

Assessing a complex, uncertain and disruptive technology environment for better IT alignment

Utility, Usability and Complexity of Emergent IS
Namur, December 2003

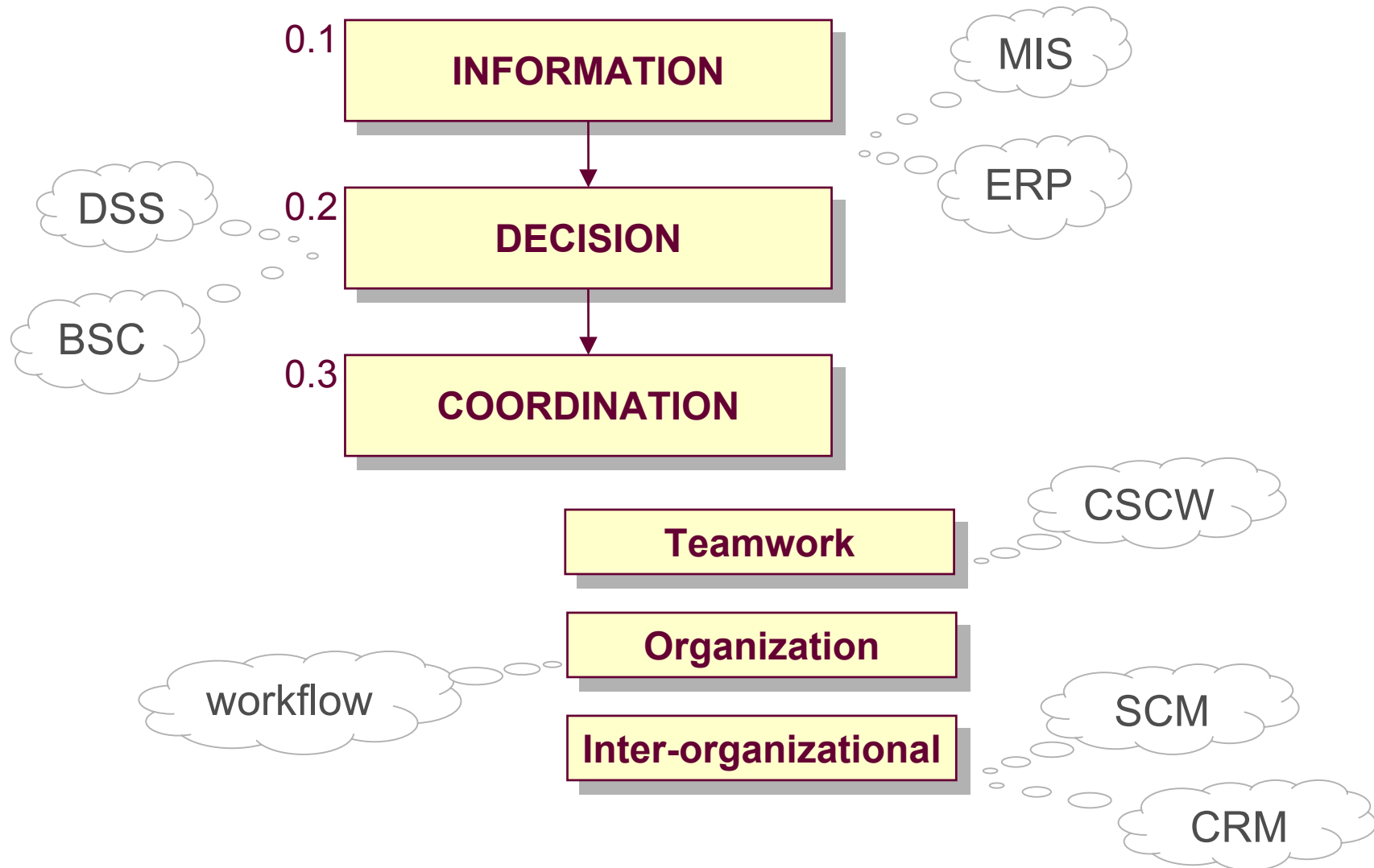
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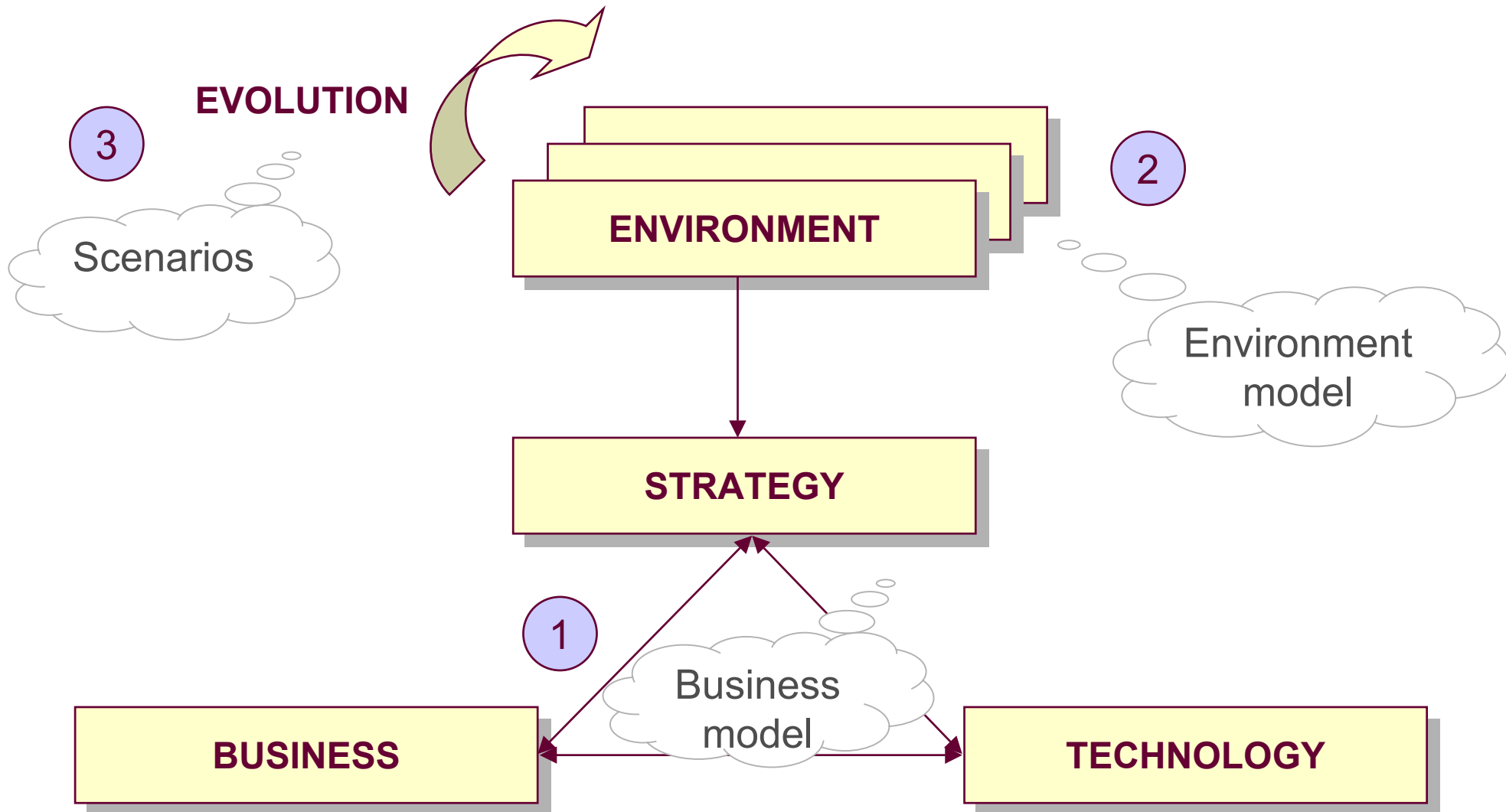
Agenda

- **Business/IT alignment**
 - Internal, external & evolution
- **Business model**
 - IT profile
 - Application portfolio and IT infrastructure
 - Balanced Score Card
- **Environment assessment** *NEW*
 - Complexity, uncertainty and disruptiveness
 - Environment model
 - Assessment tools
- **Evolution scenarios**

Information systems

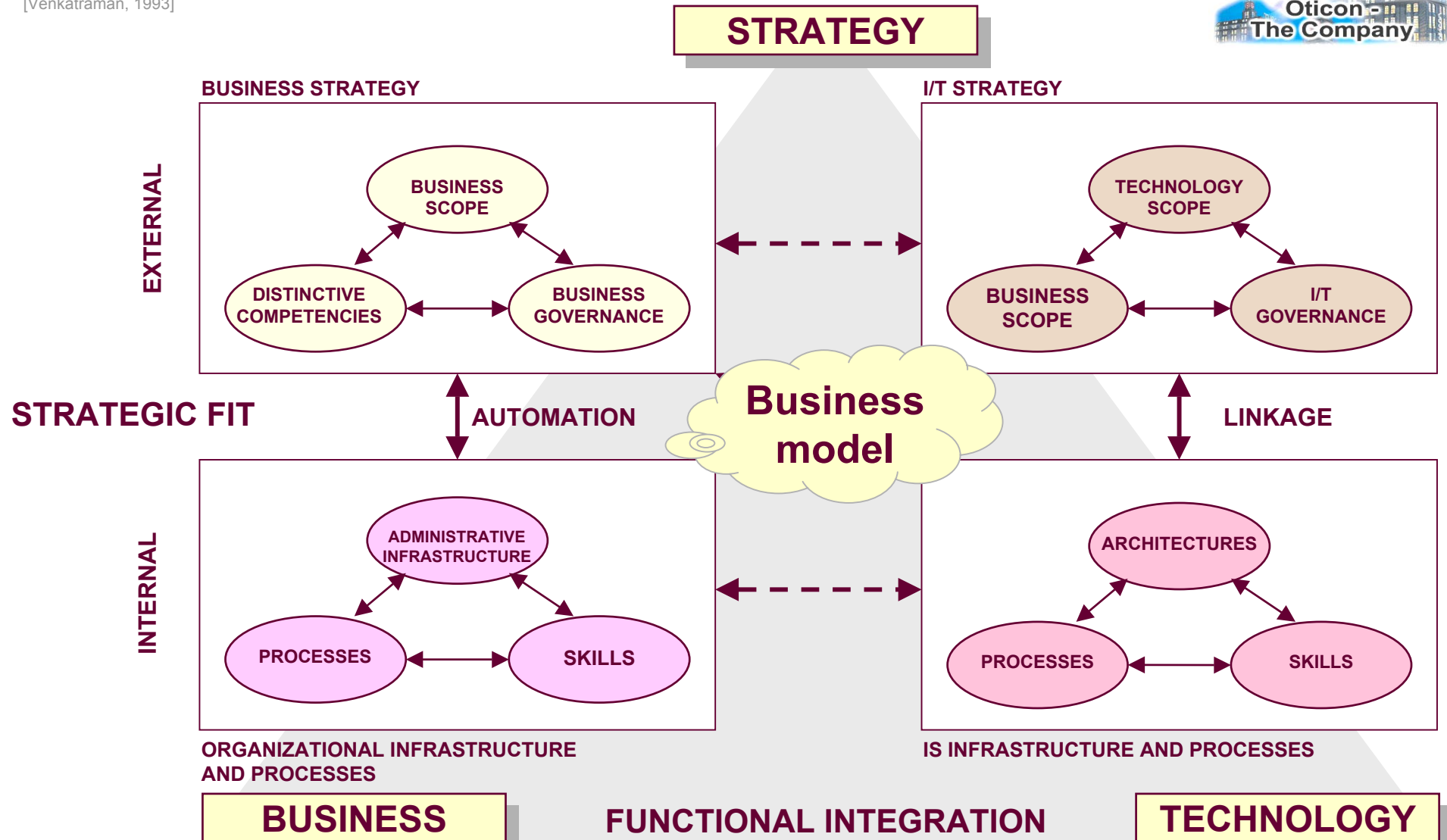


3 levels of alignment (adaptation of IS)



Alignment with business

[Venkatraman, 1993]



PART 1 - Business Model

WHAT?

	Browsing in price lists	Online booking	Transportation (low flight fares)
explanation	The customer can navigate on the Website and check-out prices for flights on different dates and at different times	The customer can book flights directly on the easyJet.com Website by using his credit card	The customer buys a transportation service from easyJet.com that is similar to competitor offers but cheaper because there is no in-flight service and no seat reservation
reasoning	This service essentially reduces the risk of not choosing the cheapest convenient flight	This service reduces the customer's effort of having to go to a travel agency	
nature of value element	Value creation: The customer individually chooses the flight that fits him best	Value appropriation: This service concerns the buying process	Value consumption: The main product is transportation from A to B
value measure	me-too	me-too	me-too
price	free	free	highly attractive

WHO?

Customer

Channel

Relationship



HOW?



Capability

Configuration

Partnership

Proposition

Product innovation

Infrastructure operation

Customer relationship

Financial Aspects

Revenue

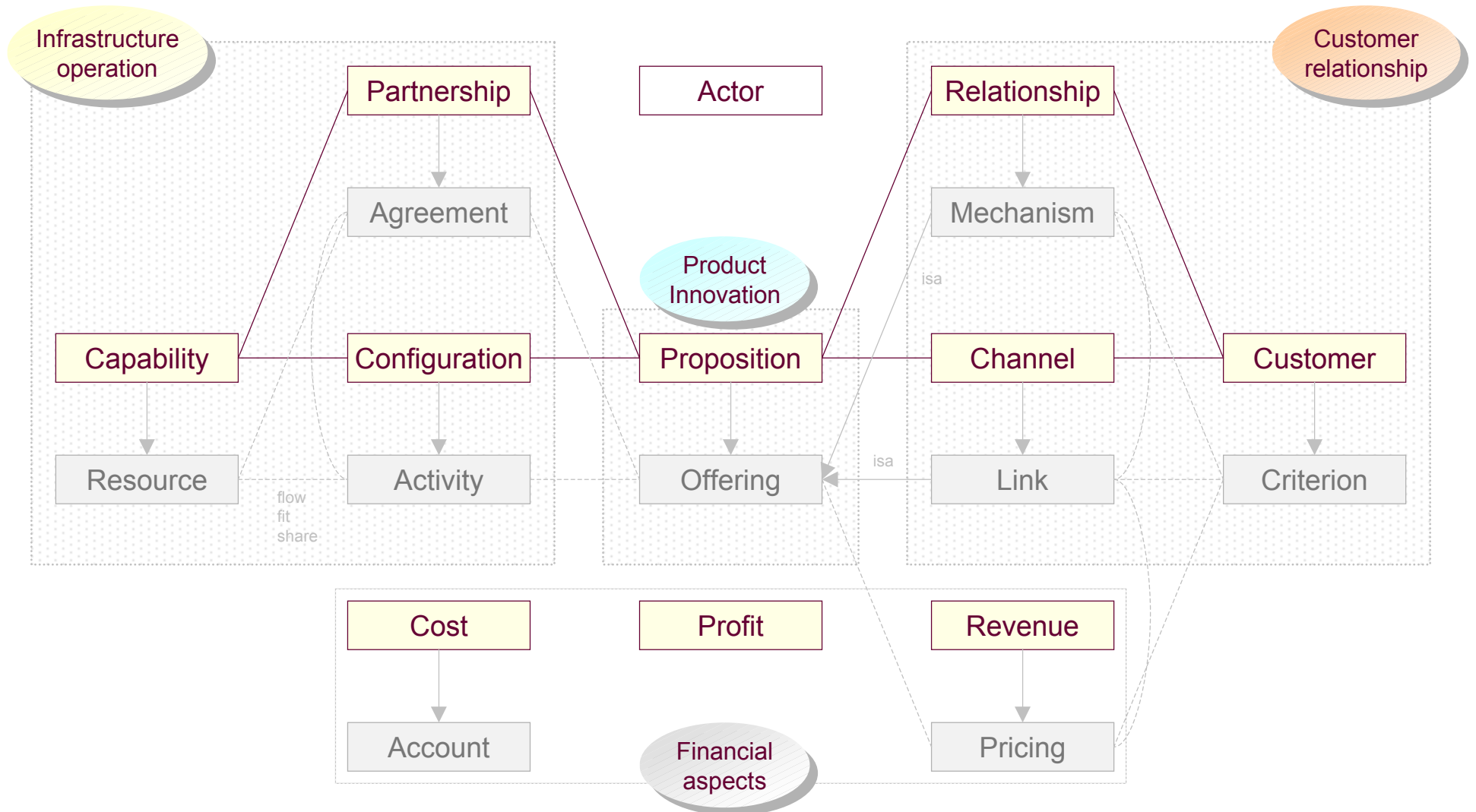
Cost

Profit

HOW MUCH?

