

Agenda

14.1. Introduction, Sakari Luukkainen

21.1. Theoretical frameworks, Sakari Luukkainen

28.1. Business model design, Sakari Luukkainen

4.2. ICT in business process, Sakari Luukkainen

11.2. STOF cases, Olli Mäkinen

25.2. Cloud computing, Sakari Luukkainen

4.3. Green ICT, Sakari Luukkainen

11.3. Mobile cloud computing, Sakari Luukkainen

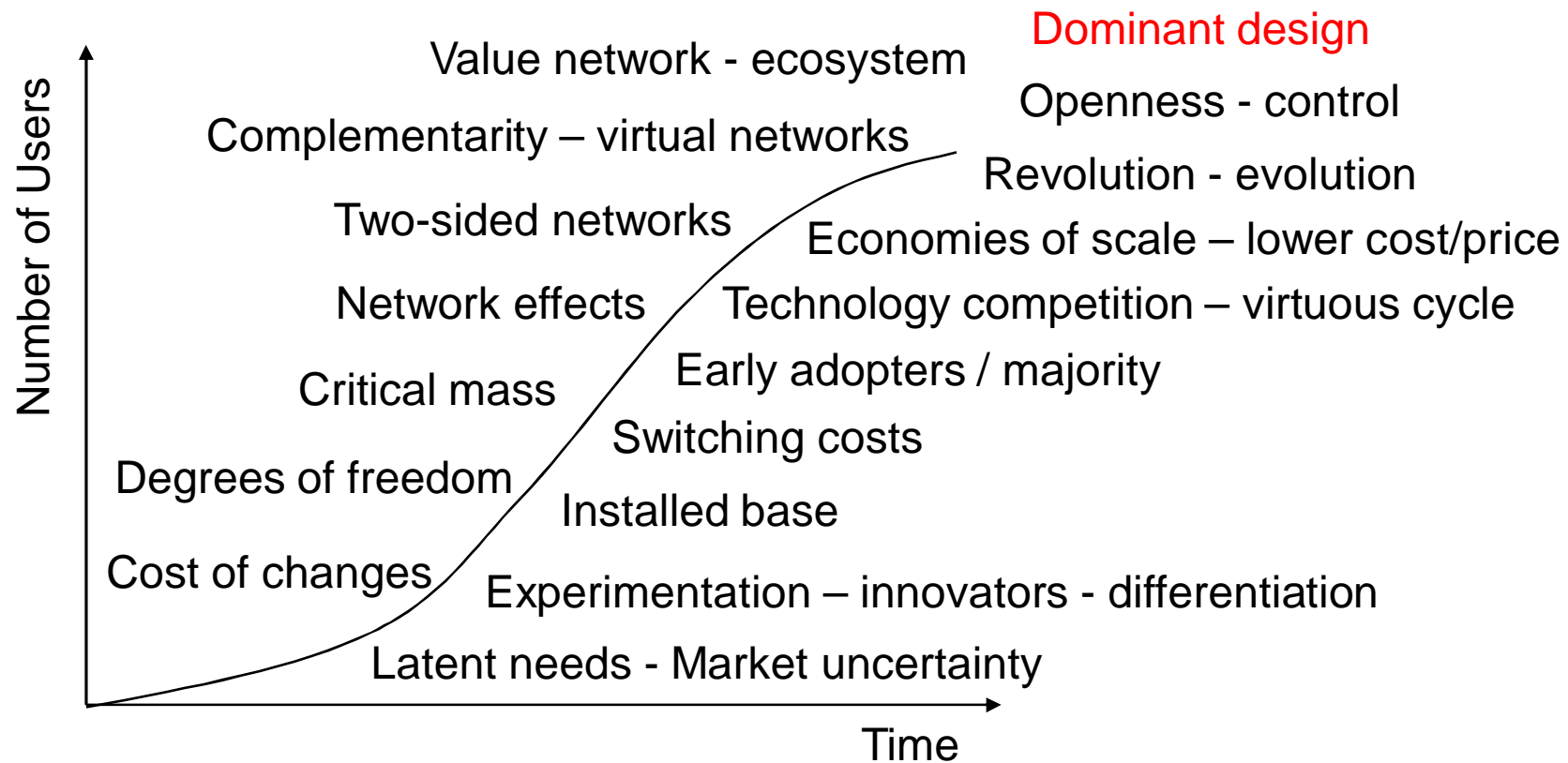
18.3. Mobile ecosystems, Juha Winter

25.3. ICT start-up development, Aaltoes & Android Aalto

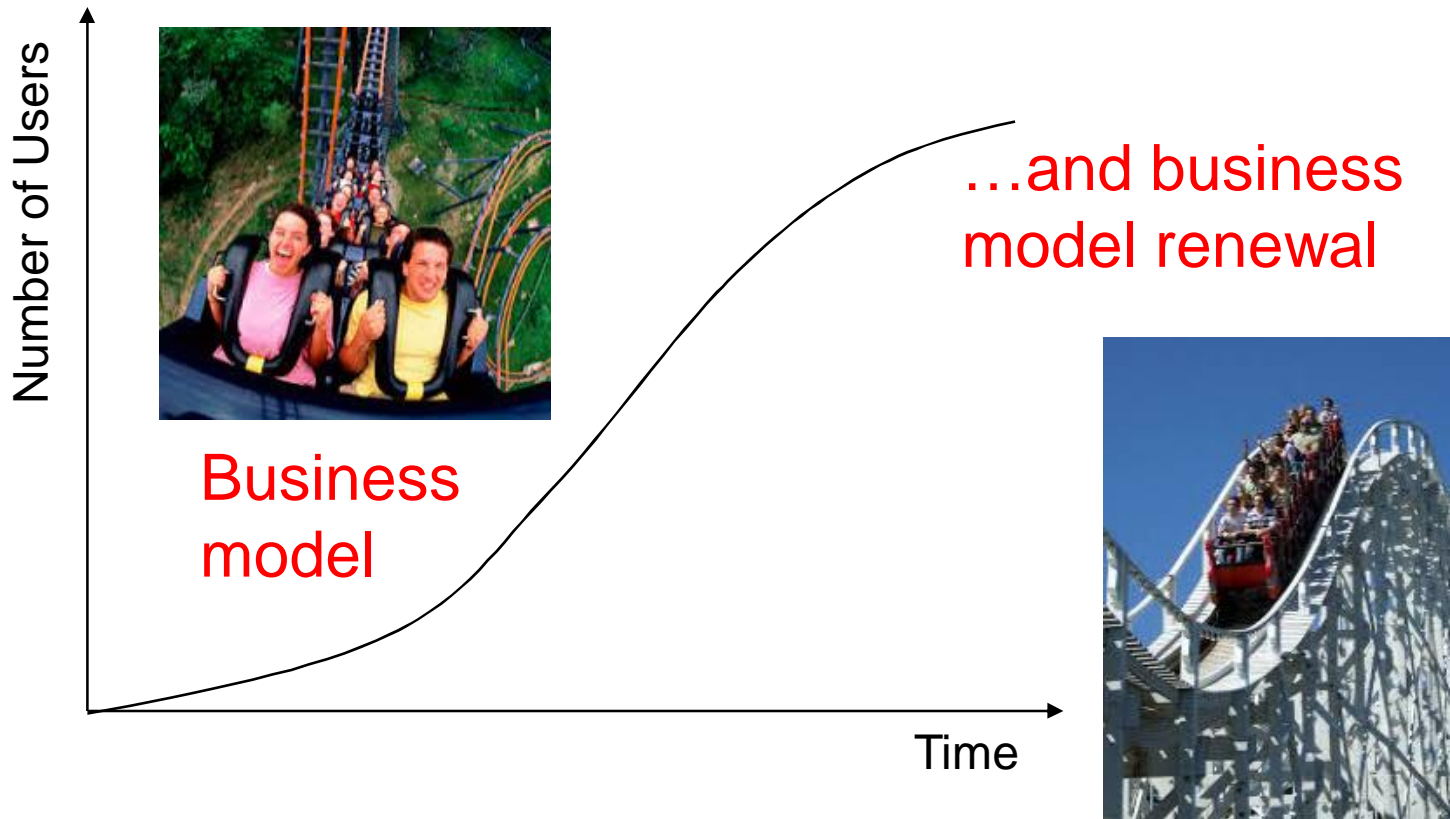
1.4. Summary, Sakari Luukkainen

10.4. Examination

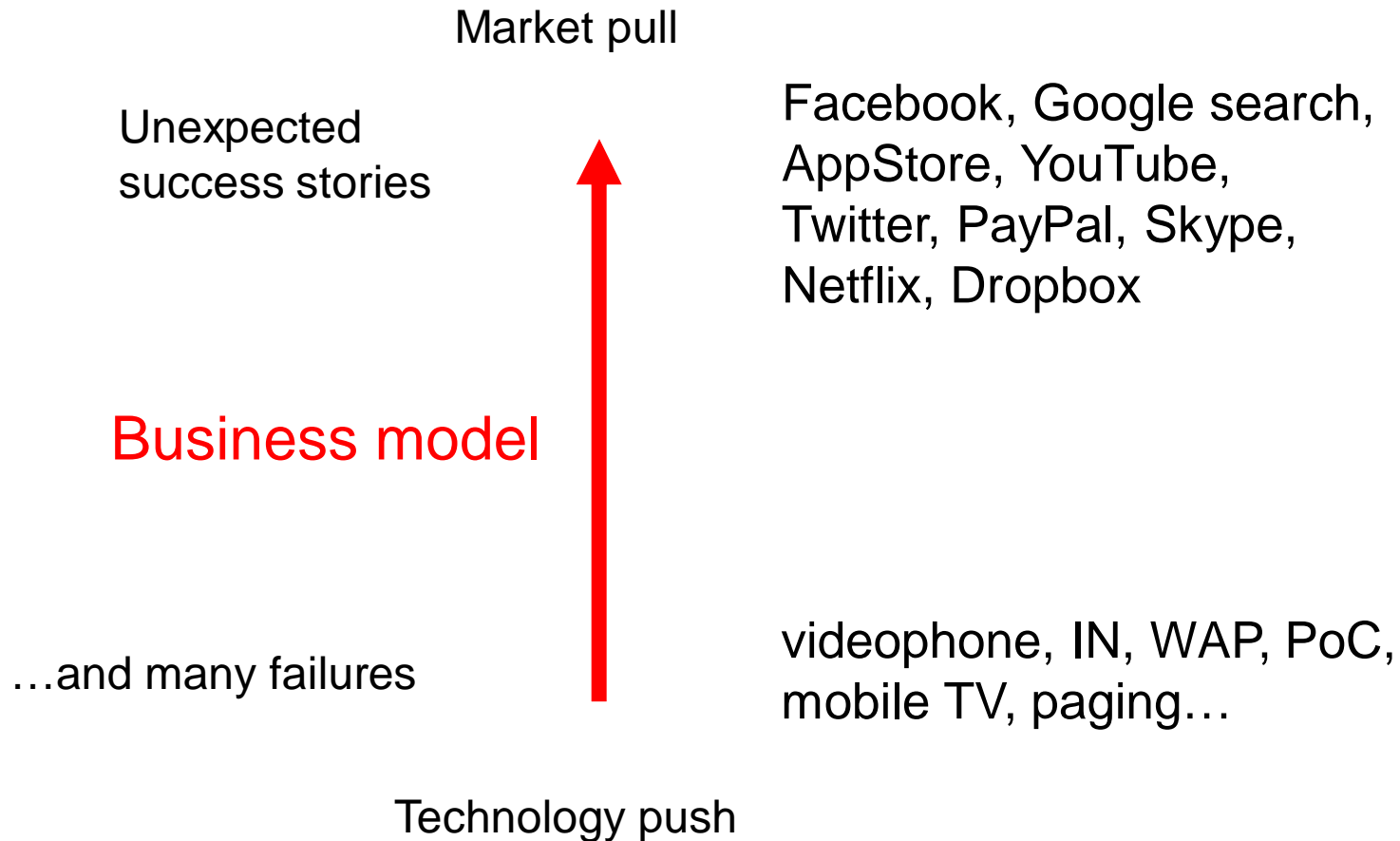
ICT innovation growth - summary



In order to survive a company needs to have an internal...



Why business model?



Business model

- Describes how to **extract value** from a service innovation
- It converts new technology to economic value (**utility** for customers)
- **Plan** by which a business intends to generate revenue and profits taken into account the dynamics of related **value network**

Business model

- Use of the business model concept exploded with the advent of the Internet from 1995 →
- Scholars do not agree on what a business model is
 - Obstructs cumulative research progress
- Business model literature developed in silos
 - Business models for e-business
 - Strategic issues
 - Innovation and technology management

Internet business models

- The **brokerage model** is practiced by brokers, market-makers who bring buyers and sellers together and facilitate transactions. Brokers make money by charging a fee or commission for each transaction they enable. Example eBay.com.
- The **advertising model** can be seen as an extension of the traditional media broadcasting model. In this model, a website serves as a broadcaster and provides content and services, usually for free. The web page contains advertising messages in the form of banner ads, which are the major or sole source of revenue for the broadcaster. This business model only works when the volume of visitors on the site is large. A portal may contain search engines, directories, and other diversified content or services. Example Google.com.

Internet business models

- **Infomediary Model.** Some companies function as information intermediaries, infomediaries who collect and sell information to sellers and buyers on the Web. Example Nielsen.
- **Merchant Model.** Merchants are wholesalers or retailers of goods and services. Sales can be based on fixed list prices or the price can be determined through an auction. Example iTunes.
