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- Business model analysis
- IT architecture design
- Alignment evaluation

INNOVATION

## A design approach for business model innovation and IT alignment

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Business University

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## Hypotheses

1. Requirement engineering is not independent from design
  - but part of the “design loop”: requirement analysis, IT solution design, prototype & evaluation
2. Goal-based requirement engineering is not appropriate for expressing business needs
  - but business model-based requirement engineering seems to be adequate
3. Innovation does not come from (goal-based) requirement engineering
  - but from business model and design

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## Agenda

### 1. Design approach

- Business task (and IT service)
- Business process (and IT workflow)
- Business model (and IT architecture)

### 2. Business model

- Business model analysis
  - Product and value proposition
  - Customer relationship and distribution channel
  - Operations management and value chain
- IT architecture design
- Business/IT alignment evaluation

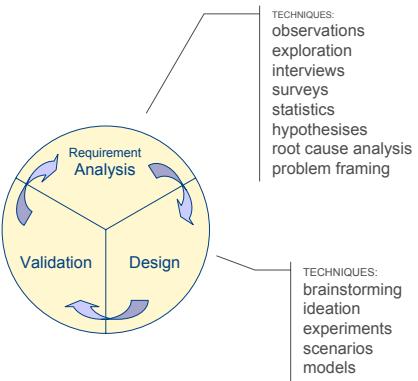
### 3. Innovation

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## DESIGN APPROACH



- TECHNIQUES:
- tests
- betas
- trials
- analytics
- simulations
- diagnostics



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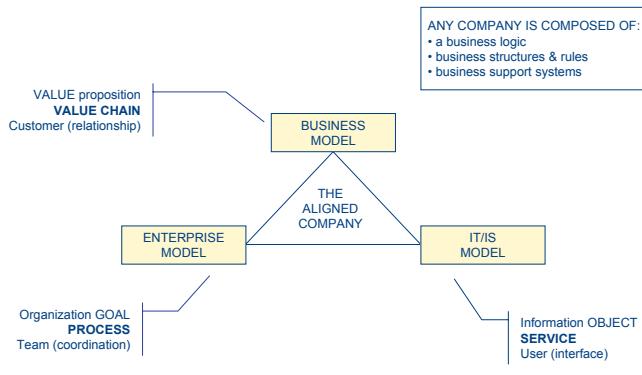
## Design approach > the designer's core competencies

1. The ability to understand the context or circumstances of a design problem and frame them in an insightful way
2. The ability to work at a level of abstraction appropriate to the situation at hand
3. The ability to model and visualize solutions even with imperfect information
4. An approach to problem solving that involves the simultaneous creation and evaluation of multiple alternatives
5. The ability to add or maintain value as pieces are integrated into a whole
6. The ability to establish purposeful relationships among elements of a solution and between the solution and its context
7. The ability to use form to embody ideas and to communicate their value

[Conley, 2004]  
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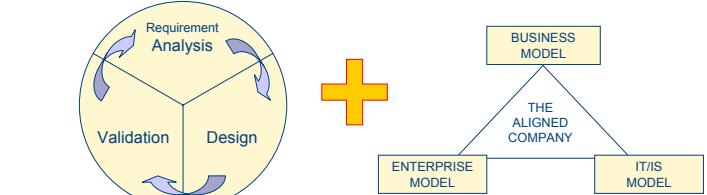
### Design approach > services, process & business model



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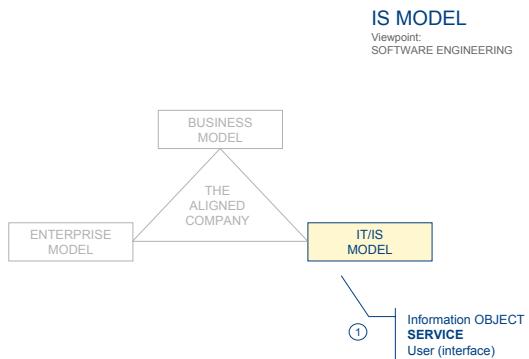
### Design approach > a cross-cutting discipline

	Service	Process	Business Model
Analysis	user goal and task	goal and process	business model
Design	application/service	workflow	IT architecture
Evaluation/Validation	utility/usability	efficiency	profitability/fit



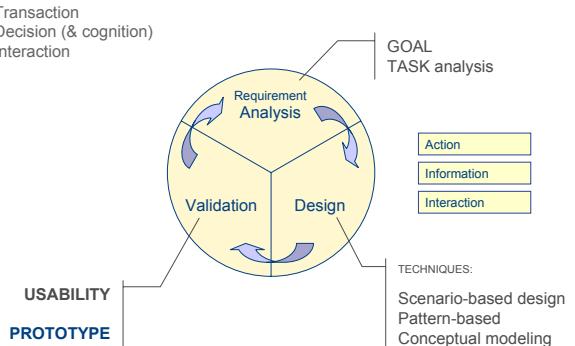
8

### Design approach > BUSINESS TASK AND IT SERVICE



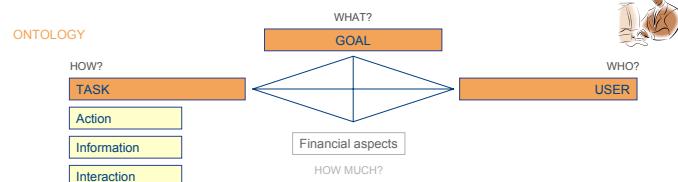
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### Design approach > service > design loop



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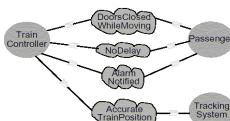
### Design approach > service > ontology

Viewpoint:  
HCI ENGINEERING

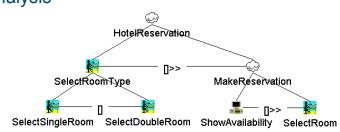
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### Design approach > service > requirement analysis

- Goal-based requirement engineering



- Task analysis



[Rolland, 2003] [Yu, 1994] [Paterno, 2002]

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## Design approach > service > 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 ...
<p><b>Scenario</b></p> <p>«<b>Booking Reservation Summary</b></p> <p><b>Goal:</b> Book a room for a conference.</p> <p><b>Context:</b> The user is at a workstation that has access to the UCITS Building system, and wants to book a room for a conference.</p> <p><b>Problem:</b> The user needs to make sure that the room they are booking is available for the time period they want to book it for.</p> <p><b>Solution:</b> The user logs into the system and selects the room they want to book. They then select the date and time they want to book the room for. The system then checks the availability of the room for the selected date and time. If the room is available, the user can proceed with booking the room. If the room is not available, the user is given the option to search for another room or change the booking date and time.</p>	<p><b>use case</b></p> <pre>     graph TD         UC[Booking Reservation Summary] --&gt; User         UC --&gt; Room         UC --&gt; Date         UC --&gt; Time         UC --&gt; System         User --&gt; UC         Room --&gt; UC         Date --&gt; UC         Time --&gt; UC         System --&gt; UC     </pre>	<p><b>hand sketch ...</b></p>