	Budget	Revenue	Cost	Profit
Revenue				
Cost				
Profit				

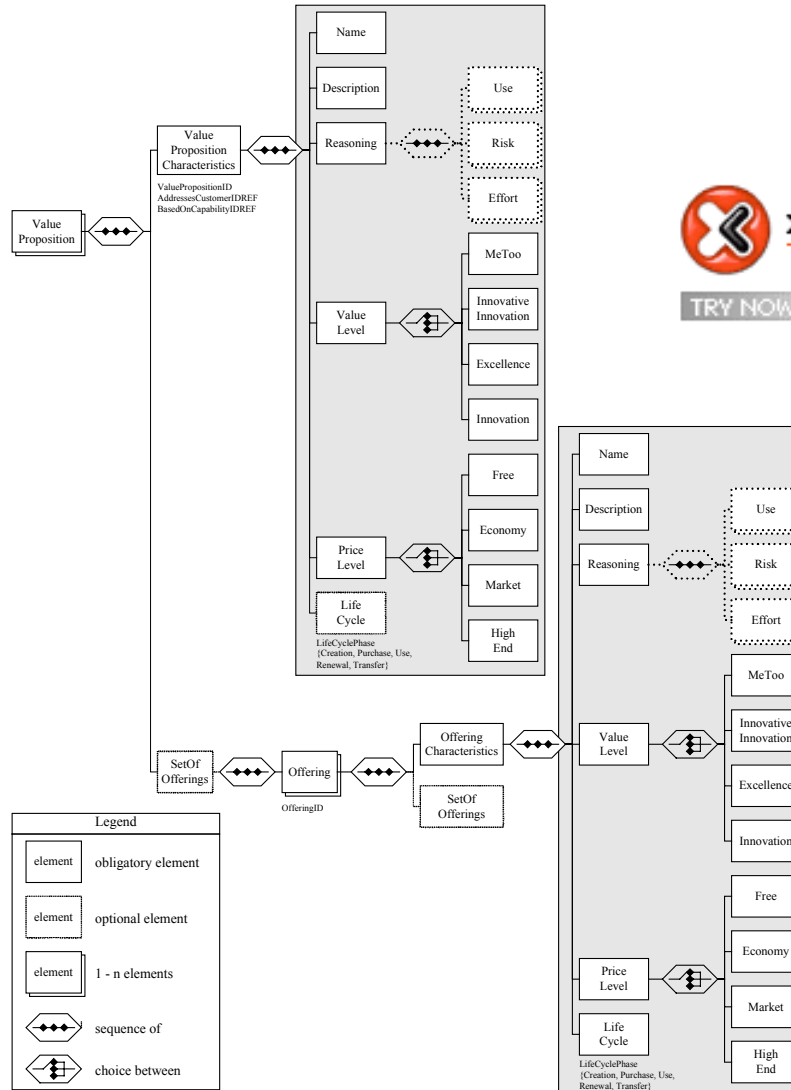
A business model ontology



Business model with XML

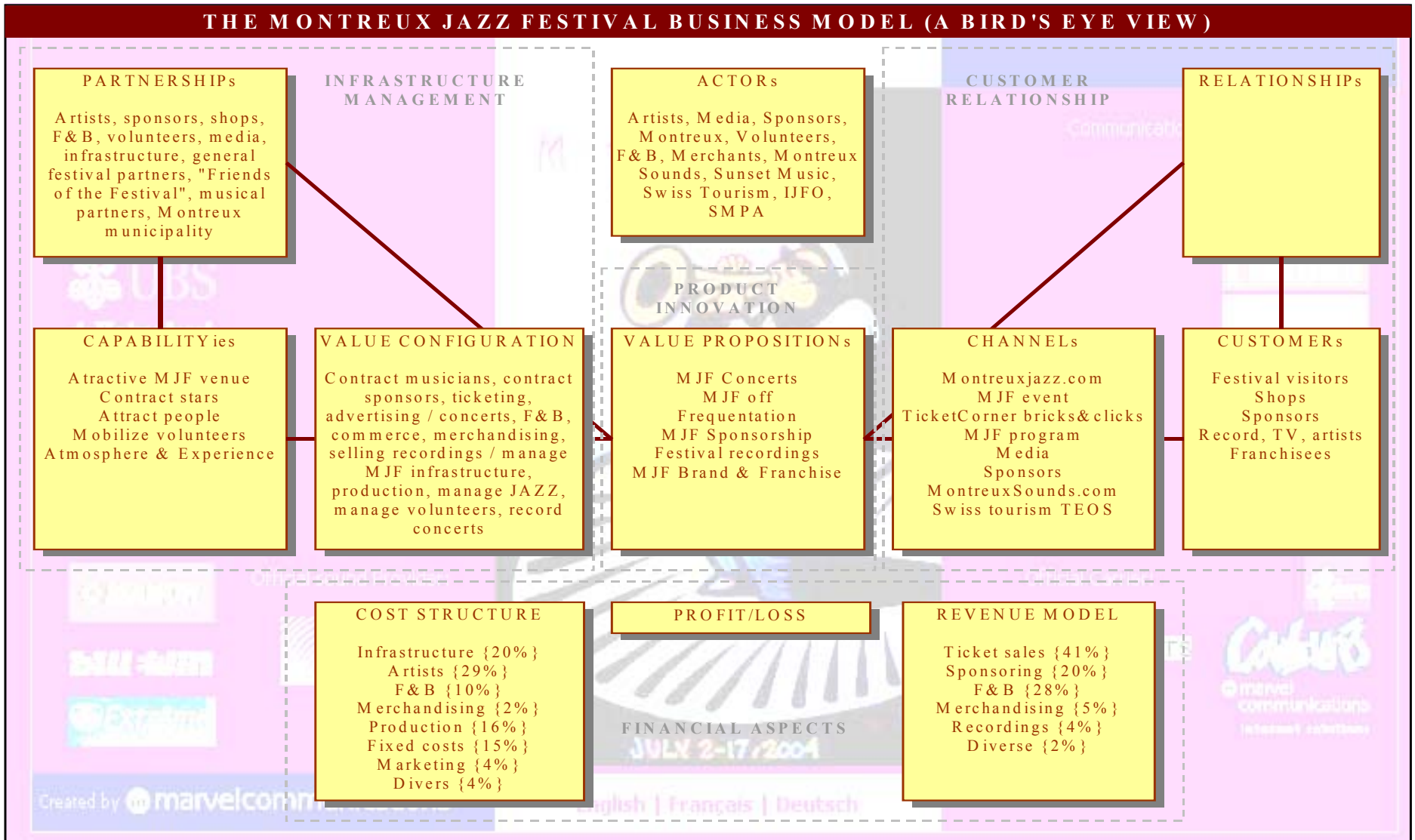
Computer-aided design
Business model handbook

...



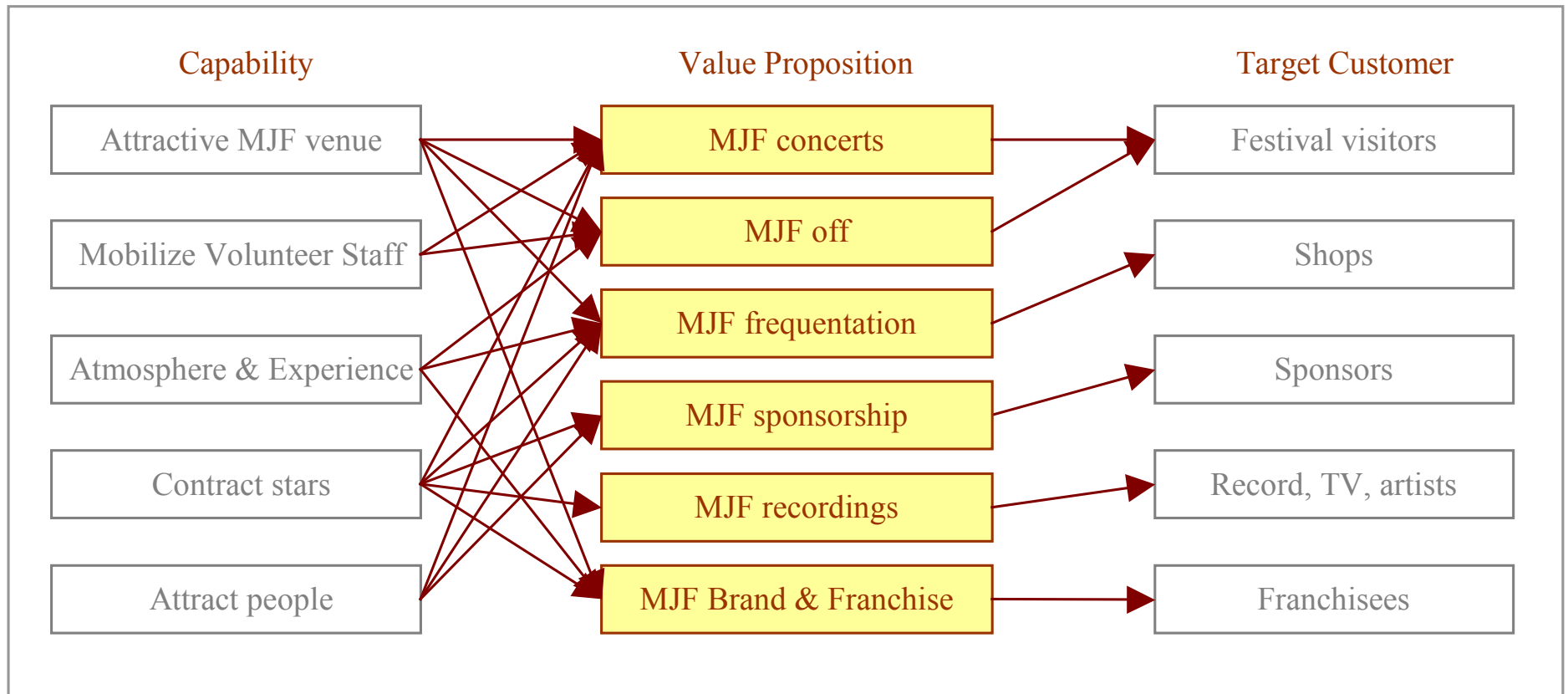
BUSINESS MODEL

illustration



Value proposition, capabilities and customers

illustration



Detailed value proposition

illustration



VALUE PROPOSITION Name: MJF sponsorship

Description: The international reputation and the size of the MJF makes it an ideal partner for sponsorships. With its great concerts, large crowd and international media presence it gives affiliated sponsors a large visibility.

Reasoning: {Use}: An MJF sponsorship contract gives a partner the possibility to potentially address 240'000 people and build be co-branded with the MJF.

{Risk}: As the MJF is an established institution with an established brand and a solid customer base the risk of entering a troubled partnership is very low.

Value level: {Me-too}: The MJF is a mass advertising "media" among others. Thought it is one of the top established festivals the value level of a sponsorship with the MJF is comparable to other festivals.

Price level: {Market}: The price level of a sponsorship at the MJF is situated at market levels.

Composed of OFFERINGS: (the detailed OFFERINGS are captured in annex XXX)

- Affiliation
- Advertising space
- Sponsors' events
- Free tickets

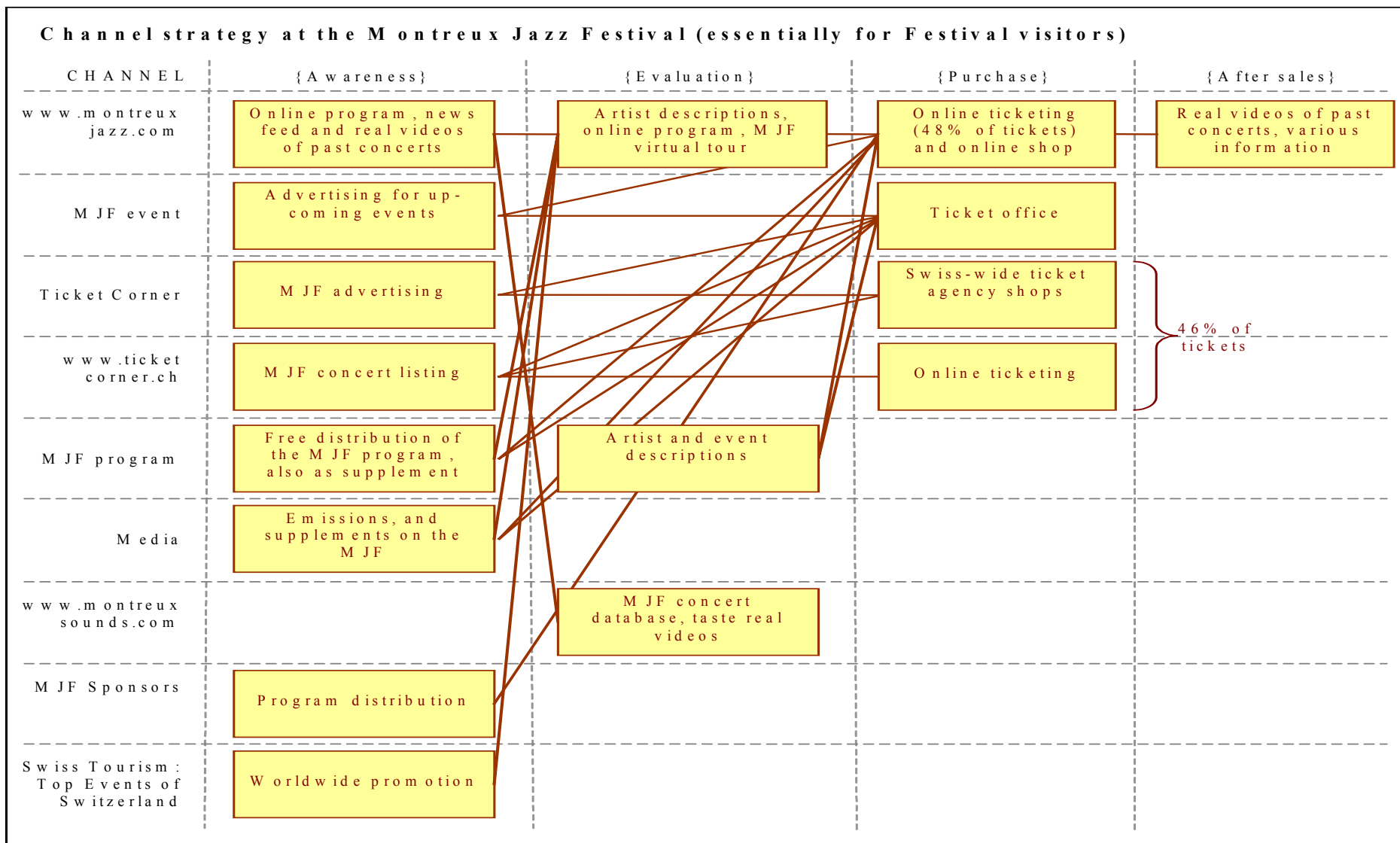
Value for TARGET CUSTOMER: TARGET CUSTOMER 3: Sponsors

Based on CAPABILITYies: CAPABILITY 2: Attract and feature great stars and concerts

CAPABILITY 4: Attract people

Distribution channels

illustration



Distribution channels

illustration



CHANNEL Name: www.ticketcorner.ch

Description: www.ticketcorner.ch belongs to Ticket Corner and is a partner CHANNEL that sells tickets of various Swiss events from concerts to sports events. They also sell MJF concert tickets.

