New Audiences for Ontologies

ESWC 2012

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Be Informed’s
Ontology driven
Business Processes

be informed

Selling Semantic Technology?
New Audiences for Ontologies
Be Informed’s Ontology driven Business Processes
Dealing with Complexity

- Many constraints
- Changing rules
- Contextual rules
  - Customer
  - Time
  - ...
- Rules from many sources
  - Inc. Conflicts and overlap
Traditional Approach: Design a Production Line, with “Some” Exceptions
Traditional Approach: Manually Consolidate Up Front

- Time Constraints
- Competence/roles
- Marketing
- Products & variants
- Retention and archiving

Analyst

be informed
**Traditional Approach: Results**

- Leads to large numbers of processes
  - Or very large processes with “Embedded” variants

- Lost traceability between the actual constraint and how it's covered in process terms

- Too complex to change fast
  - And test all over....

- Attempts to reduce complexity often fail as they try to over-rationalize inherent diversity
Business Users express their own definitions & constraints, computers infer the process
Ontology driven processes

- Case
  - Requires Running
  - Requires Expired
  - Performs

- Activity
  - Requires Role
  - Requires Completed
  - Requires Taken
  - Creates
  - Requires Available
  - Decides

- Role
  - Assigns

- Time Limit
  - Begins
  - Ends
  -Suspends
  - Resumes
  - Creates
  - Changes
  - Corrects
  - Deletes
  - Lookup
  - Requires Available

- Decision
  - Requires Role

- Artifact
  - Subtypes

- Document
- Appointment
- Note

- Pre Condition
- Post Condition

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Ontology driven processes

Explantion

The activity Assess subsidy request is only completed if
- a decision of type Eligibility of subsidy is taken
- a calculation of type Height of subsidy is taken

The activity Assess subsidy request may only be performed if
- all of the following conditions are met
  - the user is involved with role Case handler
  - an document of type Acknowledgement is available
The actual process is derived from the constraints in the Ontology

- What you have done so far…
  - Submit subsidy request
  - Send acknowledgement
- What you can do now…
  - Assess subsidy request
    - Publish decision
      - Publish on intranet
      - Publish in newspaper
- What could be next…
Flexible Goal Oriented Processes

- Straight Through where possible
- If not, an “exception flow” is available to return to STP

- Experts choose their own path
- Certain activities may not be strictly necessary now, but it is simply handy to do them. Or vice versa, decide to delay activities.

- Process adaptive to interventions
- User may have the rights to manually override process steps, after which the process continues again.
Selling Semantic Technologies
Dutch Immigration Office

Customer portals

Knowledge services
Challenge
How do we treat everyone fair, and how do we keep up with change?

Situation
165 business processes. 50 changes in legislation per year. High workload, delays, resulting in errors

Solution
INDiGO is an organizational change program, from departments to business services

Benefits
Time to change from 9 months to 2-3 days; 1 generic process left; business in control; 20% reduction in labor, improved customer service
Tax Office Dutch Caribbean
“A complete Tax Office in 6 months”
Situation
After dissolution of the Dutch Antilles, the Bonaire, Eustatius and Saba became responsible for taxation, policing, health, immigration, education & social security, on behalf of the Dutch Government.

Benefits
- Rapid implementation of the required new legislation:
  - tax legislation (6 months);
  - social security (2 months)
  - pension (3 months);
- One generic platform for all government processes.
European Patent Office

“The best patent grant process in the world”
How we sell semantic technology?
Actually, we don’t...
We DO convince our customers that clear, precise definitions result in

- Agility
- Consensus
- Ownership
- Compliance
As opposed to implicit semantics, hidden in flow, procedure or combinatorics
Audiences across the Policy Lifecycle
Implement

Execute
Policy lifecycle

1. Consult
2. Draft
3. Choose
4. Implement
5. Execute
6. Evaluate
7. Feedback
8. Report
9. Goals
International Audiences
Use cases for Multilingual Ontologies

Localize services used in an international context

Share Models with International Counterparts

Cooperate across boundaries during modeling
Welcome

If you come to the Netherlands to live, work or study, you are likely to have some questions about the arrangements you need to make. This site will guide you to the government organizations you may have to deal with.

