Harnessing the Global Brain: Models for Network-Centric Innovation

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Agenda

- Motivation
  - Perspectives on network-centric innovation
  - Models for network-centric innovation
  - Globalizing network-centric innovation
  - Making network-centric innovation happen
The Innovation Crisis

– Companies realize that innovation is the best avenue for sustained profitable growth, so innovation is high on the CEO agenda

– But the existing innovation model isn’t delivering the goods

  • Weak R&D pipelines
  • Rising R&D costs
  • Shrinking product life cycles
  • Emergence of global low-cost imitators
  • Poor track record of M&A
So companies need to “open up”

- There are many more ideas and smart people outside your firm than you can ever hope to hire
  - There is tremendous amount of knowledge and expertise among your customers and partners waiting to be harnessed
  - The global talent pool dwarfs the talent in developed markets; emerging market talent is far cheaper and far hungrier
- Most new knowledge is socially constructed - the community is wiser than the sum of its members
- There are new types of intermediaries (and new technological infrastructure) to facilitate a firm’s innovation reach and range
- There are new ways of appropriating value and protecting asset rights (e.g., creative commons)
Consensus on “opening” innovation

“We want to grow efficiently. And at the size we are, it’s just not possible to do it all yourself. And even if it was it’d be lunacy to attempt it. Even if we could, it would be expensive. There are just too many smart people out there. And so we’ve been able to increase our innovative output while reducing our spending as a percent of sales because we’re multiplying it by all the people we’re partnering with. So the reason is simply to grow and to grow efficiently to get the very best ideas out there, rather than trying to compete with everybody.”

- Tom Crepe (Associate Director, EBD group, P&G)

“It’s clear that we need to be much more open, access talent from wherever it exists, and in the strategic areas that we are trying to drive, make sure that we are constantly scanning technology and bringing in anything that is going to enhance our ability to grow faster.”

- Uma Chowdhry (Sr. Vice President and CTO, DuPont):
Leaders are laying down the gauntlet

We will acquire 50% of our innovations from outside.

We expect a significant part of our offerings to be based on innovation occurring within the open source community.

We have set an internal target of sourcing 30% of our product concepts from outside.
But one size doesn’t fit all...

• Not all externally-focused innovation is classic open innovation.
• Very different models of “network-based” innovation are emerging, ranging from open source communities to tightly governed partner ecosystems.
• What works for P&G does not work for DuPont or for Red Hat Software
• Anecdotal case studies aren’t enough to implement an externally-focused innovation strategy
Our Goal

To develop a practical and customized roadmap for companies to pursue “network-centric” innovation initiatives

Three questions:

1. What are the different models for network-centric innovation?
2. What model or models are best for us, given our context?
3. How do we make it happen at our company?
Our Fact Base

Primarily CPG and Technology companies

• J&J
• P&G
• Dial
• Unilever
• Staples
• Church & Dwight
• Pfizer Consumer Health
• Estee Lauder
• Lifetime Brands, ... etc.

• IBM
• DuPont
• Boeing
• Cisco
• Motorola
• Microsoft
• Kodak
• Schering-Plough
• 3M
• Linden Lab.
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The Rise of Network-Centricity

- Network-Centric Computing
- Network-Centric Organizations
- Network-Centric Supply Chains
- Network-Centric Warfare
- Network-Centric Advocacy
- Network-Centric (Social) Media
Defining Network-Centric Innovation

An externally-focused approach to innovation that relies on harnessing the power of networks and communities to amplify innovation reach, accelerate innovation speed, and improve the quality of innovation outcomes.

Fundamental principles:
- Leveraging the Global Brain
- Social knowledge creation
- Division of labor among specialized players
- Intermediaries to bridge ‘distant worlds’ in the network
- Non-traditional value appropriation
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Structuring the NCI landscape

**Centralized**
- Dominant player led
- More formal structures/linkages
- Hierarchical
- Low decisional openness
- Visible core/periphery

**Structured**
- Clearly defined/structured problem space
- Exploitation, efficiency
- Focus on utilizing existing knowledge/assets
- Emphasis on ‘known connections’ in knowledge-base

**Emergent**
- Less defined / unstructured problem space
- Exploration, novelty
- Focus on creating new knowledge/assets
- Emphasis on ‘unknown connections’ in knowledge-base

**Diffused**
- Community led
- More informal structures/linkages
- Etherarchical
- High decisional openness
- Less visible core/periphery