Reasoning: {Use}: The concerts of the MJF can conveniently be found on the website in the Ticket Corner database.
 {Effort}: The customer can comfortably order the tickets over the Internet and get them delivered directly to his home.

Value level: {Me-too}: Online ordering of tickets for a specific event have become quite commonplace.

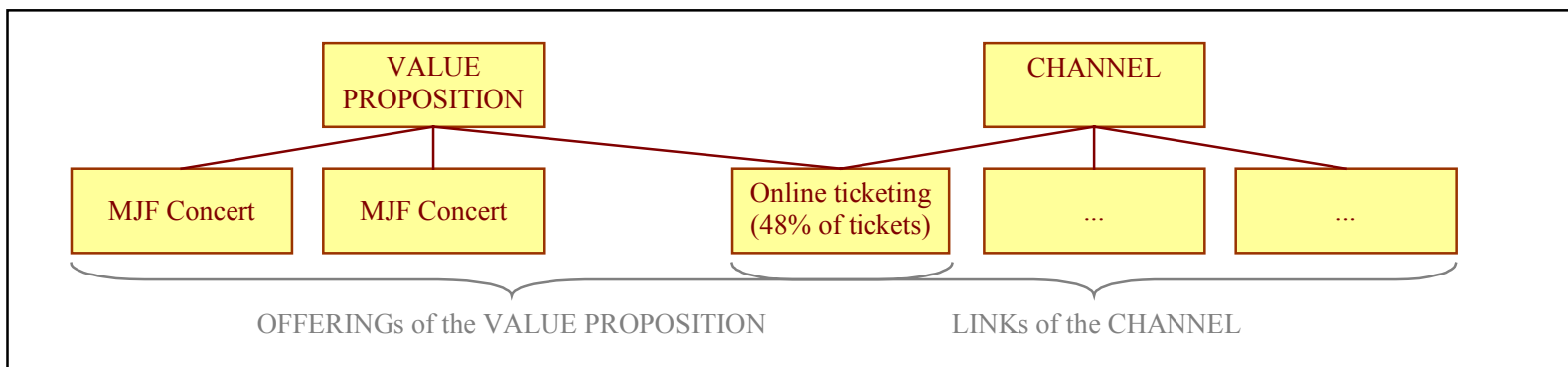
Price level: {Free}: Customers have to pay a fee for handling an delivery of an order.

Composed of LINKs:

- MJF concert listing.
- Online ticketing.

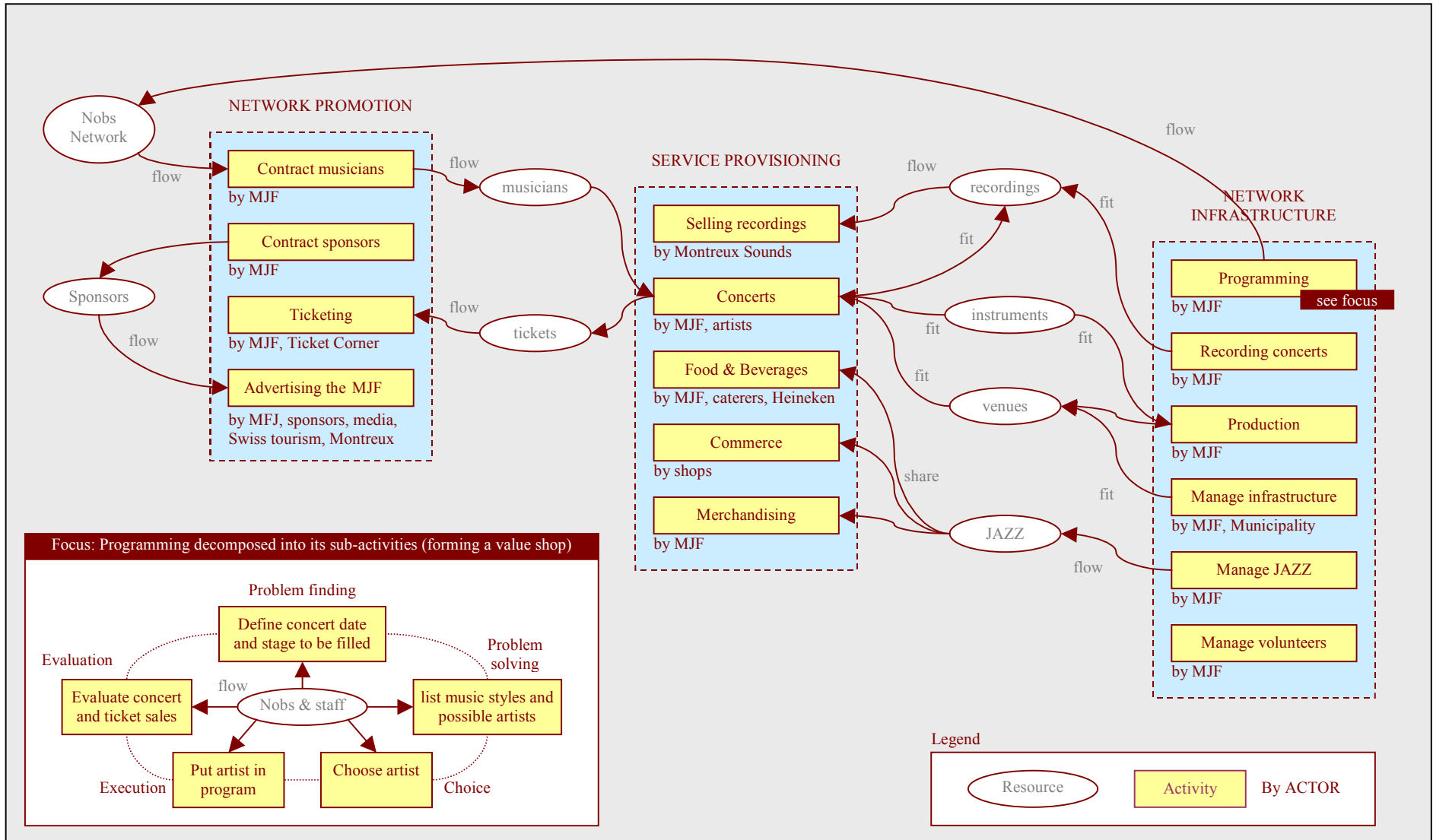
Delivers VALUE PROPOSITION: VALUE PROPOSITION 1: MJF concert (tickets).

Delivers to TARGET CUSTOMER: TARGET CUSTOMER 1: Festival visitors.

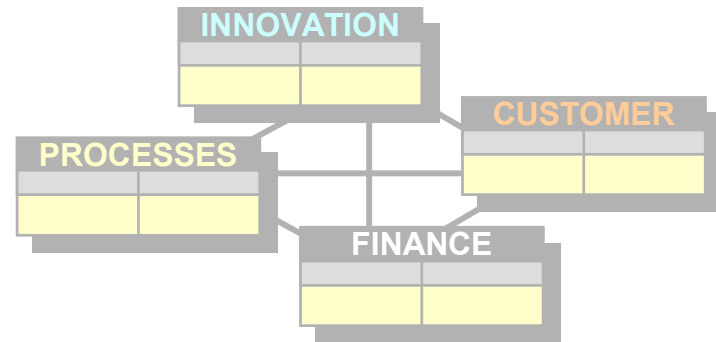


Activités & ressources

illustration



Business model and business/IT alignment

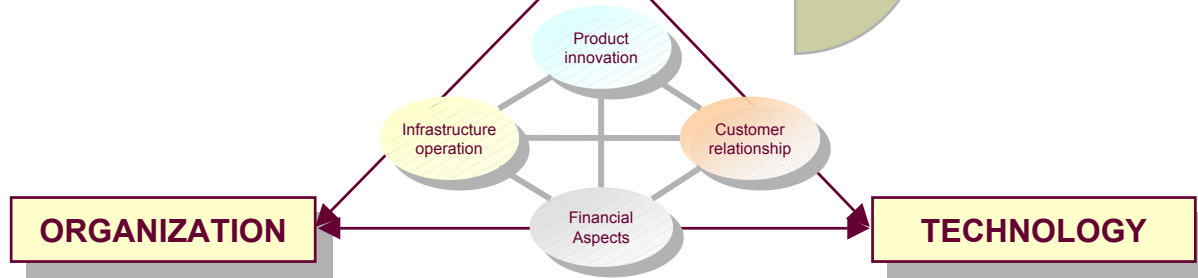


Balanced ScoreCard

STRATEGY



IT application portfolio



	Infusion PROSPECTOR	Alliance ANALYZER	Utility DEFENDER
IS role			
IS sourcing			
IS structure			

IS role
IS sourcing
IS structure

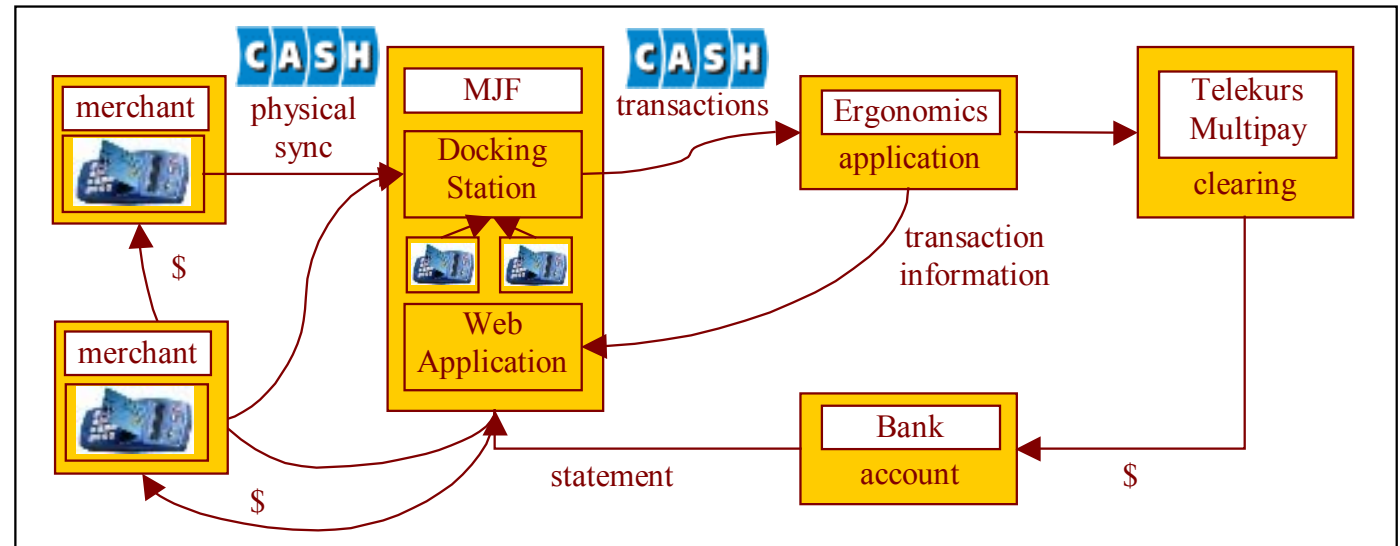
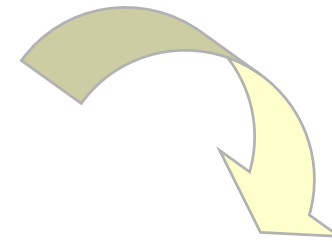
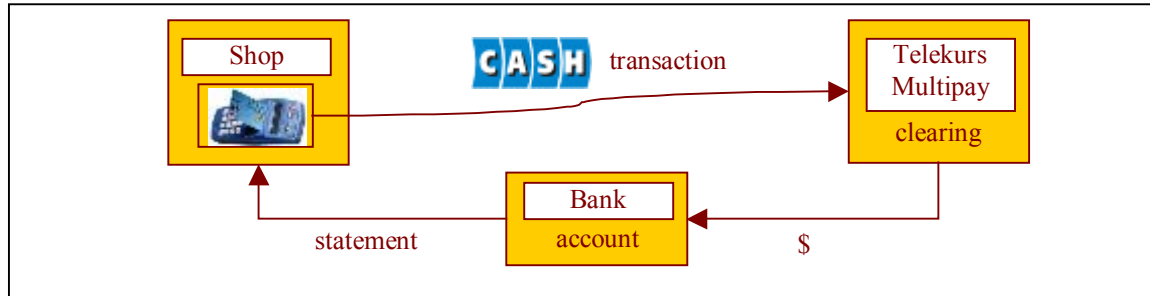
- Application infrastructure
- Communication
- Data management
- IT management
- Security
- Architecture & standards
- IT research & development
- IT education

IT infrastructure

Alignment profile

IT infrastructure (e-payment)

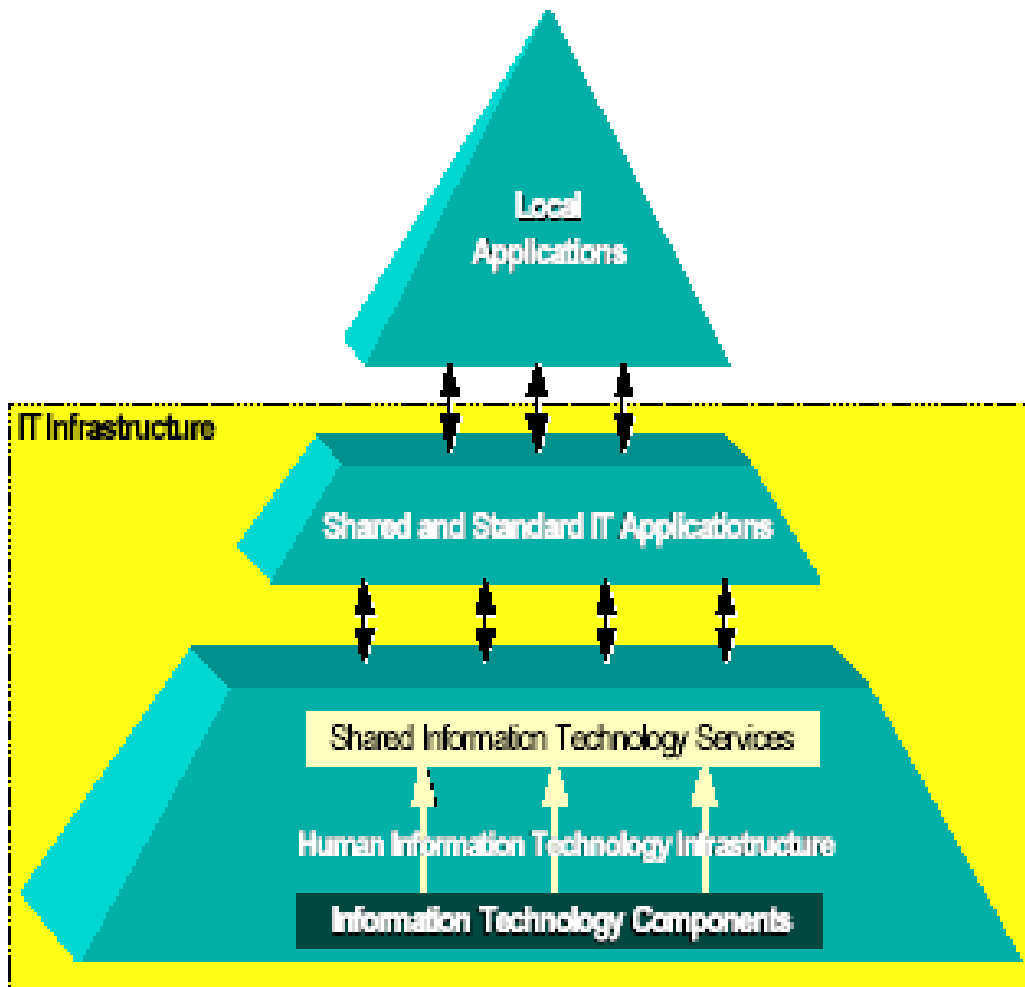
illustration



IT infrastructure

[Weill, 2002]