- **Manufacturer Model.** The manufacturer model is based on the power of the Web to allow manufactures to reach buyers directly. This compression of the distribution channel aims for an efficient, improved customer service, or a better understanding of customer preferences. Example Dell.

Internet business models

- The **affiliate model** is the opposite of the generalized portal, which seeks to drive a high volume of traffic to one specific site. The affiliate model provides purchase opportunities wherever people may be surfing by offering financial incentives to affiliated partner sites in the form of a percentage of revenue. It is a pay-for-performance model, because it represents no cost to the merchant, if the affiliate does not generate sales.
- There are many variations of the model, including banner exchange, pay-per-click and revenue sharing programs. A simple example of the affiliate model is that affiliates are invited to put a banner of a vendor, such as Amazon.com, on their sites. Whenever a consumer clicks on Amazon's banner at a vendor's site, a commission is paid to the vendor if the customer makes a purchase.

Internet business models

- The **community model** is based on user loyalty: users are supposed to have high investment in the Web site in both time and emotion and they may be regular contributors of content or money. Having users who visit the site continually offers advertising, infomediary and specialized portal opportunities. The model may also run on subscription fees for premium service. Example Wikipedia.
- In the **subscription model**, users are charged a periodic fee to subscribe to a service every day, month, or year. Sites may combine free content with premium, member-only content. The model is often combined with the advertising model. Example Netflix, Spotify.
- The **utility model** is based on metering usage and charging the users by actual usage rates in an on-demand manner e.g. in public cloud computing services.

Business model research

- Emerging common ground among business models
 - BM emerging as a new unit of analysis
 - BM emphasize a system-level, holistic approach in explaining how companies do business
 - Organizational activities important in BMs
 - BMs try to explain how value is created and captured
- STOF viewed through this analysis
 - Definition based on components (dimensions S, T, O, F)
 - Links between different components
 - Technology in a more prominent role