<http://guir.berkeley.edu/projects/denim>

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## Design approach > service > prototype

- Lo-fi prototype

- Hi-fi prototype

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## Design approach > service > usability evaluation

- Usability testing with user

model-based > service quality

**Conceptual Model for Understanding and Improving E-Service Quality (e-SQ)**

```

graph LR
    subgraph Customer
        CG[Customer Satisfaction Requirements] --> FG[Fulfillment Gap]
        FG --> CEE[Customer Expected Experiences]
        CEE --> P1[Perceived e-SQ]
        P1 --> PV[Perceived Value]
        PV --> PR[Purchase/Renewal]
    end
    subgraph Company
        MWS[Marketing of the Web site] --> DOOW[Design and Operation of the Web site]
        DOOW --> CE[Communication Gap]
        CE --> MBCR[Management's Beliefs about Customer Requirements]
        MBCR --> D1[Design Gap]
        D1 --> IGG[Information Gap]
        IGG --> PR
    end
    P1 <--> PV
    PV <--> PR
    MWS <--> DOOW
    DOOW <--> CE
    CE <--> MBCR
    MBCR <--> D1
    D1 <--> IGG
    
```

The diagram illustrates the conceptual model for understanding and improving e-service quality (e-SQ). It is divided into two main sections: Customer and Company. The Customer section shows a flow from satisfaction requirements through a fulfillment gap to expected experiences, leading to perceived e-SQ, perceived value, and finally purchase or renewal. The Company section shows a flow from marketing to design and operation, leading to communication gaps, which then lead to management beliefs about customer requirements, a design gap, and finally an information gap. There are also feedback loops between the Customer and Company sections, and between different stages within each section.

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E-Service Design & Testing

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## Design approach > BUSINESS PROCESS (AND IT WORKFLOW)

**ENTERPRISE MODEL**  
Viewpoint:  
BUSINESS PROCESS (RE-) ENGINEERING

```

graph TD
    BM[BUSINESS MODEL] --- ALIGNED[THE ALIGNED COMPANY]
    EM[ENTERPRISE MODEL] --- ALIGNED
    IM[IT/IS MODEL] --- ALIGNED
    subgraph BottomLeft [ ]
        GOAL[Organization GOAL  
PROCESS  
Team (coordination)]
        GOAL --- P2((2))
        P2 --- EM
    end
    subgraph BottomRight [ ]
        OBJECT[Information OBJECT  
SERVICE  
User (Interface)]
        OBJECT --- P1((1))
        P1 --- IM
    end
  
```

The diagram illustrates the relationship between three core components of business engineering:

- BUSINESS MODEL**: At the top, connected to **THE ALIGNED COMPANY**.
- ENTERPRISE MODEL**: On the left, connected to **THE ALIGNED COMPANY**.
- IT/IS MODEL**: On the right, connected to **THE ALIGNED COMPANY**.

Below the central triangle, two arrows point upwards from a horizontal line:

- An arrow from the **Organization GOAL PROCESS Team (coordination)** box to the **ENTERPRISE MODEL** box, labeled with a circled **(2)**.
- An arrow from the **Information OBJECT SERVICE User (Interface)** box to the **IT/IS MODEL** box, labeled with a circled **(1)**.

Design approach > process > design loop

The diagram illustrates the Design Loop as a continuous cycle of three main phases: Requirement Analysis, Validation, and Design. The cycle is influenced by several external factors:

- BUSINESS PROCESS analysis** (top right)
- Activities**, **Resource**, and **Control** (yellow boxes, middle right)
- TECHNIQUES**: **Use case and scenario**, **Best practice (pattern-based)**, and **Conceptual model** (bottom right)
- EFFICIENCY simulation** (left side)
- Organization**, **Coordination**, and **Integration** (top left)

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## Design approach > process > ontology

Viewpoint:  
ENTERPRISE MODELING  
BPR

ONTOLOGY

WHAT?

ORGANIZATIONAL GOAL

WHO?

TEAM

AGENT

HOW?

PROCESS

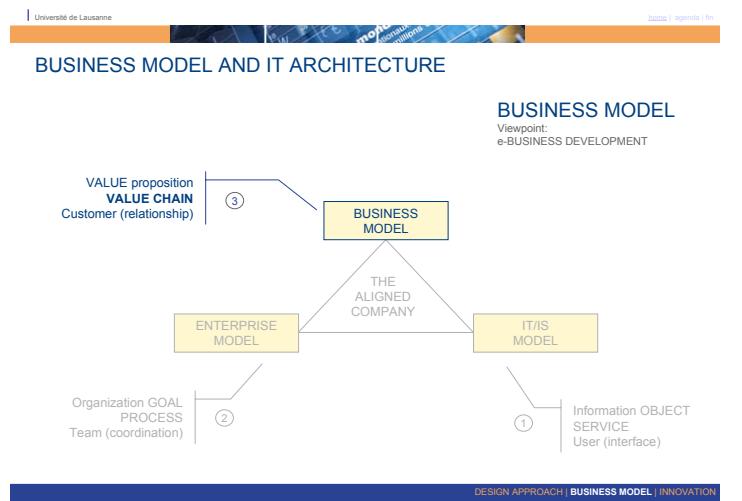
Activities

Resource

Control

Financial aspects

HOW MUCH?



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## Business model > definition

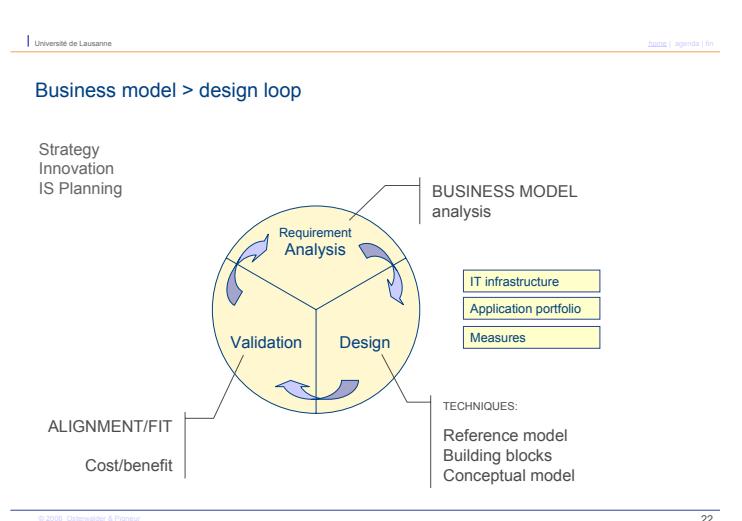
- A model of the business of a company, aggregating ...
  - the value a company offers to one or several segments of customers, and
  - the architecture of the firm and its network of partners
  - for creating, marketing and delivering this value and relationship capital,
  - in order to generate profitable and sustainable revenue streams

### 1. Business model analysis

- Product and value proposition
- Customer relationship and distribution channel
- Operations management and value chain

