Gi2MO Types: A Domain Independent Idea Categorization Schema for Idea Management Systems

Adam Westerski, Carlos A. Iglesias

Grupo de Sistemas Inteligentes
Departamento de Ingenieria de Sistemas Telematics
Universidad Politecnica de Madrid

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Idea Management Background

[Introduction: what are Idea Management Systems?]

- Origins
  - Open Innovation | ask others for innovation
    Chesbrough, 2003
  - Crowdsourcing | connect to large audience
    Howe, 2004

- Goals
  - communicate with community and allow deliberation
    Bailey and Horvitz, 2010
  - select best ideas available
    Bailey and Horvitz, 2010; Hrastinski, 2010

- Motivations for use in organizations
  - react to fast changing markets & customer profiles
    Bailey and Horvitz, 2010
  - capture wider scope of ideas (as opposed to closed innovation)
    Gassmann, 2006; Riedl 2009
Idea Management Problems

[Introduction: Common Problems of IMSes]

- **Information overflow** | lots of data gathered over long time
  Jouret 2009; Belecheanu 2009

- **Noisy data** | similar ideas, lots of simple or obvious input
  Kornish 2010; Jouret 2009; Belecheanu 2009

- **Peaks of data** | lots of ideas over short period of time
  Baumgartner 2008; Turrell 2002

- **Rating innovation** | lack of proper metrics, lot of effort required
  Hrastinski 2010; Gangi 2009

**Approach:** research on new data modeling approaches and analysis of gathered metadata
Different perspectives on IMS

[Introduction: IMS example]
Different perspectives on IMS

[Introduction: IMS example]
Proposed Approach: Gi2MO Project

[Introduction: Research background]
Solution overview

Solution: Taxonomy -> Data Annotation -> Metrics

1. Taxonomy
2. Data Annotation
3. Metrics

Data Analytics: theoretically grounded model for information classification and deriving metrics
Research Methodology

Methodology:

1. Analysis of the **theoretical models** from Innovation Management area

2. Confront **theory vs. practice** of IMSes

3. **Taxonomy** for domain independent idea characteristics in IMS

4. **Annotation** of ideas with the taxonomy

5. **Generate metrics** based on annotations to assess content of IMS and compare ideas
Building the taxonomy (I)

[Solution: methodology part I]

Theoretical Innovation Models (examples)

- **product vs. process vs. market vs. input innovation**  
  Schumpeter 1934; Drejer 2004

- **radical vs. incremental innovation**  
  Abernathy 1978; Porter 1986; Garcia 2002

- **modular vs. architectural innovation**  
  Henderson and Clark 1990

- **new markets vs. old markets**  
  Abernathy and Clark 1985

**Approach:** Innovation Management theory vs. Idea Management System practice (Gi2MO Ontology & Idea Life Cycle research)
Building the taxonomy (II)

[Solution: methodology part I]
Idea Annotation

[Solution: methodology part II]

Idea Title: More buttons on the tablet.

Idea Summary:
I would like to propose adding more physical buttons on the 9 inch tablet that is currently available in your offer. When using the tablet I feel that the single 'home' button is not enough for many activities that the tablet is advertised for making the experience bad.

For example, for reading ebooks, it would be very useful to have "back" and "forward" buttons for scrolling pages of the book. I own an e-paper reader and I think those buttons could be also used for different activities (for example web browsing or games).
Generating the metrics

[Solution: methodology part III]

<table>
<thead>
<tr>
<th>Innovation</th>
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<tbody>
<tr>
<td><strong>Dependence</strong></td>
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<tr>
<td>Proceeds</td>
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<tr>
<td>Follows</td>
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<tr>
<td>Encapsulates</td>
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<td>Is Part Of</td>
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<tr>
<td><strong>Target Audience</strong></td>
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<tr>
<td>New Audience</td>
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<tr>
<td>Existing Audience</td>
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<tr>
<td><strong>Originality</strong></td>
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<tr>
<td>New</td>
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<td>Incremental</td>
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<td>Additive</td>
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<td>Subtractive</td>
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<tr>
<td>Replacement</td>
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<td>None</td>
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<td>Relative To</td>
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<td>Current State</td>
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<td>Market</td>
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<tr>
<td>Local</td>
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<tr>
<td>Global</td>
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<tr>
<td>Innovation Proposals</td>
</tr>
</tbody>
</table>

- Idea Dependability

- Idea Adaptiveness = \{ 1 = \text{Existing audience} \}
  \{ 0 = \text{New audience} \}

- Idea Originality

- Idea Originality Scope
Experiments: Dataset comparison

[Observing differences between IMSes]
Experiments: Idea Similarity

[Observing idea diversity in IMSes]

Use of information entropy as term diversity measure
Masisi 2008; Ghosh 2011; Huang 2008

\[ E(tbx) = - \sum_{i=1}^{n} p(i) \log_2 p(i) \]

count of term combinations in a taxonomy branch

term combination

frequency of annotations
Practical Appliance

[Implementation in IdeaStream: IMS performance breakdown]
Practical Appliance
[Implementation in IdeaStream: Idea Clustering (I)]
# Practical Appliance

[Implementation in IdeaStream: Idea Clustering (II)]

## Clustering overview
- Cluster count: **4**
- Total idea count: **249**
- Last idea date: **2011-03-19 17:33:00**
- Ideas per Cluster - avg: **62.25** max: **86** min: **20**
- Comments per Cluster - avg: **38.75** max: **80** min: **0**

### Cluster 1
- Theme (56): AssociatedObject, Branch, ComplementaryObject, ComposedOf, CreativityOrigin, CurrentState, Department, Dependence, Duplicates, Ecapsulates, Event...
- Ideas Count: **75**
- Comment Count: **80**
- Idea Workflow breakdown:
  - Draft - **52**
  - Under Review - **7**
  - Rejected - **12**
  - Already Exists - **4**

### Cluster 2
- Theme (6): AdditiveInnovation, ElementChange, ExistingAudience, LackOfFeature, Request, AdditiveChange
- Ideas Count: **68**
- Comment Count: **6**
- Idea Workflow breakdown:
  - Draft - **51**
  - Under Review - **9**
  - Rejected - **6**
  - Implemented - **1**
  - Already Exists - **1**

### Cluster 3
- Theme (15): CharacteristicChange, IssueReport, None, ObjectInteraction, ObjectOfInnovation, OrganizationsProductLine, PartOf, PotentialCause, ProductLine, Regressive, ReplacementOfElement...
- Ideas Count: **86**
- Comment Count: **69**
- Idea Workflow breakdown:
  - Draft - **62**
  - Under Review - **8**

### Cluster 4
- Theme (13): CompetitiveObject, ComplementaryWith, CompleteChange, Evolutionary, New, NewAudience, NewObject, ObjectComparison, Organization, OtherPartyOffering, PotentialOpportunity...
- Ideas Count: **20**
- Comment Count: **0**
- Idea Workflow breakdown:
  - Draft - **16**
Thanks for attention!

Questions?