Mobile computing & business modeling
Scenario planning, business model and disruptive technology

EXTRACT

MINEMA

Agenda

• INTRODUCTION
  – Managing as designing

• ASSESSING THE ENVIRONMENT
  – Technology foresight
  – Scenario planning

• DESIGNING THE BUSINESS MODEL
  – Business model
  – Shockfish case study

• EVALUATING THE INNOVATION
  – Disruptive technology
  – on-the-fly evaluation

• CONCLUSION
  – Prediction market
Design approach > application > requirement analysis

- Goal-based requirement engineering
- Task analysis
Design approach > application > IT solution design

- **Action design**
  - Focus on functionality
- **Information design**
  - Information provided to the users by the systems
- **Interaction design**
  - Details of user action and feedback

**Scenario**

**use case**

**hand sketch …**

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Design approach > application > usability evaluation

- **Usability testing with user**

**PROTOTYPING**

**model-based > service quality**

![Conceptual Model for Understanding and Improving E-Service Quality (e-SQ)](image)

source: [Rosson and Carroll, 2002]
The dominant paradigm: business/IT alignment …

[Diagram showing business scope (distinctive competencies, IT governance) and technology scope (system competencies, IT governance).]

[Diagram showing strategic fit (ORGANIZATION infrastructure) and function integration (IS infrastructure).]

Business model > design loop

1. SCENARIO PLANNING

- Environment Analysis
- Innovation Validation
- Business model Design

2. BUSINESS MODEL

- Financial
- Customer
- Activity
- Resource

3. DISRUPTIVE TECHNOLOGY

PARTICIPATION
ASSESSING THE ENVIRONMENT

- Environment assessment
- Scenario planning
- Case studies:
  - MobiCom scenarios and
  - Ambient intelligence scenarios

Business model > environmental pressures

- Disruption
- Market share
- New products

- Disruption enablement efficiency

- Technological change

- Customer demand
- Needs
- New markets

- Social environment
- Stakeholders
- Environmental values

- Legal environment
- Intellectual property
- WTO
- Antitrust
Environment model

Financial perspective

Market capitalization
Revenue

Market perspective

MARKET
DISRUPTIVE
Product & technology

Actor perspective

ACTOR
COMPLEX
Value chain

Future perspective

ISSUE
UNCERTAIN

FINANCE
What is the market capitalization? What is the business volume?

DEMAND
What is the market? Who are the customers? How do they adopt & use the technology?

OFFER
What is the industrial sector? Who are the actors? What are the forces? The position of stakeholders? How do they interact?

What are the factors and debatable questions that influence the future?

Hype curve

First generation
products high price, lots of customization

Mass media hype
Lab prototypes
Stratups
first round
venture capital

R&D

Visibility

First round
venture capital

High-growth
phase adoption
20% target audience

Third generation products
out of the box

As of July 2006

New media hype

Technology
Trigger
Peak of
Inflated
Expectations
Trough of
Disillusionment
Slope of
Enlightenment
Plateau of
Productivity

Time

Years to mainstream adoption:
○ less than 2 years
● 2 to 5 years
▲ 5 to 10 years
▲ more than 10 years
○ before plateau

Source: www.gartner.com (July 2006)
No prediction …

- “This ‘telephone’ has too many shortcomings to be seriously considered as a means of communication. The device is inherently of no value to us.”  
  [West Union internal memo, 1876]

- “I think there is a world market for maybe five computers.”  
  [Thomas Watson, chairman of IBM, 1943]

- “I have travelled the length and breadth of this country and walked with the best people, and I can assure you that data processing is a fad that won't last out the year.”  
  [The editor of management books at Prentice-Hall, 1957]

- “There is no reason anyone would want a computer in their home.”  
  [Ken Olsen, President and founder of Digital Equipment Corp., 1977]

- “640K ought to be enough for anybody.”  
  [Bill Gates, 1981]

… but scenarios

Levels of uncertainty:

- Clear-enough future forecast
- Alternate futures
- Range of futures
- True ambiguity

- Traditional toolkit
- Game theory
- Decision analysis
- Analogies
- Pattern recognition

[Courtney, 1997]
Scenario planning

- "Scenarios are a way of developing alternative futures based on different combinations of assumptions, facts and trends, [...] Building scenarios will force asking relevant questions and identify a range of possible choices or events"

1. Identify general, broad, driving forces,
   - which are applicable to essentially all scenarios
2. Identify a variety of PLAUSIBLE trends within each driving force topic
   - trends that vary depending on your assumptions so you get positive and negative perspectives
3. Combine the trends so you get a series of scenarios
   - for example, mostly positive trends from all driving force topics would give a positive scenario

[Calwett, 2002]