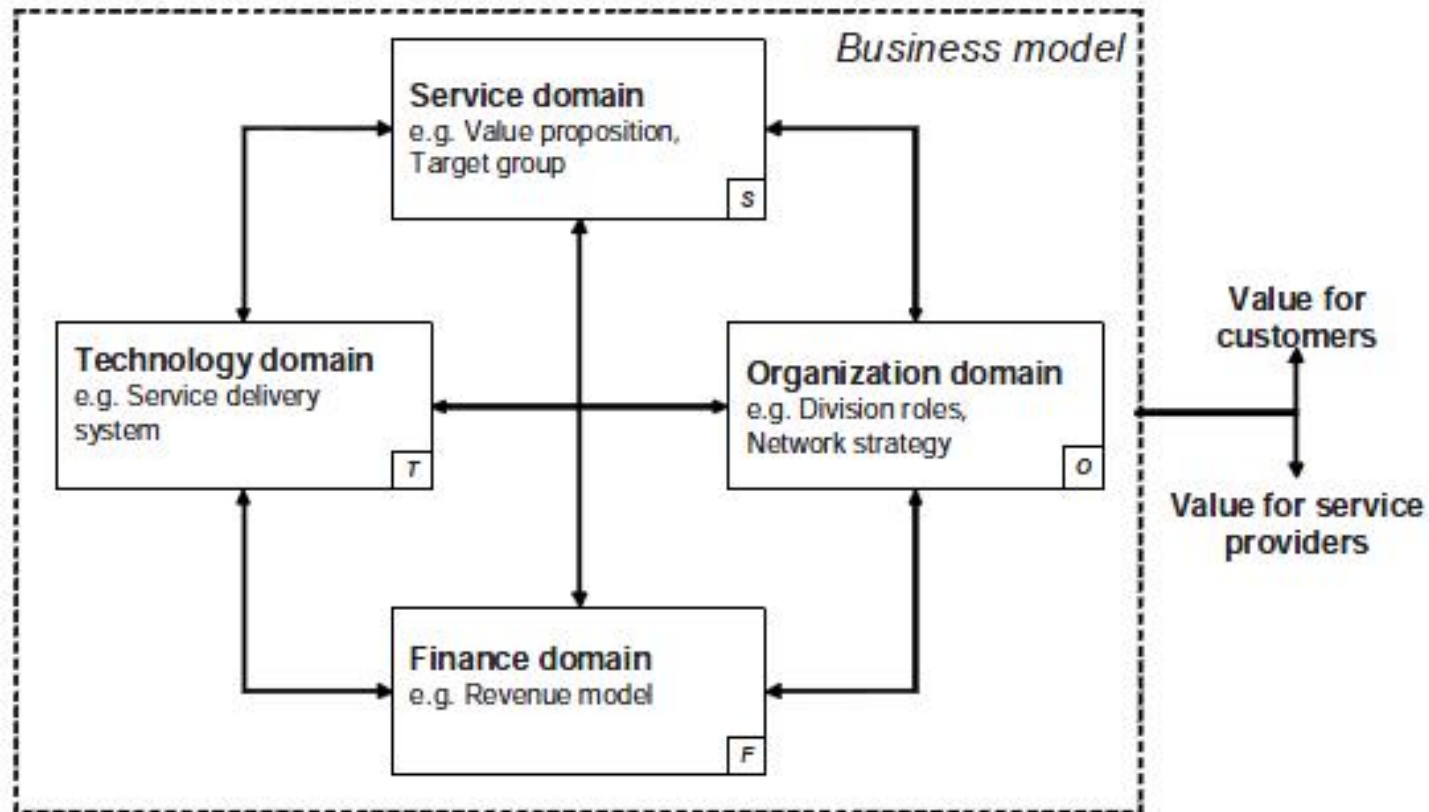
Business model components

- Rappa (2001)
 - Sustainability
 - Revenue stream
 - Cost structure
 - Value chain positioning
- Chesbrough & Rosenbloom (2002)
 - Value proposition
 - Market segment
 - Value chain
 - Cost structure
 - Value network
 - Competitive strategy

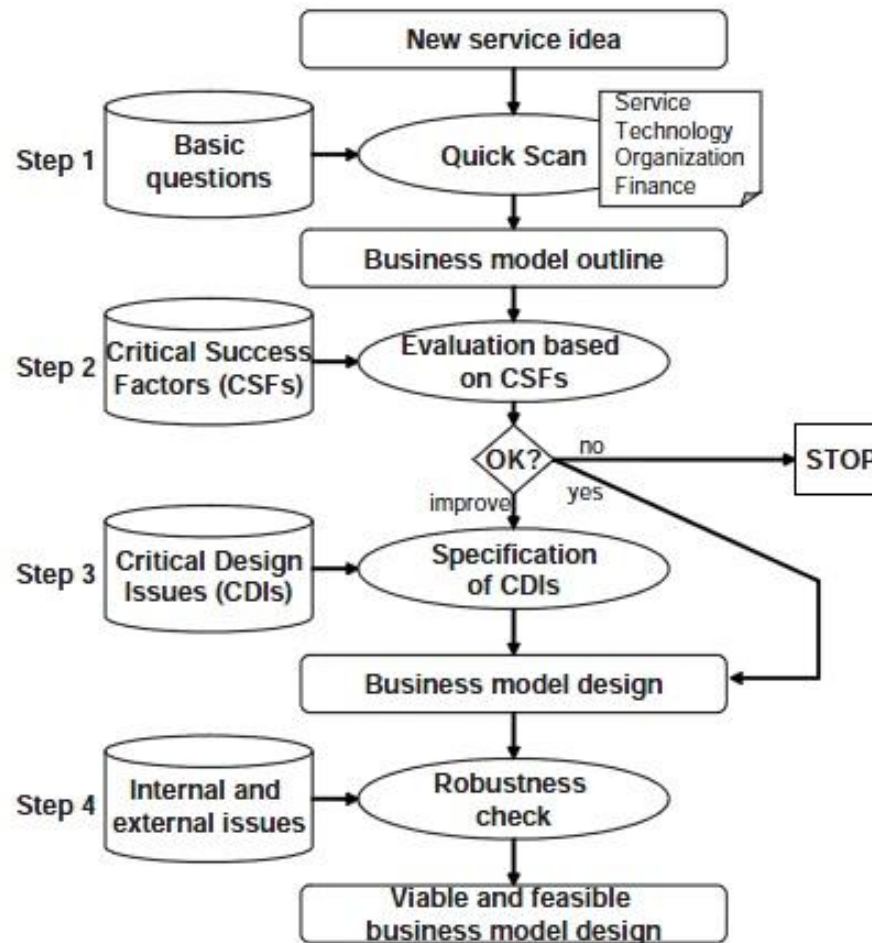
STOF business model framework

- Practical tool derived from academic research - checklist of relevant **factors** to consider including their **interrelationships** in a complex innovation process
- Presents a **holistic** view of the business model design of an emerging service idea
- Can help in identifying the key **weaknesses** which could cause a service to fail as well as the **strengths** of a service
- Identifying these issues in an **early** phase makes it easier and cheaper to react to any problems and to approach the right **market segments** by right **timing**, **differentiation** and **pricing**
- Usage requires wide techno-economic skills - typically done by a group of experts working in different fields