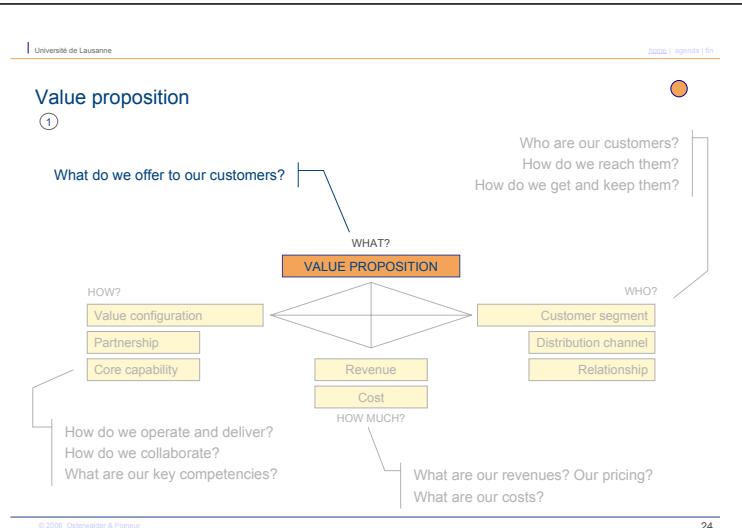
### 2. IT architecture design

### 3. Business/IT alignment evaluation



The diagram illustrates the components of a business model centered around the **VALUE proposition**.

- WHAT?** (Top Level):
  - What do we offer to our customers?
  - Who are our customers?
  - How do we reach them?
  - How do we get and keep them?
- HOW?** (Left Level):
  - Value configuration
  - Partnership
  - Core capability
  - How do we operate and deliver?
  - How do we collaborate?
  - What are our key competencies?
- WHO?** (Right Level):
  - Customer segment
  - Distribution channel
  - Relationship
- HOW MUCH?** (Bottom Level):
  - Revenue
  - Cost
  - What are our revenues? Our pricing?
  - What are our costs?



## Value proposition

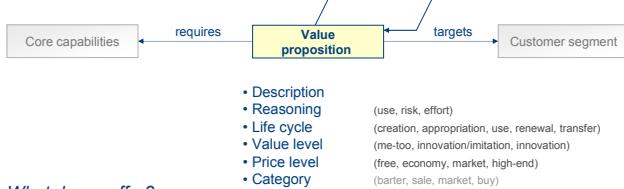
①

### DEFINITION

A VALUE PROPOSITION is an overall view of a firm's bundle of offerings, products and services, that together represent a benefit or a value for its customers ...

refers to [Kambil et al., 1996] ...

### SCHEMA



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## Value proposition > example

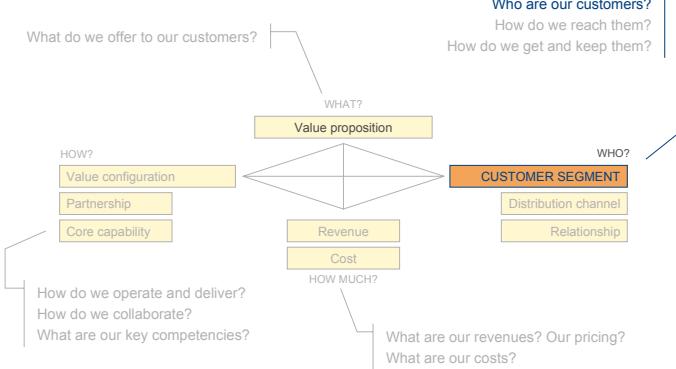


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## Customer segment

②



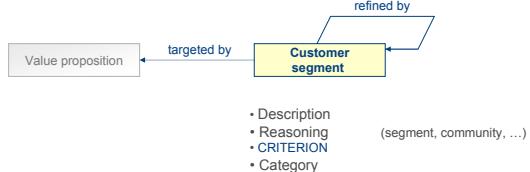
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## Customer segment

②

**DEFINITION**  
Categorizations of the population into social class or psychologically defined groups

### SCHEMA

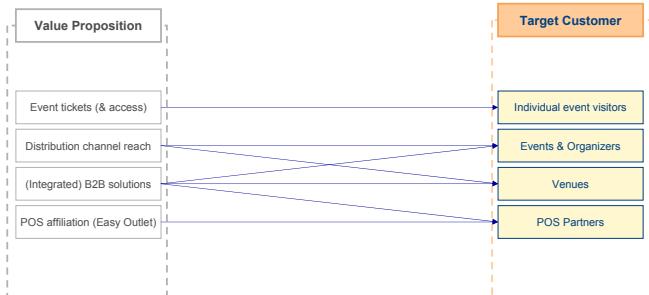


**Who are our customers?**

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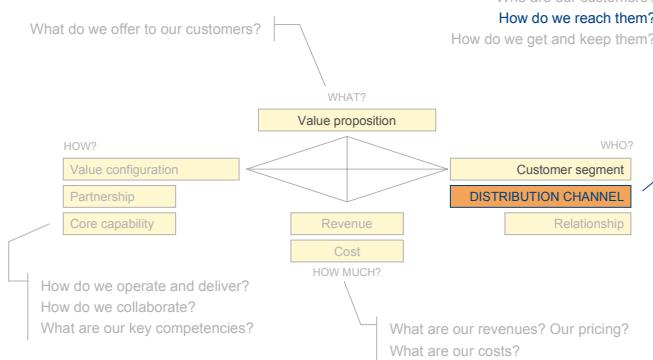
## Customer segment > example



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## Distribution channel

③



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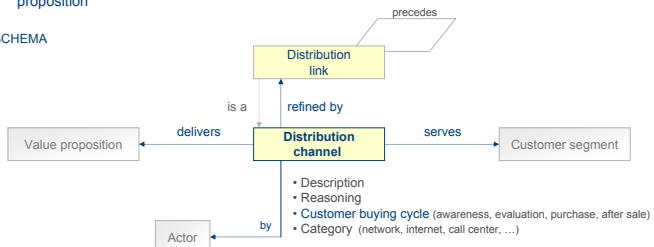
## Distribution channel

(3)

### DEFINITION

a set of links or a network via which a firm "goes to market" and delivers its value proposition

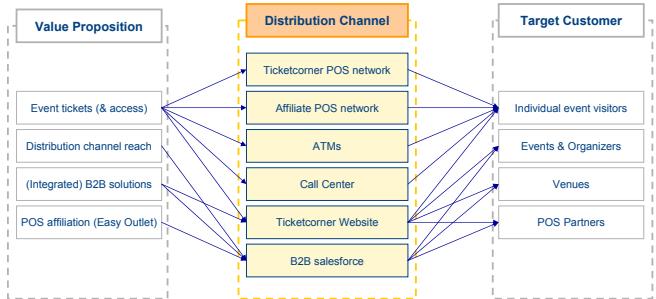
### SCHEMA



*How do we reach our customers? Feel and serve them?*

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## Distribution Channels

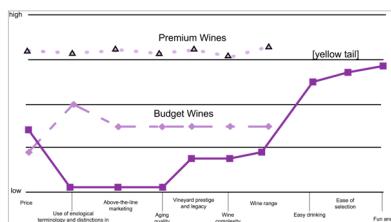


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## Value proposition > strategy canvas

