwined levels of the representation?

Need to modify dynamically the contextual graph (e.g. the example of the coffee preparation)

Key points

Contextual graphs in AI are similar to the notion of schemes of action in Cognitive Science

A scheme of action is a mental unit to guide the action

For managing new situations by assimilation (integration of specifics) and accommodation (enrichment with new strategies)?

Propose a type of knowledge chunking for reasoning

CONTEXT DYNAMIC AND EXPLANATION IN CONTEXTUAL GRAPHS

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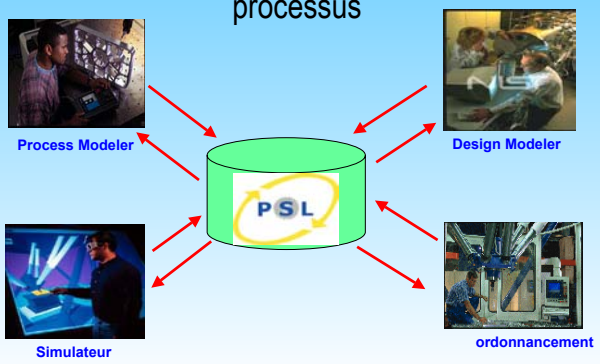
University Paris 6, France

PSL : des standards pour la construction, Anne-Françoise Cutting-Decelle

NORME ISO 18629 PSL
Process Specification Language

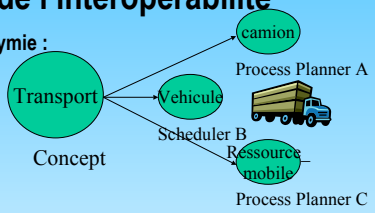
Pr. A.F. CUTTING-DECELLE, Université d'Evry, IUT – Département OGP, F
Dr. L. POUCHARD, ORNL (Oak Ridge National Labs), Oak Ridge, USA
G. TESFAGABER, Loughborough University, UK

Interopérabilité des informations de processus

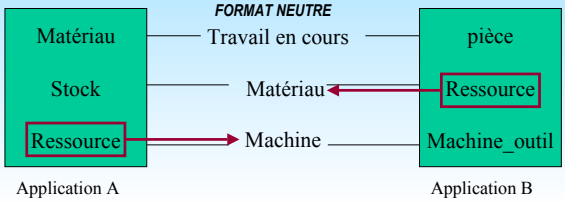


Challenges de l'interopérabilité

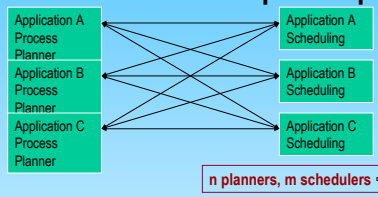
Challenge sémantique 1: synonymie :



Challenge sémantique 2: ambiguïté :

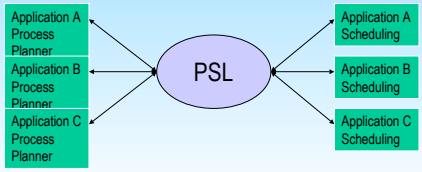


Scenario 1 : traduction point à point



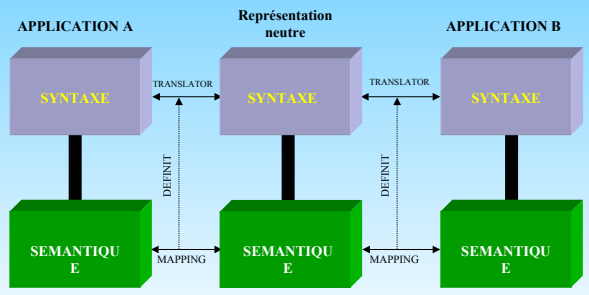
n planners, m schedulers ⟹ n*m traductions

Scenario 2 : traduction avec PSL



n planners, m schedulers ⟹ n + m traductions

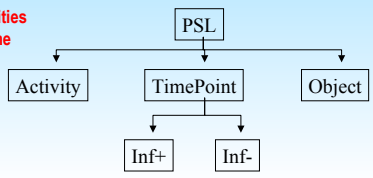
Scenario d'échange



Qu'est-ce que PSL?

- Ce que PSL est actuellement :
  - un programme de développement de sept ans, au NIST (US), d'une représentation neutre des informations relatives aux processus de fabrication
  - un modèle de donnée modulaire, extensible (ontologie) intégrant les concepts inhérents aux processus de fabrication
- Ce que PSL va être :
  - un langage permettant l'interopérabilité de l'information relative aux processus industriels

Qu'est-ce qu'un processus ?
A process is one or more activities that occurs over a period of time in which objects participate



BUTS de PSL

- **Process specification language** : spécifie un processus ou un flux de processus, avec les paramètres correspondants

---- ce n'est pas un langage de modélisation ---

- Cible : processus discrets de fabrication : gammes, ordonnancement, simulation, …
- Actuellement : normalisation en cours au niveau international : ISO TC 184 SC4-SC5 JWG8 ISO 18629 : norme PSL
  composé de : une ontologie et des représentations : EXPRESS, XML, …

En tant que langage :

- Lexique : symboles logiques (connecteurs booléens et quantificateurs), symboles non logiques (constantes, symboles de fonctions, predicats (unaires et binaires))
- Grammaire : basée sur la grammaire de KIF et la logique du premier ordre, spécification BNF rigoureuse, permettant une définition récursive de la classe d'expressions grammaticalement correctes du langage

Qu'est-ce qu'une ontologie ?

- Termes de base et relations contenant le vocabulaire d'un domaine donné
- Un ensemble de définitions de ces termes
- Des règles de combinaison de ces termes et des relations

A quoi servent les ontologies ?

- Fournir les définitions et les axiomes contraignant l'utilisation des termes, sous une forme lisible par les machines et compréhensibles par l'homme
- Permettre la création de systèmes de classification hiérarchique, avec généralisation, héritage, agrégation, avec relations de structure plus variées que dans les taxinomies et les vocabulaires organisés

Quand faut-il utiliser une ontologie ?

