Perspectives on Open Innovation
When Theory Meets Practice
LUT Summer School
July 25-29, 2016

Marko Torkkeli
Lappeenranta University of Technology
Questions we need answers for?

- What does open innovation (OI) mean to me and my organization/region?
- How can we create an OI culture in our organization/region?
- How can we overcome NIH & NSH syndromes and organizational/regional inertia?
- What is the relationship between OI and open data?
- The future? New curricula (OI-Net)
Potential Goal
Intangible Assets and Market Value

Components of S&P 500 Market Value

Year | Tangible Assets | Intangible Assets
--- | --- | ---
1975 | 17% | 83%
1985 | 32% | 68%
1995 | 32% | 68%
2005 | 20% | 80%
2010 | 20% | 80%

Source: Census Bureau
Quality vs Numbers

<table>
<thead>
<tr>
<th>PATENT WINNERS</th>
</tr>
</thead>
<tbody>
<tr>
<td>Who comes out tops in intellectual property? It depends on whether the ranking is based on quantity or quality.</td>
</tr>
</tbody>
</table>

### MOST PATENT GRANTS*

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>IBM</td>
</tr>
<tr>
<td>2</td>
<td>Samsung</td>
</tr>
<tr>
<td>3</td>
<td>Microsoft</td>
</tr>
<tr>
<td>4</td>
<td>Canon</td>
</tr>
<tr>
<td>5</td>
<td>Panasonic</td>
</tr>
<tr>
<td>6</td>
<td>Toshiba</td>
</tr>
<tr>
<td>7</td>
<td>Sony</td>
</tr>
<tr>
<td>8</td>
<td>Intel</td>
</tr>
<tr>
<td>9</td>
<td>Seiko Epson</td>
</tr>
<tr>
<td>10</td>
<td>Hewlett-Packard</td>
</tr>
</tbody>
</table>

### MOST VALUABLE PORTFOLIOS**

<table>
<thead>
<tr>
<th>Rank</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Microsoft</td>
</tr>
<tr>
<td>2</td>
<td>Samsung</td>
</tr>
<tr>
<td>3</td>
<td>Canon</td>
</tr>
<tr>
<td>4</td>
<td>Hewlett-Packard</td>
</tr>
<tr>
<td>5</td>
<td>Intel</td>
</tr>
<tr>
<td>6</td>
<td>Hitachi</td>
</tr>
<tr>
<td>7</td>
<td>Ricoh</td>
</tr>
<tr>
<td>8</td>
<td>IBM</td>
</tr>
<tr>
<td>9</td>
<td>Panasonic</td>
</tr>
<tr>
<td>10</td>
<td>Seiko Epson</td>
</tr>
</tbody>
</table>

* U.S. patents issued in 2009
** U.S. patents granted over the past five years
Data: IFI Patent Intelligence, Ocean Tomo
What is Open Innovation?

Open innovation means that companies (COUNTRIES, INDIVIDUALS, TEAMS) should make much greater use of external ideas and technologies in their own business, while letting their unused ideas be used by the other companies (CROSS-BORDER). This requires each company to open up its business model to let more external ideas and technologies flow in from the outside and let more internal knowledge flow to the outside.

Chesbrough, 2006 – modified
Open Innovation

Stolen with pride from Prof Henry Chesbrough UC Berkeley, Open Innovation: Renewing Growth from Industrial R&D, 10th Annual Innovation Convergence, Minneapolis Sept 27, 2004
Designed to minimize "false positive" errors
Ignores risk of "false negative" errors
Why Open Innovation?

- Time to market is shorter
- New knowledge/technologies beyond usual suspects
- Access to additional competencies and resources
- Cost reduction (faster and cheaper?)
- New ideas, new communities
- Access to new markets

Source: IBM “The Global CEO study 2006”, based on interviews with 765 CEOs and business leaders
Mortara et al, 2009 p. 12
Three Archetypes of Open Innovation System

**Outside-in Process**
Integrating external Knowledge, Customers and Suppliers

**Inside-out Process**
Bringing ideas to market, Selling/licensing IP and Multiplying technology

**Coupled Process**
couple outside-in and inside-out process, working in alliances with complementaries

Gassmann & Enkel, 2007
## Skills needed for OI

<table>
<thead>
<tr>
<th>Introspective – understanding ourselves</th>
<th>Extrospective – understanding our partners</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Strategic insights</strong> e.g. understand fit with internal strategies</td>
<td><strong>Behavioral analyses</strong> e.g. analytical, personal</td>
</tr>
<tr>
<td><strong>Legal/IP skills</strong> e.g. understand IP implications, ability to draw up contracts</td>
<td><strong>Strategic insights</strong> e.g. understand fit with partners’ strategies</td>
</tr>
</tbody>
</table>

### Interactive

- **Communication/collaboration** e.g. communicate needs internally and to partners, resolve conflicts, language skills, network building
- **Negotiation** e.g. understand buying and selling tactics

### Technical

- **Technological** e.g. understand principles of technology being used
- **Portfolio management**
- **Financial** e.g. understand and set budgets
- **Analytical** e.g. evaluation of risk, financial analysis, problem solving

