MoKi

the Modelling WiKi ---

or … how to suport collaborative Knowledge Engineering
via Semantic MediaWiki

Chiara Ghidini, Marco Rospocher

FBK-irst. Trento, Italy

Joint work with:

Luciano Serafini (FBK-irst, Trento)

Barbara Kump, Stefanie Lindstaedt, Viktoria Pammer (Know-Center, Graz)

Motivations

- Building high quality (formal) models of an enterprise is a strategic task:
  - improve knowledge management
  - provide knowledge-based services
  - reasoning and verification
  - ….
- It is a task we have to accomplish more and more in research and technology transfer projects.

An example:The APOSDLE project

FONDAZIONE BRUNO KESSLER

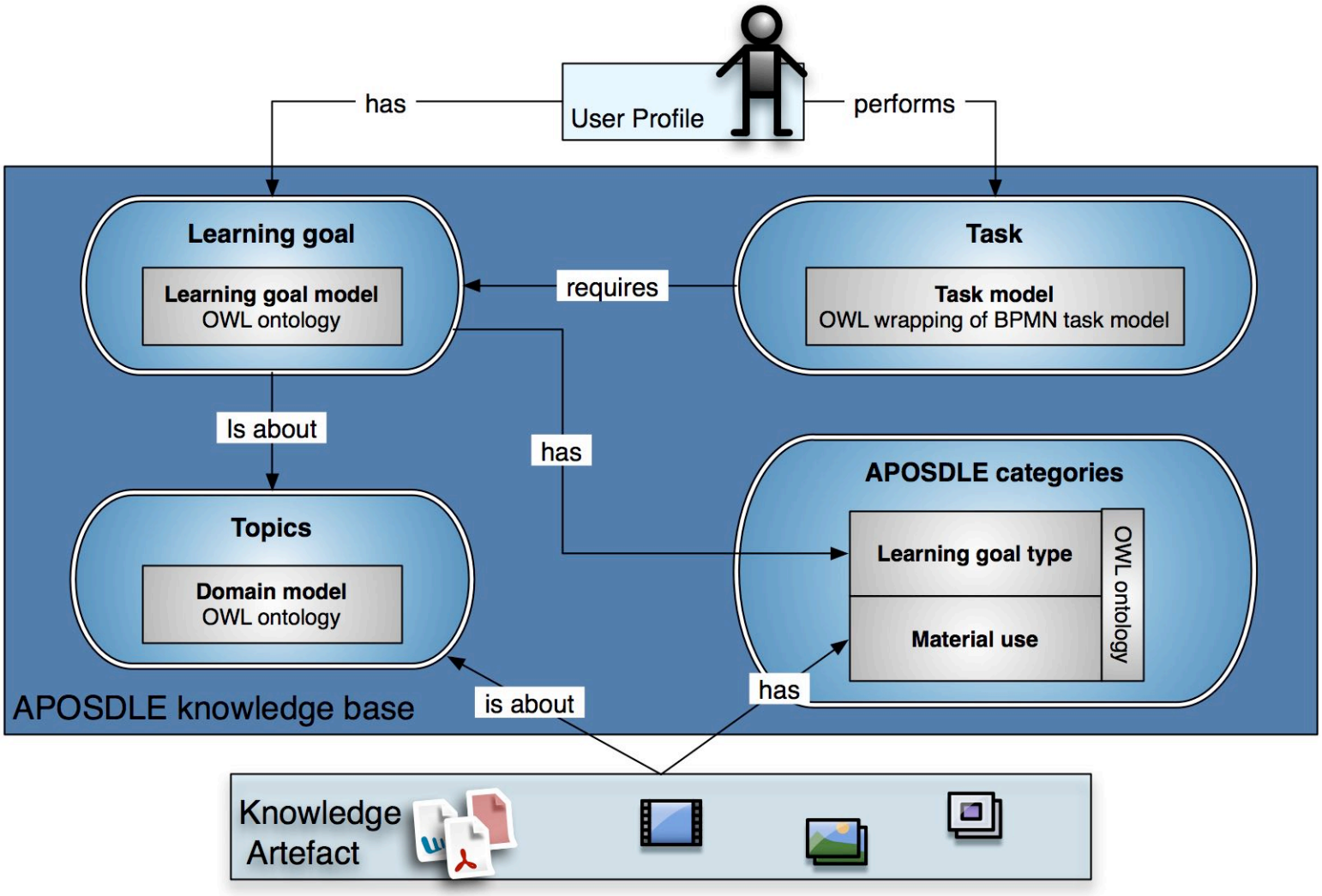
center . graz Know

APOSDLE aims at developing a software platform to support the process of learning@work, that is learning within the context of the immediate work of a user and within his/her current work environment.