**Network Leadership**
Models of Network-Centric Innovation

- **Creative Bazaar**
- **Orchestra**
- **Jam Central**
- **MOD Station**

**Innovation Space**
- Emergent
- Structured

**Network Leadership**
- Centralized
- Diffused
The Orchestra Model

Characteristics

- Focused on exploiting the market opportunities defined by an *explicit innovation architecture*
- Found in markets where a proprietary dominant design has emerged
- Prominent innovation *roles*: Orchestrator; Integrator; Complementor; Niche player
- Emphasize modularity and innovation efficiency
- Highly organized and coordinated innovation processes & support infrastructure
- IP ownership is proprietary and tightly controlled

*Examples:* Boeing Dreamliner; Salesforce.com; Facebook
Orchestra in Play: The Facebook Application Platform
Facebook Platform takes off!

- Over 3,400 applications have been created within 4 months
- Top 44 applications have been downloaded 200 million times
- Over 80% of Facebook users have downloaded at least one application
- The average user has downloaded an average of six applications
- Facebook has increased its user base by 50% in the past 6 months

<table>
<thead>
<tr>
<th>Rank</th>
<th>Application</th>
<th>Daily Active Users</th>
<th>% Active</th>
<th>Approx # Users</th>
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<tbody>
<tr>
<td>1</td>
<td>Top Friends</td>
<td>2,713,593</td>
<td>16%</td>
<td>16,959,956</td>
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<td>2</td>
<td>Video</td>
<td>982,023</td>
<td>10%</td>
<td>9,820,230</td>
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<tr>
<td>3</td>
<td>Super Wall</td>
<td>792,584</td>
<td>9%</td>
<td>8,806,489</td>
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<tr>
<td>4</td>
<td>Likeness</td>
<td>429,658</td>
<td>5%</td>
<td>8,593,160</td>
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<tr>
<td>5</td>
<td>X Me</td>
<td>513,353</td>
<td>6%</td>
<td>8,555,883</td>
</tr>
<tr>
<td>6</td>
<td>iLike</td>
<td>757,962</td>
<td>9%</td>
<td>8,421,800</td>
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<td>7</td>
<td>My Questions</td>
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<td>8,377,240</td>
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<td>8</td>
<td>SuperPoke!</td>
<td>836,083</td>
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<td>8,360,830</td>
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<td>9</td>
<td>Movies</td>
<td>714,629</td>
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<td>7,940,322</td>
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<td>10</td>
<td>Graffiti</td>
<td>555,503</td>
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<td>7,935,757</td>
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<td>11</td>
<td>FunWall</td>
<td>1,267,986</td>
<td>17%</td>
<td>7,458,741</td>
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<td>12</td>
<td>Compare People</td>
<td>411,155</td>
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<td>6,852,583</td>
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<tr>
<td>13</td>
<td>Free Gifts</td>
<td>361,121</td>
<td>6%</td>
<td>6,018,683</td>
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<tr>
<td>14</td>
<td>Moods</td>
<td>269,159</td>
<td>5%</td>
<td>5,383,180</td>
</tr>
<tr>
<td>15</td>
<td>Superlatives</td>
<td>262,573</td>
<td>5%</td>
<td>5,251,460</td>
</tr>
</tbody>
</table>
The Creative Bazaar Model

Characteristics

- Focused on seeking out and bringing to fruition new innovation opportunities that meet the broad market and innovation agenda of the dominant firm
- Innovation roles: Innovation Capitalist; Innovation Host; Product Scout; Inventor; etc.
- Found in markets that are diverse in terms of customer choices (e.g. consumer products) or technology application contexts (e.g. enterprise computing)

Examples: Dial (PIN); P&G (EBD); Staples
‘Partners in Innovation’: The *Direct* Creative Bazaar model

- Dial conducts open contests for individual inventors to present new product concepts to the company
- Partnership with the Inventors Association (to raise Dial’s credibility among the inventors)
- Dial defines the broad innovation areas (that match its brand portfolio) but not the specific problems
- Innovation roles:
  - Innovation Host: Dial
  - Innovator: individual inventors
- Currently several NPD projects derived from this initiative are under active consideration/in the pipeline
P&G defines the broad innovation areas of the network (e.g. oral care, bleaching, packaging, fragrances, etc.)

