Strasbourg IHU Knowledge Base: a CERIF implementation

CRIS2016 conference

Valerie Brasse and Laurent Remy

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Stakeholders

INSTITUTE OF IMAGE-GUIDED SURGERY

Institut Hospitalo-Universitaire = teaching hospital institute

- Scientific cooperation foundation (public and private partners)
- Digestive diseases
- Minimally invasive technologies
- Latest advances in medical imaging
- New concept of hybrid surgery room

Information System 4 Research & Innovation

- Support the design, development, integration and use of information systems
- Contribute to advancement of research and innovation

The project

Issues

- No centralized repository
- Unknown amount of unstructured information
- No tool to share information efficiently

Interviews

- Identified user/employee's profile
  - External start-ups
  - Surgeons
  - Software development engineers
  - Etc.
- Interview (x2)

The project

Previous issues

+ Specific requirements

- Need for market information! (Pathologies + procedures)
- How to find the right expert?
- How to identify the [internal] information holder?
- What is going on internally?
- What is going on in the field of minimally invasive surgery?

+ Technical requirements

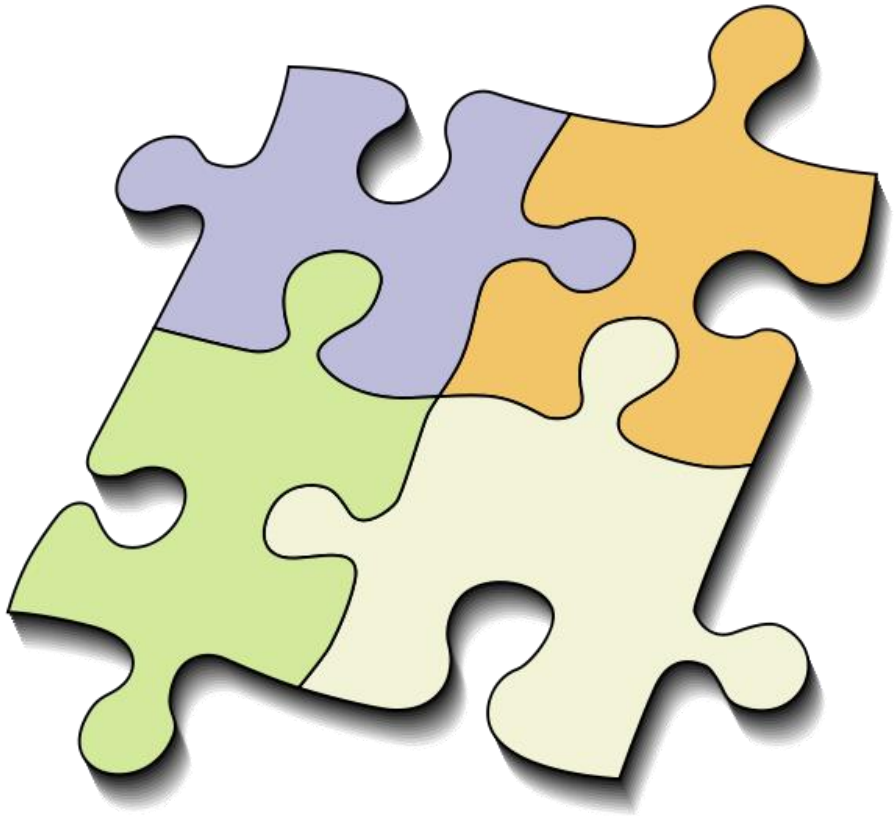
- Central authentication + Single-Sign-On
- Local infrastructure integration

Designing a solution

Knowledge base
- Structured data
- Link between data
- Semantics
- Search engine + facets

Market watch
- Identified relevant sources
- Information to be qualified and sorted

Social networking
- Commenting contents
- Sharing content
- Interacting with medtech stakeholders



CERIF as a data model

Experts
Person

Projects
Projects

Instruments
Equipments

Patents
Patents

Market studies
Indicators & measurements

[medical] Procedures
Products

Companies
Organisation Units

Publications
Publications

Pathologies
?