TECHNOLOGY

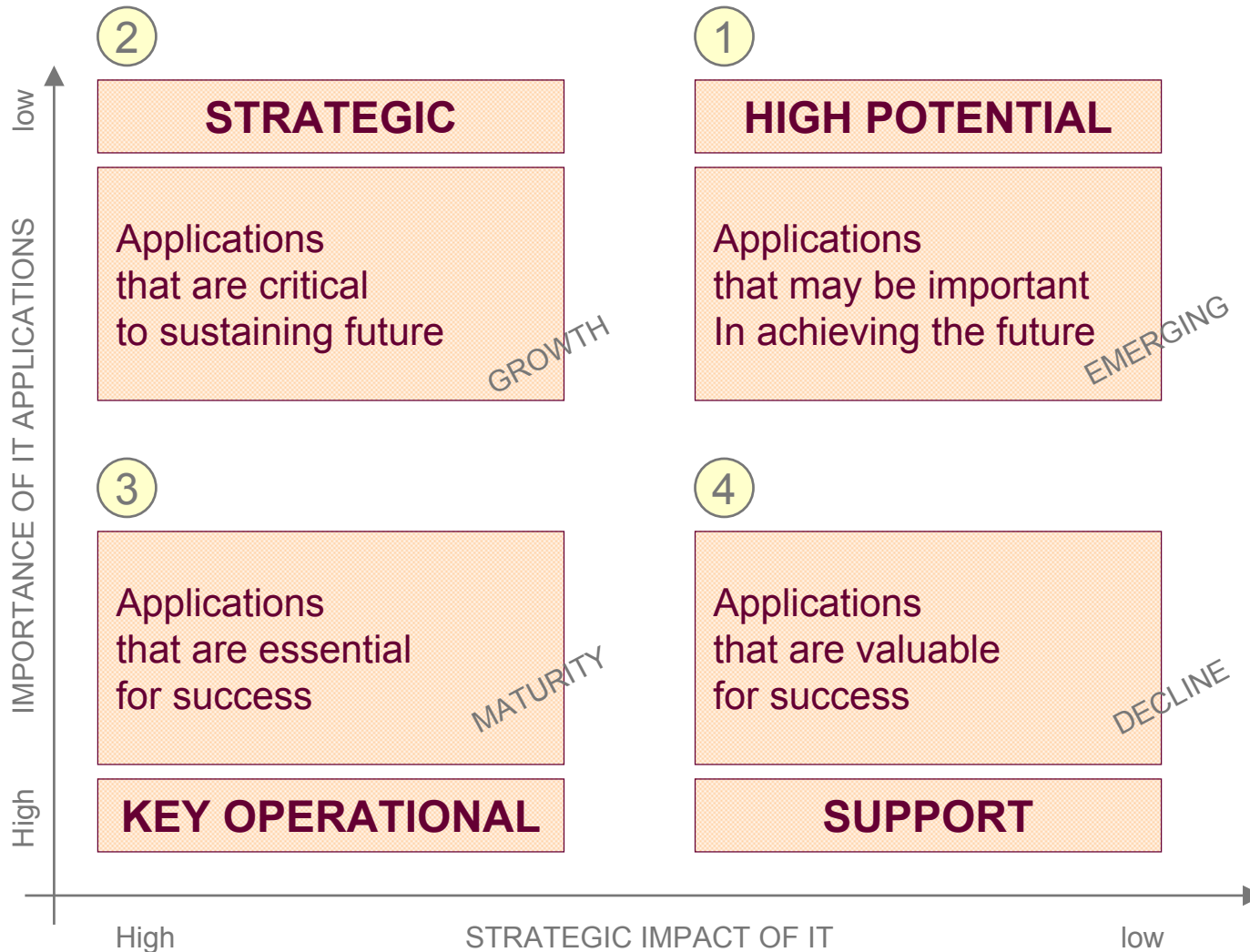


- Application infrastructure
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Application portfolio

[Ward, , 2002]

TECHNOLOGY



IT infrastructure & application portfolio alignment

	Application infrastructure	Communication	Data management	IT management	Security	Architecture & standards	IT research & development	IT education
IT infrastructure	<i>Application infrastructure</i>	<i>Communication</i>	<i>Data management</i>	<i>IT management</i>	<i>Security</i>	<i>Architecture & standards</i>	<i>IT research & development</i>	<i>IT education</i>
Value proposition								
Target customers								
Distribution channels								
Customer relationship								
Capabilities								
Activities								
Partnerships								
Revenues								
Costs								

	STRATEGIC	TURNAROUND	FACTORY	SUPPORT
IT application portfolio	<i>HIGH POTENTIAL</i>	<i>STRATEGIC</i>	<i>KEY OPERATIONAL</i>	<i>SUPPORT</i>
Value proposition				
Target customers				
Distribution channels				
Customer relationship				
Capabilities				
Activities				
Partnerships				
Revenues				
Costs				

IT infrastructure alignment

illustration



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

IT infrastructure

Value Proposition √ = basic service √√ = key service ? = potential basic service ?? = potential key service grey = subject to change	Application Infrastructure	Communications Management	Data Management	IT Management	Security	Architecture and Standards	Channel Management	IT Research and Development	Training and Education in IT
MJF concerts		√					√√??		
MJF off									
MJF frequentation	√√	√	√√	√√	√√	√√	??	??	??
MJF sponsorship		√							
MJF recordings	√	√				√??	??	??	
MJF brand & franchise		√	?	??					??
Target Customers									
Festival visitors		√	√??		√??		√√		??
Shops		√	√		√√				
Sponsors		√							
Record, TV, artists		√	√				√		
Franchisees		√							
Distribution Channels									
www.montreuxjazz.com	√√	√	√√	√√	√√	√√	√√	??	
MJF event			√	√??	√?	??	?	??	
Ticket Corner		√√	√√		√√	√√	??	??	
www.ticketcorner.ch		√√	√√	√	√√	√√	√√	??	
MJF program		√	√				√		
Media		√	√				√		
www.montreuxsounds.com	??	√	√??	??	?	√??	√√	??	
MJF sponsors		√	√				√		
Swiss Tourism TEOs									
Relationships									
Sponsorship & VIP	??		√??	??	??	??	??	??	
Festival visitor	??		√??	??	√??	??	√??	??	
All (retention/branding)							√√		
Capabilities									
Attractive MJF venue									
Attract & feature stars		√	√						

Alignment profiles

[Hirschheim, 2001]

ORGANIZATION

Alignment Profile	Infusion: Alignment through Business Leadership	Alliance: Alignment through Partnering	Utility: Alignment through Low Cost Delivery
Business Strategy	Prospector	Analyzer	Defender
IIS Strategy			
• IS Role	Opportunistic	Comprehensive	Efficient
• IS Sourcing	Insourcing	Selective Sourcing	Outsourcing
• IS Structure	Decentralized	Shared	Centralized

Alignment profiles

illustration



	Alignment through Business Leadership	Alignment through Partnering	Alignment through Low Cost Delivery
Business Strategy	Prospector	Analyzer	Defender
IS Strategy			
IS Role	Opportunistic	Comprehensive	Efficient
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Balanced scorecard (BSC) & Intangible Assets Monitor

[Kaplan, 1992]

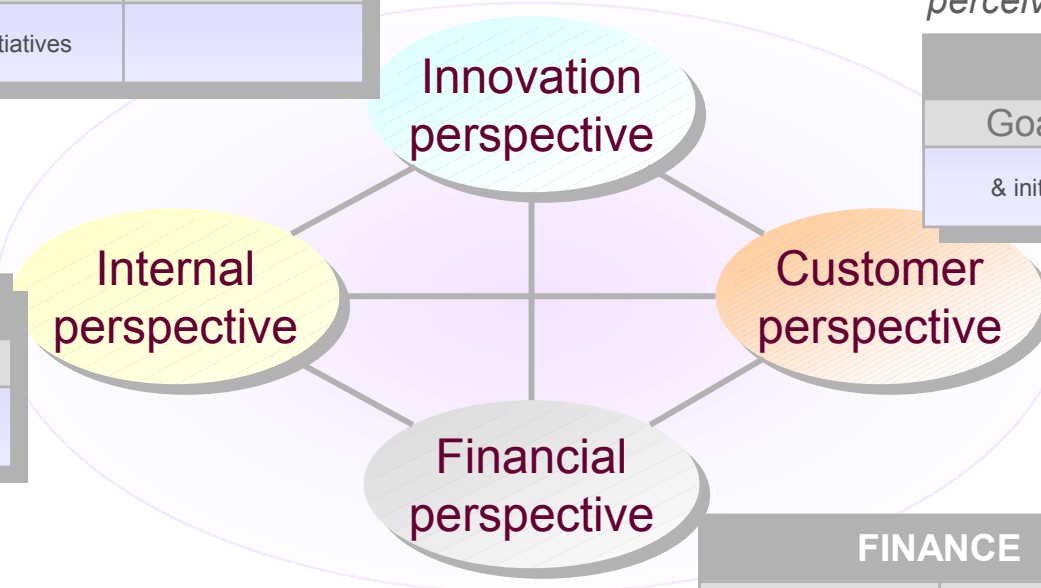
How to improve our services and our quality?

STRATEGY

How do the customers perceive us?

INNOVATION	
Goals	Measures
& initiatives	

CUSTOMER	
Goals	Measures
& initiatives	

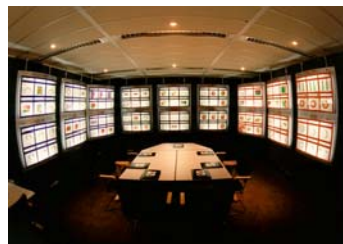
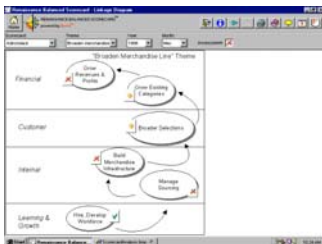


PROCESSES	
Goals	Measures
& initiatives	

In which process do we have to prove excellence?

FINANCE	
Goals	Measures
& initiatives	

How do shareholder perceive us?



Balanced scorecard (BSC)

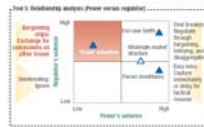
illustration



	BM element	Indicator	current	target	alarm
Value Proposition	MJF concerts	percentage of seat capacity sold			
Target Customer	Franchisees	quality of franchised festival			
Distribution Channels	Media	media coverage (e.g. Nr. of TV broadcasts)			
Relationship Management	Sponsor satisfaction	sponsor questionnaire			
Value Configuration	F&B	hours out of beer			
Capabilities	Attract and feature stars	nr. of top 20 Jazz musicians			
Partnerships	F&B	nr. of different exotic food stand			
Cost Structure	Artists	cost of contracts			
Revenue Model	Merchandising	percentage of total revenues			

PART 2 - Environment Model

NEW



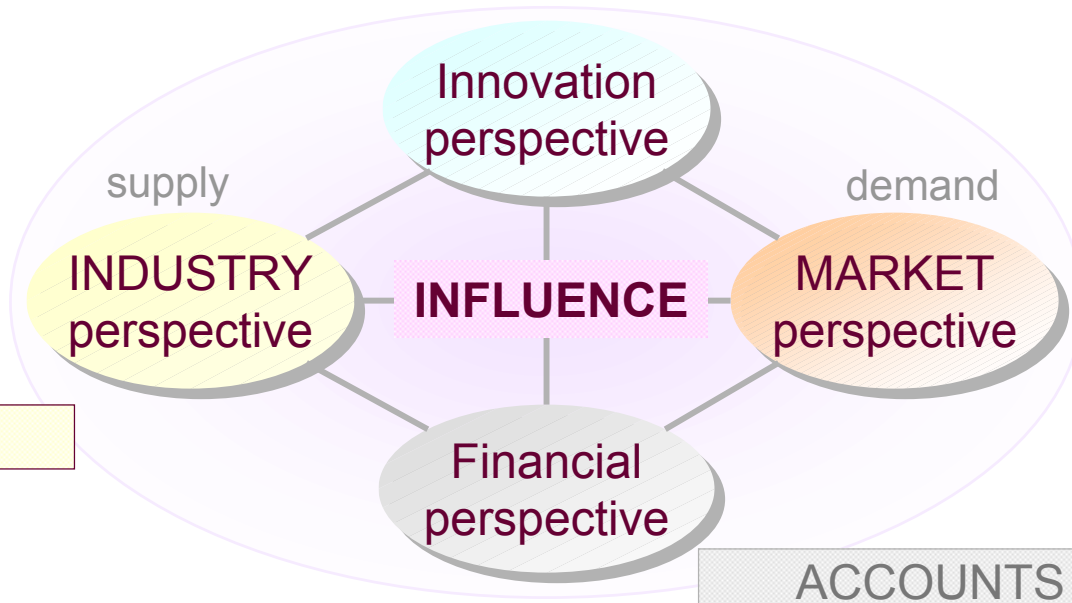
ISSUES



APPLICATIONS



ACTORS



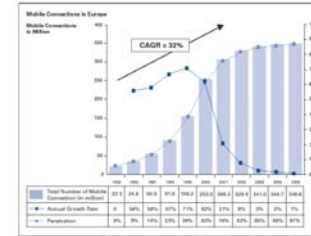
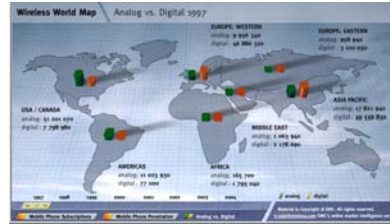
ACCOUNTS



Assessing a technology environment ...