- Pour les hommes : pour fournir un cadre de référence commun et un certain consensus sur des entités dans un domaine donné
- Pour les machines : pour améliorer : les schémas de données, l'interopérabilité des systèmes basée sur une approche sémantique, les systèmes à base d'agents

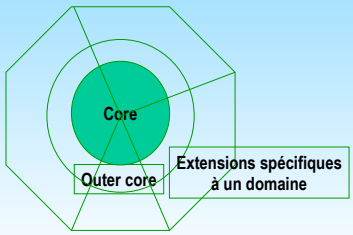
SPECIFICITE DE PSL : ontologies applicables aux NOMS *et* VERBES
==> ORIGINALITE DE L'APPROCHE PSL

- Exemple : *La durée d'une activité est la différence entre son point de départ et son point d'arrivée, pour toutes les occurrences de l'activité*

```
(defrelation duration (?a ?d) :=
(forall (?t1 ?t2)
        (=>     (and    (= ?t1 (Beginof ?a))
                        (= ?t2 (Endof ?a)))
                (= ?d (time_minus ?t2 ?t1)))))
```

Structure de PSL

- **Objectif** : définir d'une manière rigoureuse les concepts nécessaires pour spécifier les processus de fabrication afin de permettre l'échange d'information de process entre eux
- **Structure** : deux couches principales :
  - core
  - extensions



PSL core

- Ensemble de concepts communs à TOUTES les applications de fabrication
- Langage formel, mathématique, basé sur la logique du premier ordre, avec une sémantique précise et un ensemble d'axiomes pour exprimer cette sémantique

- classes :
  - OBJECT : abstract or concrete « thing », participating in :
  - ACTIVITY
  - ACTIVITY_OCCURRENCE : limited, temporally extended piece of the world, determined by its begin and end :
  - TIMEPOINT
- fonctions : beginof, endof
- relations : is_occurring_at, occurrence_of, participates_in, before (and beforeEq), between (and betweenEq), exists_at

Quelques axiomes de PSL-Core

Axiome 10. Objects, activities, activity occurrences, and timepoints are all distinct kinds of things.

```
(forall (?x)
(and     (=>     (activity ?x)
                 (not (or (activity_occurrence ?x) (object ?x) (timepoint ?x))))
         (=>     (activity_occurrence ?x)
                 (not (or (object ?x) (timepoint ?x))))
         (=>     (object ?x)
                 (not (timepoint ?x)))))
```

Axiome 11. The occurrence relation only holds between activities and activity occurrences.

```
(forall (?a ?occ)
        (=>     (occurrence_of ?occ ?a)
                (and    (activity ?a)
                        (activity_occurrence ?occ))))
```

Extensions de PSL

- **Objectifs :**
  fournir les ressources permettant d'exprimer des concepts qui ne figurent pas dans PSL-Core
- **Contenu :**
  nouvelles constantes / prédicats, avec axiomes et definitions correspondants
- **Aujourd'hui :**
  - environ 330 concepts
  - dans 46 extensions

LISTE des extensions actuelles

Part 10 Series: Core Theories

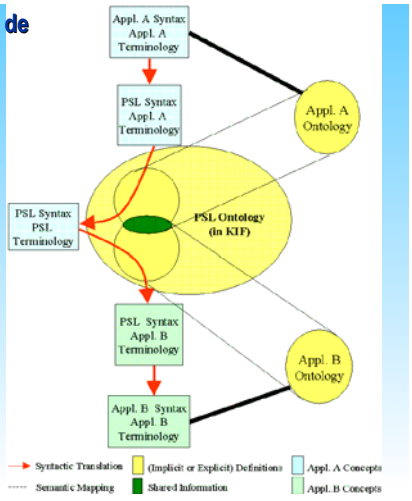
Part 11 : PSL-Core
Part 12 : Outer Core
Part 13 : Duration and Ordering Theories
Part 14 : Resource Theories
Part 15 : Actor and Agent Theories

Part 40 Series: Definitional Extensions of PSL

Part 41 : Activity Extensions
Part 42 : Temporal and State Extensions
Part 43 : Activity Ordering and Duration Extensions
Part 44 : Resource Roles
Part 45 : Resource Sets
Part 46 : Processor Activity Extensions

Echange d'informations de Process avec PSL

- L'ontology de chaque application est exprimée en utilisant des concepts de PSL
  On peut faire un mapping direct (inconditionnel)
- SOIT le terme de l'application est plus restrictif =>constraintes
- SOIT PSL est étendu pour prendre en compte le nouveau concept



NORME ISO 18629 PSL : Process Specification Language

- **Part 1 : Process specification language :** overview and basic principles

- **Part 11 : Process specification language :** PSL core
- **Part 12 : Process specification language :** Outer core
- **Part 13 : Process specification language :** Duration and ordering theories

- **Part 41 : Process specification language :** Definitional extension : activity extension
- **Part 42 : Process specification language :** Definitional extension : Temporal and state extension
- **Part 43 : Process specification language :** Definitional extension : Activity ordering and duration extension

Quel est le public de PSL ?

- Utilisateurs finaux : ingénieurs confrontés à des échanges d'informations de processus entre des logiciels internes à leur entreprise, et avec leurs partenaires

- Première étape : incorporation de « traducteurs » PSL dans les applications logicielles professionnelles

NORME ISO 18629 PSL : EXEMPLE D'APPLICATION AU SECTEUR DU BATIMENT

(Thèse en cours, G. Tesfagaber, Univ. of Loughborough, UK)

Objectif : interopérabilité entre 3 applications logicielles utilisées par les bureaux d'études de conception et ingénierie Bâtiment :

- **CAO :** AutoCAD v13
- **Planification :** MS Project 98
- **Estimation :** CCS Estimating

* informations relatives aux processus techniques
* niveau de sémantique élevé : échanges de connaissances entre les modèles
* élaboration d'un modèle générique de processus (IDEF3)

EXEMPLE D'APPLICATION AU SECTEUR DU BATIMENT

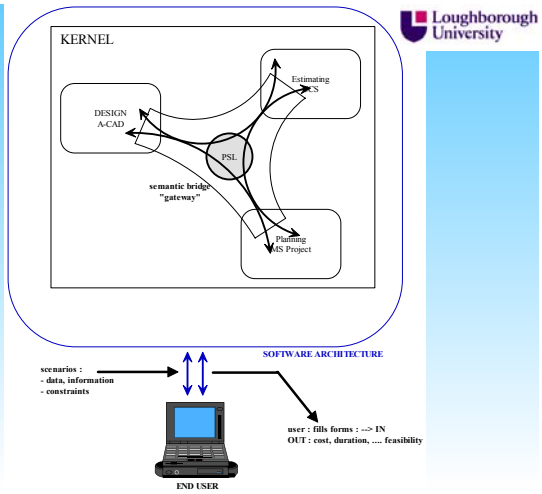
Scenario :
* projet : **Bâtiment de bureaux**
* échange d'informations relatives à la mise en place d'une : **porte extérieure**
* étude à faire : conception, estimation du projet, planification

***** scenario voisin : simulation d'un changement de fournisseur**

SCENARIO DETAILLE :

Mise en place d'une porte métallique (porte de protection anti-ouragan) sur menuiserie métallique adéquate à installer :

Ensemble des processus à prendre en compte en termes de :
- **conception architecturale**
- **estimation du coût**
- **planification**



DESCRIPTION DU PRODUIT « PORTE » (extraits)

Metal Building Opening Construction	
Overall Opening Dimension	"w x 102 ½" h
Height of Horizontal Girt above the floor	7'-5" (above normal installation height)
Adjustable Attachment clip	1 5/8 "x 8" x 0.100"
Horizontal Top Girt	5 5/8" x 8" d x0.023" t x 95- 15/16 "
Horizontal Intermediate Girt	5 5/8" x 8" d x0.023" t x 27 ½ "

Method of Construction:
A wood frame measuring 97" wide x 102 ½ " high was constructed using double 2 x 12 Douglas Fire Wood. An 8" girth with 3" flange was installed 89" above the base floor (which is above normal installation height of Grit).