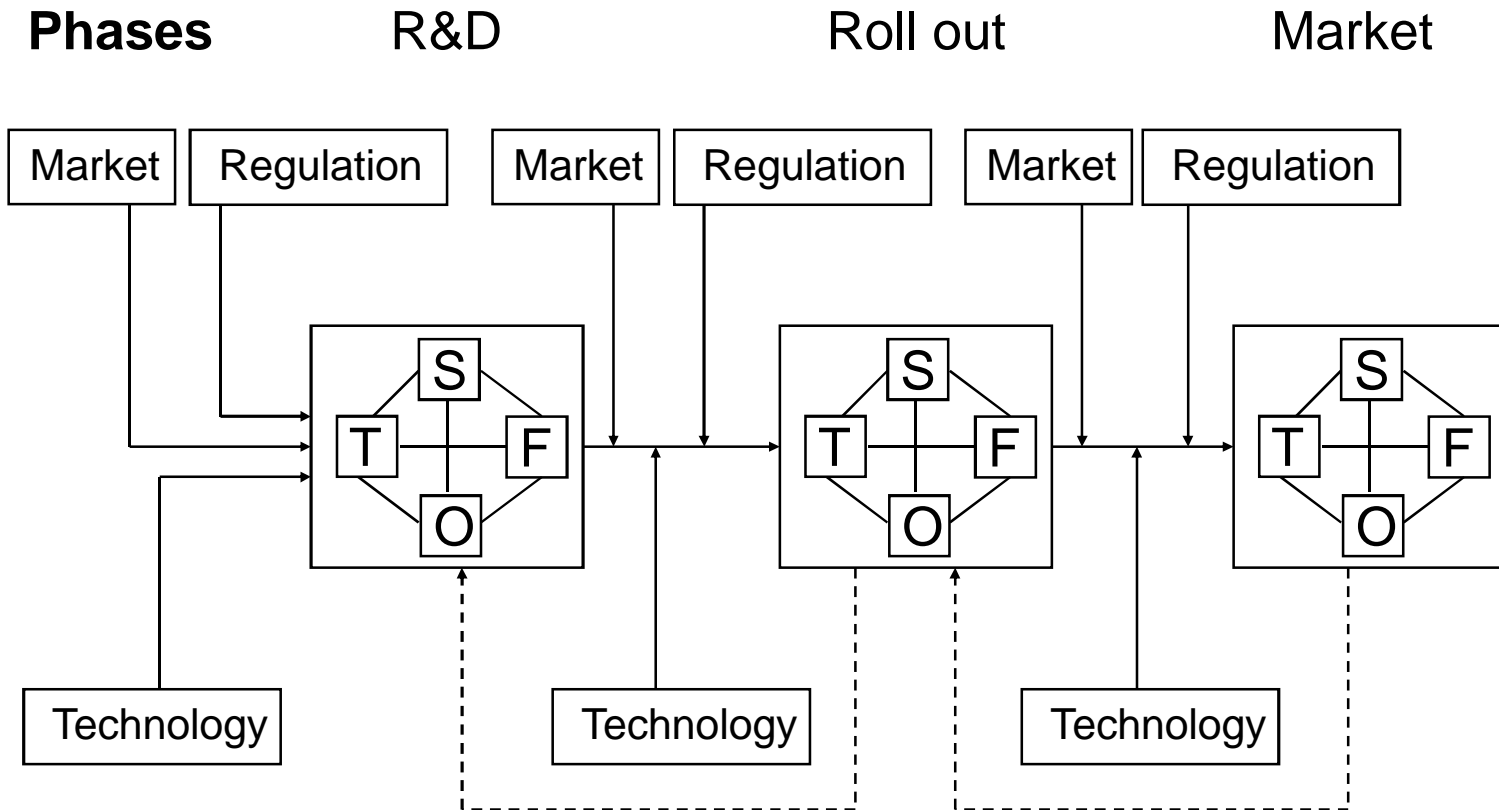
STOF business model framework



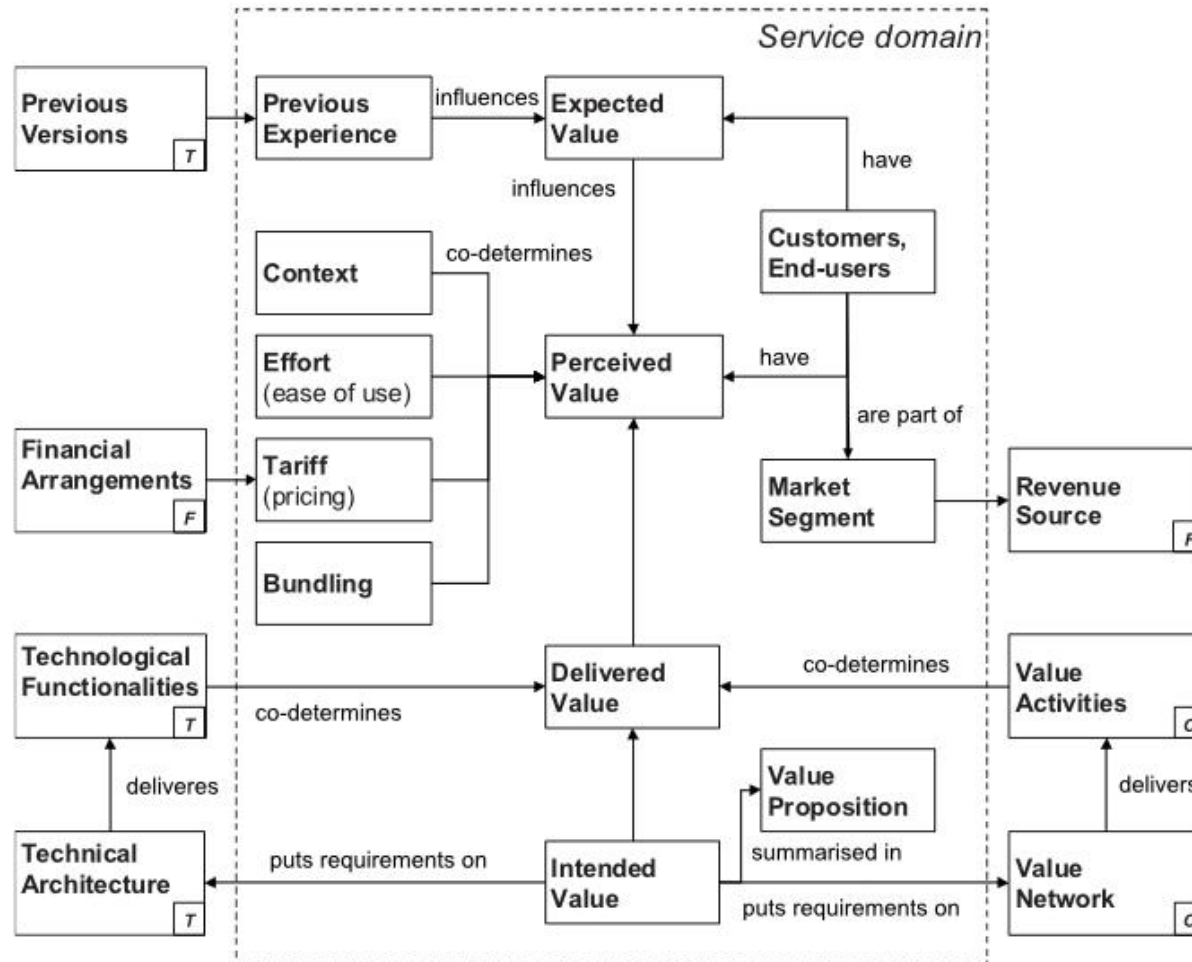
STOF process phasing



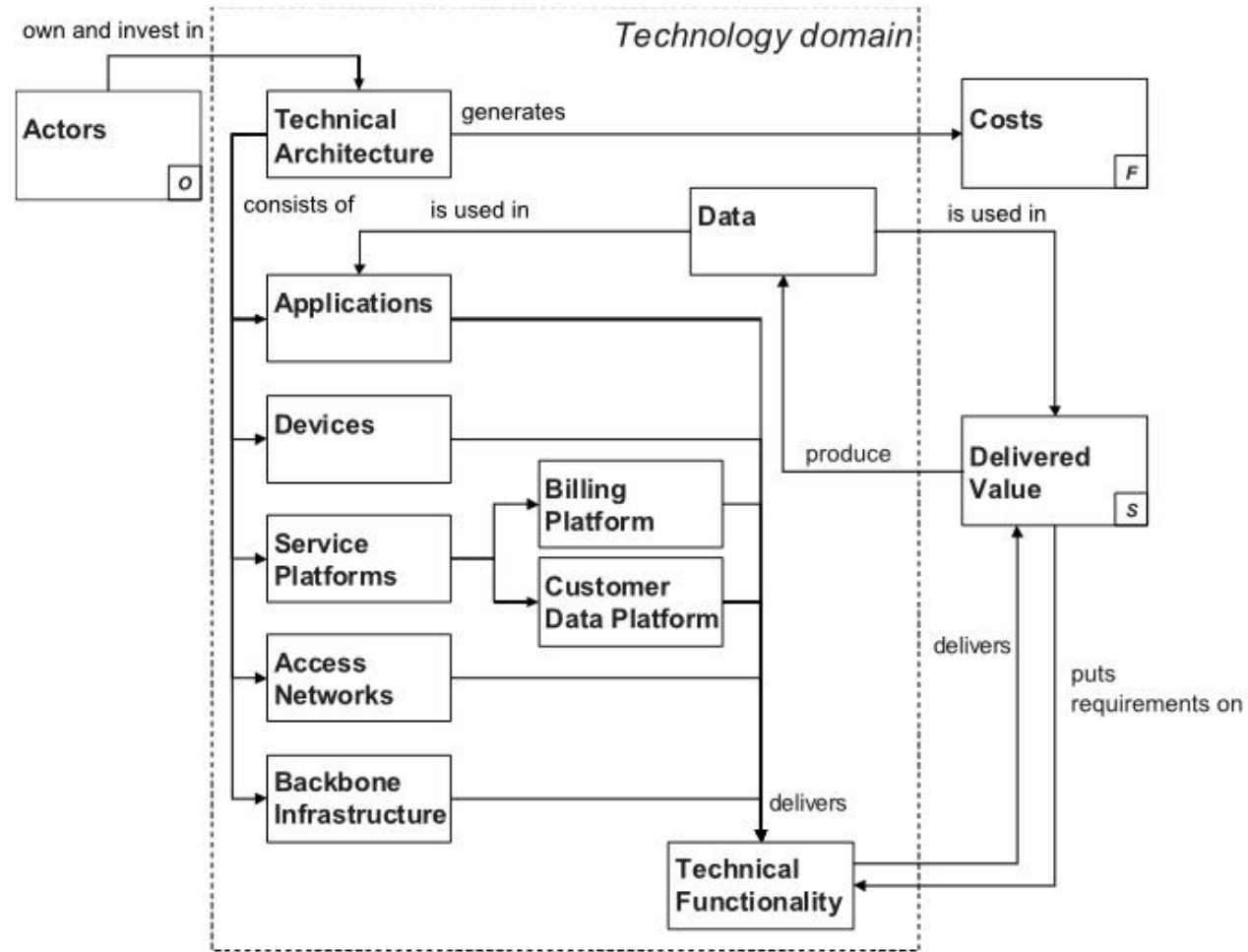
STOF process over time



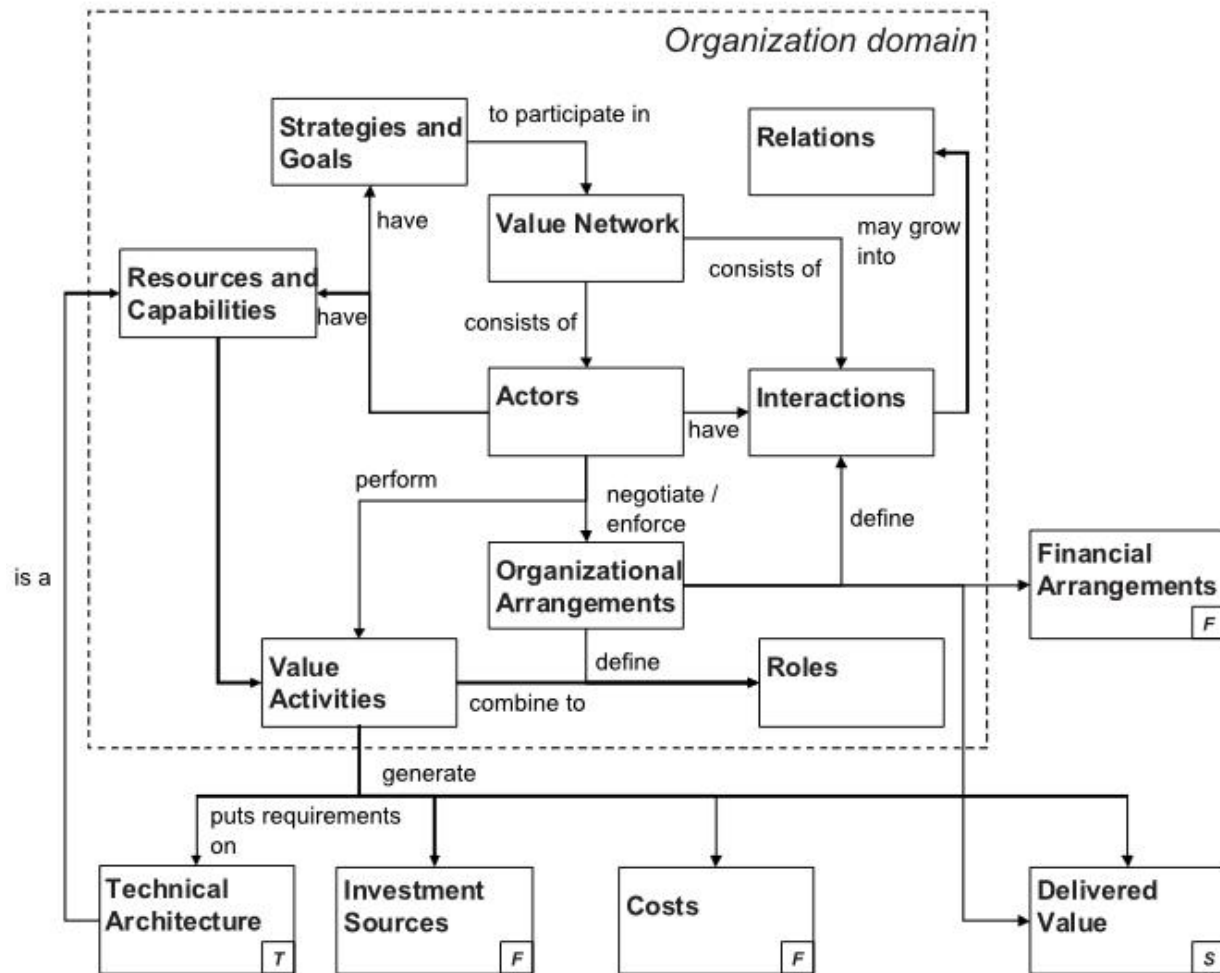
Service design



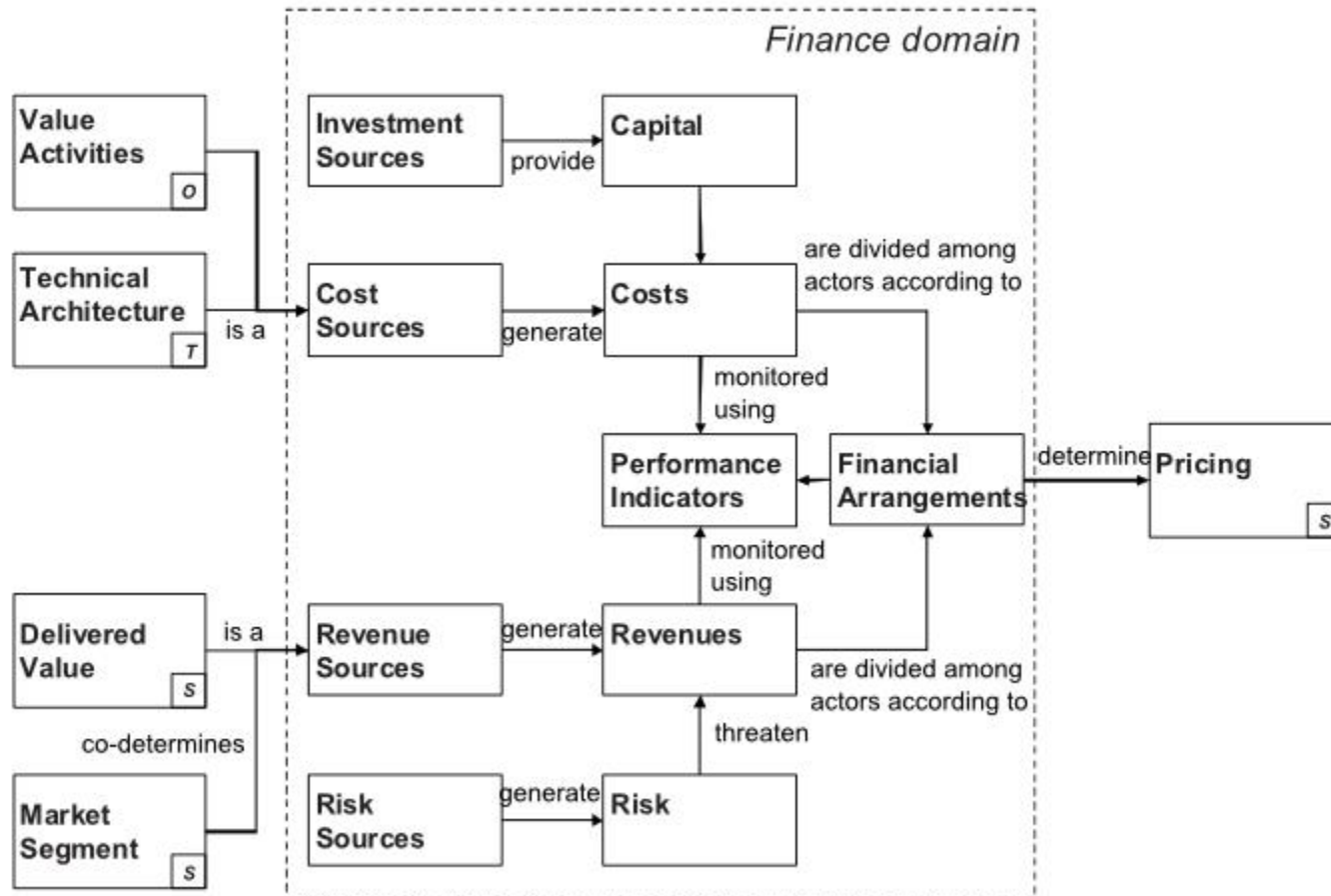
Technology design



Organization design



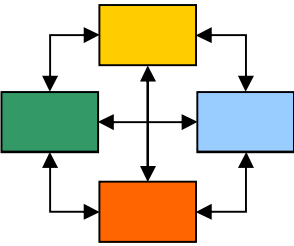
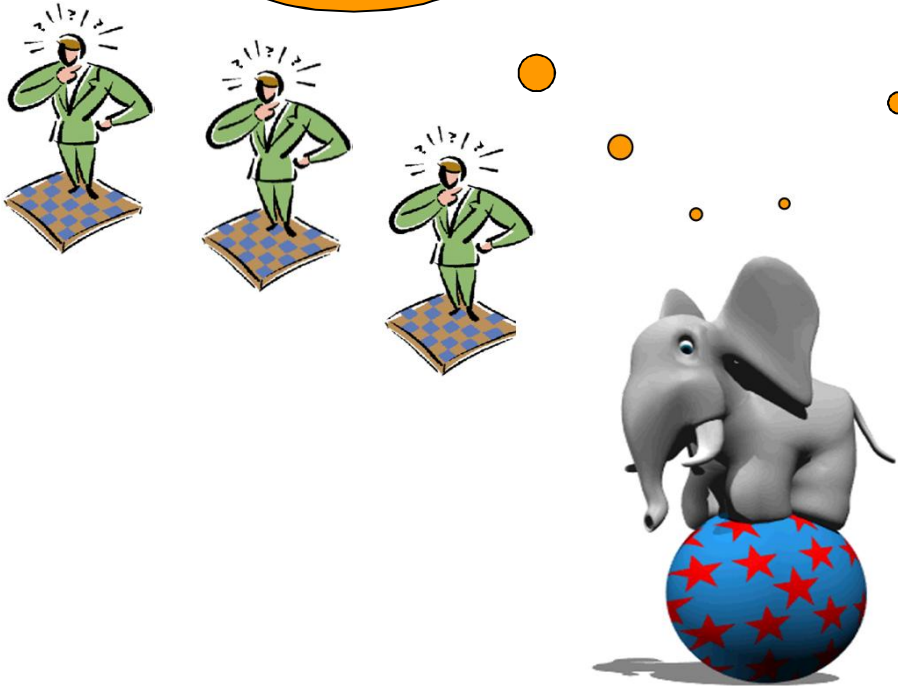
Finance design



Balancing of different goals

NETWORK VALUE
Strategic interests of partners

CUSTOMER VALUE
*Design requirements
usefulness*



CDIs: Service domain

Critical Design issue	Description	Balancing requirements
Targeting	How to define the target group of a mobile service?	Generic vs. Niche service B2C vs. B2B service
Creating value	How to create value for end users?	Technological possibilities vs. user needs and wishes