MeSH for semantics

MeSH Tree Structures - 2016

Return to Entry Page

1. + Anatomy [A]
2. + Organisms [B]
3. + Diseases [C]
4. + Chemicals and Drugs [D]
5. + Analytical, Diagnostic and Therapeutic Techniques and Equipment [E]
6. + Psychiatry and Psychology [F]
7. + Phenomena and Processes [G]
8. + Disciplines and Occupations [H]
9. + Anthropology, Education, Sociology and Social Phenomena [I]
10. + Technology, Industry, Agriculture [J]
11. + Humanities [K]
12. + Information Science [L]
13. + Named Groups [M]
14. + Health Care [N]
15. + Publication Characteristics [V]
16. + Geographicals [Z]

Medical Subject Headings

Branches:

- Anatomy [A]
- Diseases [C]
- Analyticial, Diagnostic and Therapeutic Techniques and Equipment [E]
- Information Science [L]

The platform

Natively includes

- Web content management
  - Customatization
- Documents and Media management
- Vocabularies management
- Fully integrated search engine
- Social networking features
- Large variety of standards
- Framework for local+remote services
- APIs

Proof of Concept

Knowledge base

- Liferay web content management
  - Customization
  - MeSH semantics integration
- Integrated concepts
  - Instruments
  - Patents
  - Companies
  - Procedures
  - Pathologies
  - A few indicators
- Facetted search engine

Social networking

- Comments
- Forum

Market watch

- Not in the scope of the PoC
- Use of Liferay's APIs (development to be done)

Proof of Concept

Problems faced

- Assets can be linked, but lack of semantics
  - Web content management does not fulfill our needs
- MeSH categories too wide