**Innovation roles:**
- Innovation Host: P&G
- “Innovation capitalists”: Evergreen IP, Ignite IP, Eureka Medical, etc.
- Inventor: individuals

**Innovation Capitalists provide value added services:**
- Source & select promising ideas from individual inventors
- Invest in & transform those ideas
- Market & place IP in large firms
Meet the Innovation Capitalist

- Staple’s Portfolio
- Dial Corp’s Portfolio
- Sunbeam’s Portfolio
- P&G’s Portfolio
- DuPont’s Portfolio
- J&J’s Portfolio
- Pfizer Consumer Health’s Portfolio

**Degree of Maturity of Innovative Idea**

- Low
- High

**Innovation Capitalist**

**Portfolio Gap**

- Individual Inventor
  - Licensing Agent
  - Idea Mktng Comp.
  - Product Scout
  - e-R&D n/w

- Innovation Firm
  - External Incubator
  - Venture Capitalist
  - Internal Incubator

**Mitigate risk**
- Reduce time-to-market

**Enhance reach**
- Reduce cost
Value chain of Innovation Capitalists

Inventor → Source and Select → Incubate and Develop → Market and License → Large Firm
Contexts favoring Innovation Capitalists

• Industries/companies:
  – Consumer products (where amateur/serial individual innovators are prevalent)
  – Companies where ‘lead user’ and ‘expert’ innovation is invaluable (e.g. medical devices, technology)

• Innovation contexts:
  – Infrastructure for ideation is low cost, readily available
  – Value addition by IC in preliminary design/development will enhance clarity of value proposition and reduce innovation risk for large firms
  – IP protection is feasible, cost-effective
The MOD Station Model

**Characteristics**

- Focus on exploiting the knowledge of a community of ‘experts’ to address market/technological issues within a predefined problem space.
- Innovation roles: Innovation seeker; Expert; Innomediantary; etc.
- Value appropriation and governance mechanisms defined by the community (includes social mechanisms).
- **Examples**: NineSigma; Innocentive; Power.org; JBoss.org; etc.
The Jam Central Model

Characteristics

- Focus on exploring novel market/technological problems; Members of the community together frame the broad parameters of the problem space.
- Found in markets where complex and a diverse set of knowledge elements have to be brought to bear to solve the novel problem.
- Innovation roles: Innovation Steward; Specialist; Innovator; Community Catalyst; etc.

Examples: Linux; TDI; Linden Lab (Second Life); Cambrian House; etc.
Choosing the best model(s): Contingent factors

- What is your innovation goal?
- What is your existing innovation infrastructure?
- What are the key industry/market factors?
- What is the nature of the (product) technology?
<table>
<thead>
<tr>
<th>Contextual factor</th>
<th>Implications for Innovation Outcome</th>
<th>Implications for Network Leadership</th>
</tr>
</thead>
<tbody>
<tr>
<td>How <em>diverse</em> is the knowledge base?</td>
<td>Diverse knowledge bases enable novel ‘connections’ that imply novel innovation outcomes</td>
<td>Diverse knowledge implies the involvement of a diverse set of entities (low network closure)</td>
</tr>
<tr>
<td>How <em>stable</em> is the foundational technologies?</td>
<td>Stable technologies/knowledge favor pursuing efficiency-focused innovation initiatives</td>
<td>Stable technologies/knowledge enable more formalized linkages and value appropriation structures</td>
</tr>
<tr>
<td>How <em>explicit</em> is the process/product knowledge?</td>
<td>Explicit knowledge contexts provide the common vocabulary and enable adoption of modularized innovation architecture</td>
<td>Explicit knowledge contexts support well defined value appropriation and IP rights management systems</td>
</tr>
<tr>
<td>How <em>mature</em> is the market?</td>
<td>Mature markets implies the need to pursue cost-focused innovation initiatives</td>
<td>Mature markets facilitate more formal value appropriation and governance mechanisms</td>
</tr>
<tr>
<td>How <em>diverse</em> is the customer-base?</td>
<td>Diverse customer-base implies the need to pursue different types of (novel) innovation initiatives</td>
<td>Diverse customer-base implies the need for more flexible leadership structures</td>
</tr>
<tr>
<td>Contextual factor</td>
<td>Implications for Innovation Outcome</td>
<td>Implications for Network Leadership</td>
</tr>
<tr>
<td>------------------</td>
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<td>-------------------------------------</td>
</tr>
<tr>
<td>How ‘technologically distant’ are the network members?</td>
<td>More ‘distant’ membership favors more novel innovation outcomes</td>
<td>More distant membership imply the need for more formal value appropriation &amp; governance mechanisms</td>
</tr>
<tr>
<td>How ‘demographically distant’ (size, power, culture, etc.) are the network members?</td>
<td>More ‘distant’ membership will call for the creation of common innovation frameworks and goals to ensure innovation coherency</td>
<td>More ‘distant’ membership will imply the need for less diffused leadership structure to minimize ‘opportunistic’ behavior</td>
</tr>
<tr>
<td>How much capital is needed for ideation?</td>
<td>Low capital requirements for ideation tend to favor diversity in innovation choices and outcomes</td>
<td>Low capital requirements for ideation tend to favor the diffusion of leadership among network members</td>
</tr>
<tr>
<td>How much capital is needed for commercialization?</td>
<td>High capital requirements for commercialization tend to favor more structured innovation production environments</td>
<td>High capital requirements for commercialization tend to favor the involvement of a dominant player to champion the product to the market</td>
</tr>
</tbody>
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The global innovation network