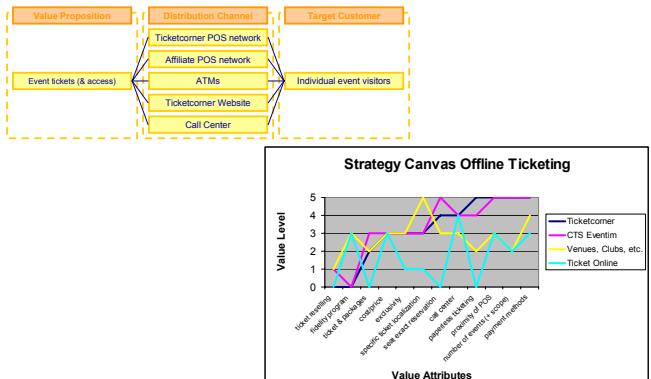
- A way to visualize the strategic profile
- Based on the factors that affect competition among industry players
- Showing the strategic profile of current and potential competitors, identifying which factors they invest in strategically



[Kim &amp; Mauborgne, 2005]

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## Value proposition > Strategy canvas > B2C customer (offline)

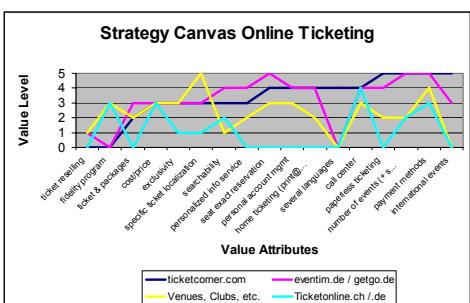


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## Value proposition > Strategy canvas > B2C customer (online)

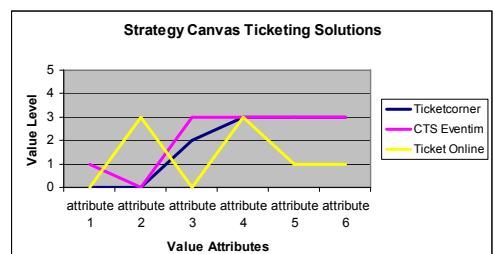
TICKETCORNER



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## Value proposition > Strategy canvas > B2B customer

TICKETCORNER

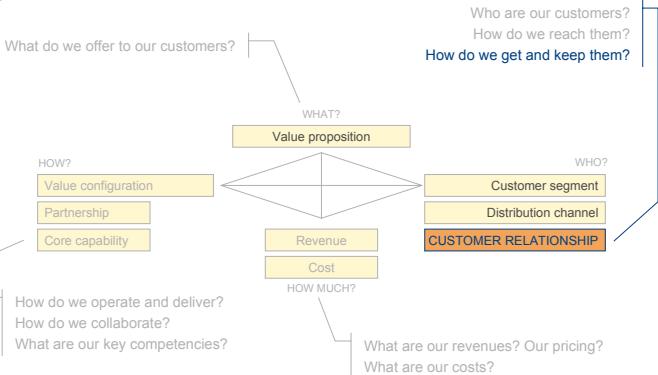


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## Customer relationship

④



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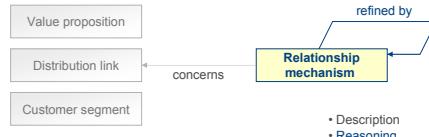
## Customer relationship

④

### DEFINITION

customer equity: acquisition, retention, add-on selling  
trust and personalization mechanisms, ...

### SCHEMA



- Description
- Reasoning
- Category

(acquisition, retention, add-on selling, ...)  
(trust, personalization, brand...)

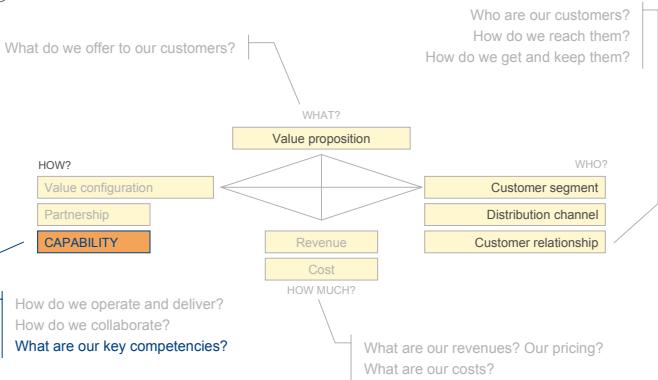
### How do we get and keep our customers?

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## Core capabilities (resources)

⑤



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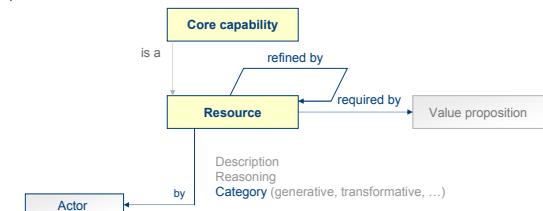
## Core capabilities (and resources)

⑤

### DEFINITION

Resource (assets): available & useful in responding to market opportunities or threats  
Capability (know-how): aptitude to exploit and coordinate resources to create, produce, and/or offer products and services to a market

### SCHEMA



- Description
- Reasoning
- Category (generative, transformative, ...)

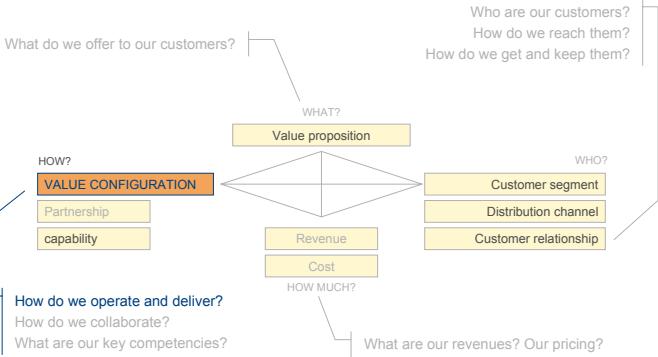
### What are our key competencies?

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## Value configuration

⑥



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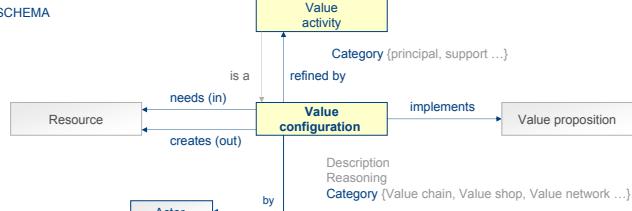
## Value configuration

⑥

### DEFINITION

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

### SCHEMA



- Category (principal, support ...)

