AGLIS:
Open Innovation and
Knowledge Management

Jan M. Pawlowski
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Open Innovation…?!
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- Innovation
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Innovation

- “Technological innovations comprise new products and processes and significant technological changes of products and processes. An innovation has been implemented if it has been introduced on the market (product innovation).” (OECD, 2001)
- Or in simple words: a new process, service, product

Innovation vs Invention (Schumpeter)

- **Invention** is an idea, a sketch or model for a new or improved device, product, process or system which has not entered the market
- **Innovation** is only accomplished with the first commercial transaction involving the new product, process, system or device
Innovation

- Open Innovation:
  - “the use of purposive inflows and outflows of knowledge to accelerate internal innovation, and expand the markets for external use of innovation” (Chesbrough, 2006)

- Frugal Innovation
  - “simple and plain and costing little”
  - Taking away non-essential features of a product or service
### Dimensions of Innovation

<table>
<thead>
<tr>
<th>System Level</th>
<th>Incremental</th>
<th>Radical</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Level</td>
<td>New versions of motor car, aeroplane, TV</td>
<td>New generations e.g. MP3 and download vs. CD and cassette music</td>
</tr>
<tr>
<td></td>
<td>Improvements to components</td>
<td>New components for existing systems</td>
</tr>
</tbody>
</table>

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Dimensions of Innovation

<table>
<thead>
<tr>
<th>Overturned</th>
<th>Core Innovation Concepts</th>
<th>Reinforced</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>ZONE 2</strong></td>
<td>modular innovation</td>
<td><strong>ZONE 3</strong></td>
</tr>
<tr>
<td><strong>ZONE 1</strong></td>
<td>incremental innovation</td>
<td><strong>ZONE 4</strong></td>
</tr>
<tr>
<td><strong>ZONE 4</strong></td>
<td>architectural innovation</td>
<td></td>
</tr>
</tbody>
</table>

Links between knowledge elements

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Discontinuity

- New market emerges
- New technology emerges
- New political rules emerge
- Running out of road
- Change in market sentiment or behaviour
- Deregulation or reregulation
- Fractures along 'fault lines'
- Unthinkable events
- Business model innovation
- Shifts in techno-economic paradigm
- Architectural innovation
Frugal Innovations

- Some nice samples
  http://www.nesta.org.uk/news_and_features/frugal_innovations
Frugal Innovation (Bhatti, 2011)

Dimensions on which firms (frugally) innovate

- Quality
- Scale up
- Distribution
- Adaptability
- Servicing
- Performance
- Output Costs: Affordability
- Input Costs: R&D

Frugal Innovation

Simplification

© Yasser Bhatti 2011
Adapted from Ventresca, M., 2011 lecture slides
Inclusive / Frugal Innovation (George et al., 2012)
Innovation Processes and Components

1. Strategic Context
- Strategies, Strategic Intent
- Resources and funding
- Desire & Motivation to Innovation
- Existing Capabilities & Skills

2. Trajectories, Discovery, Insight
- Trends Spotting
- Scenario Planning
- Scouting
- Voice of Customer

3. Systematic Innovation Process
- Identify Potential
- Establish Strategy
- Product Development Launch
- Execute
- Screen & Rationalize
- Evaluate Skills

4. Go-to-market execution

5. Enabling and Scalable Infrastructure
- Common Environment, Networking & Collaboration-Building Tools
- Software Infrastructure

Align Market & Customer Environment

Strategic Alignment to Vision & MOST (Mission, Objectives, Strategies & Tactics)

Existing Product/Service Portfolio and Capabilities

Organizational Readiness

1. Strategic Context
2. Trajectories, Discovery, Insight
3. Systematic Innovation Process
4. Go-to-market execution
5. Enabling and Scalable Infrastructure

Align Market & Customer Environment

Strategic Alignment to Vision & MOST (Mission, Objectives, Strategies & Tactics)

Existing Product/Service Portfolio and Capabilities

Organizational Readiness
But:

<table>
<thead>
<tr>
<th>If innovation is only seen as . . .</th>
<th>. . . the result can be</th>
</tr>
</thead>
<tbody>
<tr>
<td>Strong R&amp;D capability</td>
<td>Technology which fails to meet user needs and may not be accepted</td>
</tr>
<tr>
<td>The province of specialists</td>
<td>Lack of involvement of others, and a lack of input from other perspectives</td>
</tr>
<tr>
<td>Understanding and meeting customer needs</td>
<td>Lack of technical progression, leading to inability to gain competitive edge</td>
</tr>
<tr>
<td>Advances along the technology frontier</td>
<td>Producing products or services which the market does not want or designing processes which do not meet the needs of the user and whose implementation is resisted</td>
</tr>
</tbody>
</table>
### Open vs closed innovation