What can you do?

If you fill in your profile, you will see a list of subjects that are relevant for you, with links to information from the organizations concerned. You can also choose a subject directly.

Your profile

- **What is your age?**
  - Make your choice

- **What is your nationality?**
  - Make your choice

- **Length of your stay?**
  - Make your choice

- **The purpose of your stay?**
  - (You may give more than one answer)
    - work in Holland
    - study in Holland
    - live in Holland

Create my checklist

Subjects

- Education
- Employment
- Permits and visa
- Social security
- Taxes
- Vehicles

See also

- Employers (dutch)
- The forum (dutch)
Labels in Legal Ontologies

- Many of these concepts do not have a name, but are identified by their description.
- “If you wish to come to the Netherlands as an au pair for longer than 3 months, you must meet the following conditions and hold the following documents:
  - You must be over 18 but no older than 25 years of age”
  - You must have a valid passport
  - You must not be married
Labels in End User Dialog

- Concepts in ontology are used to create end user service dialogs,
- Mood variants are provided as alternative labels to be used in dialog: query whether a norm applies, to state that it does or does not, etc.
- “Do you have a valid passport?”; “You do not have a valid passport”
Monnet: Lexically rich representation of labels
Monnet: Contextual Translation of Ontologies
Monnet: Dialog Variant Generation

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<th>FUTURE</th>
<th>PAST</th>
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<td>have you been over 18 ?</td>
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<tr>
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<td>have you not been over 18 ?</td>
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<td>you will possibly be over 18</td>
<td>you have possibly been over 18</td>
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<tr>
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<td>you will probably not be over 18</td>
<td>you have probably not been over 18</td>
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</tbody>
</table>
Evaluation at Be Informed’s Clientbase
Audiences New to Ontologies
Who will be modelling?

Product Marketing

Analists

Knowledge Engineers

Compliance Officers

Policy Makers

Designers

Ontologists

Domain Experts
More Important:
Who will be using the models?

Policy Makers
Domain Experts
Involved Users
Reviewers
Call Centre Agents
Explaining Individual Cases
Personal Advice
Self Service
Feedback Loop
The web full circle?

From making the human web machine readable
To making sure humans can still read it
Self Documenting Models

Explain

A **Housing benefit application** case is only completed if

* the activity **Submit the application** is completed
* the activity **Accept the application** is completed
* the activity **Assess the application** is completed
* the activity **Publish the decision** is completed
* the activity **Archive the application** is completed
1 Case
To implement their business processes, organisations may handle different types of cases. Cases are completed if all goals or post conditions of the specific case are reached. Typical examples: Application for a benefit, Insurance Claim.

Case Management Domain

1.1 Housing benefit request

Description
People who pay too much rent – in relation to their income – can request or apply for a Housing benefit. The benefit is a monthly allowance.

- the activity Submit the request is only completed if
- the activity Accept the request is completed
- the activity Assess the request is completed
- the activity Publish the decision is completed
- the activity Archive the request is completed

Relations
performs (out)
performs (out)
performs (out)
offers (in)
offers (in)

Labels
Postulation completed
Question completed
Negated
Explain what has been done

Activities

- Veldweg 24a
- Submit
- Accept
- Assess
- Publish
- Archive

The activity **Accept** is completed by **Kees**,

- the document **Acknowledge letter** is created
- the time limit **Acceptable response time** began
- the appointment **Customer visit** is scheduled

1 day ago
And why other things cannot (yet) be done
01-09-2009
Dhr. A. Arends
Arendslaan 1
2345AE Lelystad

Subject: Settlement claim 5000363

Dear Mr. Arends,

Below are the payment details on your claim. During the treatment it is determined that your claim may be paid partially.

Total will soon be paid to you an amount of: €1150,-.