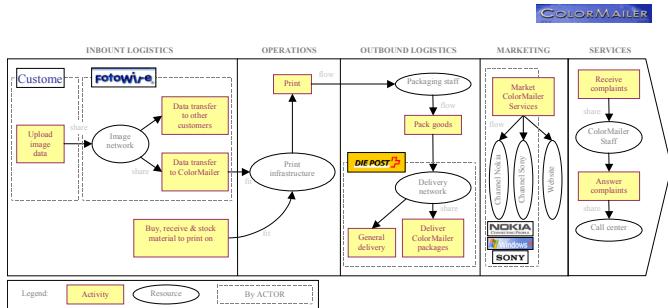
- Description
- Reasoning
- Category {Value chain, Value shop, Value network ...}

### How do we operate and deliver?

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## Value configuration > value chain



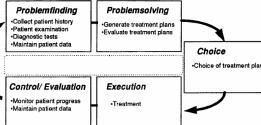
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## Value configuration > category

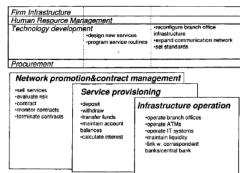
### Value chain



### Value shop



### Value network



[Stabell, 1998]

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## Value configuration (and resources)

	Network promotion and contract management	Service provisioning	Infrastructure operation
activities	<ul style="list-style-type: none"> <li>Mainstream marketing</li> <li>POS acquisition &amp; development</li> <li>Event, Venue acquisition</li> </ul>	<ul style="list-style-type: none"> <li>Selling tickets</li> <li>Printing tickets</li> <li>Delivering tickets</li> </ul>	<ul style="list-style-type: none"> <li>POS network maintenance</li> <li>Platform (TicketSoft) operation, development &amp; maintenance</li> <li>Website maintenance</li> <li>Operating call center</li> <li>Installing solutions</li> </ul>
resources	<ul style="list-style-type: none"> <li>Newsletter</li> <li>Recommendation system</li> </ul>	<ul style="list-style-type: none"> <li>Printing infrastructure</li> <li>Delivery logistics</li> </ul>	<ul style="list-style-type: none"> <li>Own POS network</li> <li>Partner POS network</li> <li>Web platform</li> <li>TicketSoft</li> <li>Call center</li> </ul>

consists of activities (& resources) associated with identifying potential customers and can provide selection of customers that are allowed to join and the initialization, management, and termination of contracts governing service provisioning and charging.

consists of activities (& resources) associated with selling, marketing, advertising, and terminating links between customers and billing for value received. The links can be synchronous as in telephone service, or asynchronous as in electronic mail service or banking.

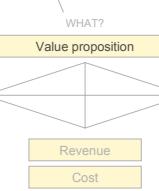
consists of activities (& resources) associated with maintaining a physical and information infrastructure. The activities keep the network in an alert status, ready to service customer requests.

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## Partnership agreement

(7)

What do we offer to our customers?



Who are our customers?  
How do we reach them?  
How do we get and keep them?

How do we operate and deliver?

How do we collaborate?

What are our key competencies?

What are our revenues? Our pricing?

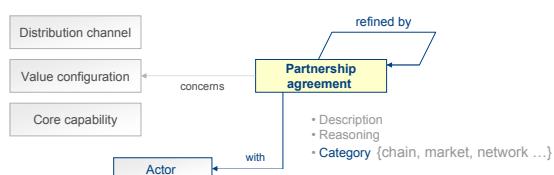
What are our costs?

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## Partnership agreement

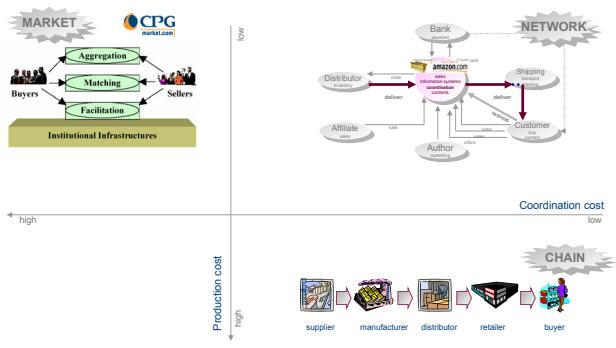
(7)



How do we collaborate?

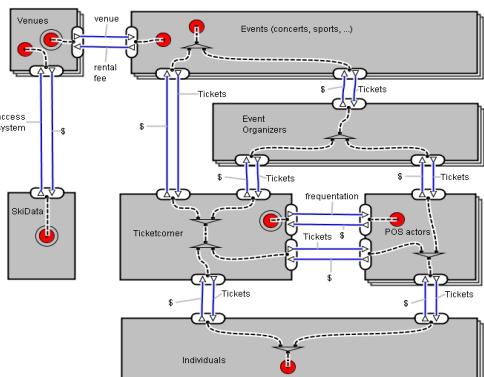
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## Partnership agreement > category



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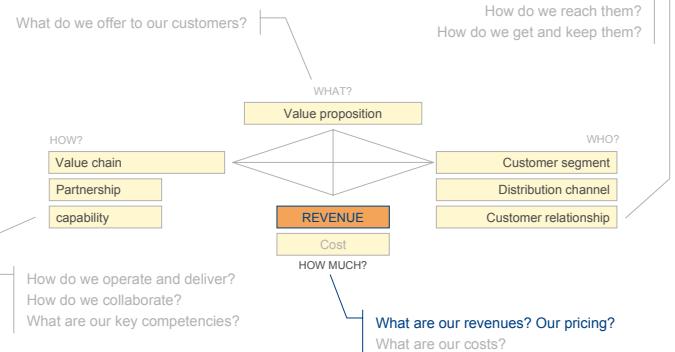
Value configuration with partners > e<sup>3</sup>value model

[Gordijn, 2002]

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## Revenue stream

(8)

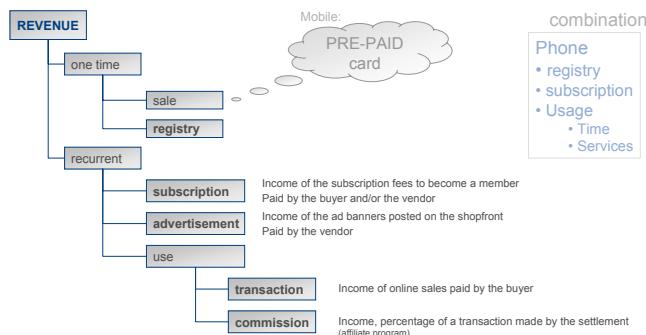


Who are our customers?  
How do we reach them?  
How do we get and keep them?