(Huizingh, 2010)

<table>
<thead>
<tr>
<th>Innovation Process:</th>
<th>Innovation Outcome:</th>
</tr>
</thead>
<tbody>
<tr>
<td>Closed</td>
<td>Closed</td>
</tr>
<tr>
<td>Open</td>
<td>2. Private Open Innovation</td>
</tr>
</tbody>
</table>
Open innovation model

(Herzog, 2011)
Process Archetypes
(Gassmann & Enkel, 2008)
A Capability-Based Framework for Open Innovation

<table>
<thead>
<tr>
<th></th>
<th>Knowledge exploration</th>
<th>Knowledge retention</th>
<th>Knowledge exploitation</th>
</tr>
</thead>
<tbody>
<tr>
<td>Internal (Intrafirm)</td>
<td>Inventive capacity</td>
<td>Transformative capacity</td>
<td>Innovative capacity</td>
</tr>
<tr>
<td>External (Interfirm)</td>
<td>Absorptive capacity</td>
<td>Connective capacity</td>
<td>Desorptive capacity</td>
</tr>
</tbody>
</table>

(Lichtenthaler & Lichtenthaler, 2009)
Open Innovation Framework

Innovations

None

Relatively Few Invitations

“Everyone”

Suggestive, Invitational

Suggestive, Participative

Directed, Invitational

Directed, Participative

Directed

[OVO, 2008]
Sketching the innovation process and support

- Fetterhoff & Völkel (2006)
  - seeking opportunities
  - evaluating their market potential inventiveness
  - recruiting potential development partners
  - capturing value through commercialization
  - extending the innovation offering

- Wallin and von Krogh (2010): managing knowledge integration
  - define the innovation process
  - identify innovation-relevant knowledge
  - select an appropriate integration mechanism,
  - create effective governance mechanisms
  - balance incentives and controls

- Support instruments
  - Living labs
  - Idea competitions
  - Think tanks
  - ...and many many more…
Risks and Partners (Enkel et al, 2009)

- **External barriers**
  - loss of knowledge (48%),
  - higher coordination costs (48%), as
  - loss of control (41%)
  - higher complexity (41%)

- **Internal barriers**
  - Difficulty in finding the right partner (43%)
  - Inbalance between open innovation activities and daily business (36%)
  - insufficient time and financial resources for open innovation activities

- **Partnerships**
  - clients (78%)
  - Suppliers (61%)
  - competitors (49%)
  - Public and commercial research institutions (21%)
Tools and Instruments (Hidalgo & Albors, 2008)

<table>
<thead>
<tr>
<th>IMT typologies</th>
<th>Methodologies and tools</th>
</tr>
</thead>
<tbody>
<tr>
<td>Knowledge management tools</td>
<td>Knowledge audits, Knowledge mapping, Document Management, IPR Management</td>
</tr>
<tr>
<td>Market intelligence techniques</td>
<td>Technology Watch/Technology Search, Patents Analysis, Business Intelligence, CRM: Customer relationship management, Geo-marketing</td>
</tr>
<tr>
<td>Cooperative and networking tools</td>
<td>Groupware, Team-building, Supply Chain Management, Industrial Clustering</td>
</tr>
<tr>
<td>Human resources management techniques</td>
<td>Teleworking, Corporate intranets, On-line recruitment, e-Learning, Competence Management</td>
</tr>
<tr>
<td>Interface management approaches</td>
<td>R&amp;D - Marketing Interface Management, Concurrent Engineering</td>
</tr>
<tr>
<td></td>
<td>Creativity development techniques, Brainstorming, Lateral Thinking, TRIZ, Scamper Method, Mind Mapping</td>
</tr>
<tr>
<td></td>
<td>Process improvement techniques, Benchmarking, Workflow, Business process re-engineering, Just in Time</td>
</tr>
<tr>
<td></td>
<td>Innovation project management techniques, Project management, Project appraisal, Project portfolio management</td>
</tr>
<tr>
<td></td>
<td>Design and product development management tools, CAD systems, Rapid Prototyping, Usability approaches, Quality Function Deployment, Value analysis</td>
</tr>
<tr>
<td></td>
<td>Business creation tools, Business Simulation, Business Plan, Spin-off from research to market</td>
</tr>
</tbody>
</table>
Examples: Innocentive.com
Examples: bigideagroup.net

Crowdfunding Services & Consulting

Big Idea Group (BIG) helps inventors, businesses and entrepreneurs prep their innovations for crowdfunding and monetization.

Contact BIG now to discuss your crowdfunding & innovation needs.