The Top Girt Attachment:
The top Girt was attached with wood frame using a girt attachment clip.

DETAILS DE CONSTRUCTION DE LA PORTE (extraits)

PRODUCT	Single Metal Door Installed in Metal Building Opening
DESCRIPTION OF UNIT	
Model Designation	AMSCOKD, 20 Gage Textured
Overall door size	41" x86 1/8" h
Configuration	X
No. and size of vents	(1) 35 ¼" x 83 3/8" (active)

Door Frame Material & Construction

Strut:	A sliding 1 3/4"x8" galvanized steel strut with 2 ½"x3 7/8x wide welded steel clip on top. The assembly was slid upward to attach to horizontal girt using two 5/6" X ¾" nut and bolt on interior and exterior face of jamb.
Jamb and Head:	16 Gage Kerfed frame profile, double rabbet with a foam filled Gasket, measuring 3"X81/8" (overall dimension). The depth of the door stop was 2 1/8" in front and 1 15/16" in rear; the height of door stop was 5/8".

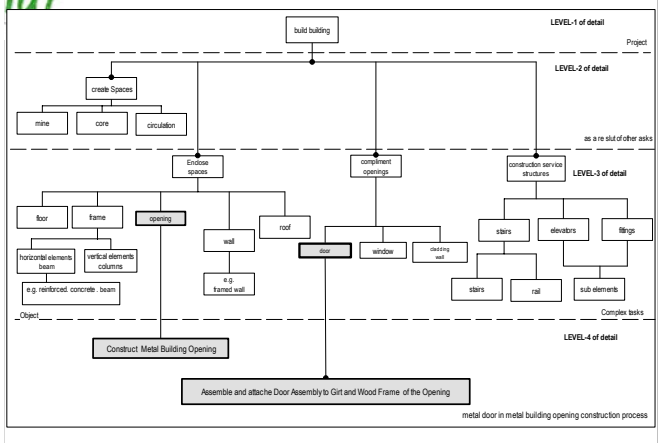
DESCRIPTION DE « MENUISERIE METALLIQUE » (extrait)

Metal Building Opening Construction	
Overall Opening Dimension	"w x 102 ½" h
Height of Horizontal Girt above the floor	7'-5" (above normal installation height)
Adjustable Attachment clip	1 5/8 "x 8" x 0.100"
Horizontal Top Girt	5 5/8" x 8" d x0.023" t x 95- 15/16 "
Horizontal Intermediate Girt	5 5/8" x 8" d x0.023" t x 27 ½ "

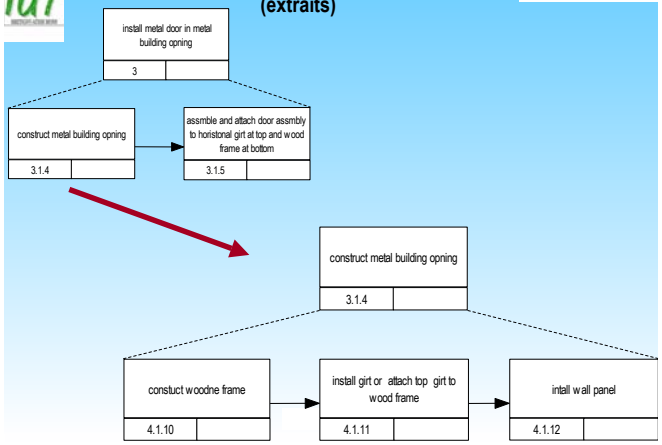
Method of Construction:
A wood frame measuring 97" wide x 102 ½ " high was constructed using double 2 x 12 Douglas Fire Wood. An 8" girth with 3" flange was installed 89" above the base floor (which is above normal installation height of Grit).

The Top Girt Attachment:
The top Girt was attached with wood frame using a girt attachment clip.

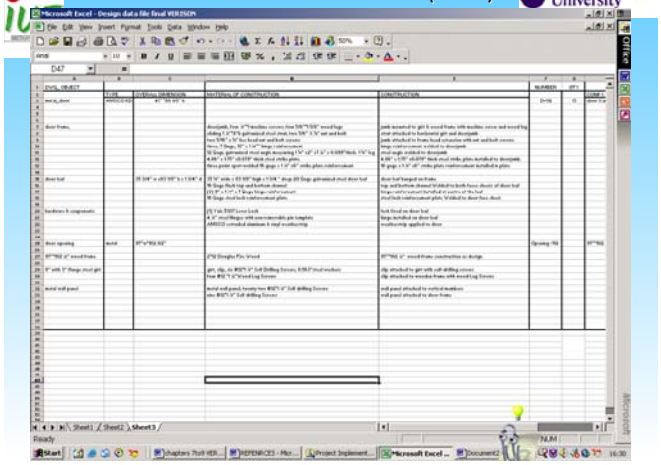
LA PORTE DANS LA HIERARCHIE DE CONSTRUCTION DU BATIMENT



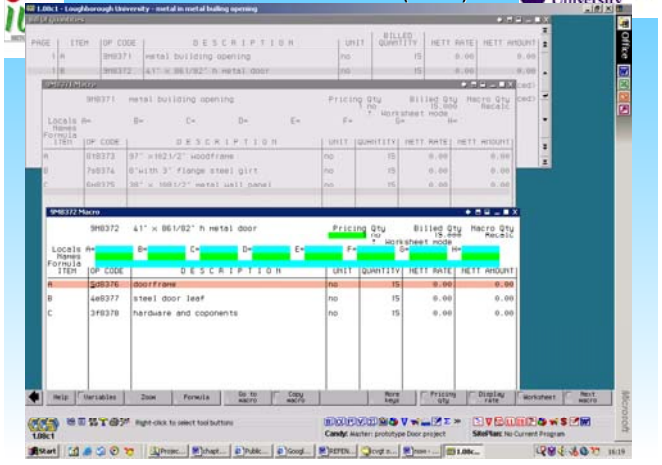
SCHEMAS IDEF3 : installation porte métallique (extraits)



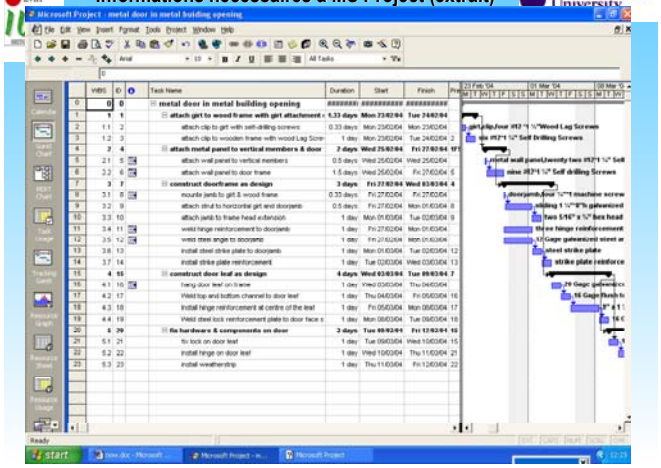
Informations nécessaires à AUTOCAD (extrait)

