Supporting the Systematization of Early-Stage Innovation by Means of Collaborative Working Environments

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Collaboration Environment for Strategic Innovation

Integrated Project (Contract no: 035262)
Start: 09/2006
Goal

• to create this next generation Collaborative Tools which will change existing technological and social infrastructures for collaborating and support knowledge workers and eProfessionals in sharing, improving and evaluating ideas systematically across teams, companies and networks.

• to make use of advanced game methodologies in order to improve collaborative work processes.
to enable knowledge workers and eProfessionals to share, improve and evaluate ideas systematically across teams, companies and networks,

to widen participation in complex innovation processes.

to provide new information network technologies supporting the three most important pillars in strategic innovation:
  – to **connect** to the best people around and make optimal use of their competencies;
  – to **improve** ideas through truly collaborative workflows that will raise our cognitive capacity
  – to **continuously evaluate** the ideas produced by using prediction markets and decision support systems
The input to the innovation process affects the quality of the output.

→ Support for the Early-Stage of Innovation to generate a better quality and quantity of successful innovations.
75% of innovation workers use the internet for information issues

but:

Specific software and IT tools for innovation management are seldom adopted

(NovaNet 2006)
Reasons for Non-Use of IT Tools in Innovation Processes

• Non-knowledge of tools
• Companies policy
• Accessibility of local tools
• Usability of tools
• Added value of usage is not expected from/obvious to users
• Dialog oriented tools are preferred
• Actors prefer less complex and without installation usable tools
• Bad interfaces to common tools
Conclusion

A successful tool to support innovation workers within their work needs to focus on the support of the real requirements of the actors

→ Focus on Workflows/ Routines of Innovation Workers
Identified Routines

Idea Generation by an Individual

- Topic
- Research
- Think/
  Represent Ideas
- Re-Think
- Review
- Evaluation
- Result Presentation

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Identified Routines

Idea Generation/ Development by an Individual

- Initial Idea/
  Transformed Idea
- Feedback Evaluation
- Idea Representation
- Feedback Extraction
- Idea Sharing
- Feedback Gathering

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Identified Routines

Idea Generation in Groups

- Capture
- Topic
- Topic Presentation
- Topic Discussion
- Idea Evaluation
- Structure Ideas
- Brainstorming
Identified Routines

- Initial Idea Representation
  - Transform
  - Filter
  - Idea
  - Representing the Idea
  - Gathering

- Experience-Led Idea Generation
  - Share
  - Talk
  - Represent
  - Commit

- Knowledge Exploration
  - Topic
  - Information Gathering
  - Reading and Annotating
  - Information Evaluation
Initial Conclusions from Interviews

Early-Stage Innovation is much about:

• … experience to generate ideas
• … communication to generate ideas
• … representing ideas → Sketches, Powerpoint, Textdocuments
• … sharing ideas with others → Mail with attachments.
• … discussing ideas → Mail, Phone, VoIP, Meetings
• … getting feedback for idea development → Mail, Phone, VoIP, Meetings
• **Strategic navigation tool** – create dynamic visual maps of strategic opportunities and challenges
• **Distributed input and feedback** - wikify your innovative project and enable others to participate
• **Idea generation games** – employ playful processes to drive creativity and perspective change
• **Visual knowledge building tool** - capture, share, and navigate your ideas and knowledge visually
• **Tools for rich knowledge meetings** - manipulate persistent visualisations in realtime online meetings
• **Idearium** - computer-assisted online brainstorming for fast idea generation
• **User profiling** - tell others about yourself and your competencies
• **Tools for people discovery** - find people that are relevant for you and can challenge your thinking
• **Tools for knowledge discovery** - get knowledge recommendations based on your current work
• **Innovation Scoreboard** – measure the status of innovation relevant interactions in your organisation
• **Stimulus agents** - connect with relevant innovation experience opportunities
• **Connection games** - get occasions for innovative interactions in professional networks
• **Prediction market** - issue virtual shares of your ideas and let traders estimate their success
• **Argumentation tools** - identify, communicate, and elaborate alternatives and decision criteria
• **Group consensus and voting tools** - make better decisions in innovative teams
• **Idea traceability system** – give credit to those who are credit due in distributed innovation processes
• Users create markets
• Users provide ideas
• Users bring ideas into markets
• Users buy and sell stocks of ideas

→ Users evaluate ideas by giving a bet on the future importance or the chance of market success of an idea
Connection Games

- Brings Users/Experts together
- Brings Users/Experts together with the idea of developing

Connection Games

.team #1
.team #2
.team #3
.team #4

collection game #1
connection game #2
connection game #3

organizational context:
- resistance to innovation
- modes of diffusion and dissemination
- change management

"This person may not bring so much to my team, but she was responsible for that particular project which I believe is strongly related to what I am proposing."

"I've worked with her in the past and we communicate very well."