Branding	How to promote/ brand the service?	Operator vs. content brand
Trust	How to enhance end users' trust in the service?	Security vs. ease of use Privacy vs. added value
Customer retention	How to stimulate recurrent usage of the service	Customer lock-in vs. customer annoyance

CDIs: Technology domain

Critical Design issue	Description	Balancing requirements
Security	How to arrange secure access and communication?	Ease of use vs. abuse and privacy.
Quality of Service	How to provide for the desired level of quality?	Quality vs. costs
System integration	How to integrate new services with existing systems?	Flexibility vs. costs
Accessibility	How to realize technical accessibility to the service for the target group?	Open vs. closed system
Management of user profiles	How to manage and maintain user profiles?	User involvement vs. automatic generation

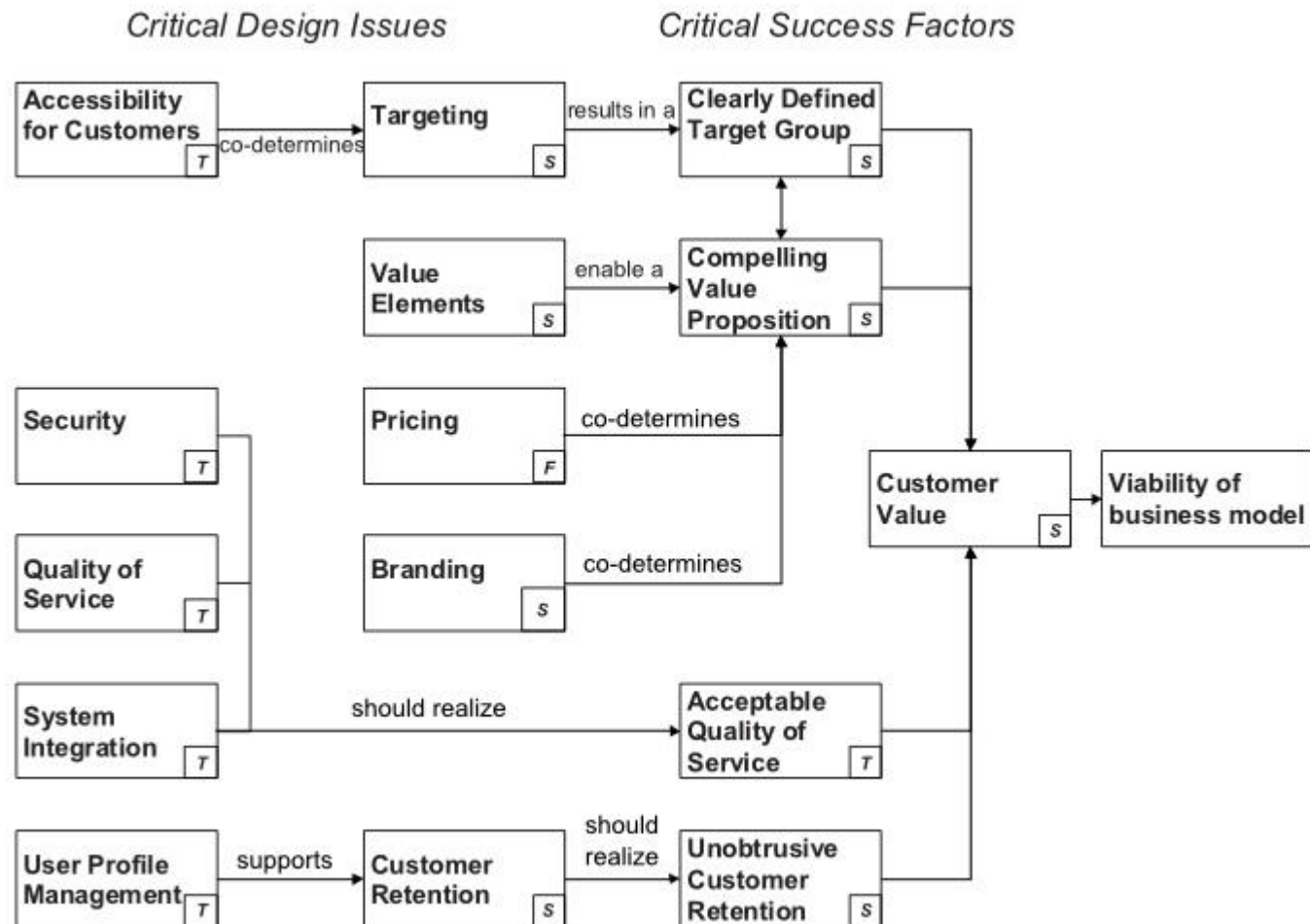
CDIs: Organization domain

Critical Design issue	Description	Balancing requirements
Partner selection	Who is offering access to critical resources and capabilities in order to offer service?	Limited number of partners <i>versus</i> quality of service and strategic interest
Network openness	Degree to which new partners can join the network, and are allowed to offer services	Openness and customer reach <i>versus</i> control and exclusiveness
Network governance	Dominant partners set and monitor rules over partnership, support partners. Customer ownership and control is key asset	Entry, compliance and exit conditions: individual <i>versus</i> network interest
Network complexity	Degree of complexity of network, both organizational and technical	Need to reduce complexity <i>versus</i> need of access to critical resources & capabilities