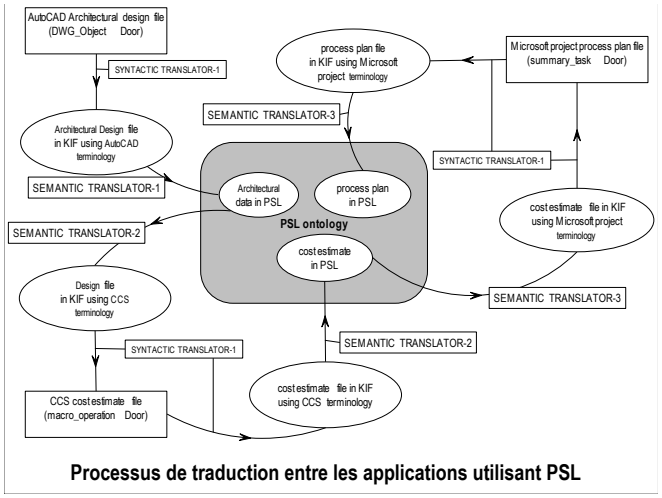


Informations nécessaires à CCS (extrait)

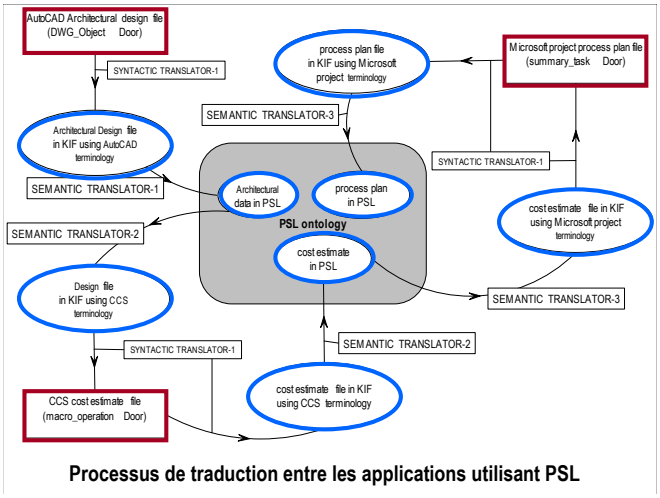


Informations nécessaires à MS Project (extrait)

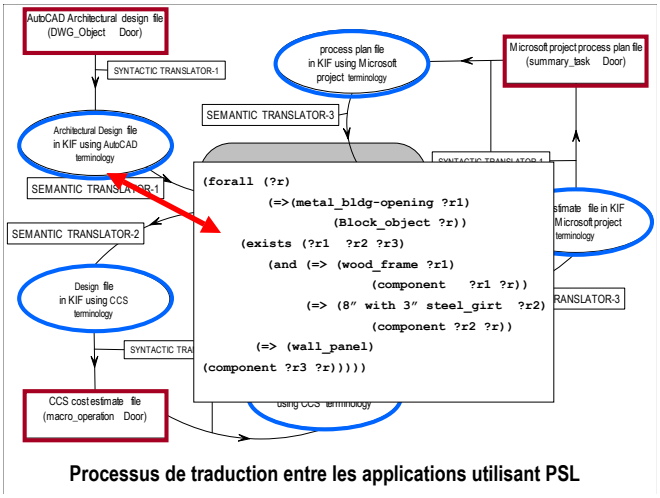




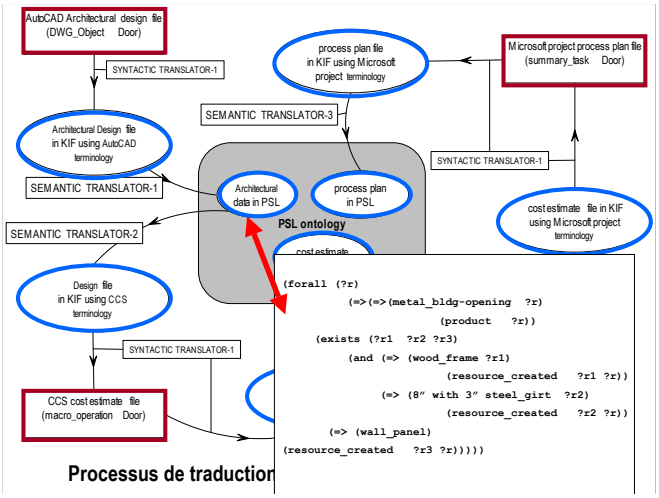
Processus de traduction entre les applications utilisant PSL



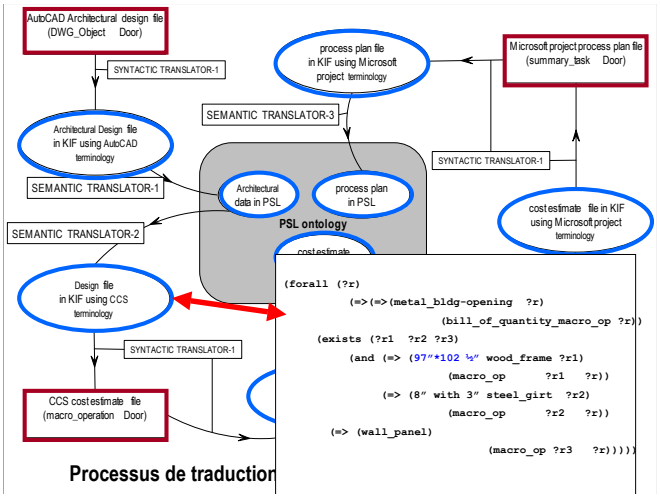
Processus de traduction entre les applications utilisant PSL



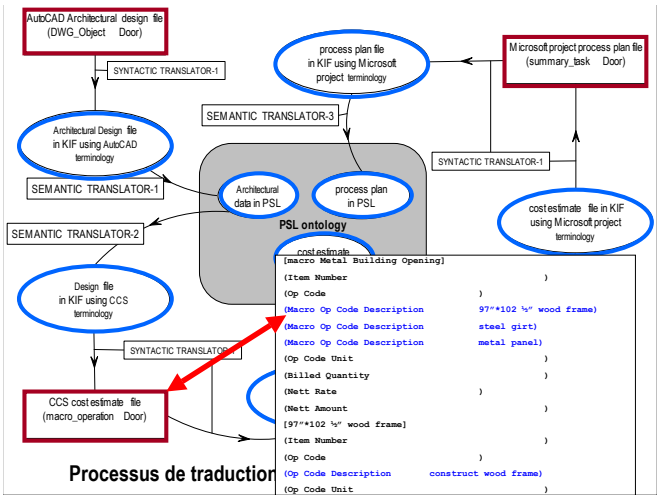
Processus de traduction entre les applications utilisant PSL