Current value camera
   Purchase price
   Purchase date

   €1800,-
   €2100,-
   21-6-2009

Maximum compensation

   €1150,-

The following product requirements have played a role.

Product Condition 3 - current value equipment

With respect to the payment of amounts claimed equipment is based on the current value. Information concerning the calculation of the current value of a device can be found at: http://www.berekeningdagwaarde.nl.

Product Condition 11.a - Maximum compensation

For photo, film, audio (visual), computer and optical equipment and accessories, instruments, hearing aids and dentures are never more than

Sincerely,

Your Insurance
Verbalization in Be Informed

Home > Assess the request

Activity
Assess the request

Explain
The activity Assess the request is only completed if
- a decision of type Eligibility of housing benefit is taken
- if EligibilityOfHousingBenefit=TRUE: a calculation of type Amount of housing benefit is calculated

A Assess the request activity can only be started if:
- all of the following conditions are met
  - a document Acknowledgement letter is available
  - the current user is involved as Case handler
Challenges in Verbalization

• Quality and grammatical correctness of texts
  • Deal with plurals, verb forms etc.
  • Sentence Planning
  • Expressions
  • Multi lingual

• Separation of Model and Metamodel Contributions to Grammars
  • How to include complex ontology labels into sentences
  • Descriptive Labels vs Names
  • Propositional Labels
  • Relation to Monnet Project
Intermediate results from Molto Project

```
Main> generate_random -number=20 | l
the result isn't published if the document with details is available

the grant application may be deleted

intake may create the document with details

the grant application is changed

the grant application may not be changed

the result may be published if 44b is completed

44b is completed if the submission form is available

the grant application may not be deleted

the result is published if the document with details is available

the grant application isn't created

the result may be published
```
Research Interest
Workplaces that facilitate collaborative modeling across disciplines

• Without requiring everyone to ‘typical’ modeling
  • Modeling by giving feedback, Modeling by dialog, Modeling by example

• In context of the user’s role and responsibilities
When using the agility of ontology driven services, **fast validation** is important.

Wouldn’t it be great to leverage feedback from a lot of people when validating a model?
**Verbalization for Validation**

- Generate logical consequences or logical equivalent statements
  - that better trigger review comments

- Analog to Terry Halpin’s work
  - Every Person has a Birth Place
  - No Person may have more than one Birthplace
  - Person X has two birthplaces...

- Also: Verbalize potential errors
  - “The Intake activity has additional requirements”

- And: Verbalize potential changes
  - “Add a requirement to the Intake activity”
Gamification is the trend where game mechanics are introduced in non-game contexts.

Could Gamification provide a flexible, expert user oriented behavior model that steers but with maximum flexibility?

Even: Allow users to violate certain constraints, when it costs less then the benefits?
A/B testing is the long existing technology where UI choices are made by deploying multiple UI’s and evaluating their relative performance.

As ontologies are now easily deployed, could we do the same with them? Evaluating at user interaction level? And even at business process performance level?

Example: Parallel sets of rules can drive an advice, determine which has highest conversion. Or lowest fallout.
A/B Testing

The Clinton Bush Haiti Fund used A/B testing to improve its site's donation rate. The original site was one column with no picture. By optimising the design (right), the group raked in $1 million more in a single month, a 10.2 per cent increase. Here's how the page design evolved, BC

(from Wired.com)
Active Research
- FP7 Research Projects
- Peer Reviewed Publications

Facilitate academic research
- Study our users
- Evaluate your ideas at actual projects

Work with us

Innovation Workgroups
- Based on Roadmap Themes
- Customers, Partners and Academics
- Participate!

Lab Projects
- Short, exploratory projects
- Visualization, Proof, Demand
- Internal or with customers

Open Source
- Adopt/Support major libraries
- Contribute at the cutting edge
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  o The FP7 projects I presented
    o www.monnet-project.eu
    o www.molto-project.eu

Questions? Ideas? Collaborate? Research I should know about?

Talk to us here or by e-mail:
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