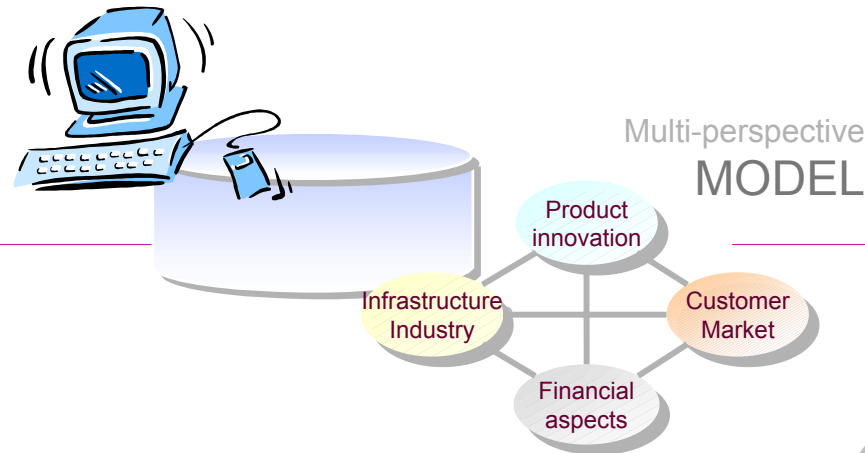
complex

Analysis & visualization
TOOL



REPRESENTATION

LANDSCAPE
m-Business

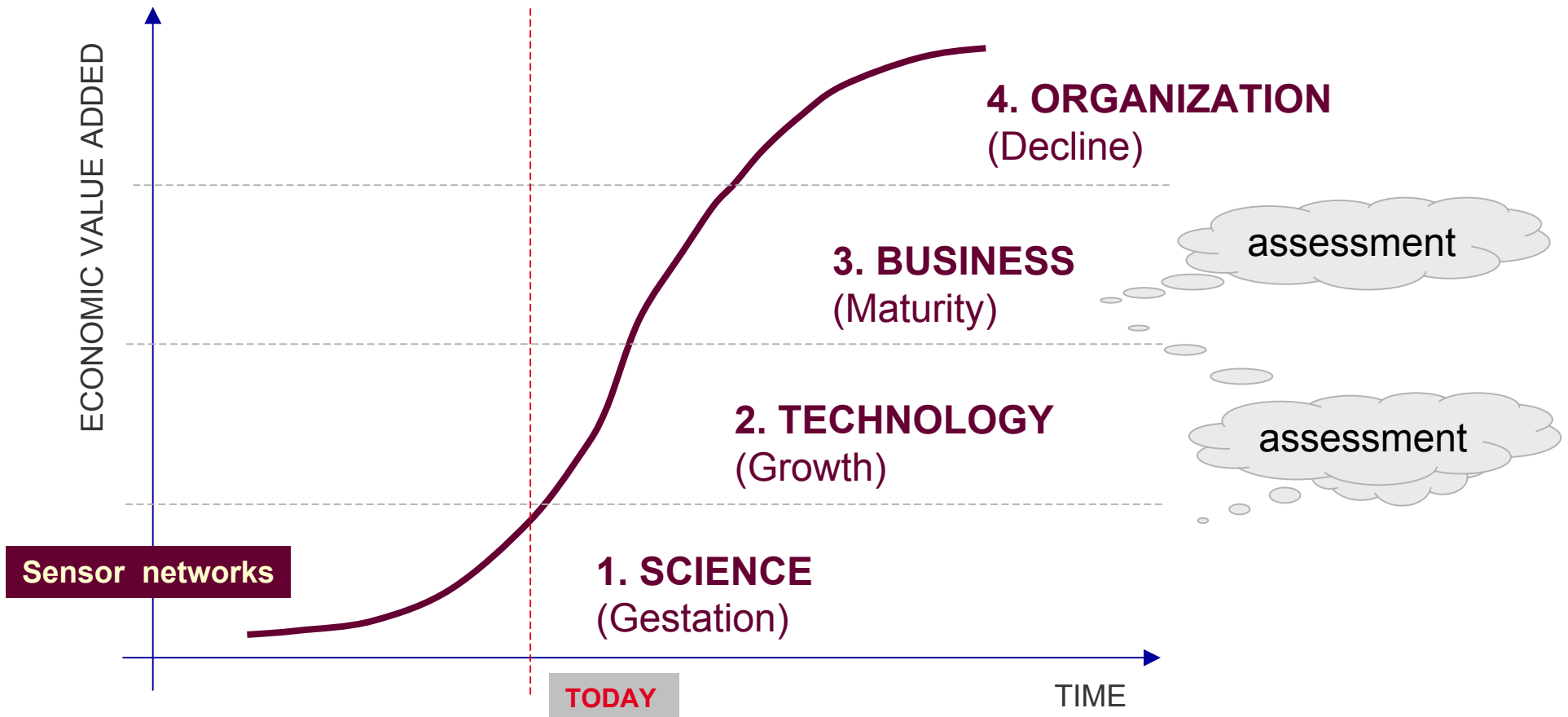


Observation & capture
STUDY

... and its evolution

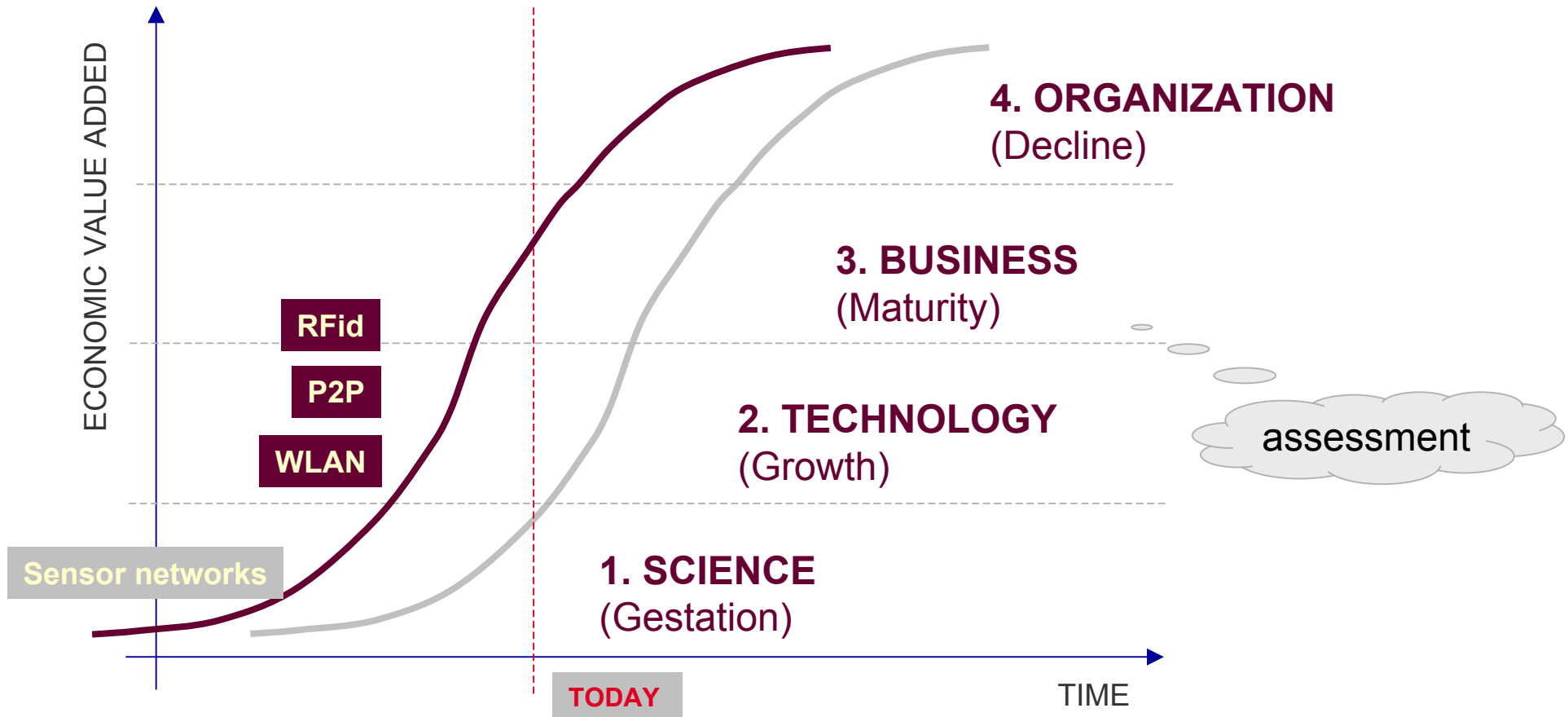
[Meyer, 2003]

FOUR-QUARTER MODEL



Multi-technology life cycle

FOUR-QUARTER MODEL



Disruptive technology

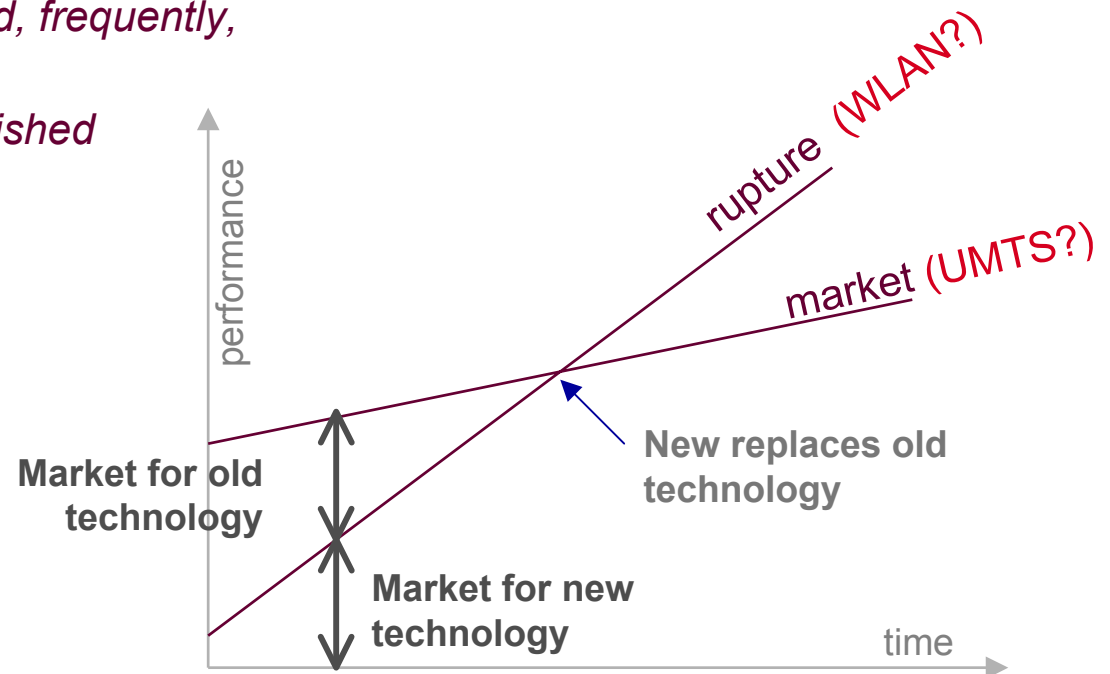
[Christensen, 1997]

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...

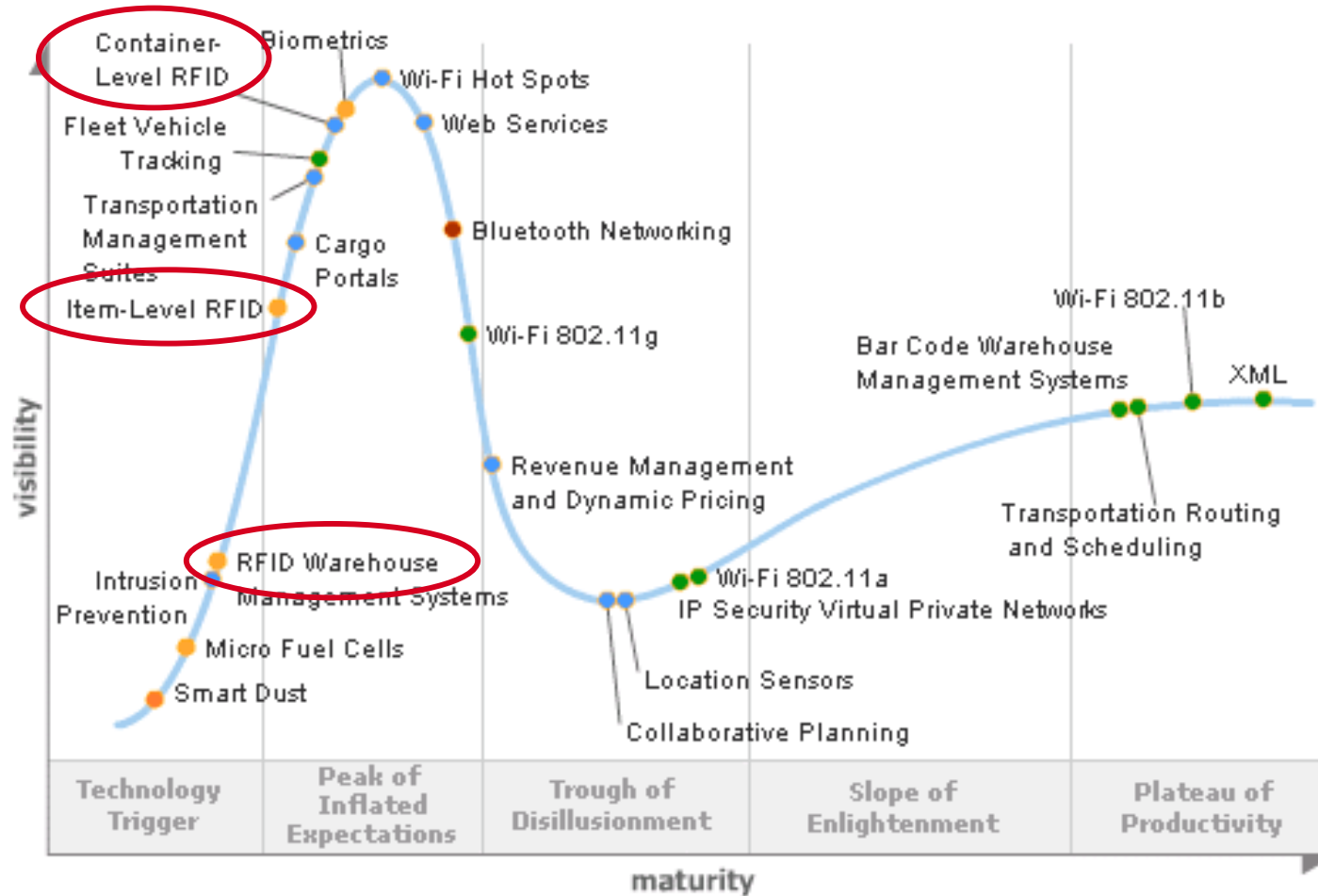
Products that are based on disruptive technologies are typically cheaper, simpler, smaller, and, frequently, more convenient to use.

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



Hype curve for transportation technologies

uncertain



Source: [Gartner, 2003]

Plateau will be reached:

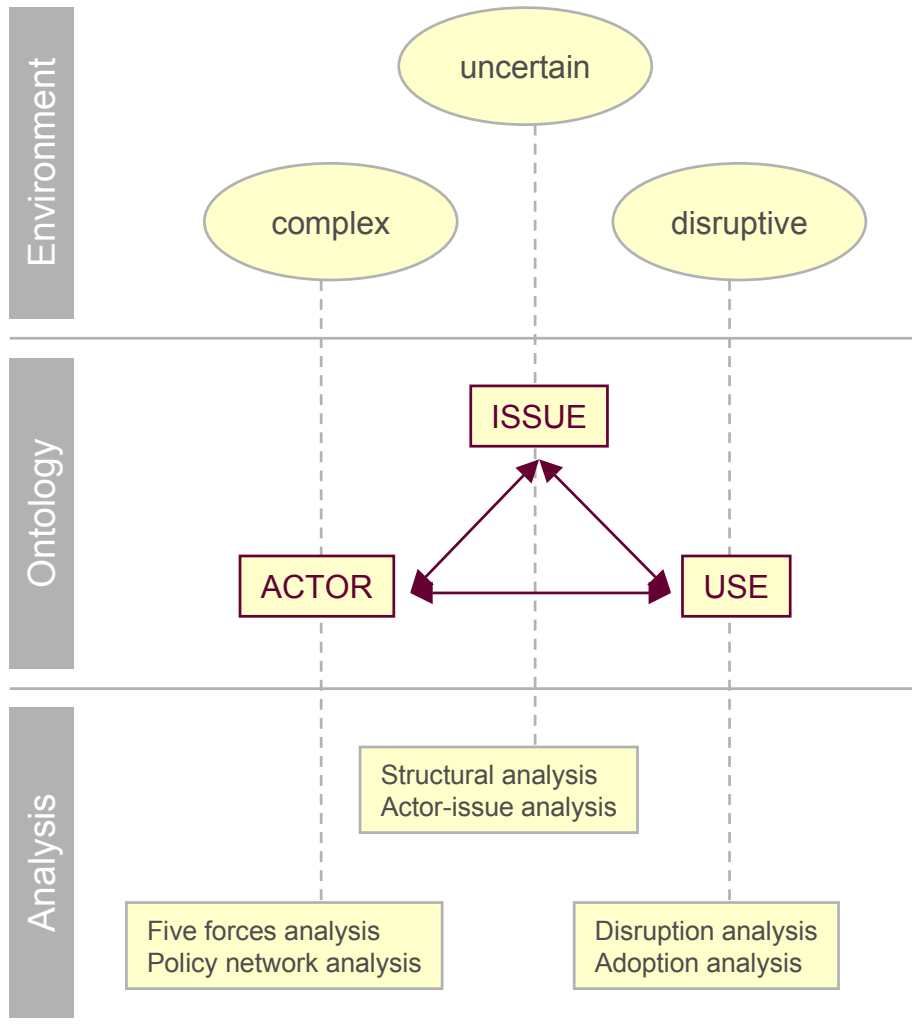
- 1 < 2 years
- 2 2 to 5 years
- 3 5 to 10 years
- 4 > 10 years
- 5 > Obsolete before Plateau

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 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]
- More recently, nobody anticipates the SMS phenomena ...