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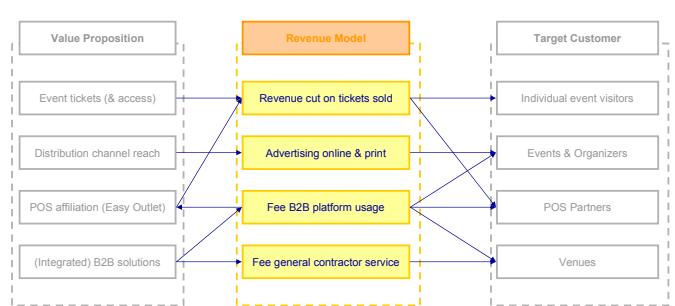
## Revenue stream &gt; categories



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## Revenue Model

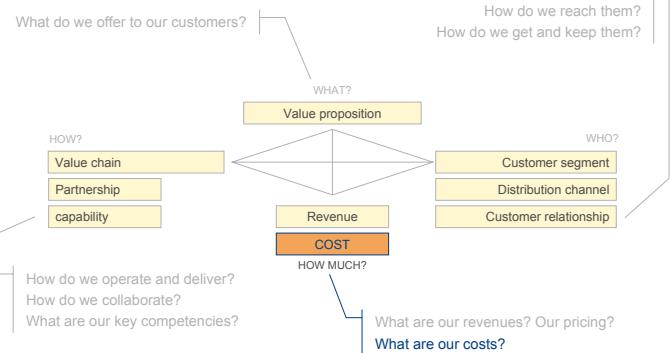


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## Profit and cost account

(9)



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## Profit and cost account

(10)

Revenues
Total net revenue
<b>Cost of goods sold</b>
Total Costs of goods sold
<b>Gross margin</b>
Total Costs of goods sold
<b>Operating expenses</b>
research and development
sales and marketing
general and administration
Total operating expenses
<b>Operating income (loss)</b>
Income (loss) before tax
<b>Net income (loss)</b>

$$\text{PROFIT} = (P - V_C) \cdot Q - F_C$$

- P the unit price of a product  
 V<sub>C</sub> the variable cost of a unit  
 Q the number of products sold  
 F<sub>C</sub> fixed costs

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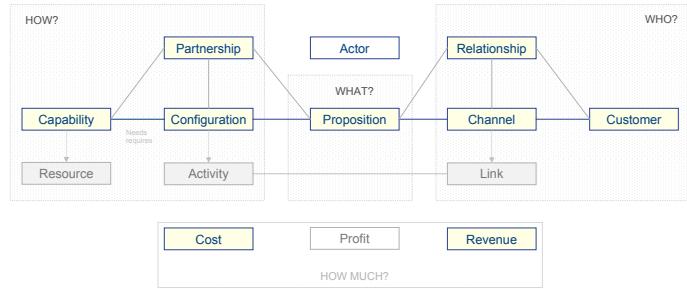
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## Cost Structure

Cost positions	Percentage of total
Point of sales network development and maintenance	
TicketSoft platform development and maintenance	
Ticketcorner marketing	
Point of sales & event acquisition and maintenance	
Website	
Call center	
R&D	

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## Business model ontology &gt; model



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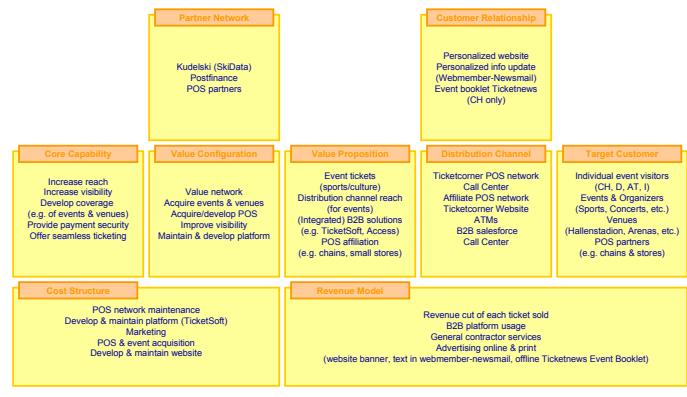
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## Ticketcorner Business Model



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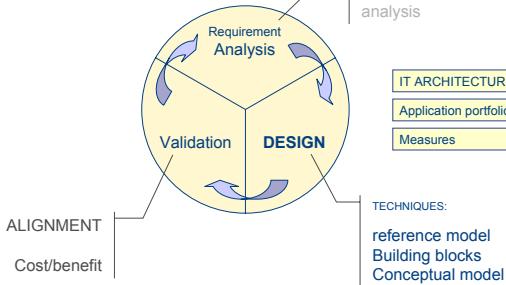
## Ticketcorner Business Model &gt; bird eyes view



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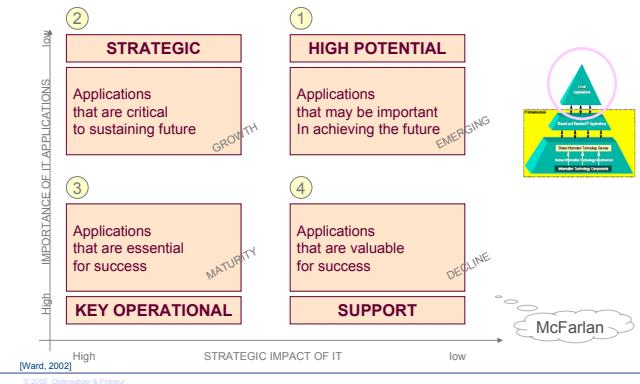
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## Business model &gt; design loop &gt; IT architecture design

Strategy  
Innovation  
IS Planning

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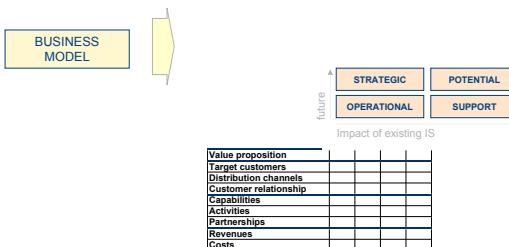
## Business model &gt; design loop &gt; IT architecture &gt; application portfolio



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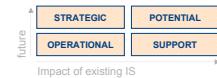
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## Business model &gt; design loop &gt; IT architecture &gt; application portfolio



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## Business model &gt; design loop &gt; IT architecture &gt; application portfolio



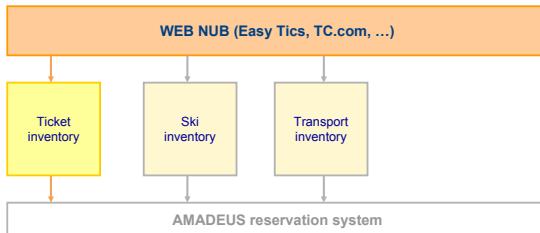
Impact of existing IS

Activities	Strategic	Key Operational	Support	High Potential
Contracting musicians			Database, Office	
Contracting sponsors				
Ticketing	Website (NAGRA's system)	Reservation System	Accounting	
Promotion	Website		Mailing Database, Office	CMS
Concerts	(NAGRA System)	Production		
F&B	(NAGRA System)	Paycenter	Accounting Office	
Commerce	(NAGRA System)	Paycenter	Accounting Office	
Merchandising	(NAGRA System)	Paycenter	Accounting Office	Website
Selling recordings		Concert Database	Accounting Office	Website (Music downloading)
manage MJF infrastructure		Production		
Production		Production		
JAZZ currency & CASH		Paycenter & Views	Accounting Office	
Volunteer management	(NAGRA system)	Volunteer Database	Volunteer Database, Office	