Case study > Scenarios for ambient intelligence in 2010

- MARIA: Road warrior
  Personal communicator
- EFFICIENT
- CARMEN: Traffic optimization
  Sustainability and commerce
- INDIVIDUAL
- DIMITRIOS: Digital me
  Expressing identities
- COMMUNITY
- ANNETTE & SOLOMON: Social learning
  Connecting people
  Creating a community memory
- SOCIABLE

source: [Ducati, 2001]
DESIGNING THE BUSINESS MODEL

- Business model
- Components
  - Financial perspective
  - Customer perspective
  - Activity perspective
  - Resource perspective
- Case study: Shockfish

Business model

“...a Business model is a description of how your company intends to create value in the marketplace. It includes that unique combination of products, services, image, and distribution that your company carries forward. It also includes the underlying organization of people, and the operational infrastructure that they use to accomplish their work.”

source: [Chesbrough, 2002] [Osterwalder, 2004]
Business model > components

Financial perspective
- Cost
- Revenue

Customer perspective
- Value proposition
- Channel
- Customer

Activity perspective
- Value configuration
- Partner

Resource perspective
- Capability

What are our revenues?
What are our costs?

What do we offer to our customers?
Who are our customers?
How do we reach them?
How do we get & keep them?

How do we operate & deliver?
How do we collaborate?

What are our competencies?

Financial perspective > Revenue (stream)

- Mobile:
  - PRE-PAID card

  - Phone
    - registration
    - subscription
    - Usage
      - Time
      - Services

- Income of the subscription fees to become a member
  Paid by the buyer and/or the vendor

- Income of the ad banners posted on the shopfront
  Paid by the vendor

- Income of online sales paid by the buyer

- Income, percentage of a transaction made by the settlement (affiliate program)

What are our revenues?
Financial perspective > Cost (structure)

<table>
<thead>
<tr>
<th>Category</th>
<th>Formula</th>
</tr>
</thead>
<tbody>
<tr>
<td>Revenues</td>
<td>Total net revenue</td>
</tr>
<tr>
<td>Cost of goods sold</td>
<td>Total Costs of goods sold</td>
</tr>
<tr>
<td>Gross margin</td>
<td>Total Costs of goods sold</td>
</tr>
<tr>
<td>Operating expenses</td>
<td></td>
</tr>
<tr>
<td>research and development</td>
<td></td>
</tr>
<tr>
<td>sales and marketing</td>
<td></td>
</tr>
<tr>
<td>general and administration</td>
<td></td>
</tr>
<tr>
<td>Total operating expenses</td>
<td></td>
</tr>
<tr>
<td>Operating income (loss)</td>
<td>Income (loss) before tax</td>
</tr>
<tr>
<td>Net income (loss)</td>
<td></td>
</tr>
</tbody>
</table>

What are our costs?

Value proposition

• To characterize product innovation, the value proposition defines the actual product or service, and the value or benefits perceived by customers of the products and services offered by the firm

  – Facilitate research and reduced transaction costs
  – Speed up distribution
    • particularly for digital goods (written, music, image, software)
  – Improve the quality of service
    • by personalization, for example
  – Improve facility and experience of buying
    • capitalizing on ludic aspects
  – Improve the transparency of information by opening up the information system
  – Develop a sense of community, and improve the diffusion of knowledge,
  – Bind complementary products

What do we offer?
Customer perspective > (target) Customer

• Customer segment
  – Categorizations of the population into social class or psychologically defined groups
  – Area where a firm can specialize and gain competitive advantage
    • Clear distinction
    • Limited set of competitors
    • Distinctive supply
    • Different purchase criteria
    • Barriers to deter new entrants

Who are our customers?

Customer perspective > distribution channel

• A channel can be defined as a set of links or a network via which a firm “goes to market” and delivers its value proposition.
  – Owned channels - direct (i.e. Web, phone, fax…)
  – Owned channels - indirect (i.e. brand shops)
  – Partner channels (intermediation i.e. retail, shops, …)

• It defines how a firm is “in touch” with its customers for a variety of tasks
  – Customer Buying Cycle (CBC)

How do we reach them? Feel and serve them?

The purpose is to make the right quantities of the right products or services available at the right place, at the right time.
Value configuration

- Set of interdependent activities
  - that add value
  - for the customers
  - to the company products or services

- Value
  - measured by the amount the customer is ready to pay for

- Profit
  - Exists if value is greater than costs

- Competitive advantage
  - Cost reduction
  - Product differentiation

How do we operate and deliver?