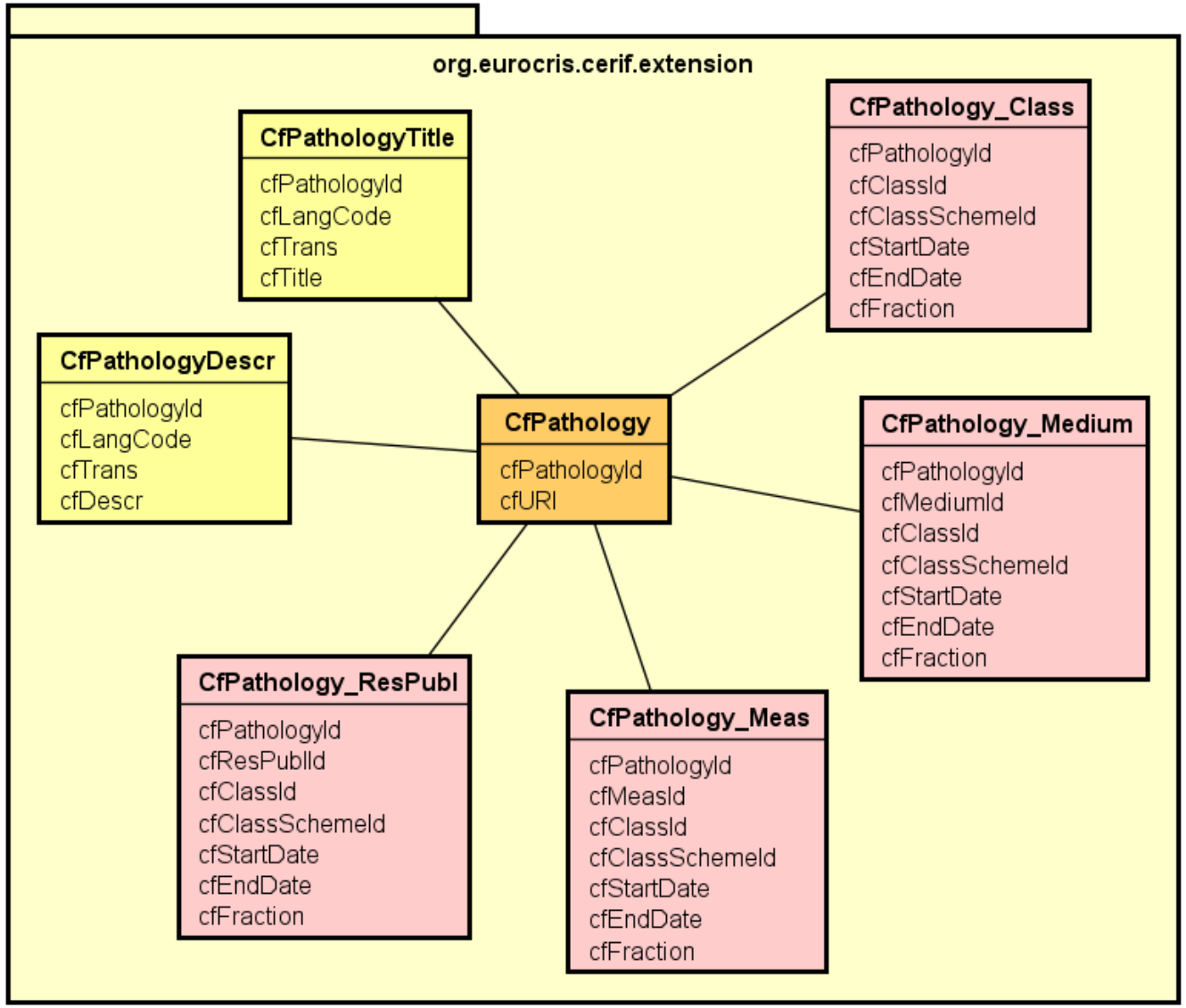
Conclusion

- Integration of a CERIF layer for the knowledge base
- Use of sub-trees of MeSH categories

Extending CERIF

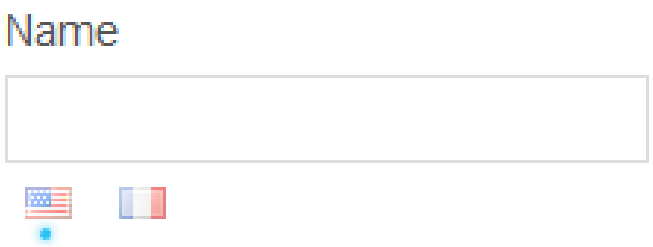
CERIF basic mechanisms

- Entities + relation-entities
- Time-based relations
- Multilingual capacity
- Semantic layer



CERIF denormalisation

Overlap between CERIF and Liferay features.

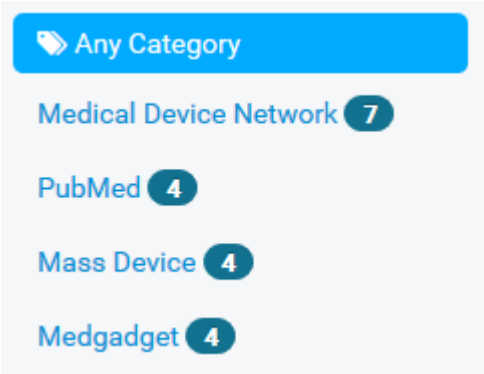


Multilingual capacity

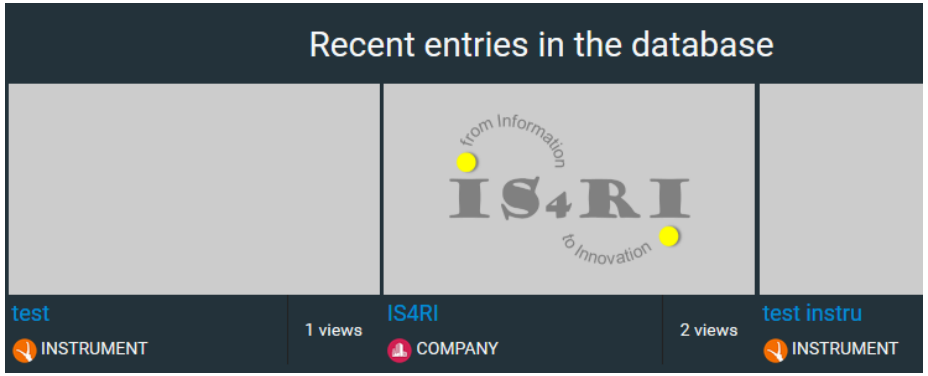
- Liferay provide this mechanism for all type of contents
- This mechanism is integrated with the platform and/or user language selection