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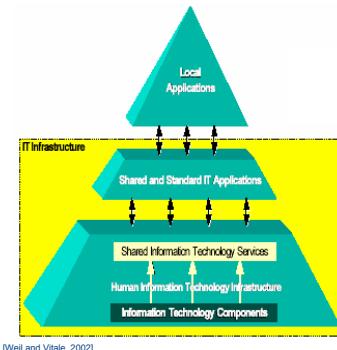
## Business model &gt; design loop &gt; IT architecture &gt; TICKETCORNER



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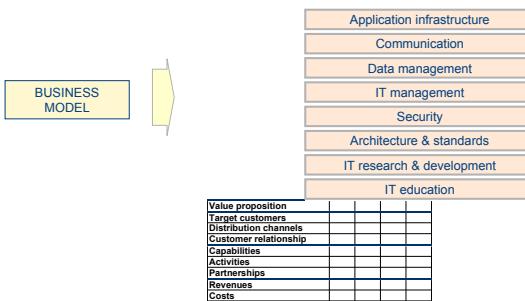
## Business model &gt; design loop &gt; IT architecture &gt; infrastructure



Application infrastructure					
Communication					
Data management					
IT management					
Security					
Architecture & standards					
IT research & development					
IT education					

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## Business model &gt; design loop &gt; IT architecture &gt; infrastructure



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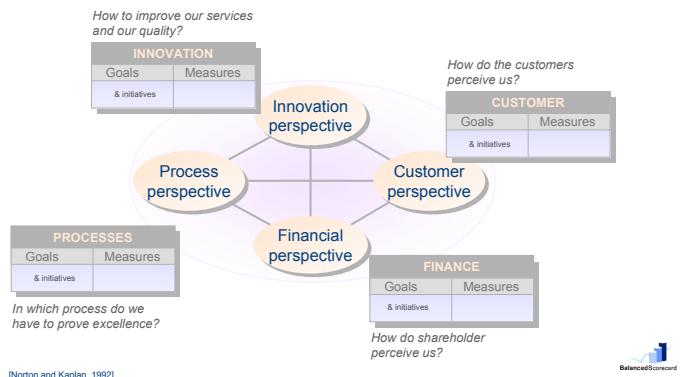
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## Business model &gt; design loop &gt; IT architecture &gt; infrastructure

Application infrastructure									
Communication									
Data management									
IT management									
Security									
Architecture & standards									
IT research & development									
IT education									
<b>Value proposition</b>									
Target customers									
Distribution channels									
Customer relationship									
Capabilities									
Activities									
Partnerships									
Revenues									
Costs									
[Well and Vitale, 2002]									

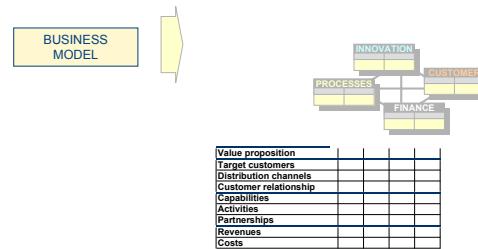
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## Business model > design loop > IT architecture > balanced scorecard



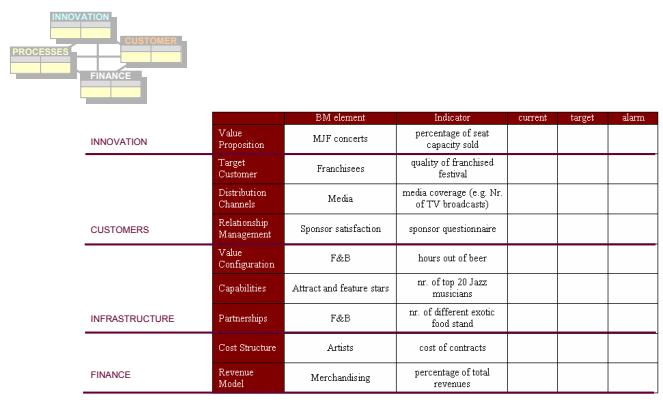
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## Business model > design loop > IT architecture > balanced scorecard



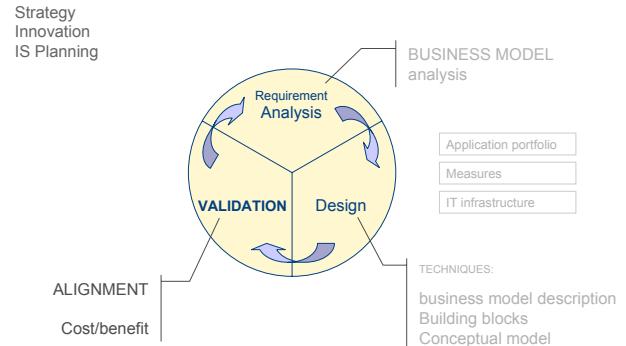
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## Business model > design loop > IT architecture > balanced scorecard



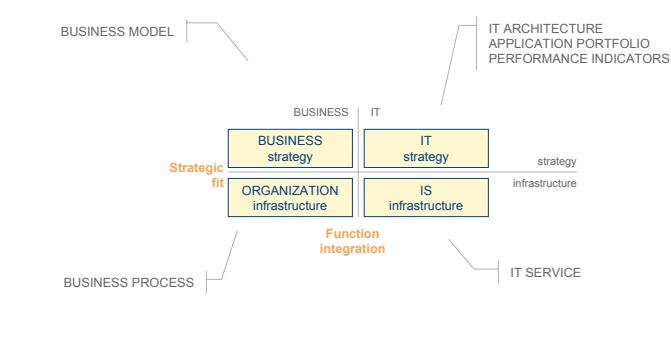
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## Business model > design loop > alignment



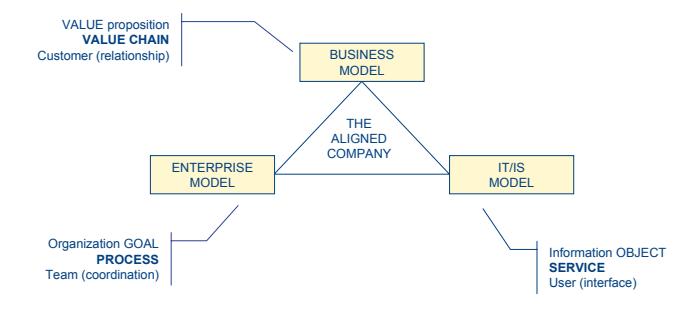
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## Business model > design loop > business/IT alignment