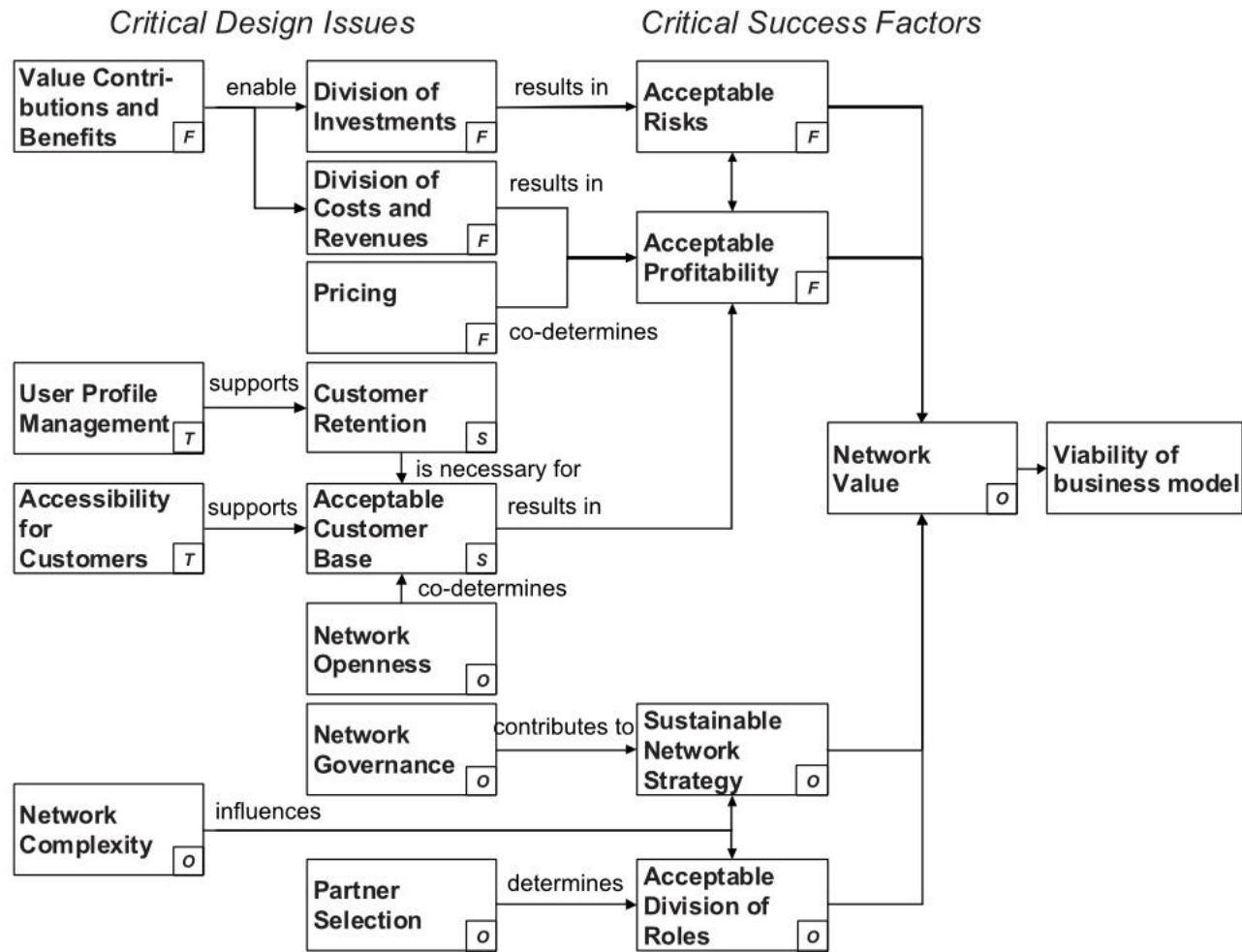
CDIs: Finance domain

Critical Design issue	Description	Balancing requirements
Pricing	Price level	Pricing seems to be aligned with maximizing profits <i>versus</i> creating market share
Investments	Capital investment and risk assessment	Operational financial interest (ROI) <i>versus</i> intangible benefits (Options)
Division and valuation of costs and revenues between network actors	Assessment of valuation is based on access to resources, direct revenue and strategic benefits.	Costs-benefits valuation on level of network versus cost benefits for individual partners

CDIs and CSFs relating to customer value



CDIs and CSFs relating to network value



Research methods for STOF analysis

- Desk research
- Focus groups
- Interviews
- Workshops
- Market research
- User trials
- Investment assessment
- Design session
- Action research

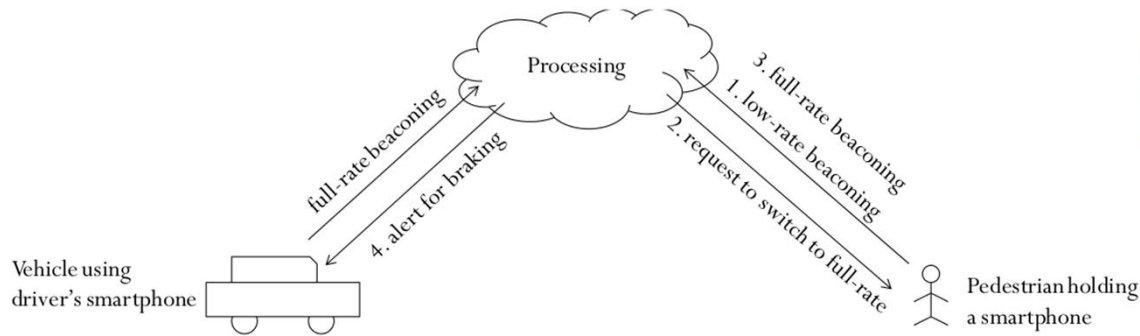
Example case: Traffic safety

- Traditional sensor based (e.g. radars) detection require **line of sight**, reflector range is 150 m
- Embedded DSRC/802.11p technology has **huge limitations** in mass market adoption
- Low chance of communication in C2C - problem in **creation of critical mass**, collision alerts can affect rear-end collision
- Mobile network and terminals **invested initially for other purposes** – traffic safety could be only an additional application
- Pedestrians/cyclists are among vulnerable road users in fatal accidents, personal injuries huge insurance cost → **V2P service**

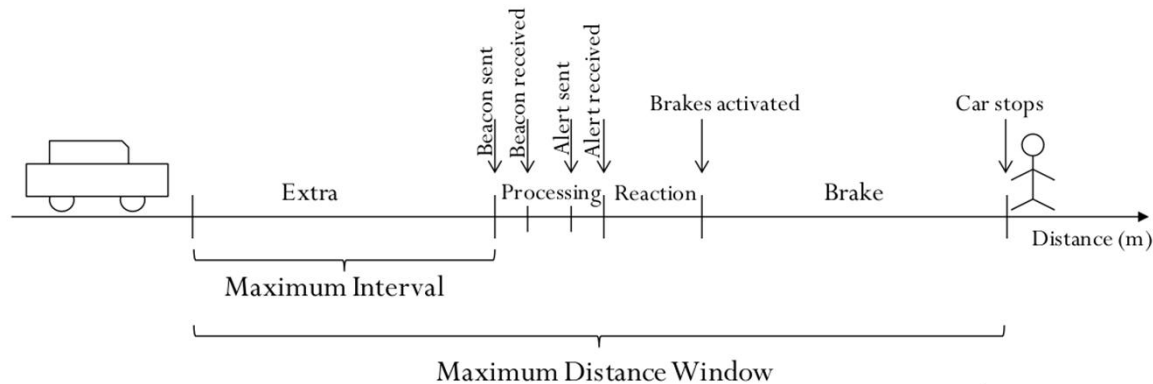
Service design

- **Early collisions avoidance alerts** to mobile phone of driver to activate vigilance
- Adaptive approach for sending location data, sidewalks, crossroads
- Usage in most dangerous places, **local drivers, cyclists and pedestrians** as target group
- Discounts of **traffic insurance** of driver, free for pedestrian
- Promotion in the **beginning of school / dark time**
- Integation to **complementary** services e.g. **ridesharing** which can use same location information
- Mobile app in Android for driver, **usability**
- Statistics of alerts can be used in **road safety planning**