Website: www.aposdle.org

APOSDLE is a 48 months research and development integrated project partially supported by the European Community under the Information Society Technologies (IST) priority of the 6th framework programme for R&D (contract no. IST-027023).

The enterprise model (in APOSDLE)



Enterprise Modelling

- Modelling the relevant aspects of an enterprise
  - Static aspects (e.g. the organizational structure, the products, the documents, …)
     domain model
  - Dynamic aspects (e.g, the procedures, the activities...)
     process model

- Domain and Process model need to be integrated.

Building the enterprise model

But…..

- Models cannot be completely extracted from data;
- Knowledge is owned by “experts”.

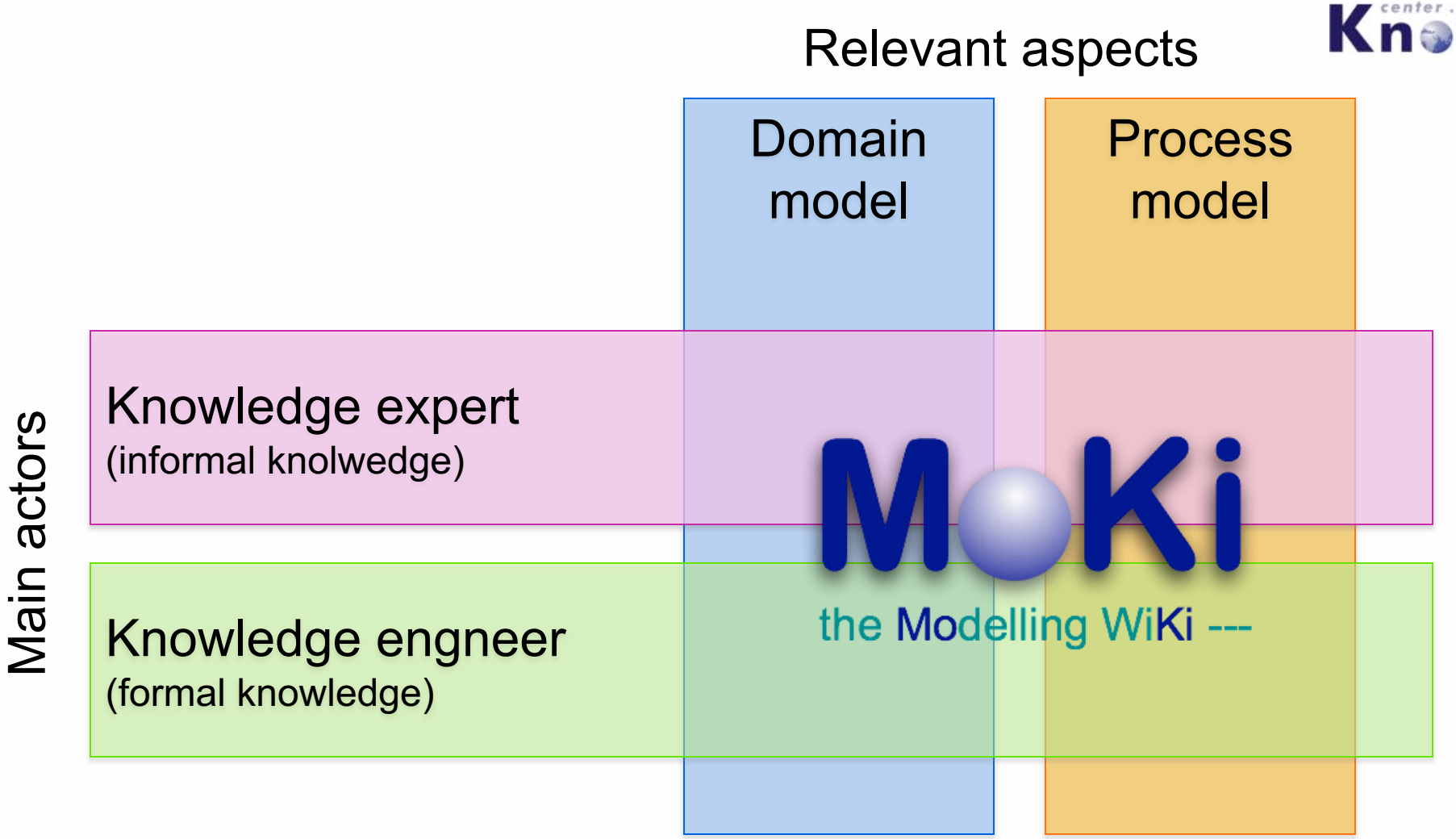
Modeling ia complex activity which requires the collaboration between:

- Knowledge experts;
- Knowledge engineers.

Specific Problems

- Different types of formal models (and tools to produce them);
- Complex Modeling team:
  - Different knowledge engineering skills;
  - Several domain/task/competencies/… experts;
  - Different locations (rare face-to-face meetings);
  - Different organisations (e.g, SMEs do not have knowledge engineering skilled people)
- Tools designed for knowledge engineers (Protégé, YAWL editor)
  - Experts write unstructured descriptions (or, Excel files);
- Little support for agile and interleaved collaboration between all actors
  - Descriptions and models are often contained in documents which are emailed back and forth

Our Contribution



MoKi; the Modeling Wiki

- A new tool for enterprise modelling based on two pillars:
  1. Semantic MediaWiki as a uniform layer for modelling domain and processes;
  2. Tight integration between informal and formal modelling to support knowledge experts and knowledge engineers.

MoKi basic technology

- Built on top of Semantic MediaWiki.
  - Supports collaborative editing;
  - Only a web-browser is required on the client side;
  - Users are quite familiar with wikis;
  - Basic versioning facilities;
  - Semantic information provided in the wiki helps to structure knowledge and to automatically extract formal models.

Ideas behind MoKi

- One “item” = one wiki page;
- Overview pages;
- Templates to guide informal but structured descriptions;
- Import/export of formal models;
- Provide some validation of knowledge;
- Insert/reuse existing techniques / tools for modelling