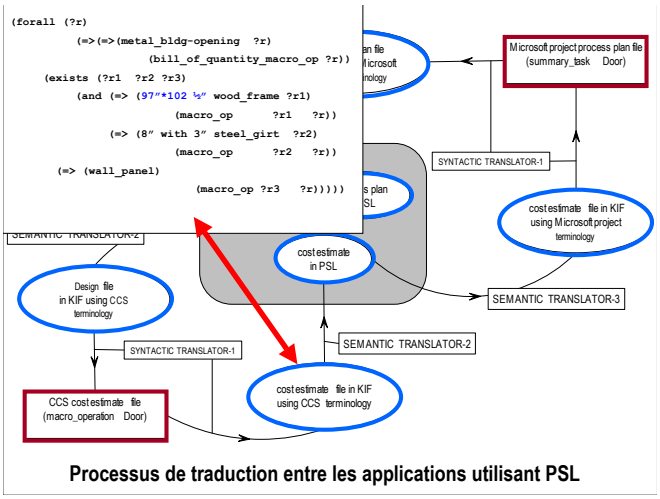
Processus de traduction



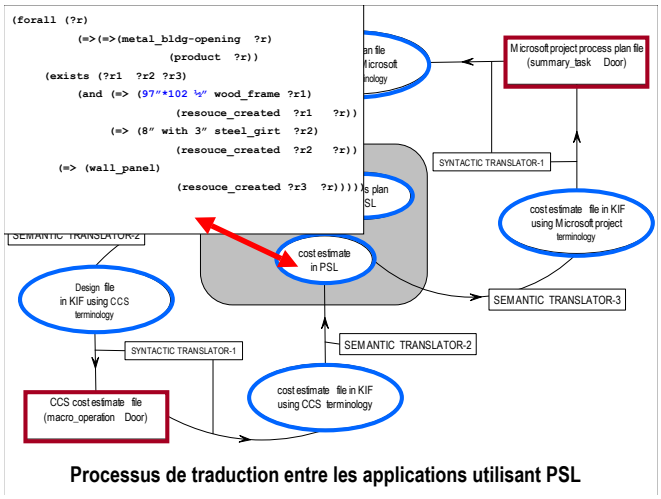
Processus de traduction



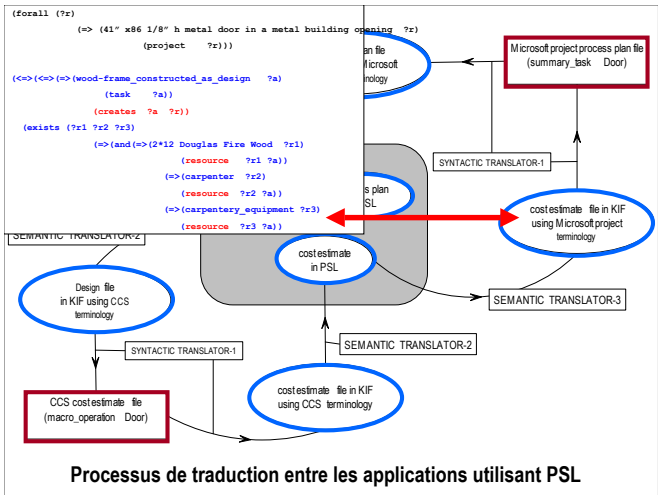
Processus de traduction



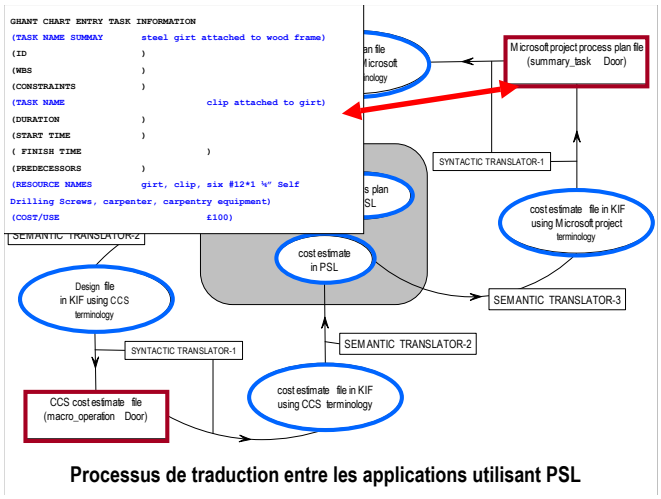
Processus de traduction entre les applications utilisant PSL



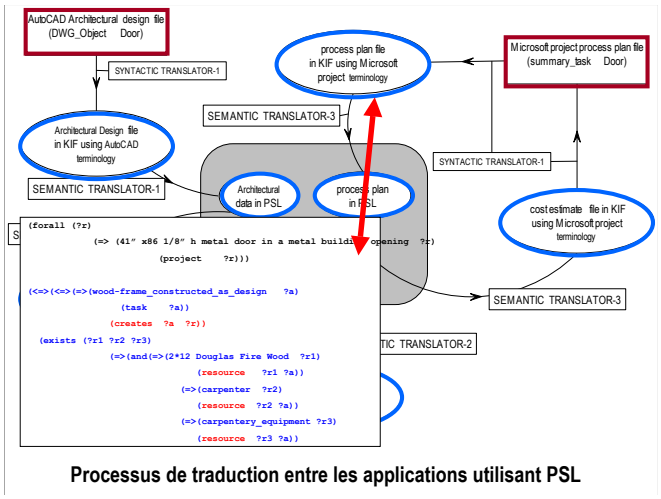
Processus de traduction entre les applications utilisant PSL



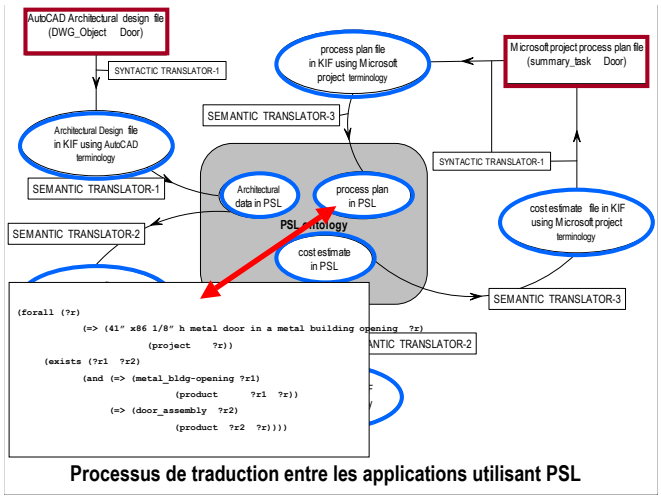
Processus de traduction entre les applications utilisant PSL