... but scenarios

Assessing a technology environment



Multi-perspective
MODEL

Analysis & visualization
TOOL

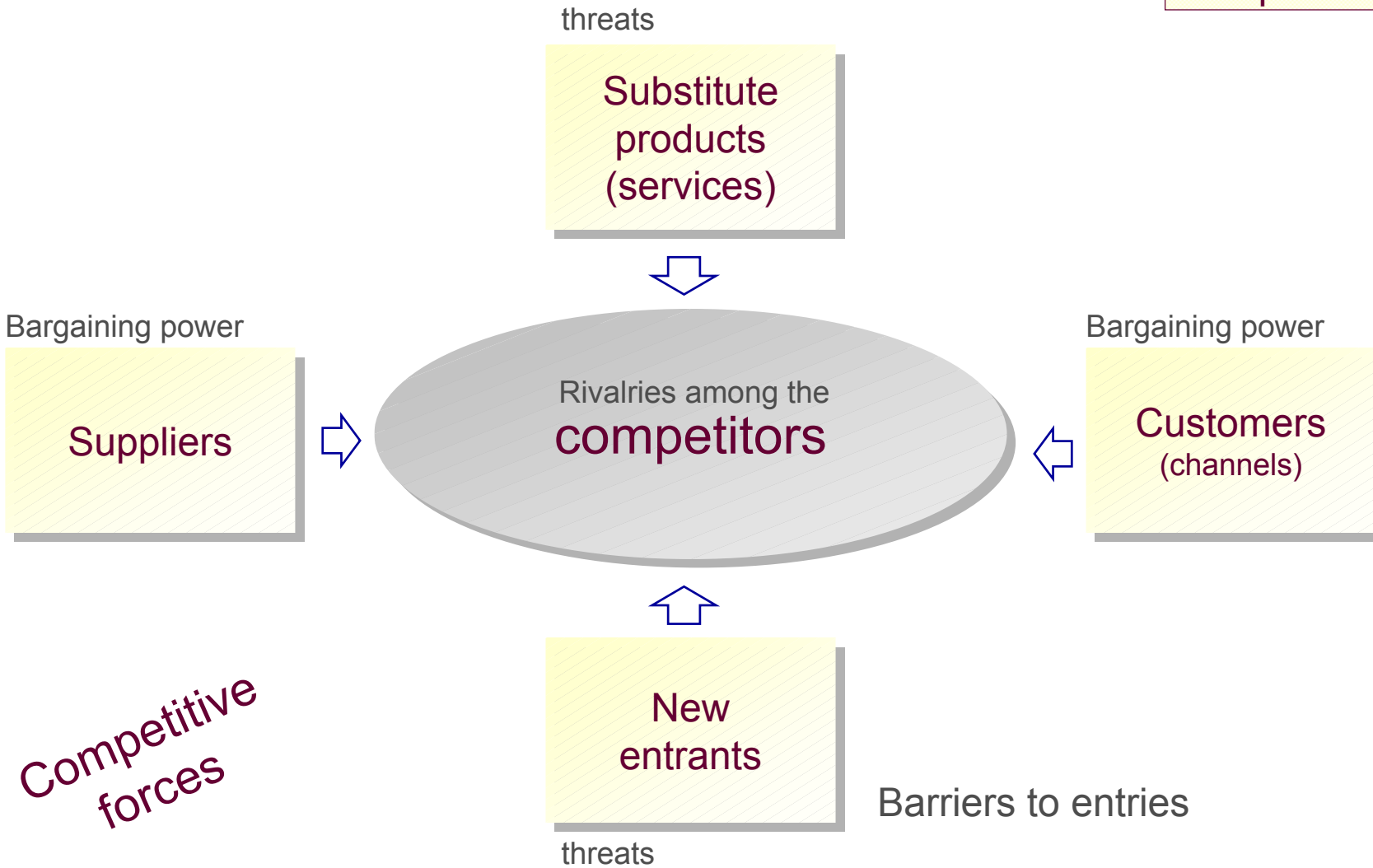


**for assessing environment (present)
and designing scenarios (future)**

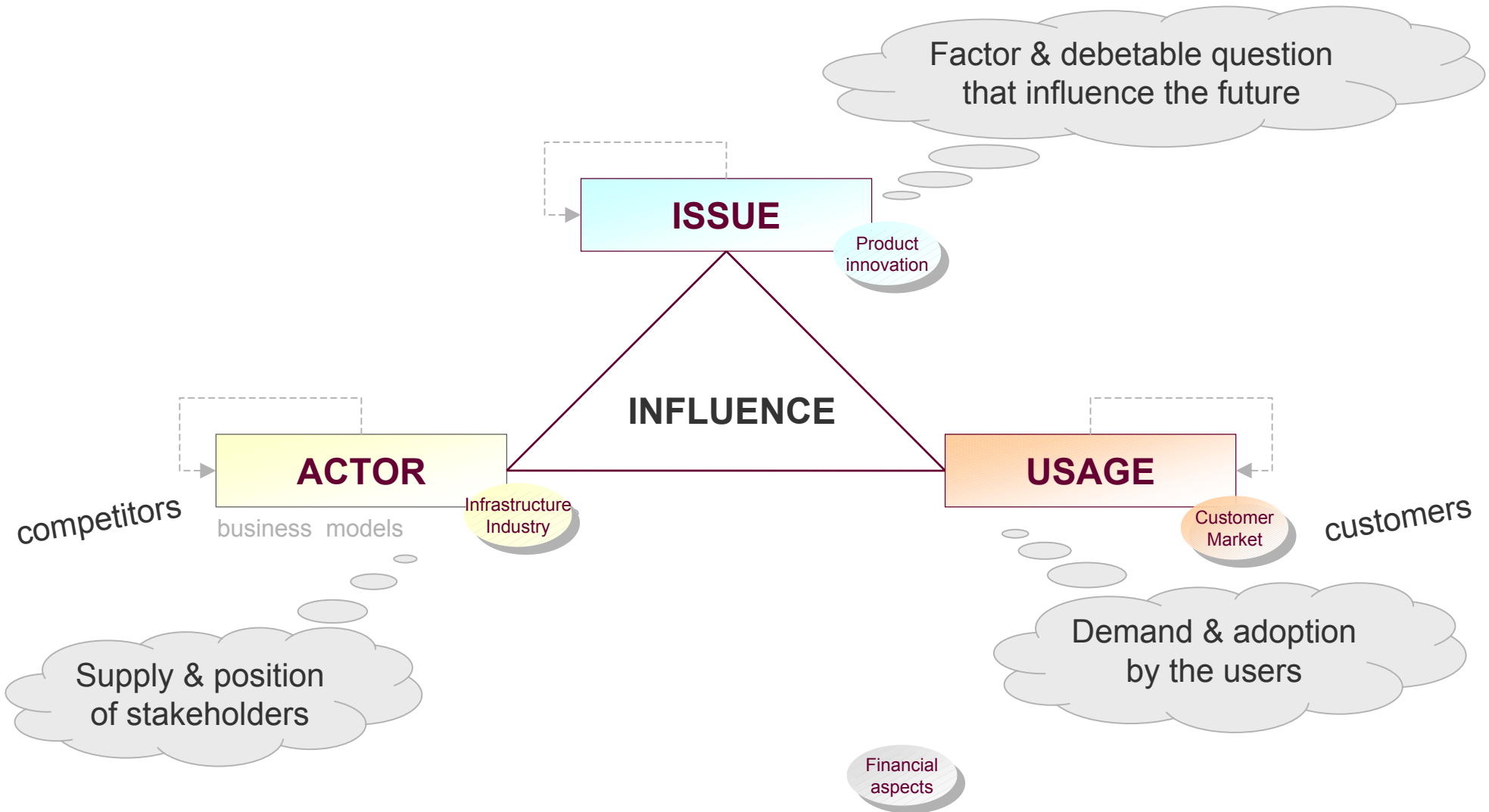
Actor/competitor analysis

[Porter, 2001]

Competitive analysis



Multi-perspective model: Actor, Issue and Usage



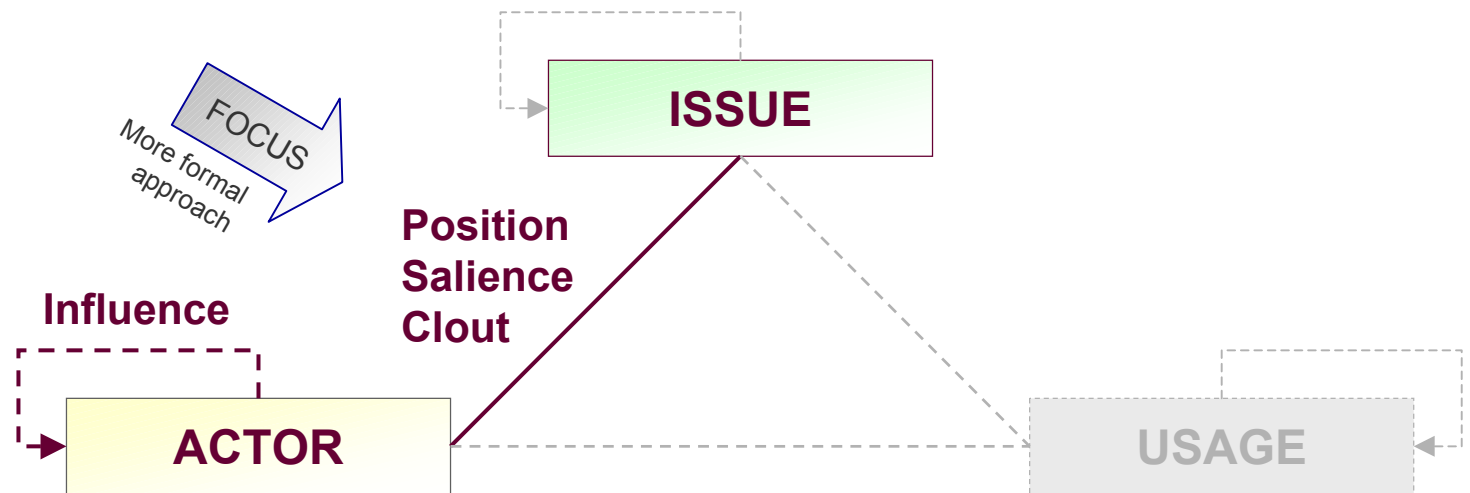
Actor/Issue focus

[Allas, 2001] [Godet, 2001]

Actor/issue analysis

GOALS

- ranks the stakeholders' positions on many strategic issues,
- assess the convergences and divergences, and
- anticipates coalitions and conflicts.



ROLES

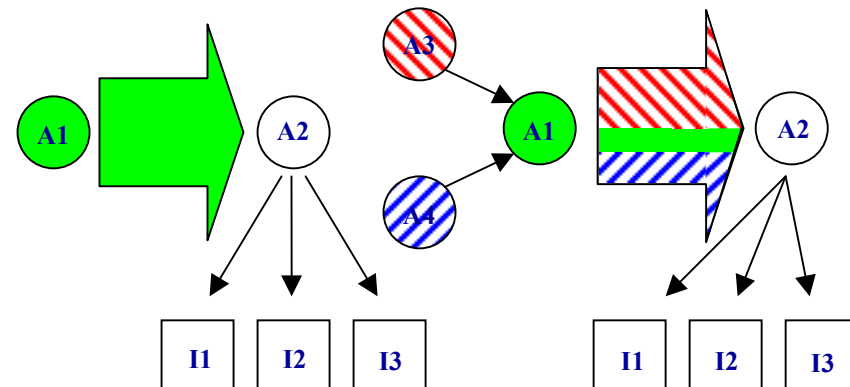
- Prospective: prepare scenarios
- Negotiation

Actor/issue input

- **POSITION**
 - What is the stakeholder's preferred outcome on this issue?
- **SALIENCE**
 - How important is this issue to the stakeholder as compared with all other issues?
- **CLOUT**
 - As compared with other players, how much power does the stakeholder have to influence the decision on this issue?
- **INFLUENCE**
 - Which power has an actor to influence the behavior of another actor?

Influence model

- Actors influence other actors in order to use their clout on issues or their influence on other actors
- Direct influence:** actors use their influence
 - to control part of the influenced actor's clout
- Indirect influence:** the influence is used both
 - to control the influenced actor's clout and
 - to gain control of part of its influence
- Analysis**
 - Influence & dependence
 - Mobilisation
 - Convergence & divergence ...



Analysis and visualization system

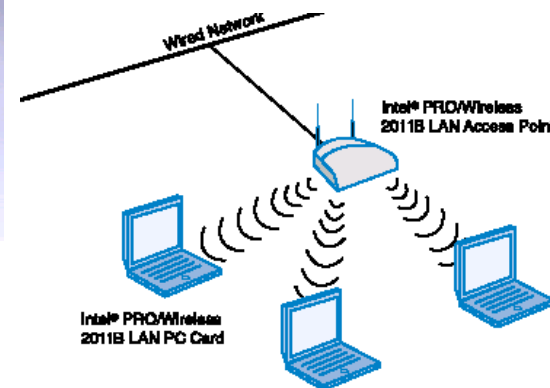
The screenshot shows the MASAM software interface with the following components:

- main actor:** GSM, with options for importance and self influence.
- actors:** A list of actors including MNO, ISP, Venue, Community, Informatic, Telecom, and Regulator, each with a status indicator.
- issues:** A list of issues including Mobility, Device, WideVLAN, FreeNet, and LooseReq, with a dissatisfaction scale ranging from red (high) to green (low).
- Proximity map:** A network graph showing connections between actors.
- Active Influences:** A grid showing the impact of various actors on the main actor.
- Passive Influences:** A grid showing the impact of the main actor on other actors.
- Power repartition:** A grid showing the distribution of power among actors.