- Capability-based global centers of excellence and market-based local expertise
- Differentiated relationships between geographies and corporate core
- Differentiated inter-linkages among geographies

Distributed corporate core
Example: Office Max and TUL
How TUL Came to be

Chinese Manufacturer

- Manufacturing
- Logistics

Gravity Tank

- Design
- Merchandising

Office Max

- Marketing
- Distribution
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The Capability Platform

• Elements of the capability platform:
  • Organization and Change Management
  • Strategy and Value Capture
  • Process and Technology
  • Metrics and KPIs

• The Capability Platform will depend on the specific model of network-centric innovation and the role the firm plays in it
Organization and Change Management

– Overcome the “NIH” and “WKE” syndrome
  • Leaders need to “sword and shield”
  • Articulate shift in mission of R&D (P&G’s “C+D”)
– Communicate across the enterprise
  • Listen to internal constituents (and align the incentives) (P&G EBD)
  • Emphasize ‘complementing’ internal innovation efforts (Dial)
– Secure organizational sponsorship
  • Build internal consensus first before “opening up” outside (IBM’s ‘jam’ sessions)
– Create new roles/units
  • Responsible for creating the enabling elements for network-centric innovation
  • Interface with a rapidly growing portfolio of external entities
  • Focus on client funding (i.e. by internal business units), not corporate tax (budget)
Strategy and Value Capture

• Network Leadership strategy
  – Be responsive to your network partners (“Become the Preferred Portal”)
  – Identify and align incentives for network partners (articulate the ‘value proposition’ for your partners)
  – Modularize innovation projects (create and communicate visible design rules and a common set of vocabulary)

• Relational strategy
  – Focus on building relational skills (risk management; deal making; customer as ‘innovation partner’; etc.)
  – Build reputation for trustworthiness; Identify & emphasize “common good”
  – Respect the business viability of other firms in the network

• IP management & Value appropriation strategy
  – Define the ‘revenue architecture’? Where is value created? How is it captured & shared?
  – Create mechanisms to ‘share and leverage’ your IP, not ‘protect and hoard’ IP
  – Expand licensing strategy to align with newer IP systems (e.g. ‘creative commons’)
  – Give IP and patents away to support innovation for commons-based products and infrastructure, while capitalizing on derivative and indirect revenue streams from results
Process & Technology Readiness

• Create repeatable processes for:
  – Selecting “external” projects
  – Accessing network partners (the global community)
  – Coordinating across boundaries
  – Managing innovation risk & relational risk
  – Managing knowledge sharing

• Connect external and internal innovation processes
  – Integrate front-end and back-end processes
  – Most failures occur at the ‘boundary’ processes

• Adopt collaborative technologies
  – Community platforms
  – PLM tools
  – Collaboration software
Metrics for NCI Success

• Measure ‘growth’ and ‘Returns on Participation’ (RoP)

• Adopt a portfolio of innovation metrics:
  – Extent of innovation leverage achieved
  – Budget/cost; time to market; first pass yield
  – Impact on innovation pipeline (volume, velocity, balance)
  – Innovation sourcing (reach, risk profile)
  – Other metrics: profit level; financial metrics; etc.
For more, read the book

“A refreshing look at innovation and its practice.”
-Azim Premji, CEO of WIPRO

“A must read for global corporations seeking to differentiate themselves through innovation...”
-Uma Chowdhry, CTO of DuPont
Thank You!