Processus de traduction entre les applications utilisant PSL



Processus de traduction entre les applications utilisant PSL



Processus de traduction entre les applications utilisant PSL

REMARQUES

- Actuellement : traducteurs écrits à la main
- Scenario proposé : unidirectionnel
- Les traducteurs seront automatisés au fur et à mesure du développement de la norme, avec une aide au choix des concepts du langage les mieux adaptés
- Etude proposée ici : **faisabilité de l'utilisation de PSL en construction**
  jusqu'à présent le langage a été testé sur des scenarii de "manufacturing"

Interopérabilité en construction, Alain Maury

MEDI@CONSTRUCT
MIEUX COMMUNIQUER POUR MIEUX CONSTRUIRE

Lundi 29 Mars 2004

Journée Interopérabilité PRODAEC

Laboratoire LIRIS – LYON

Interopérabilité en construction

Intervenant :
Alain Maury – Architecte DESA – Vice-Président Mediaconstruct
E-mail alnmaury@aol.com

MEDI@CONSTRUCT
MIEUX COMMUNIQUER POUR MIEUX CONSTRUIRE

Présentation de Mediaconstruct

Une association qui regroupe, depuis 1988 (Ediconstruct) :

- Organisations professionnelles de la construction
la FFB, l'UNSFA, le SYNTEC Ingénierie, la CICF, l'UNAPOC, la COPREC, la FNTP, la CAPEB, l'Union Sociale pour l'Habitat
- Éditeurs et opérateurs de services internet
- Enseignement

Autour du slogan :

« Mieux communiquer pour mieux construire »

MEDI@CONSTRUCT
MIEUX COMMUNIQUER POUR MIEUX CONSTRUIRE

Objectifs de Mediaconstruct

Favoriser les échanges et la coopération
entre les professionnels de la construction, de l'informatique,
des établissements d'enseignement et de recherche

Participer activement aux mouvements de normalisation dont celui de l'Alliance Internationale pour l'Interopérabilité : I.A.I.

Promouvoir et faciliter les bonnes pratiques
des technologies de l'information et de la communication

MEDI@CONSTRUCT
MIEUX COMMUNIQUER POUR MIEUX CONSTRUIRE

Mediaconstruct : Chapitre francophone de l'I.A.I.

IAI : société de droit UK à but non lucratif dont l'objet est le développement et la promotion des IFC.

10 « Chapitres » : US, UK, Pays nordiques, Allemagne, Pays francophones, Singapour, Australie, Japon, Corée, Espagne (Italie, Chine, à venir) – création 1995

600 Membres

IFC 2X2 opérationnel (IFC = Information For Construction)
Implémentés par la quasi-totalité des softs de la construction mondiaux

IFC 2X certifié ISO-Pas 16739

MEDI@CONSTRUCT
MIEUX COMMUNIQUER POUR MIEUX CONSTRUIRE

Moyens de Mediaconstruct

- Cotisations et travail des membres
- Soutien des pouvoirs publics depuis son origine :

Ministère de l'équipement MELT, Plan Urbanisme Construction et Architecture

Ministère de l'industrie MINEFI, DIGITIP

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Activités de Mediaconstruct

Veille technologique : « Bativeille »

Journal électronique trimestriel : « la lettre »

« Club » : Les rendez vous de Mediaconstruct

Formation professionnelle

Groupe de travail IAI France : site web IAI-France.org

Groupe de travail : Catalogues électroniques

Groupe de travail : Appels d'offre électroniques

Groupe de travail : Éditeurs / Opérateurs internet

MEDI@CONSTRUCT
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SESSION 2004 DES FORMATIONS INTERPROFESSIONNELLES

« NOUVELLES PRATIQUES DE L'INFORMATION ET DE LA COMMUNICATION EN ARCHITECTURE, INGENIERIE, CONSTRUCTION ET MAINTENANCE »

- Soutenues par la DAPA, Ministère de la Culture, et la DGUHC, Ministère de l'Équipement (MELTM)
- Organisées en partenariat avec :

Ecoles d'Architecture de Marseille, St Etienne, Lille, Nancy
Université de Valenciennes
Ecole Spéciale des Travaux Publics et du bâtiment (ESTP)

Fédérations Professionnelles :
UNSFA,FFB,SYNTEC Ingénierie, UNAPOC, CICF, UNTEC, Union Sociale pour l'Habitat

Trois modules indépendants d'une journée :

Module 1 : Les avantages du standard mondial d'échange des données du projet
Module 2 : L'ingénierie interopérable avec les logiciels de CAO et de métiers
Module 3 : La gestion et le partage les documents de projets

http://www.mediaconstruct.org
http://www.iai-france.org

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Planning des formations

Ecole d'Architecture de St Etienne
Module 1 = Mardi 1er juin 2004
Module 2 = Mardi 8 Juin 2004
Module 3 = Mardi 15 Juin 2004

Ecole d'Architecture de Lille
Module 1 = Vendredi 15 Octobre 2004
Module 2 = Vendredi 22 Octobre 2004
Module 3 = Vendredi 3 Novembre 2004

Ecole d'Architecture de Nancy
Module 1 = Vendredi 3 Décembre 2004
Module 2 = Vendredi 10 Décembre 2004
Module 3 = Vendredi 17 Décembre 2004

Ecole d'Architecture de Marseille
Module 1 = Vendredi 7 janvier 2005
Module 2 = Vendredi 14 janvier 200
Module 3 = Vendredi 21 Janvier 2005

Ecole Spéciale des Travaux Publics (Paris)
Module 1 = Vendredi 28 janvier 2005
Module 2 = Vendredi 04 Février 2005
Module 3 = Vendredi 11 février 2005

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Le rôle social de Médiaconstruct

dans le cadre de la promotion de l'interopérabilité

- Démontrer (pertinence – faisabilité)
- Soutenir (normes – outils – cohérence Int., inter-sect.)
- Expliquer !

un objectif constant : « NON aux doubles saisies » !!!

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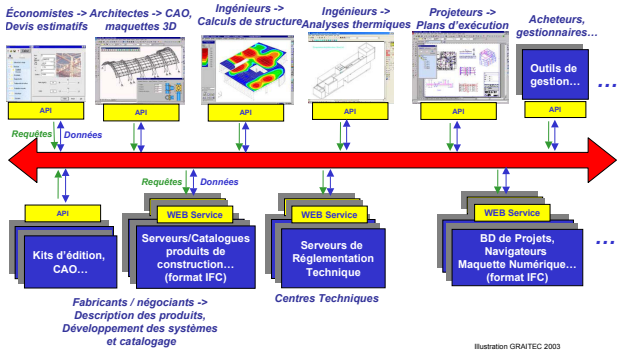

Illustration GRAITEC 2003

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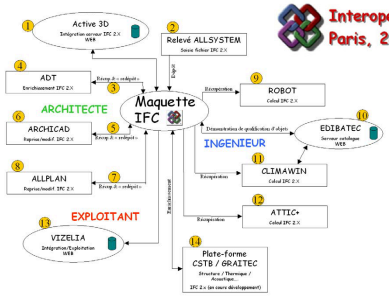