One item = one page

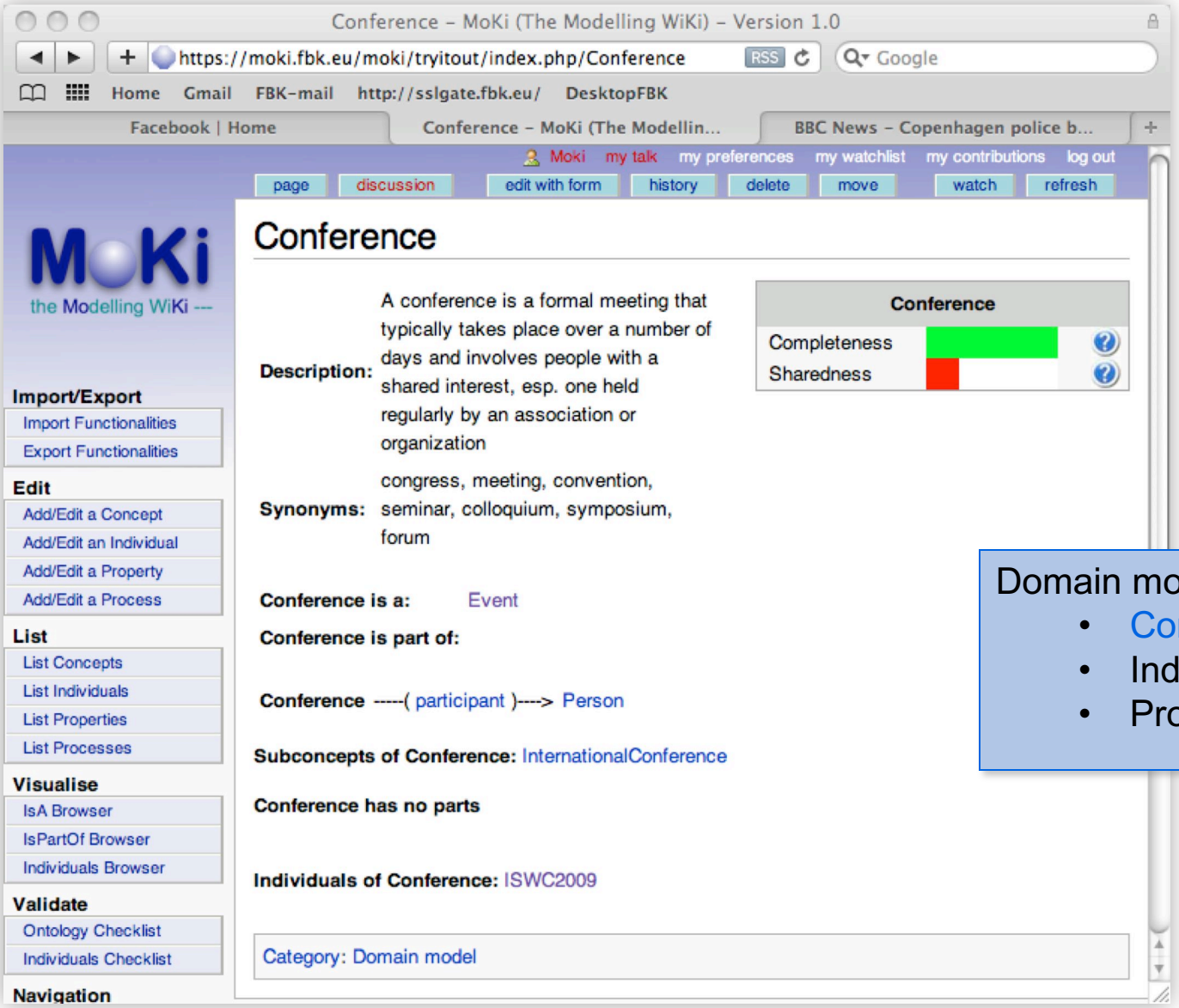
Domain model

- Concept Page
- Individual page
- Property Page

Process model

- Process Page

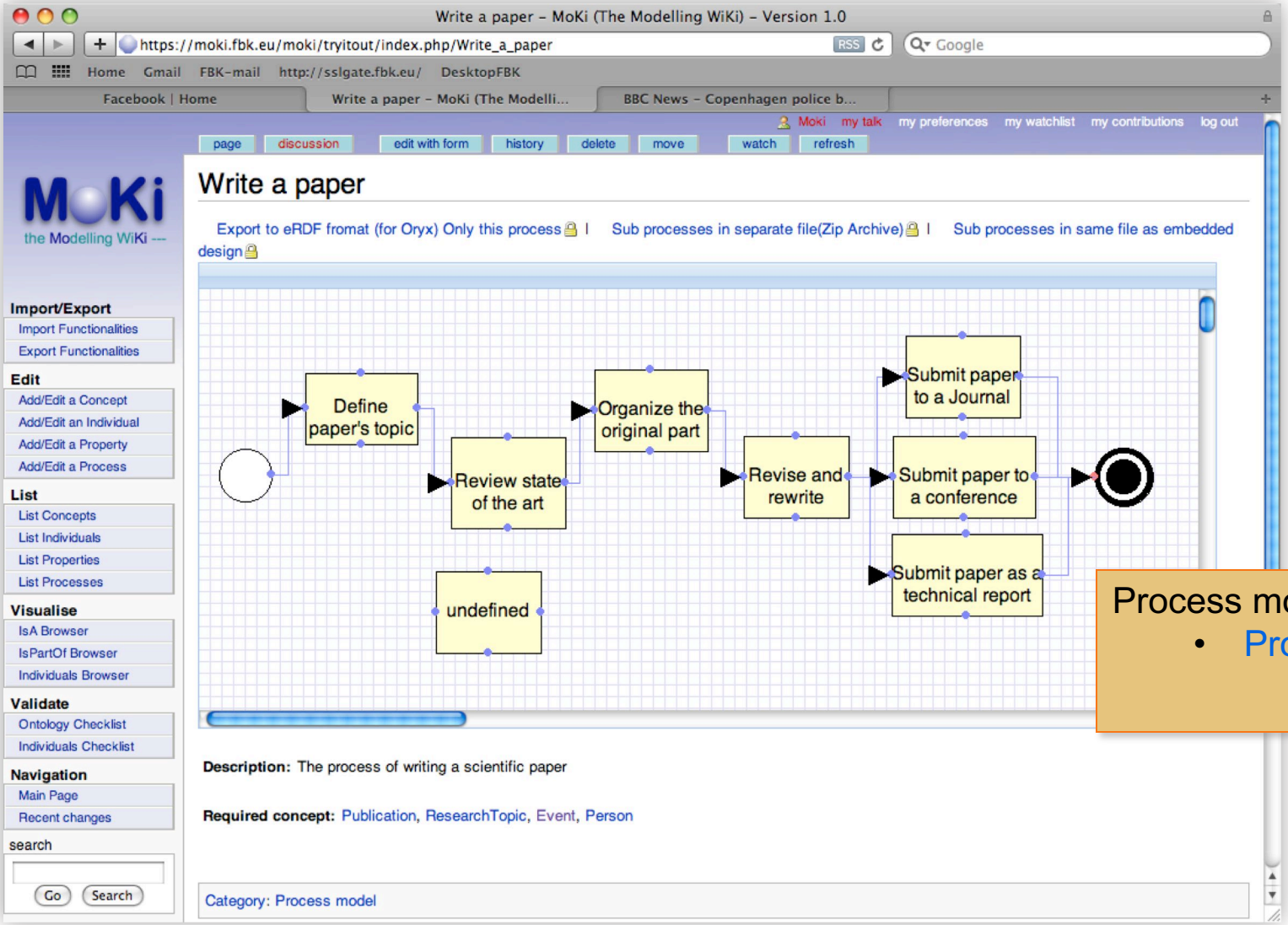
Concept Page



Domain model

- Concept Page
- Individual page
- Property Page

Process page



Process model

- Process Page

Overview Pages

FONDAZIONE BRUNO KESSLER

center . graz

List domain concepts

Number of concepts in the Domain Model: 71

Concept	Description	Is part of
Misc	Work of another or undetermi the scheme is not explicitly sta	
UndergraduateIntermediateClass	see: http://www.neurolabor.de /cgi-bin/dict/urlexp/200307052	
UndergraduateAdvancedClass	see: http://www.neurolabor.de	
GraduateClass	see: http://www.neurolabor.de	
Topic	If changing this concept (or its ontology depends on the fores The swrc topic ontology can b http://ontoware.org/frs/downlo	
Document	Dublin Core elements added. See: http://dublincore.org/docu for document types see: http://www.bsz-bw.de/diglib/m	