Our Crowdfunding Services

- Crowdfunding consulting
- Research & positioning

Latest Blog Posts

- Jan. 23: Kickstarter’s Banner Year
(Simplified) Open Innovation Process

**Initiate**
- Innovation Model
- Awareness
- Partnerships
- Planning the process

**Innovate**
- Create candidates
- Discuss & Develop
- Improve

**Evaluate**
- Prototype
- Trial
- Improvements

**Produce and Market**
- Production
- Marketing
- Validation
Innovation and Knowledge Management (DuPlessis, 2009)

- Knowledge management assists in creating tools, platforms and processes for tacit knowledge creation, sharing and leverage in the organization.
- Knowledge management assists in converting tacit knowledge to explicit knowledge.
- Knowledge management facilitates collaboration in the innovation process.
- Knowledge management ensures the availability and accessibility of both tacit and explicit knowledge used in the innovation process.
- Knowledge management ensures the flow of knowledge used in the innovation process.
- Knowledge management provides platforms, tools and processes to ensure integration of an organization’s knowledge base.
- Knowledge management assists in identifying gaps in the knowledge base and provides processes to fill the gaps in order to aid innovation.
- Knowledge management assists in building competencies required in the innovation process.
- Knowledge management provides a knowledge-driven culture within which innovations can be incubated.
# OI and KM: Common barriers (Liu, 2012)

<table>
<thead>
<tr>
<th>Barriers</th>
<th>Score/ 3</th>
<th>Rank</th>
</tr>
</thead>
<tbody>
<tr>
<td>Do not know which kind of knowledge can be shared</td>
<td>1.3999</td>
<td>1</td>
</tr>
<tr>
<td>Licensing details of the resources</td>
<td>2.0768</td>
<td>2</td>
</tr>
<tr>
<td>Lack of citations for the original online resources</td>
<td>2.2309</td>
<td>3</td>
</tr>
<tr>
<td>The privacy of personal profile and contributions</td>
<td>2.3844</td>
<td>4</td>
</tr>
<tr>
<td>Lack of motivation to share</td>
<td>2.6920</td>
<td>5</td>
</tr>
<tr>
<td>Lack of training</td>
<td>2.6921</td>
<td>6</td>
</tr>
<tr>
<td>Lack of time</td>
<td>2.9230</td>
<td>7</td>
</tr>
<tr>
<td>Do not want to share ideas (keep advantages)</td>
<td>3.0770</td>
<td>8</td>
</tr>
<tr>
<td>The problem with the layout of the network</td>
<td>3.1536</td>
<td>9</td>
</tr>
<tr>
<td>The problematic to be dependent on the others’ resources</td>
<td>3.1538</td>
<td>10</td>
</tr>
<tr>
<td>Language misunderstanding</td>
<td>3.2305</td>
<td>11</td>
</tr>
</tbody>
</table>
Knowledge Management Framework

Core Knowledge Activities

Knowledge Management Tasks (Maier, 2004)
- creation, building, anticipation or generation
- acquisition, appropriation or adoption
- identification, capture, articulation or extraction
- collection, gathering or accumulation
- (legally) securing
- conversion
- organization, linking and embedding
- formalization
- storage
- refinement or development
- distribution, diffusion, transfer or sharing
- presentation or formatting
- application, deploying or exploiting
- review, revision or evolution of knowledge

(Probst & Romhardt 2000)
Influence Factors / Knowledge Networks

Network context
- Consistent aims
- Effective communication
- Mutual trust
- Cooperation rules
- Risk control

Innovation Performance

Relationship between context quality and innovation performance within knowledge network (Li & Zheng, 2009)
A (very simplified) OI & KM Process

Initiate
Innovation Model
Partnerships
Planning the process

Knowledge Acquisition
Social network
Coll. Planning
Expert database

Innovate
Create candidates
Discuss
Develop
Improve

Knowledge Creation, Development and Sharing
Concept Mapping
Creativity techniques
Annotation

Evaluate
Prototype
Trial
Improvements

Knowledge Use, Measurement
Modeling & Simulation
Coll. Development

Produce and Market
Production
Marketing
Validation

Knowledge Use, Knowledge sharing, ...
Experience Sharing
Feedback
Challenges

- Support regarding knowledge activities
  - Partnership creation
  - Trust building
  - Knowledge acquisition
  - Knowledge creation
  - Knowledge sharing
  - Knowledge development
  - Knowledge use
  - ...

- Parallel innovation
- How to integrate KM and OI processes (aligned with business processes)
- Which instruments / tools can support which activity?
Summary

- Open Innovation covers many different areas, perspectives, processes and instruments
- KM is clearly related
  - Matching OI and KM processes
  - Matching OI and KM activities and interventions
- Understanding OI processes requires to understand knowledge flows
- New ways of innovation collaborations
- Validation of KM tools strongly necessary!
- Complex, not fully explored area, in particular for social software tools
References (theory and background)

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