Microsoft Excel - MASAM.xls

Standardized Direct and Indirect Influences - 1					
	Influence	Passive			
3	Keep first order influences	Active	Constructors	Régulatoires	Chartres
4			50.00	5.07	5.50
5			11.32	50.00	10.49
6	Include first order influences	Chartres	7.06	0.03	50.00
7			22.70	20.51	18.00
8			5.07	8.43	9.30
9	Include first and second order influences	Riverains	3.96	6.36	5.92

WLAN Example



Multi-Actor Strategic Analysis Model

WLAN (wifi) issues

illustration



	Mobility	WideArea	Device	FreeNet	Regulation
0	Stationary neighborhood LAN	notebook	Few hotspots	Commercial only	Tight Licensing
1					
2	Nomadic	PDA	Many hotspots roaming	coexistence	Status quo
3					
4	Mobile	Phone <i>WLAN & GSM</i>	Ubiquitous <i>WLAN & GSM</i>	Free networks mainly	Loose

WLAN (wifi) actors

illustration



- Mobile network operators (MNOs)
- Internet service providers (ISPs)
- Venues
 - Airports, hotels, cafes...
- Communities
 - and free networks (*Myotis*)
- Informatics-related companies
 - Hardware, software, network equipment, ...
- Telephony-related companies
 - Device manufacturer, equipment, ...
- Regulator



Position, salience & clout

illustration



	Mobility	Device	Wide Area	Free Net	Regulation
MNO	2	3	4	0	0
ISP	1	0	2	0	1
Venues	2	2	2	2	2
Communities	1	1	1	4	4
Informatics	1	1	2	2	4
Telecom	3	4	4	1	2
Regulator	4	2	4	2	2

Table 2: Position matrix

	Mobility	Device	Wide Area	Free Net	Regulation
MNO	1	0	4	4	3
ISP	1	1	3	4	2
Venues	2	0	1	2	1
Communities	1	0	0	4	4
Informatics	1	3	1	0	1
Telecom	4	4	3	1	1
Regulator	0	0	1	3	1

Table 3: Salience matrix

	Mobility	Device	Wide Area	Free Net	Regulation
MNO	4	2	3	2	0
ISP	1	0	3	2	0
Venues	1	0	1	1	0
Communities	0	0	1	4	0
Informatics	1	4	3	0	0
Telecom	3	4	3	0	0
Regulator	1	0	2	2	1

Table 4: Clout matrix

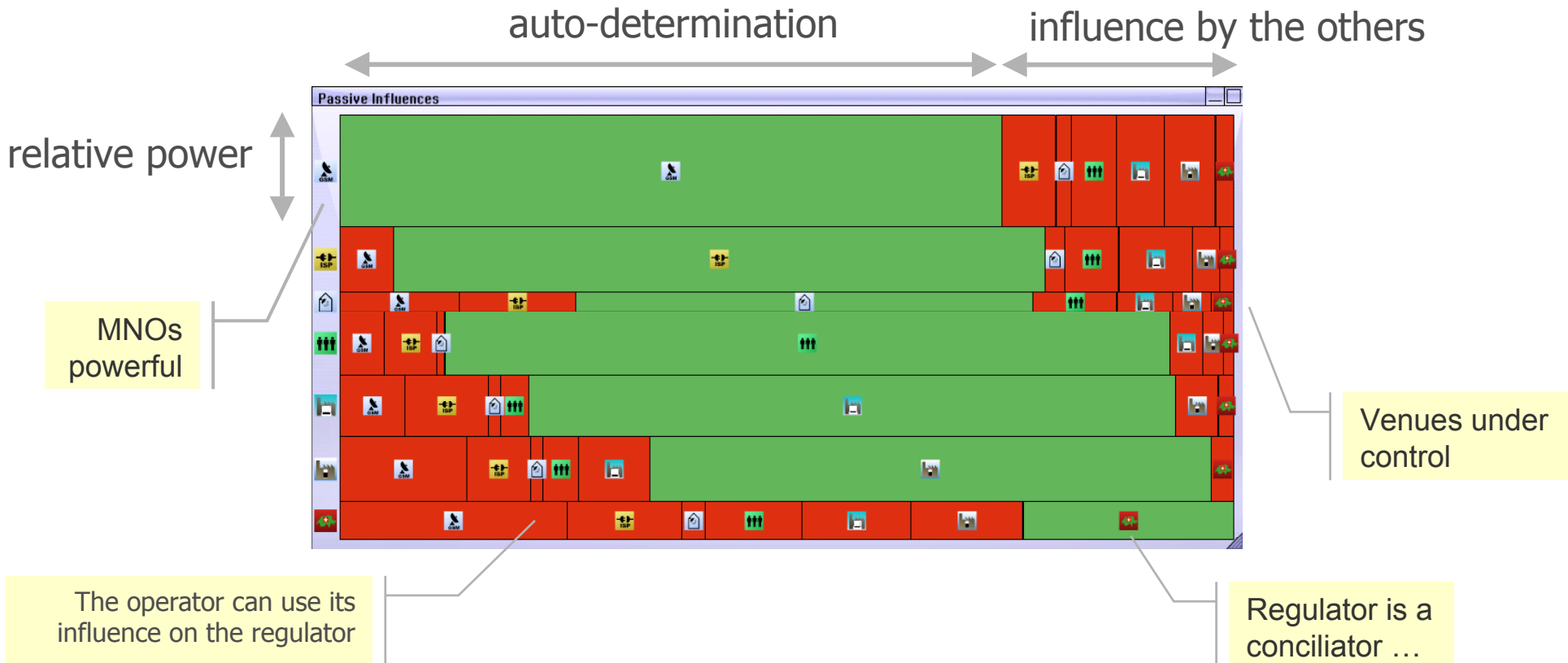
- Interviews of actors
 - UniSG & Unil
- Case studies (WISP)
 - CHUV
 - Zurich Airport
 - Swisscom Mobile
 - Sunrise TDC
 - Monsoon
 - Netair
 - Myotis
 - ...
- DELPHI approach
 - Matrices by experts
 - Consensus in meeting

Influence analysis

illustration



- Influence and relationship between actors
 - Dominancy , control, power, auto-control ...

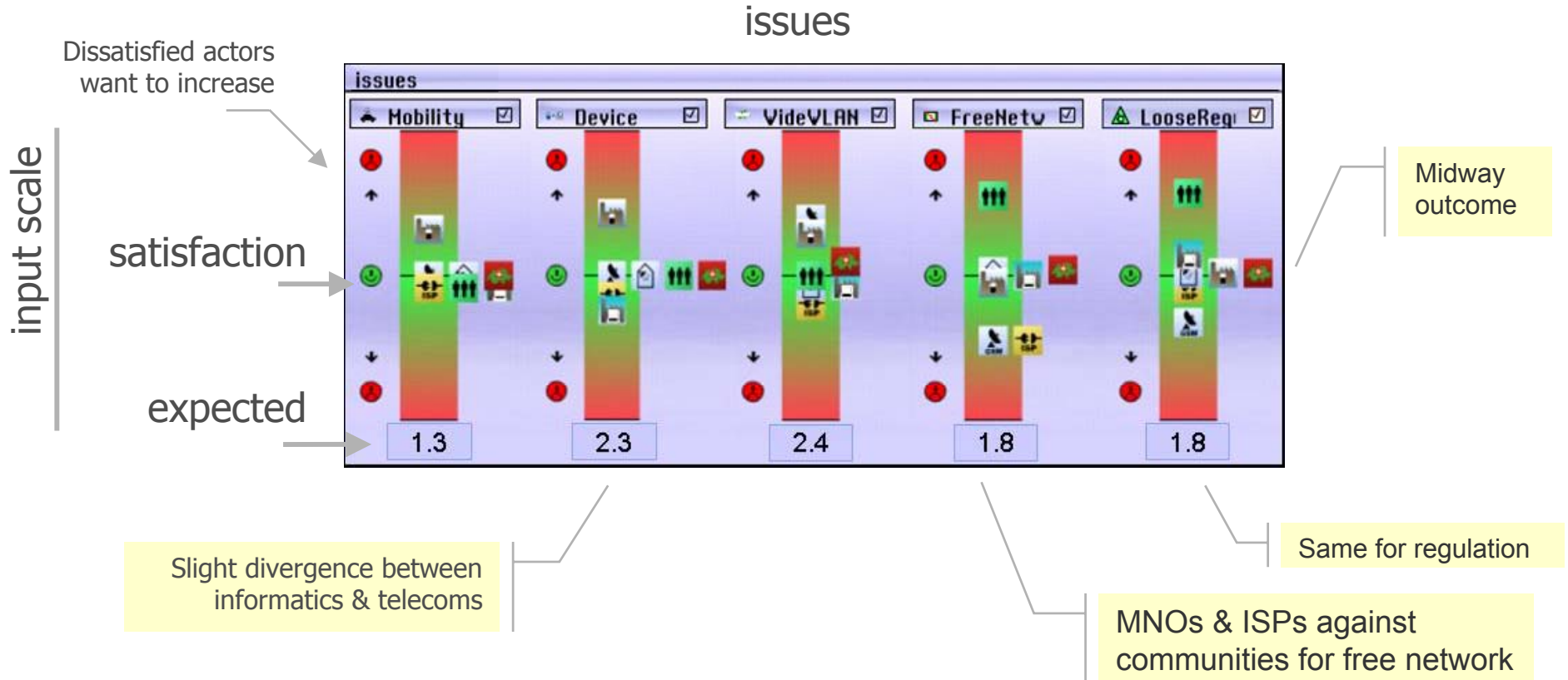


Issue analysis and dissatisfaction

illustration



- Expected outcome of issues and dissatisfaction of actors
 - Importance of issue
 - (in-)stability

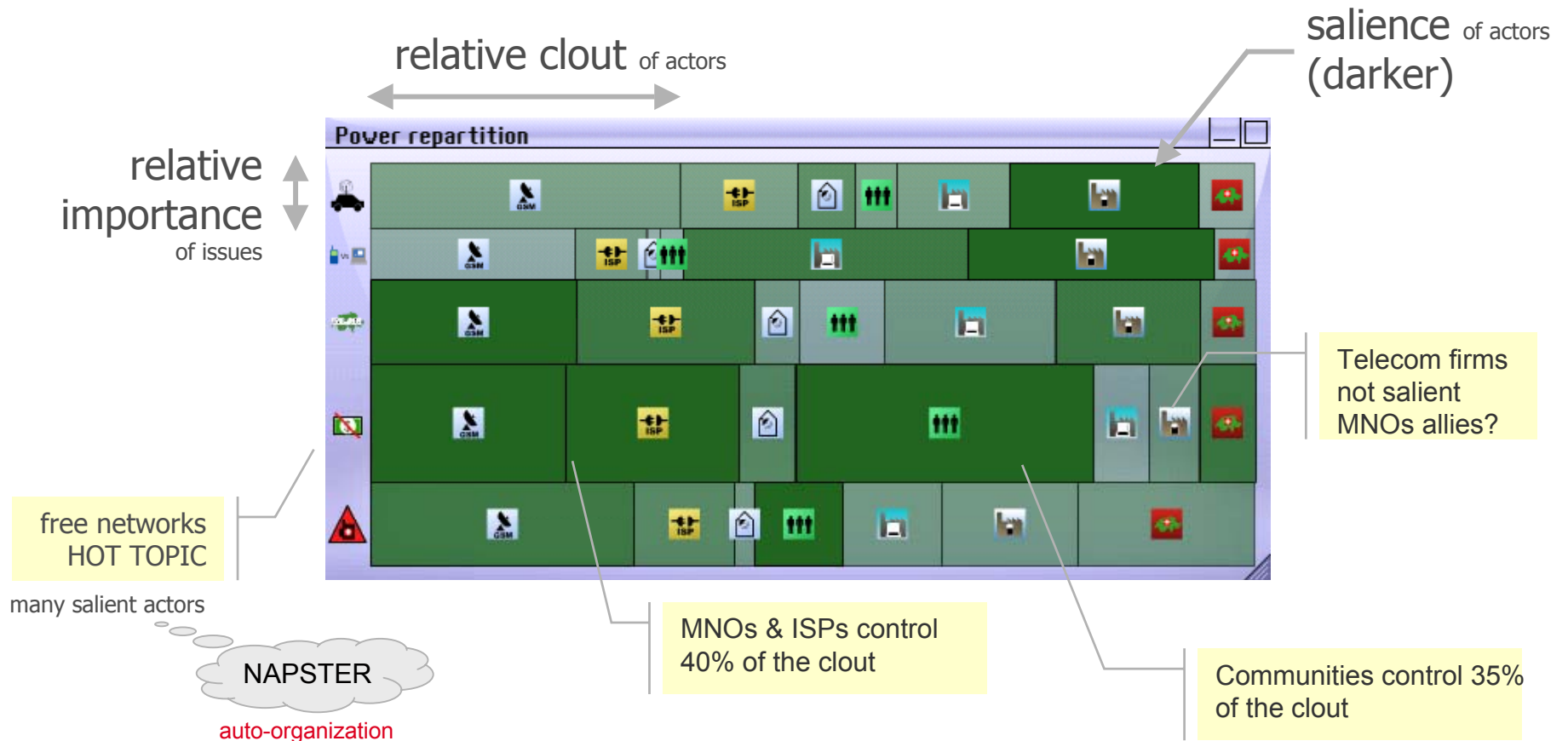


illustration



Actor analysis and power repartition

- Relative importance of issues
- Power repartition and salience of actors over issues



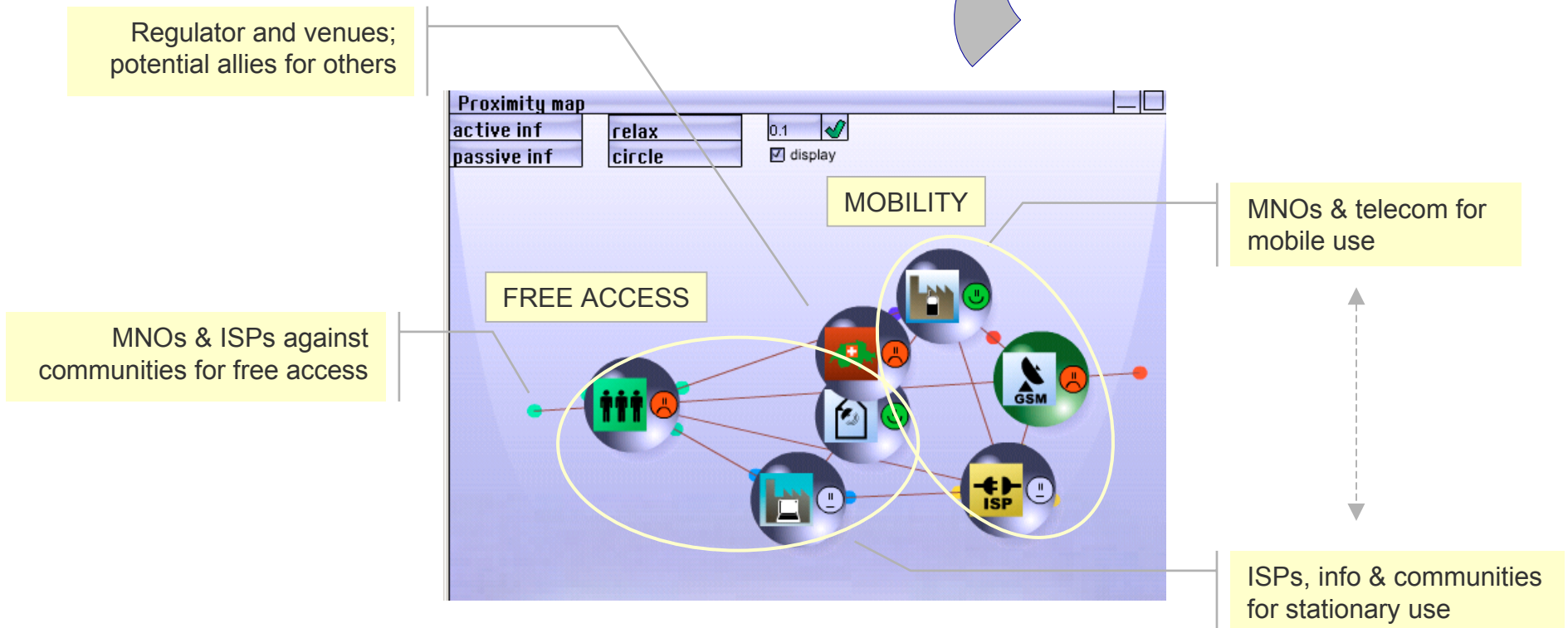
Alliance analysis & proximity map

illustration



- Relative distance between actors
 - Based on an “alliance coefficient”

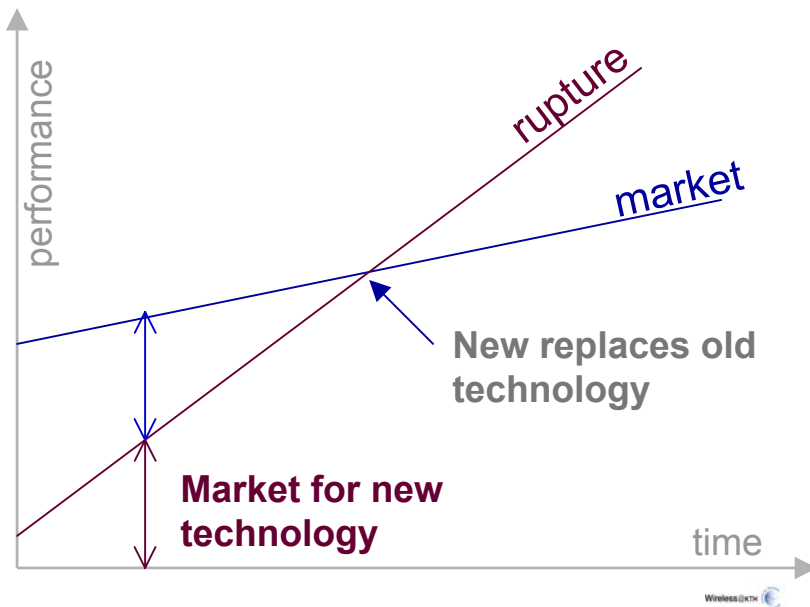
2 scenarios?