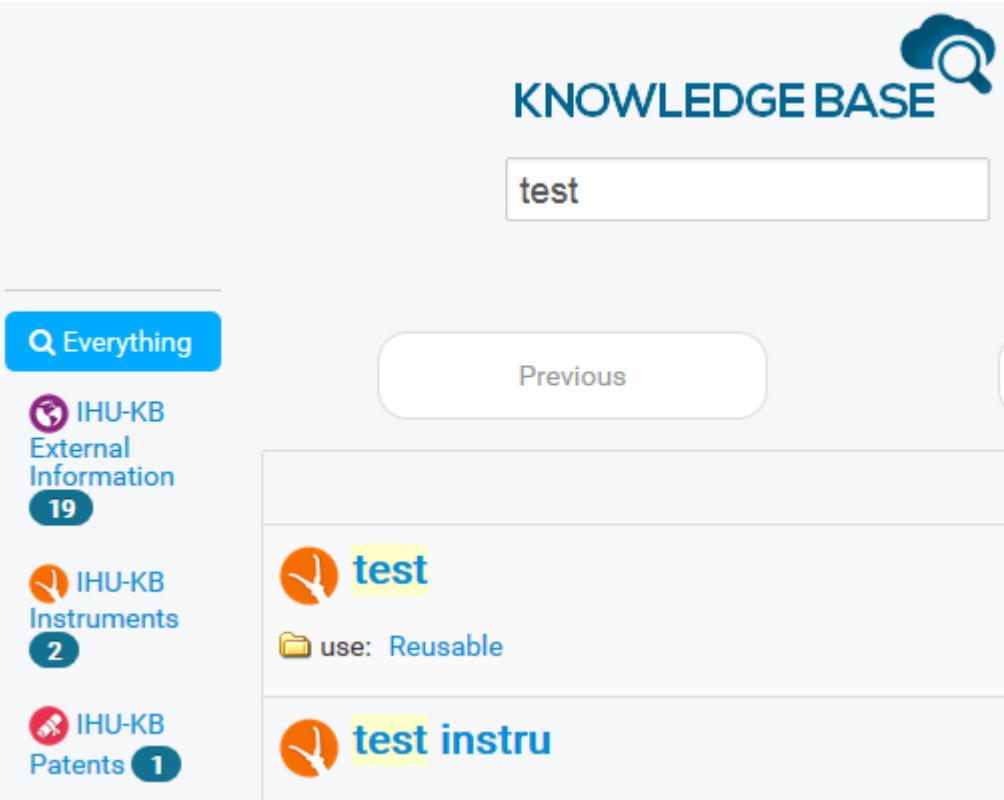
Semantics

- Liferay provide vocabularies management
- These vocabularies are shared by all type of contents of the platform
- These vocabularies are also fully integrated as facets in the search engine



V1.0





Knowledge base web-platform

- Structured content (CERIF compliant)
- Categorized content
- Search capacities

V1.0

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FROM MEDGADGET - 0 COMMENTS

Augmented Future Project Partners Video Game

The designers of the popular role-playing video game Deus Ex, with powerful capabilities, have partnered with Open...

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FROM BING SEARCH - 0 COMMENTS

The oncocytic subtype is genetically distinct fror subtypes

With approval of the Institutional Review Board, the surgical pa

Harvesting Engine Sources

- Bing search
- EPO
- Mass Device
- Medgadget
- Medical Device Network
- PubMed

Market watch

- 6 sources harvested
- Manually qualified and added to the knowledge-base
- Daily harvesting

V1.0

11

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BY LAURENT REMY PROCEDURE-TECHNIQUE

Cut deeper than possible

Use a sharp knife and cut deeper and deeper!

Publications (URL)

- http://www.amazon.fr

Links to WeBSurg

- http://www.websurg.com/MEDIA/?noheader=1&doi=vd01fr2388

(A) Anatomy Cells

- http://www.websurg.com/MEDIA/?noheader=1&doi=vd01fr1100f

Procedure-Technique interventions

Country	Year	Number Of Interventions
Afghanistan	2015	27
Afghanistan	2014	22
Afghanistan	2013	65

Procedure-Technique used for the following pathologies

Pathology	Number Of Cases	Notation
test pathos	180000	18.5

Related Assets:

Endometrial cancer in elderly women: Which disease, which surgical management? A systematic review of the literature.

Your Rating ★★★★☆ Average (1 Vote) ★★★★☆

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My first comment

Laurent REMY

Social networking

- Rating
- Commenting

Next steps

Knowledge base

- Add non-integrated concepts
  - Experts
  - Projects

Market watch

- Metrics
- Identify new sources
- Text mining

Social networking

- User profiling

Questions

?

Laurent REMY
lremy@is4ri.com