"I want to gain access to this expertise!"
Connection Games

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Idea Generation Games

- Supporting Users in Generating Ideas
- Provide path to reframe the idea
- Challenges the idea from different view points
Thank you for your attention!

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Back Up
Today’s Early-Stage Innovation

75% of innovation workers use the internet for information issues but:
Specific software and IT tools for innovation management are seldom adopted (NovaNet 2006)

Reasons

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Early-Stage Innovation is much about

- ... experience to generate ideas
- ... communication to generate ideas
- ... representing ideas
- ... sharing ideas with others
- ... discussing ideas
- ... getting feedback for idea development

Today Supported by

- Sketches
- Slideshows
- Textdocuments
- Mail
- Mail with attachments
- Phone
- VoIP
- Meetings

- Use of separate IT solution leads to data inconsistency, data-redundancy and object-unrelated communication

Routines of Innovation Workers

- Idea Generation by an Individual
- Knowledge Exploration
- Idea Generation in Groups
- Idea Sharing

- Early Stage of Innovation

Idea Generation
Proto-typing
Manufacture
Marketing & Sales
Development

Potential in supporting the Early-stage innovation Stage-gate process

Fulfills Innovation Workers Requirements within an Integrated Software Solution to Enhance European Companies Abilities to Generate Successful Innovations.
Outlook/ Perspective

• Further single worker and group worker interviews will be accomplished

• Out of these additional work routines on single/group level will be identified

• An supportive IT environment will be developed to enhance the work routines of innovation workers
IT Support of Users Work Routines

Processes

Strategic

Individual/Group
dynamic

Workflows/Routines

Methods & Tools

Aggregation (Activities)

Methods and Tools

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NovaNet Study

Within the study “the internet” is segmented in three categories:

Type A: Information oriented research tools for the external environment (e.g. online-professional journal, economical data basis, research-, technology and job portals/ search engines Excluded because of their extremely high usage 75.9 %)

Type B: Dialog oriented tools for the external environment (online- forums, networked data exchange with cooperation partners, customer communities)

Type C: Dialog and process oriented tools for the internal exchange within a company (knowledge data basis, expert data basis, document management systems, networked project management)

Definitions

Innovations are new developments within a company which are not necessarily new for the industry (product-, assortment-, market- improvement)
Innovators are companies which brought at least one product innovation to market in the last three years
NovaNet Study

Outcomes

• ¾ of all interviewees are using the internet for information issues

• Search engines are the most often use application (75.9 %), second is networked exchange of data with suppliers, partners (34.3 %)

• The actors prefer the less complex and without installation usable tools for external research

• IT-tools and software for innovation management are adopted seldom (INSTI e.V. 2003, in Nova Net 2006)

• Within larger companies the usage of internet application is bigger

• Innovation managers in the ICT and environmental engineering segment use internet applications more often than the ones in engineering and chemistry, especially dialog oriented tools.

• Innovative companies use the internet application more often than non-innovative companies

• The higher the innovation level the higher is the usage of tools, especially the usage of dialog oriented tools for the external environment

• Specific software and IT tools for innovation management are adopted seldom

• Type A tools are used most often (70.6 % usage/ averaged 1.88 tools used), Type B usage is 59.1% and 0.81 tools averaged, Type C usage is 54.9 % and 1.14 tools averaged.

• Power users adopt all categories nearly similar, normal or “less-users” users prefer Type A tools. → Type A tools supposed to be entry applications
Identified Routines

Sense Making Routines:

1. Topic
2. Information Gathering (e.g., Google Scholar, Wikipedia)
3. Reading and Annotating
4. Information Evaluation

5. Decision of proceeding
6. Create entry in bibliography (Journal)
7. Note taking
8. Considering

Information Evaluation
Identified Routines

Idea Sharing Routine:

Experience led idea

2-3 days break

Talk

Commit

Email out

Represent

Notes

Powerpoint

Flash

Illustrator
## Related Tool Usage

<table>
<thead>
<tr>
<th>Sense making</th>
<th>Idea Generation</th>
<th>Idea development</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Represent</strong></td>
<td>● Office journal</td>
<td>● Word ● PowerPoint ● CAD ● Notebook ● Illustrator ● Flash</td>
</tr>
<tr>
<td><strong>Exchange</strong></td>
<td></td>
<td>● Email</td>
</tr>
<tr>
<td><strong>Structure information</strong></td>
<td>● Tags and categories ● Cross links providing ‘live’ transversal views on the notes and stories</td>
<td></td>
</tr>
<tr>
<td><strong>Communicate</strong></td>
<td>● Stories</td>
<td>● Email ● Phone ● Team discussion ● Skype</td>
</tr>
<tr>
<td><strong>Gather</strong></td>
<td>● Office journal</td>
<td>● Notebook</td>
</tr>
<tr>
<td><strong>Evaluate</strong></td>
<td>● Two-day breaks, stories ● Reframing</td>
<td>● Communication ● Feedback</td>
</tr>
</tbody>
</table>