Domain Model: Is_a Browser

Add

Add Relation

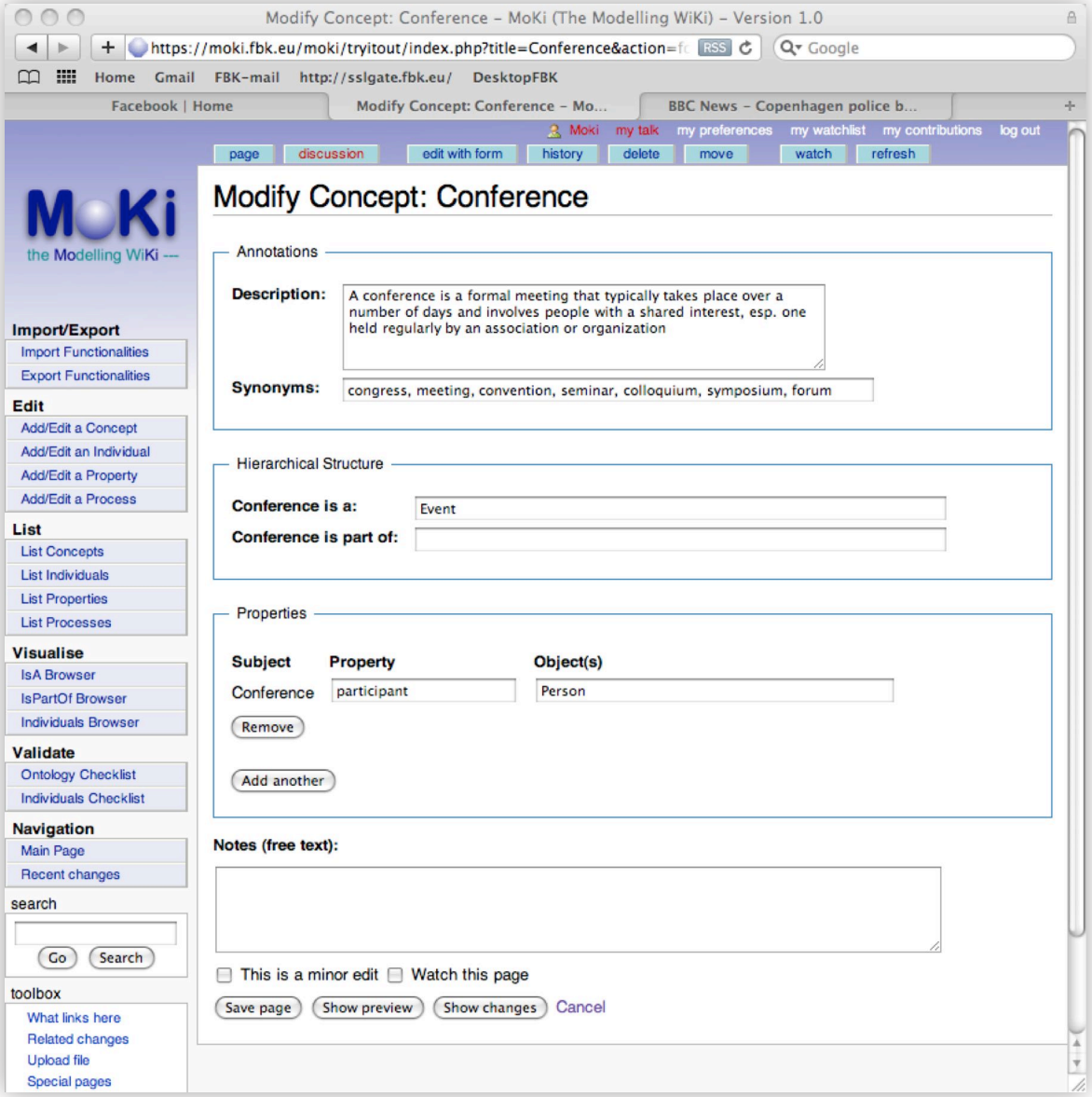
Edit

Del Relation

Delete

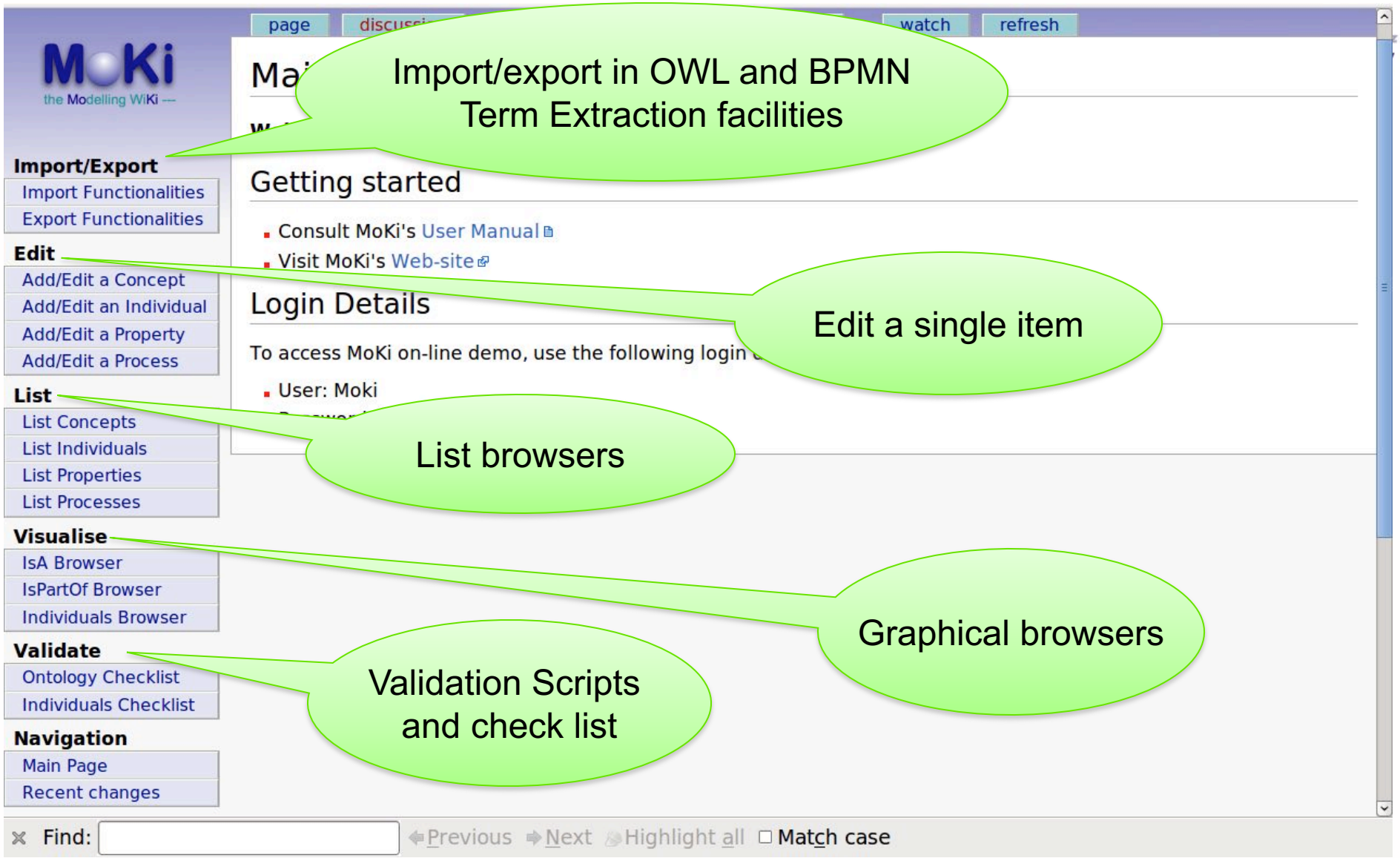
- Thing
  - Document
    - Publication
    - Unpublished
  - Event
  - Organization
  - Person
    - Employee
      - AcademicStaff
      - AdministrativeStaff
      - Manager
      - TechnicalStaff
    - Student
  - Product
  - Project
  - Thing
  - Topic

Editing templates via forms



Appropriate templates for the different entities

Moki functionalities



MoKi @ work

- Six medium-size enterprise models for the use cases in APOSDLE (FP6 EU-project (2008)
- Training in knowledge management courses at
  - university of Graz (6 MoKi's ~ 50 users each)
  - University and Bratislava
- Revision of an Organic Agriculture and Agreoecology ontology(FP7 Organic.Edunet project)
- Experiments at CEII Trentino

Sister tools:

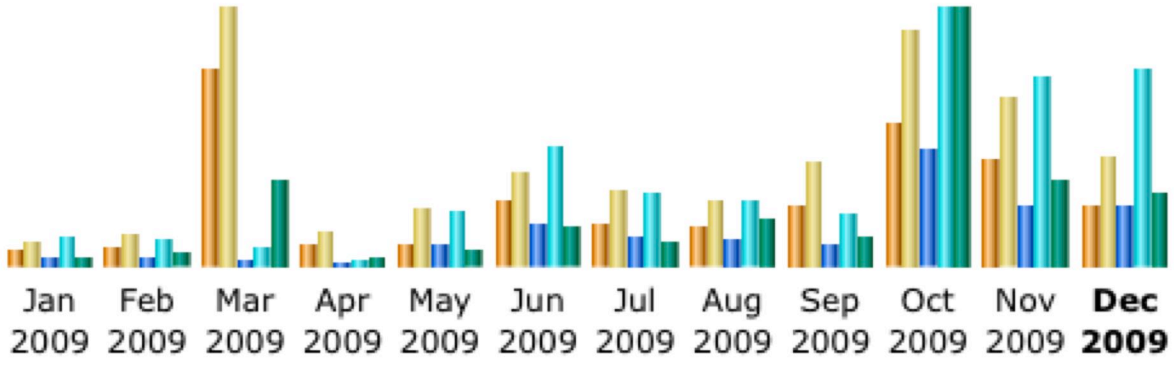
- Collection of italian medical lay terminology (oct 2008)
- Specification of medical guidelines (output in ASBRU)

Usage of the on-line version

FONDAZIONE BRUNO KESSLER

Countries

Countries		Pages	Hits	Bandwidth
Italy	it	6505	16574	493.44 MB
European country	eu	5435	15456	338.00 MB
United States	us	1443	3765	91.88 MB
Austria	at	601	1519	109.10 MB
Germany	de	562	1191	29.71 MB
Slovak Republic	sk	378	933	14.05 MB
Spain	es	261	897	38.90 MB
Portugal	pt	95	199	2.76 MB
Great Britain	gb	94	319	8.25 MB
Greece	gr	81	136	1.01 MB
Norway	no	76	144	3.51 MB
Japan	jp	58	197	2.57 MB
Sweden	se	52	215	21.66 MB
Hungary	hu	44	76	1.24 MB
France	fr	30	55	4.80 MB
China	cn	18	35	1.21 MB
Indonesia	id	18	29	242.45 KB
Brazil	br	16	30	200.77 KB
Netherlands	nl	16	50	1.56 MB
Belarus	by	15	53	1.02 MB
South Korea	kr	10	34	515.32 KB



Month	Unique visitors	Number of visits	Pages	Hits	Bandwidth
Jan 2009	10	15	414	1186	16.43 MB
Feb 2009	11	20	427	1044	20.66 MB
Mar 2009	123	162	326	720	149.55 MB
Apr 2009	14	22	190	329	16.31 MB
May 2009	14	37	819	2198	28.23 MB
Jun 2009	40	58	1557	4526	65.59 MB
Jul 2009	26	47	1121	2831	40.65 MB
Aug 2009	24	40	992	2473	79.73 MB
Sep 2009	39	65	826	2065	51.54 MB
Oct 2009	89	149	4424	9905	435.81 MB
Nov 2009	68	105	2348	7293	145.29 MB
Dec 2009	38	70	2403	7492	125.12 MB
Total	496	790	15847	42062	1.15 GB

Things we are working on…

- Add templates for different families of ontology concepts;
  - Events, Artifacts, Roles, ….
- (Re)Use patterns;
- Support mode expressive constructs (axioms) both at modeling time and in import/export
  - Integrate formal modeling functionalities;
  - Present both the formal and informal parts as two views on the “same” knowledge in the MoKi.
- Extend support for validation and revision
  - highlight the effects of changes;
- Extend informal / formal modeling of business processes;
- Include “namespaces”;
- Include different term extractors;
- ……..

And now….

- Play with Moki using the on-line demo at

http://moki.fbk.eu

- Send us your feedback;
- Ask us for the (Open Source) code and use it!