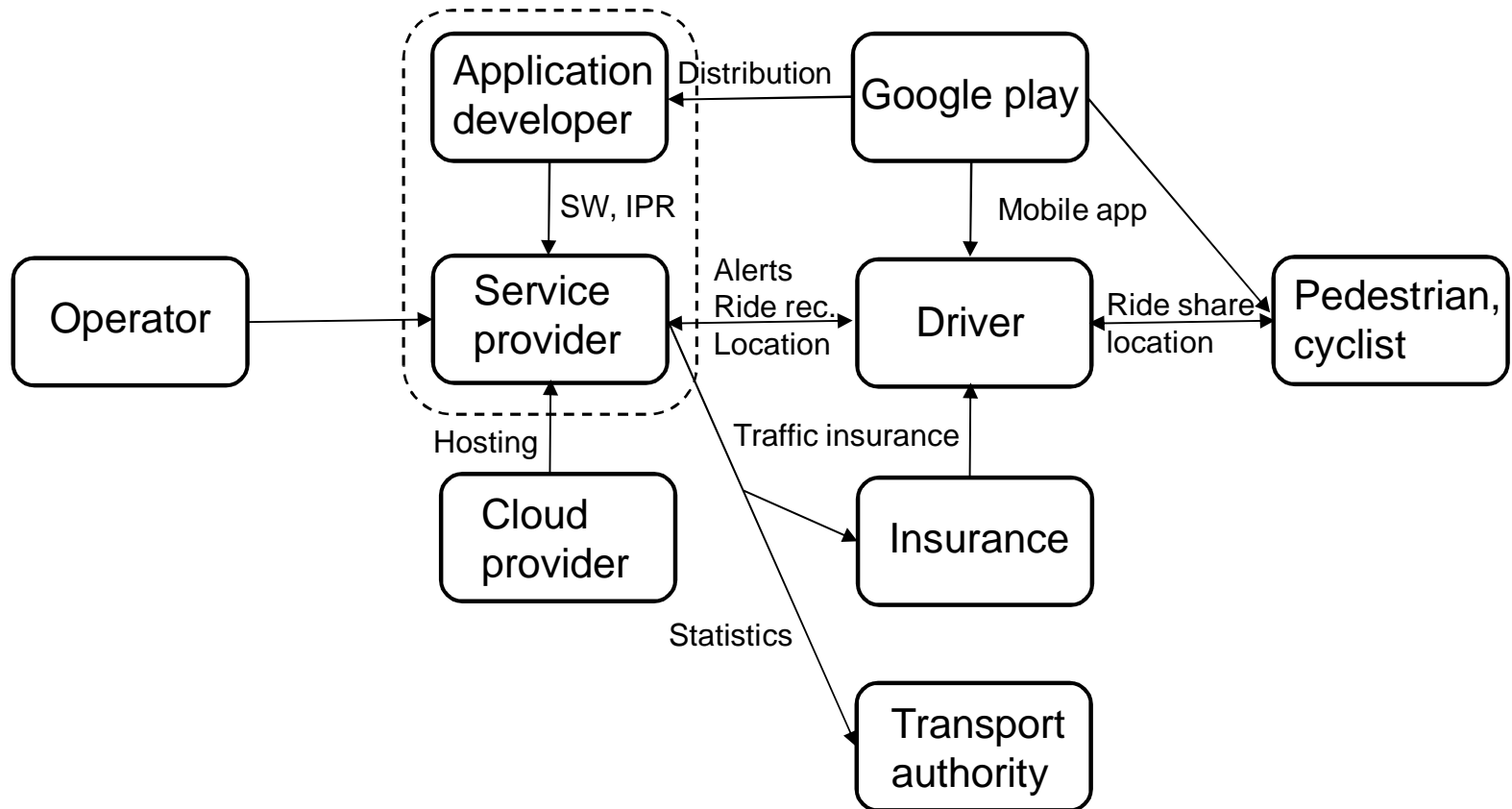
Technology design



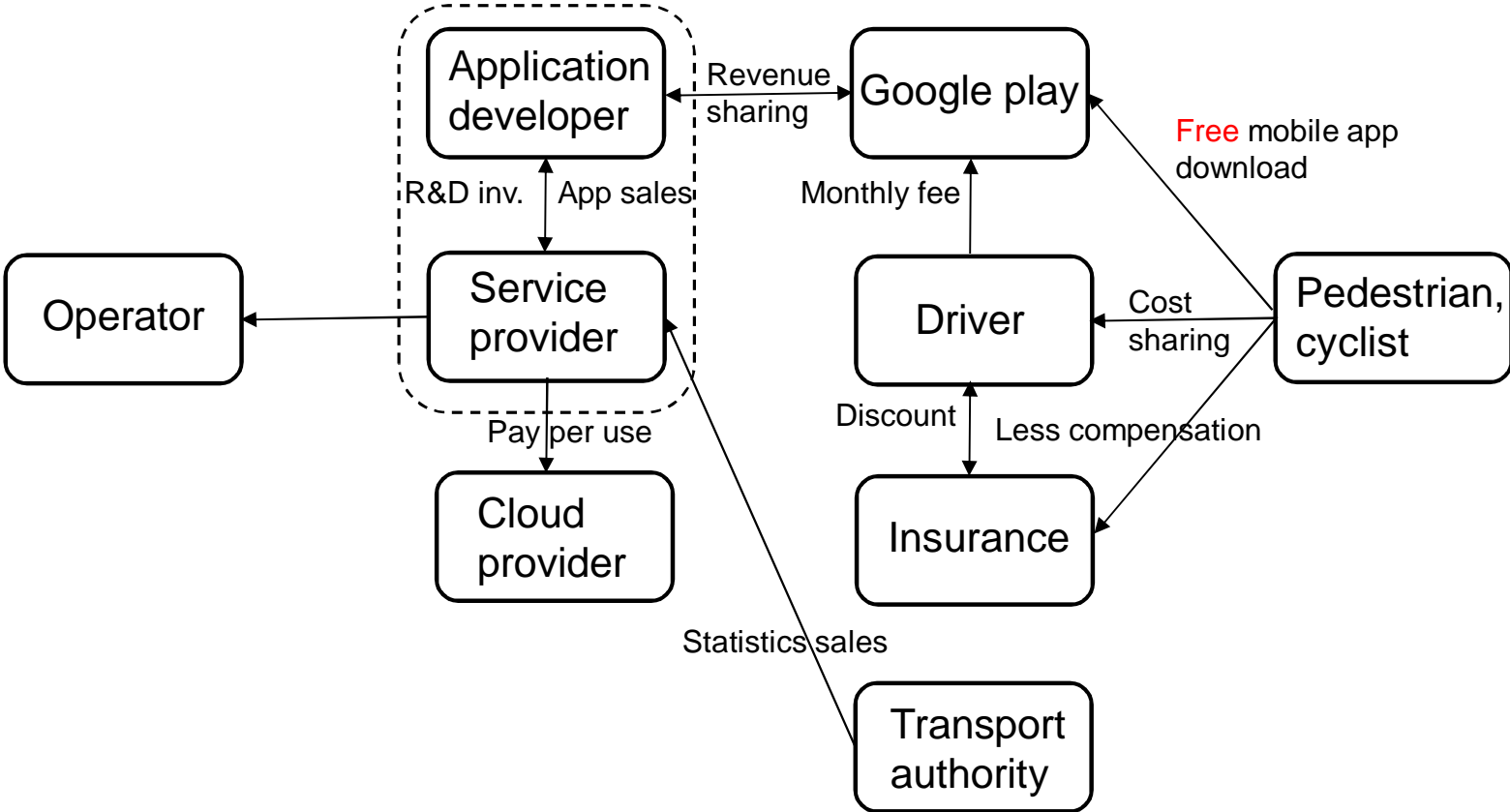
Location, speed, direction data needed from GPS



Organization design



Finance design



Next time

- Digital economy and growth
- ICT in supporting business process – Industrial Internet