---

Mortara et al, 2009 p. 42
The "Open Innovation" paradigm

A contingency perspective
(Torkkeli, Kock & Salmi, 2009)

- Question of balancing open & closed innovation
  - Openness is not superior in all circumstances
  - Defining boundary conditions for application of OI
  - Sharing knowledge is likely to reduce rarity of potential inventions and increase competition

- Identifies key contingencies for when to be open
  - Complementary assets (Teece, 1986); absorptive capacity (Cohen & Levinthal, 1990); game theory (Nash, 1950; 1953); scale and learning effects (Sakakibara, 2003); network externalities; learning strategy (March, 1991)
(Open) Innovation Intermediary

- An intermediary can provide an opportunity to economize on a critical area of efficient investments – the expertise to sort profitable and unprofitable ones.

- Innovation intermediaries are those who facilitate companies' access to external technologies and solutions.

Research & Business Connection

- University partnerships – stipends to PhDs
- SMEs and MNCs – M&As
- Vision and insight
- Test arenas
- Explore beyond usual suspects
OI instruments

- Exhibitions and poster sessions
- Call for proposals/papers
- Grants
- Intermediaries
- Publicly funded projects
- Campaigns and competitions
- Research contracts
- Interns
Evaluation of OI actions with universities and research organizations

- Number of patents (value)
- Commercialized ideas
- Number of projects
- Impact, value captured

Marinelli, 2010
OI Articles and Journals

*2010 is for 9 months

Torkkeli, 2010
Open Innovation is Over-performing

Torkkeli et al. (2007), Implementing Open Innovation in Large Corporations: Challenges and Financial Outcomes
How company may failure on OI

• Proper business reasons to engage OI not identified
• OI initiative copied from competitors (imperfectly)
• Employees, partners and customers do not get it
• Different organizational units (especially operational) not fully aligned with OI
• Executives cannot tolerate risk of loosing control
• “Best guys” in traditional business are not necessarily what is needed in order to succeed with open innovation
• Internal innovation process must work first, then you can get results on OI.
• Focus on own gain will not lead true win-win

Lindegaard, 2010
(Open) Business Model

**Technical Inputs**
- Feasibility
- Performance
- Other measures

**Business Model**
- Target Market
- Value proposition
- Value chain
- How paid
- Costs/margins
- Value network
- Competitive strategy

**Economic Outputs**
- Value
- Price
- Profit
- Other measures

Measured in Technical Domain

Measured in Social Domain

Chesbrough, 2006
# Intermediaries and Communities

The table below illustrates the sources of ideas or paths used by the innovation intermediary, categorized into internal and external sources.

<table>
<thead>
<tr>
<th>Source of ideas or paths used by the innovation intermediary</th>
<th>Internal</th>
<th>External</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Services</strong></td>
<td>Innovation consultants</td>
<td>Innovation traders</td>
</tr>
<tr>
<td><strong>Infrastructure</strong></td>
<td>Innovation incubator</td>
<td>Innovation mediator</td>
</tr>
</tbody>
</table>

Draft by Lopez, Vanhaverbeke and Torkkeli, 2009
Table 30: Defining the right open innovation approach: Matching information requirement and type of initiating the collaboration

<table>
<thead>
<tr>
<th></th>
<th>Open search</th>
<th>Open call</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Need information</strong></td>
<td>Searching for trends</td>
<td>Posting a question to a broad community and perform an idea contest</td>
</tr>
<tr>
<td></td>
<td>Integrating the gathered information in own innovation process</td>
<td>Integrate selected ideas and concepts</td>
</tr>
<tr>
<td><strong>Solution information</strong></td>
<td>Searching for certain knowledge and expertise</td>
<td>Posting very specific problems to broad or special expert communities</td>
</tr>
<tr>
<td></td>
<td>Integrating the expert holding the needed knowledge</td>
<td>Integrate the solution to the problem</td>
</tr>
</tbody>
</table>

Diener & Piller 2010
OI Examples
Open Government Data

Transparency

Collaboration

Participation

Open Government

Consult Citizens
Seek criticisms suggestions and ideas

Deliberate with Citizens
Organise public debates

Educate Citizens (pedagogy)
Data visualisation - Display governance process - Infographics -

Monitor Policies
- Communication strategies - Dashboard - Timelines

Break down Silos and Pyramidal Structures
- Inside organisations - Between organisations

Work Horizontally
- Between organisations - Through territories With:
  - Service design tools - Agile methodologies By:
  - Empowering citizens - Favoring cooperation

Co-Design Policies with Citizens

Organise Partnerships (inside/between)

NGOs
Companies
Public authorities

http://ownyourcity.ca/2014/11/open-government/
Recent Trends of Open Innovation

- From concept development to performance measurement
- OI is fully integrated in innovation management practices
- Simulation and networks, new open business models
- New set of skills needed to cope with open innovation at companies and intermediaries
- Bring customers closer (inside) to your innovation process
- Enable ecosystem around your platform
- Services are differentiator over 'commodity trap', including open architecture
- Large population, serendipity, urbanization
Call for Papers
www.open-jim.org
LUT Summer School, July 25-29, 2016