Application/issue analysis

[Raffi, 2002]

Disruption analysis



Sony and Microsoft: the battle of convergence

Foothold market entry (video game systems market)											
Factors	Forces disabling disruption			Neutral	Forces enabling disruption			Rating	Weight (1 to 3)	Weighted score	Comments
	-3	-2	-1	0	-1	+2	+3				
A suitable foothold market does not exist, or it exists and is poorly suited to provide the insurgent an entrée into the main market.				1				1	2	2	Video game systems are a computing platform suitable for moving upward into the home computainment market.
Insurgent has no existing presence in the foothold market.							1	3	2	6	Sony is a strong player in the video game systems market.
Raw column totals (No. of 1s per column)	0	0	0	0	1	0	1	Average	2.0	2.0	4.0
Weighted stage score (normalized to range of -3 to +3) (= avg. weighted score/avg. weight)									2.0		

Main market entry (converging computainment market)											
Factors	Forces disabling disruption			Neutral	Forces enabling disruption			Rating	Weight (1 to 3)	Weighted score	Comments
	-3	-2	-1	0	-1	+2	+3				
Powerful blocking patents exist.							1	3	2	6	No important blocking patents exist.
Incumbent is very competitive in one or more converging markets.							1	1	3	3	Microsoft is competitive in some converging markets, but products can be hard to use.
Insurgent has no brand presence in one or more converging markets.							1	2	3	6	Sony has a strong brand presence in some converging markets.
Insurgent will have easy access											

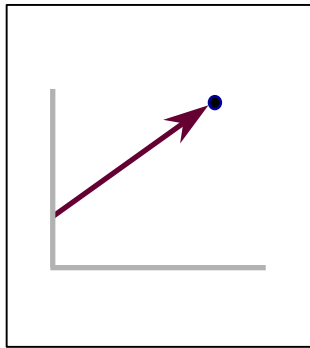
Stage	Forces disabling disruption	-3	-2	-1	0	+1	+2	+3	Forces enabling disruption
Foothold market entry	unattractive foothold market(s)					2.0			attractive foothold market(s)
Main market entry	high barriers to entry					1.5			low barriers to entry
Customer attraction	low value added					1.3	(with Apple Computers)		high value added
Customer switching	high costs of switching					1.0			low costs of switching
Incumbent retaliation	low barriers to retaliation					-1.9	(with strong MS antitrust sanctions)		high barriers to retaliation
Incumbent displacement	low revenue displacement					2.2			high revenue displacement

Source Harvard Business Review

Part 3 - Alignment with the future

[Courtney, 1997]

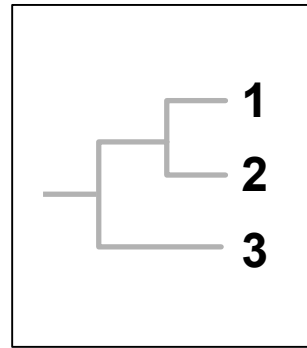
Levels of uncertainty:



Clear-enough future

forecast

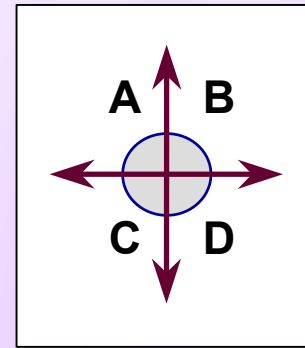
Traditional toolkit



Alternate futures

Discrete options

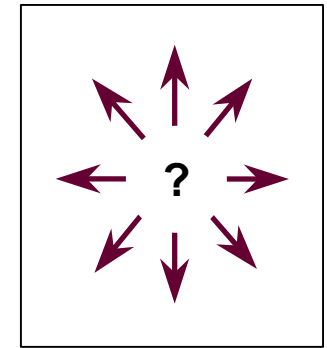
Game theory
Decision analysis



Range of futures

No natural option

**Scenario
planning**



True ambiguity

No basis for forecast

analogies
Pattern recognition



Scenarios

[Caldwell, 2002] [Masini, 2000]

- *“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”* Caldwell

- Backcasting
- Looking from the Bottom up
- Delphi Analysis or Questionnaire
- Focus Groups
- Technological Forecasting
- Personal Interviews
- Models or Simulations
- Scenarios
- Search Conference
- Science Fiction
- Surveys
- Modified Trend Analysis
- Concept Mapping
- Cross Impact Analysis
- Futuring Wheel
- Separating Foresight from Data Collection



Extrapolative and normative scenarios (Erich Jantsch)	
extrapolative scenario	- uses data referring to the past and present - explores what is possible and probable (will happen)
normative scenario	- projected from future to present and then back to the future - desirable state (should happen)
Probable and desirable scenarios (French school)	
probable scenario	- answers what will happen in the future, knowing the activity of the actors
desirable scenario	- indicates the horizon to which efforts must be directed in order to change things significantly
First- and second-generation scenarios (Shell - Stanford Research Institute school)	
first-generation scenario	- exploratory, focus on understanding the reality - do not provide further help in decision-making
second-generation scenario	- analysis of reality - educational tools, changing assumptions of decision makers
Trend, optimistic, pessimistic, and contrasting scenarios (H. Kahn and Human and Social Futures Studies)	
tendential-inertial or trend scenario	- prolongation on the present situation - no change, things slowly going worse
utopian scenario	- the best of possible worlds - most desirable situation
catastrophic scenario	- the worst of possible worlds - worsens the trend scenario
normative scenario	- desirable and achievable situation, objectives for the future - improves the trend scenario
contrasting scenario	- different situations based on variations of certain of the key variables - opposite of the trend scenario, extreme situations

Scenario definition

[Caldwell, 2002]

- Identify general, broad, driving forces,
 - which are applicable to essentially all scenarios
- 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
- 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

- The number of scenarios should be around 3-5 (positive, negative, neutral)
- Scenarios are good because one can play "what if" games
- The major use is **UNDERSTANDING** the situation rather than trying to predict the future
- Difficulty to identify the "right" scenario to include

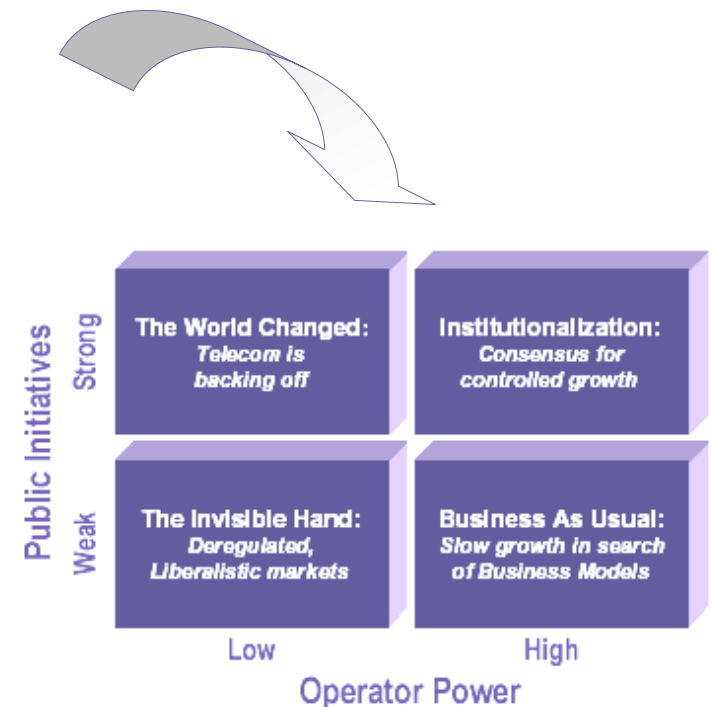
“Scenarios for m-commerce 2006”



Scenario approach

- Search for key variables, driving forces, and assumptions
- Select scenarios logics and axes
- Develop scenarios

Assumptions	1	2	3	4
H1: Mobile network operators control the value chain as well as the customer base	X	X		
H2: Seamless roaming between services, devices and networks		X	X	X
H3: Investment by public sector will provide the catalyst for mobile services' diffusion		X	X	
H4: Disputes over copyrights (IPR) in the mobile context are rare.		X		X
H5: Open standards are the norm. No single party controls the standards.		X	X	X
H6: Effective regulation and operations models exist regarding privacy issues		X	X	
H7: Technological pluralism exists. UMTS will not be the only platform	X	X	X	X



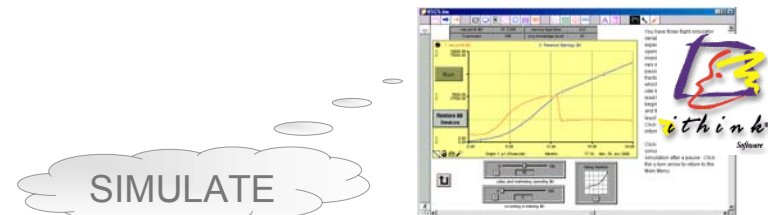
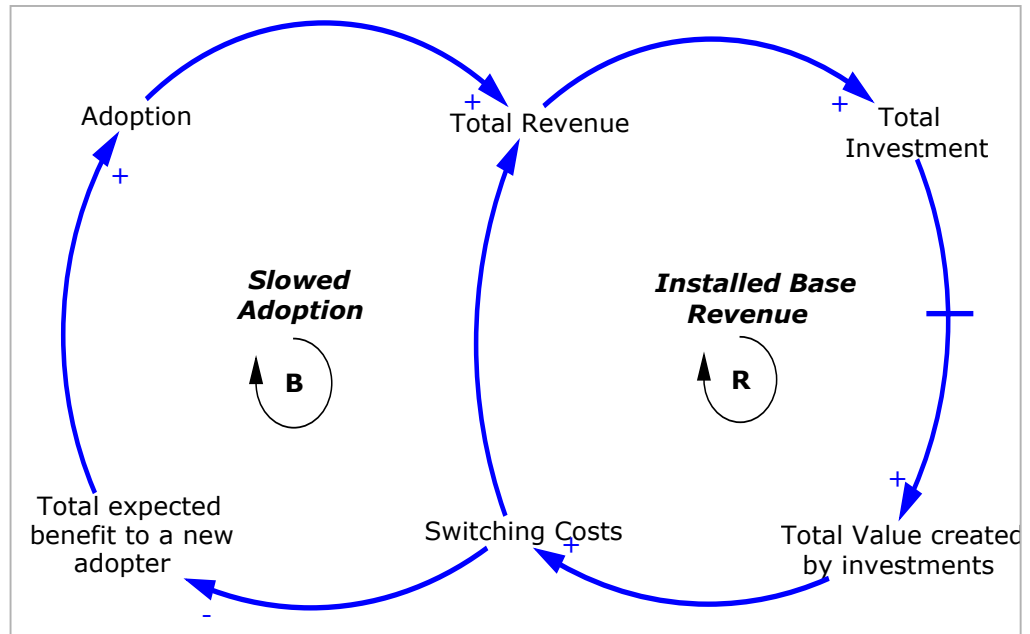
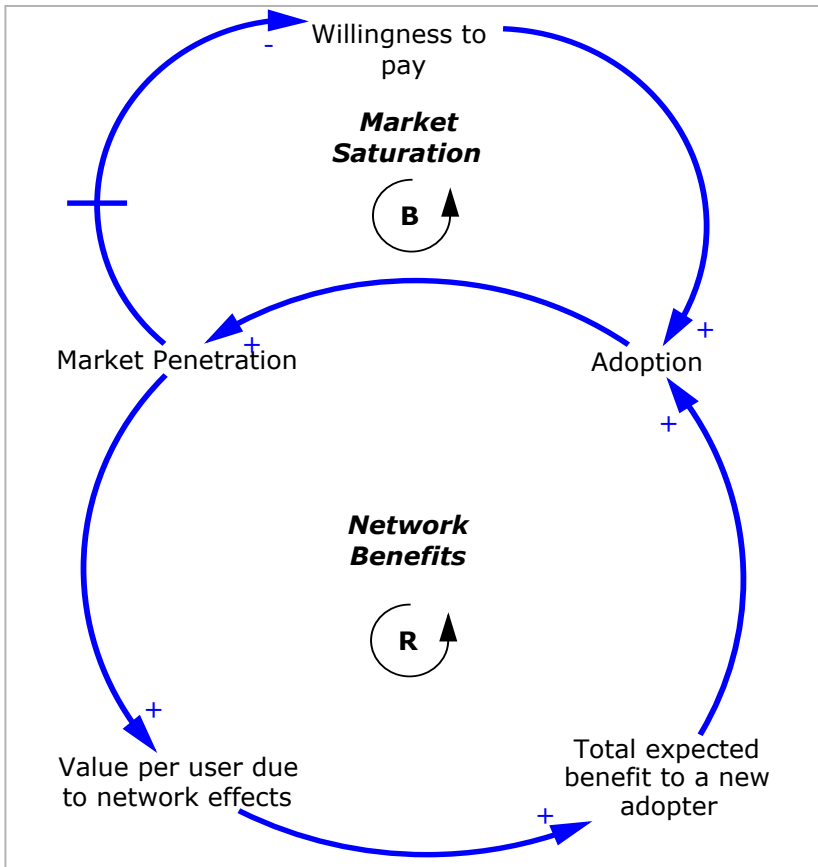
Strategic modeling

[Constance, 2001]

Simulation

Market Saturation and Network Benefits Causal Loops

Slowed Adoption and Installed Base Causal Loops



SIMULATE

Synthesis

3 levels of maturity, adaptability, utility and ... complexity for Information systems

- **IS aligned with the business**
 - Align strategy, business and IT
 - with *Business model*
- **IS aligned with the environment**
 - Assess the markets forces
 - with *Environment model*
 - and analysis: *adoption, application portfolio, competitive forces, actor/issue, disruption, ...*
- **IS aligned with the future**
 - Tame the future uncertainty
 - with *Scenarios*
 - and simulation