Interoperability Day
Paris, 28 janvier 2004

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PHASE 1 : CONCEPTION

VIZALL : SOLUTION DE RELEVE DE BATIMENT VIA POCKET PC

EXPORT EN IFC 2.x

CONNEXION ET DEPOT DU DOCUMENT SUR LA PLATEFORME **ACTIVe3D**

VISUALISATION DE LA MAQUETTE SUR LA PLATEFORME ACTIVe3D

EXPORT EN IFC 2.x

http://www.iai-france.org

Interoperability Day
Paris, 28 janvier 200

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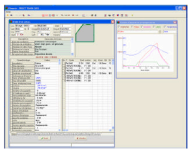
VISUALISATION ET AFFECTATION DES MATERIAUX DE MURS DANS CLIMAVIEW

CALCUL DE DEPERDITION ET APPORT THERMIQUE



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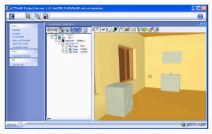
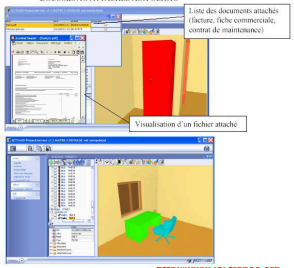


DOCUMENTS ATTACHES AUX OBJETS



Interoperability Day
Paris, 28 janvier 200

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Interopérabilité IFC : un bilan 2004

Un catalogue exhaustif de logiciels IFC, pas connu ni diffusé !

Qualité du modèle (et des certifications) perfectible

2 domaines opérationnels immédiatement pour les IFC :
- Certaines chaînes de calcul technique
- La gestion de patrimoine via internet

Transformation des pratiques, sur le terrain, totalement à faire !!!

Priorité :
Information et sensibilisation des donneurs d'ordre
(cf. Exemple US du General Service Administration)

Des pistes nouvelles pour les IFC : Le génie civil et les SIG

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http://www.iai-france.org

Les catalogues électroniques, Frédéric Grand

EDIBATEC Réalisations

Les catalogues électroniques

Lyon le 29 Mars 2004

Frédéric Grand
edibatec@edibatec.org

http://www.edibatec.org

EDIBATEC 10 ans déjà !

- L'association fête cette année ces 10 ans d'existence
- Initiative soutenue à l'origine par le PUCA
- But : mettre en place un format informatique unique utilisable par les différents acteurs du bâtiment
- L'association s'est constituée initialement dans le domaine du génie climatique puis, dès 1994 un atelier électricité s'est constitué.
- Le dictionnaire : une activité essentielle de l'association
- A l'heure actuelle, près de 300 classes de produits ont été définis dans différents domaines : appareillage électrique, chauffage, sanitaire, climatisation, ventilation…

Les effectifs de l'association

- 58 industriels se répartissant de la manière suivante
  - Génie climatique 39
  - Isolation 6
  - Electricité 12
  - Sanitaire 1
- 9 professionnels et négociants
- 22 éditeurs
- 9 organismes professionnels

Soit 98 adhérents

Favoriser l'utilisation des données produits

- Que ce soit pour une étude réglementaire, un dimensionnement ou un diagnostic il est impératif de disposer de données produits à jour.
- L'essor des nouvelles technologies favorise l'intégration de ces données au cœur des logiciels métiers.
- L'utilisation de maquettes numériques au format IFC et de plates-formes collaboratives augmente la qualité des échanges.

Le service Web : un nouveau lien entre les métiers

- Une nouvelle façon de communiquer entre les professionnels du bâtiment
- De nouvelle relations entre les professions
  - Industriels
  - Architectes
  - Ingénieries
  - Entreprises
  - Négociants…

De nouvelles perspectives

- Pour les utilisateurs
  - Une nouvelle façon de travailler
  - Un accès à l'information simple et transparent
- Pour les éditeurs et les industriels
  - L'utilisation de méthodes d'accès standardisées permet d'accéder à des sources d'informations réparties
  - Il n'est plus nécessaire de disposer d'un serveur de bases de données unique
  - Permet aux utilisateurs d'accéder, sans ressaisie à une information produit fiable et à jour

Le service Web comment ça marche ?

Ce sont des applications qui publient une ou plusieurs fonctionnalités afin de les rendre accessibles, via Internet, à d'autres applications

- Cette nouvelle technologie :
  - S'appuie sur des standards publics comme XML,HTTP
  - Est basée sur une architecture à base de composants
  - Permet d'augmenter l'interopérabilité des applications
  - Facilite les échanges de données

Ces outils vont permettre d'intégrer les bases de données au cœur des logiciels métiers

Déjà une réalité

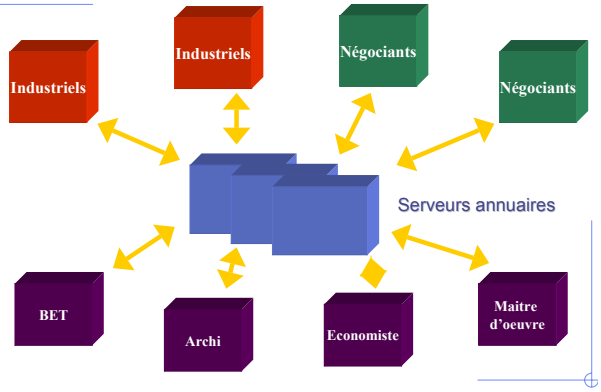
- A l'heure actuelle les services Web Edibatec sont utilisés par deux logiciels de calculs thermiques réglementaires certifiés par le CSTB :
  - Le logiciel Clima-Win de la société BBS-Slama
  - Le logiciel U-Win des logiciels Perrenoud
  - Plusieurs centaines de Bureaux d'études utilisent ce nouveau service
- La plate-forme Active3D
- Une intégration prochaine dans des logiciels de gestion
- Ce nouveau service est en plein essor

Les perspectives

Vers un catalogue virtuel et réparti

- La notion de base de données centralisée n'est pas une solution d'avenir.
- Grâce à l'utilisation d'une méthode d'accès commune, les services Web permettent d'envisager des catalogues répartis sur plusieurs sites.
- Chaque industriel pouvant publier sur son site son propre catalogue.
- Un site « annuaire » se chargeant de stocker les adresses des différents catalogues

Une vue d'ensemble



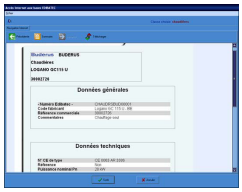
Le rôle d'EDIBATEC

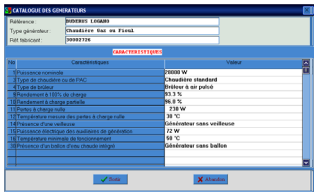
Afin de favoriser le développement de ces nouveaux outils, Edibatec accompagne les différents intervenants

- Les éditeurs
  - Assistance technique lors de l'intégration des services Web dans leur offre logicielle
- Les industriels
  - Constitution des catalogues produits (importation des données existantes, fourniture d'outils de saisie…)