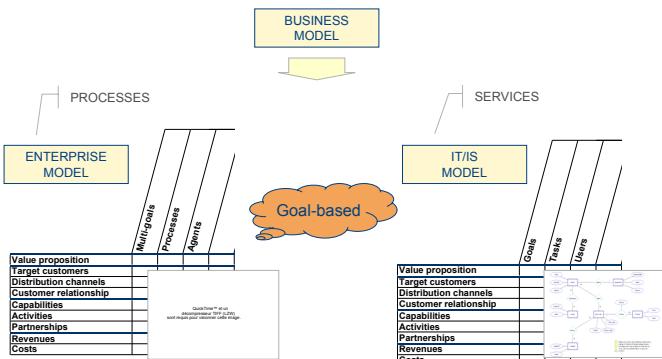
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## Business model > design loop > business/IT alignment



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## Business model > design loop > alignment with processes and services



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## Business model innovation

- Innovating in one or several of the business model components and as combining them in new and innovative ways
- Managers and executives had a whole new range of ways to design their businesses, which resulted in innovative and competing business models in the same industries.
- Before it used to be sufficient to say in what industry you were for somebody to understand what your company was doing because all players had the same business model.
- Today it is not sufficient anymore to choose a lucrative industry, but you must design a competitive business model.
- In addition increased competition and rapid copying of successful business models forces all the players to continuously innovate their business model to gain and sustain a competitive edge.

DESIGN APPROACH | BUSINESS MODEL | INNOVATION

## Business model innovation > typology

- Supply-driven innovation**
  - New way of doing/supplying or new technology
- Demand-driven**
  - New or changing customer needs
- Similar business model**
- Extended business model**
  - Adding new things
- New business model**
  - New rules of the game ...



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## Business model innovation > examples

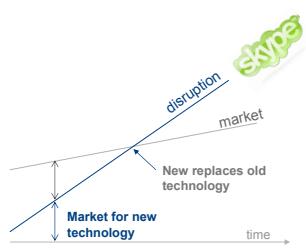
1. Value proposition	
2. Target customer segment	
3. Distribution channel	
4. Customer relationship	
5. Core capabilities	
6. Value configuration	
7. Partnership agreement	
8. Revenue streams	
9. Cost structure	

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## Business model innovation > disruptive technology

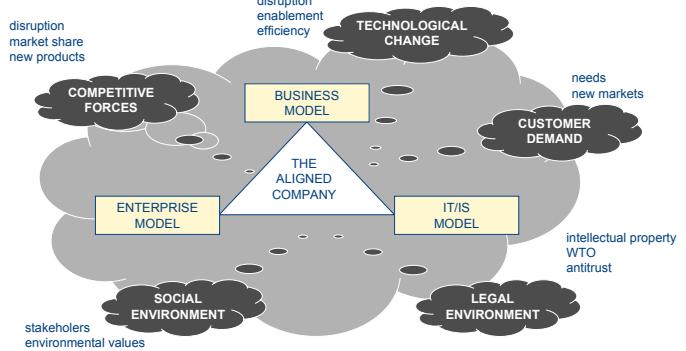
- A disruptive technology is a technology or an innovation
- "that results in worse product performance, at least in the near-term..."
- [It] brings to the market a very different value proposition than had been available previously...
- Products that are based on disruptive technologies are typically cheaper, simpler, smaller, and, frequently, more convenient to use.
- [But, they generally] under-perform established products in mainstream markets."



[Christensen, 1997] [Danneels, 2004]

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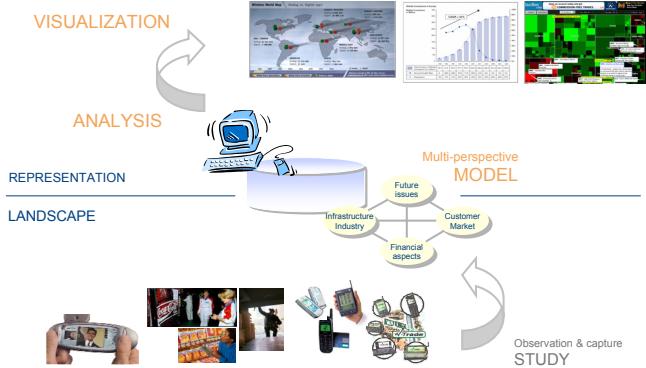
## Business model innovation > environmental pressures



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## Business model innovation > environment assessment

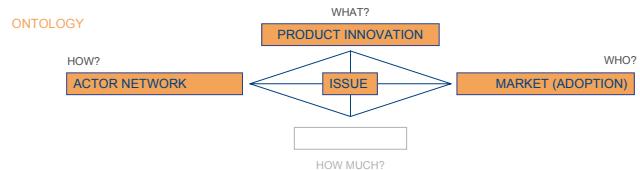


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## Business model innovation > environment assessment > model

Viewpoint:  
ENVIRONMENT INTELLIGENCE

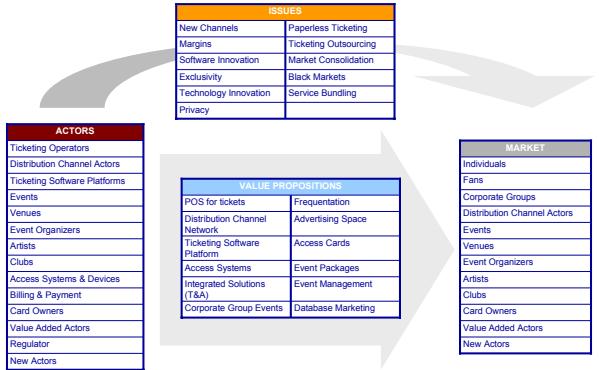


[Camponovo, 2004]

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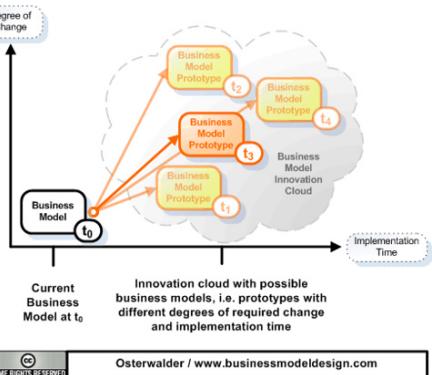
## Business model innovation > environment assessment > model



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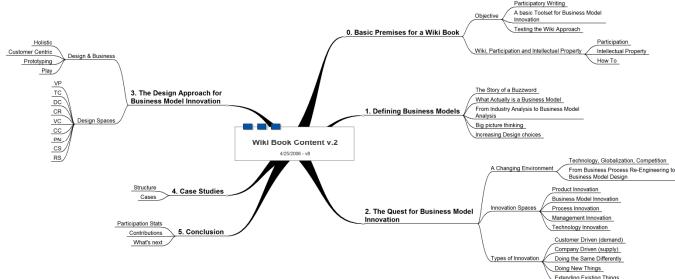
## Business model innovation > evolution & change management



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## Next > wikibook "Business model design and innovation" > content



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Basic Premises for a Wiki-Based Business Book

What Activity is a Business Model?

The Story of a Business

Innovation Spaces

The Objectives of this Wiki

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Questions ...



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