Activity perspective > Partnership

- Supply chain management (SCM)
  - Suppliers, manufacturers, distributors …

- Competitors
  - Market place actors

- Alliances and strategic networks
  - Co-operitors

How do we collaborate?
Resource perspective > (core) Capability

- Resource [OWN]
  - ASSETS
  - available & useful
  - in detecting and responding to
  - market opportunities or threats

- Capability [DO]
  - KNOW-HOW
  - Repeatable patterns of action in the use of assets
  - Aptitude to exploit and coordinate resources
  - to create, produce, and/or offer products and services to a market

What are our key competencies?

SWOT analysis

**STRENGTHS**
Capabilities for competitive advantage
- Patents
- Brand name
- Good reputation among customers
- Cost advantage from proprietary know how
- Access to high grade natural resources

**WEAKNESSES**
Absence (flip side) of strengths
- Lack of patent protection
- A weak brand name
- Poor reputation among customer
- High cost structure
- Lack of access to the best natural resources

**OPPORTUNITIES**
For growth and profit
- An unfulfilled customer need
- Arrival of new technologies
- Loosening of regulations
- Removal of international trade barriers

**THREATS**
Pressures
- Shifts in consumer tastes
- Emergence of substitutions
- New regulations
- Increase trade barriers

http://www.quickmba.com/strategy/swot/
EVALUATING THE INNOVATION

- SWOT analysis
- Disruptive technology
- Case study: shockfish Vs bluetooth & NFC ...
  - Gaming ...

Evaluating a business model in its environment

![Diagram of business model evaluation](image-url)
Disruptive technology

A disruptive technology is a technology or innovation

"that results in worse product performance, at least in the near-term...

[It] brings to the market a very different value proposition than had been available previously...

Products that are based on disruptive technologies are typically cheaper, simpler, smaller, and, frequently, more convenient to use.

[But, they generally] under perform established products in mainstream markets."

source: [Christensen, 1997] [Danneels, 2004]
The disruptive process

Can the insurgent gain a foothold, usually in the market below the main one?

Does the insurgent face high barriers to entering the main market?

How much value can the insurgent offer relative to the incumbent?

How easily can customers switch from the incumbent to the insurgent?

Does the incumbent have high barriers to retaliating against the insurgent?

Does the innovation displace incumbent products and revenues?

Rating and weighting the disruption

Disruption detection

<table>
<thead>
<tr>
<th>Foothold market entry</th>
<th>Forces enabling disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forces disabling disruption</td>
<td>rating</td>
</tr>
<tr>
<td>A suitable foothold market does not exist, or it exists and is poorly suited to provide the insurgent an entry into the main market</td>
<td>1.5</td>
</tr>
<tr>
<td>Insurgent has no existing presence in the foothold market</td>
<td>1.3</td>
</tr>
</tbody>
</table>

Average | 1.4 | 2.8 | 2.7 |

Weighted stage score | 1.4

<table>
<thead>
<tr>
<th>Main market entry</th>
<th>Forces enabling disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Forces disabling disruption</td>
<td>rating</td>
</tr>
</tbody>
</table>

[Rafii, 2002]
Disruptiveness profile

Disruption detection

[Radl, 2002]

<table>
<thead>
<tr>
<th>Stage</th>
<th>Forces disabling disruption</th>
<th>Rating</th>
<th>Forces enabling disruption</th>
</tr>
</thead>
<tbody>
<tr>
<td>Foothold market entry</td>
<td>Unattractive foothold market(s)</td>
<td>1.4</td>
<td>Attractive foothold market(s)</td>
</tr>
<tr>
<td>Main market entry</td>
<td>High barriers to entry</td>
<td>0.6</td>
<td>Low barriers to entry</td>
</tr>
<tr>
<td>Customer attraction</td>
<td>Low value added</td>
<td>1.3</td>
<td>High value added</td>
</tr>
<tr>
<td>Customer switching</td>
<td>High cost of switching</td>
<td>0.2</td>
<td>Low cost of switching</td>
</tr>
<tr>
<td>Incumbent retaliation</td>
<td>Low barriers to retaliation</td>
<td>0.5</td>
<td>High barriers to retaliation</td>
</tr>
<tr>
<td>Incumbent displacement</td>
<td>Low revenue displacement</td>
<td>1.6</td>
<td>High revenue displacement</td>
</tr>
</tbody>
</table>

[Radl, 2002]

CONCLUSION

mobile ad hoc networks

Introduction

network

design loop

design

evaluate

environment assessment

business model design

innovation evaluation

Assessing the environment

definition

method

case studies

ambient intelligence

business model

components

process perspective

long-term perspective

case studies

Sharkfish

disruptive technologies

multi-criteria

actors (ENNat)

criterion

Conclusions

prediction market

SCENARIO PLANNING | BUSINESS MODEL | DISRUPTIVE TECHNOLOGY