Mise en pratique des services web

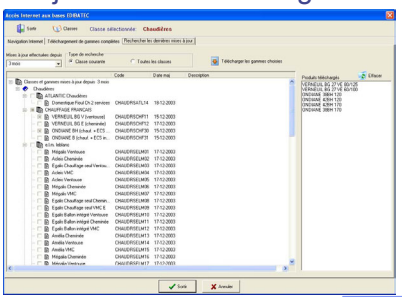
- Pour utiliser les données des fabricants à jour en temps réel au sein d'un logiciel de calcul





Mise en pratique des services web

- Pour maintenir les données des fabricants à jour au sein d'un logiciel métier

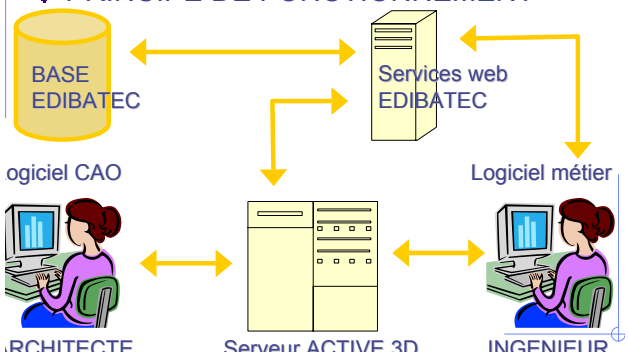


Interopérabilité des produits avec la maquette numérique

- Fonctionne aujourd'hui entre une plateforme collaborative, un logiciel thermique et un logiciel de métré.
- Les informations produits sont accessibles et reconnues depuis les 3 outils, elles peuvent donc être modifiées ou mises à jour dans chacun d'eux

Interopérabilité des produits avec la maquette numérique

- PRINCIPE DE FONCTIONNEMENT



Les démarches internationales

- Les travaux de STABU en Hollande
- Le projet international XM7

La fondation STABU

- Fondation regroupant les grandes organisations de l'industrie en Hollande
- Structuration des informations pour que les spécifications des produits soient introduites directement dans les spécifications projets.
- Lexicon
- http://www.stabu.org (en hollandais)

Des services web pour accéder aux produits

- 800 fabricants partenaires utilisent un standard de recherche et d'accès aux spécifications des produits (CD & Internet)
- Des services web sur les sites fabricants pour récupérer les spécifications des produits
- http://nbdonline.nl
  http://fbs-index.nl

Le LexiCon

- Un outil de description des objets du bâtiment et leurs associations construit sur la norme ISO/PAS 12006-3
- Une approche orientée objet des bâtiments et leurs éléments constitutifs
- Les données sont interopérables en utilisant STEP et les IFC
- Des directives (GUIDELINES) pour la description des systèmes)

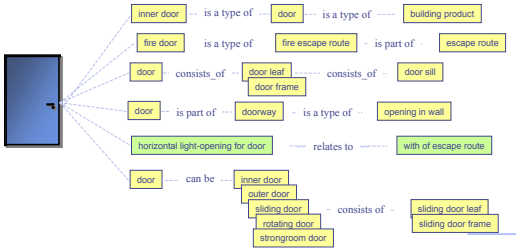
XM7: projet d'harmonisation IFC - IFC

- IFC: Informations For Construction
  - Développé et maintenu par l'IAI
  - Modèle express complet de maquette numérique
  - Reconnu comme ISO/PAS 16739 en novembre 2002
- IFD: International Framework For Dictionnaries
  - Développé et maintenu par le WorkGroup 6 de l'ISO/TC 59/SC 13
  - Modèle express standardisé comme ISO/PAS 12006-3
  - Plusieurs pays ont commencé à construire des dictionnaires basés sur l'IFD.

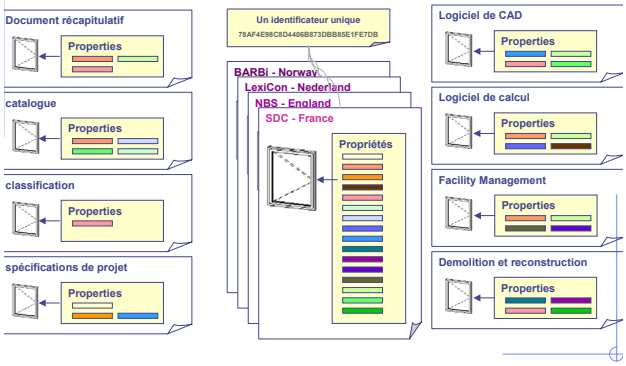
BARBI | LexiCon | EDIBATEC | NBR | ...

Les librairies de l'IFD

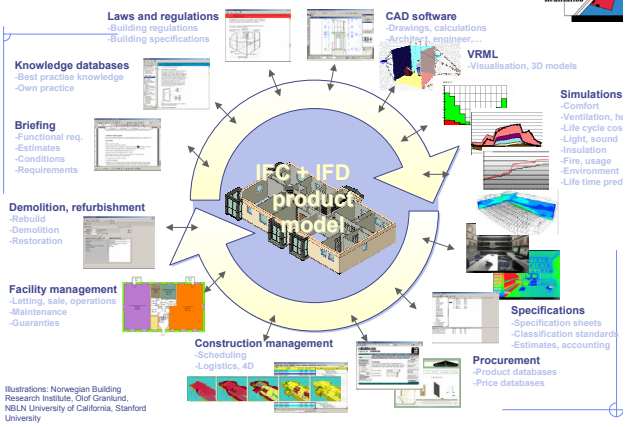
- Elles sont orientées objet:
  - Un objet est décrit via ses relations avec les autres objets
  - Il n'existe qu'une seule occurrence d'un objet dans un systèmes
  - Un objet peut être référencé par son GUID (Global Unique ID)
  - Un objet peut être présent dans plusieurs contextes



Un objet est utile dans différents contextes



De l'information fragmentée aux données partagées



Illustrations: Norwegian Building Research Institute, Olof Granlund, NBLN University of California, Stanford University

Les extensions du projet

- Besoins
  - Possibilités de référencement:
    - Lien vers la documentation d'un produit (utilisation d'un logiciel pour la consulter)
    - Lien vers des pages web
    - Lien vers le dictionnaire ISO/PAS 12006-3
    - Accès à des services web
  - Liens avec les instances d'IfcElement
- Bénéfices
  - Des fichiers IFC plus petits grâce aux référencements externes
  - Un accès à toutes les informations disponibles pour le produit quelle que soit la langue grâce au GUID

La France et le projet XM7

- Le chapitre français de l'IAI est à l'origine de la proposition d'extension du projet
- Suite à une commande du PUCA à la société BBS Slama, dans le cadre de l'étude « Stucturation et Description des produits de Construction », le dictionnaire Edibatec a été traduit selon la norme ISO/PAS 12006-3.
- Le dictionnaire Edibatec peut être importé le navigateur norvégien du projet BARBI

MERCI……..