

Technology marketing

- Typical marketing process begins with a definition of the new product features and their benefits the current customers have requested
- In the incremental development it is possible to assess the market and make financial analyses before the beginning of the development
- This approach is not appropriate for discontinuous innovations that significantly change the current market structures, customer usage patterns and value propositions
- In addition traditional market research can provide little or no benefit for exploring the potential of the emerging market of discontinuous technologies, it can even obstruct or create unrealistic expectations of a radical idea development

Market uncertainty

- Market uncertainty relates to the inability of vendors and service providers offering new communications solutions to predict what are the latent end users needs
- The uncertainty exists partly also because users do not know what they want until they see and use it
- When users are first introduced to new technology they tend to view it in the context of the older technology
- Users needs evolve hierarchically from basic features to more sophisticated ones along with the technology evolution as they become more educated about the benefits it provides

Managing market uncertainty

- Rather than by analysing the market and selecting the best alternative, the products should be developed by successive approximations, that is by introducing early versions of the product into the initial market, learning from the experience, modifying the product and approaching the market on the basis of better new information in circumstances of lower uncertainty
- A successful convergent technology and market vision is often found by technology and business oriented individuals who worked from early on closely together
- In high market uncertainty conditions competition is feature based differentiation and in low uncertainty price based
- When market uncertainty is high, being lucky with correct guess about the market is likely to produce more revenue than being right in markets with low uncertainty

Source: Gaynor, 2003

Managing market uncertainty

- The usage of the flexible modular system architecture in the introductory phase of a new communications platform, when the market uncertainty is high enables experimentation of suitable new services especially when they are targeted at latent end-users' needs
- This understanding of such a derived demand that is related to the new telecommunications services has been found to be a success factor for the vendors in telecommunications
- Nobody predicted in the early 90's what Web is today and its impact to society
- Flexible layer architecture enabled new service development according to contingent market development without large changes in the underlying infrastructure

Marketing process

- The key is first to select a target market segment among the existing customers or new ones, which then creates an entry point into a larger segment later
- It should be small enough so that the company can quickly become the dominant player in that market segment with an in-installed base of customers who face high switching costs
- Among this market segment visionary lead users have to be found who identify problems before the main market and seek a solution to it and are willing to participate in the product development process
- These visionaries advance the state of the art of the industry, because they want to be the first in their market and are willing to take high risks to pursue that goal
- If the demands of the lead customers precede changes in the global market, the company can leverage its channels in the foreign markets

Marketing process

- Greatest challenge is in the transition from an early market dominated by visionaries to a mainstream market dominated by customers who are pragmatists in their orientation
- While visionaries lack respect for their colleagues' experiences, pragmatists value references
- Pragmatists prefer to buy from a market leader that has a wide installed base and reliable products based on standards
- Pragmatists want competition in the market, that is why an increased level of openness and alliances related to the new technology is required, while it facilitates more companies to enter the market

Marketing process

- Ideas of feature fullness important to visionaries tend to converge and they become less important than the usability of the products
- At this point the development process begins to flow into a more conventional incremental product development process
- Pragmatists want to buy a whole product with open interfaces to complementary products that are provided by several companies and services like installation, training and after-sales support and they will then select the most competitive vendor as the market leader
- Finally discontinuous innovation is truly realised when the early majority has undergone the associated technological change and the mainstream market adopts the new technology paradigm

Commercialization map

- **Imaging**
Interest gap
- **Incubating**
Technology transfer gap
- **Demonstrating**
Market transfer gap
- **Promoting**
Diffusion gap
- **Sustaining**

Switching costs

- Investments in varying complementary benefits related to the actual ICT investment influence switching costs
- When the switching costs from one brand to another are substantial, customers face lock-in
- Sonera & Radiolinja example: low number of moving customers before portability of telephone number
- iki.fi e-mail solution to reduce switching cost

Switching costs

- Existing installed customer base with high switching cost is significantly valuable asset
- Acquiring new customer is much more expensive than keeping existing one
- Collective switching costs, group pricing of mobile calls
- Total switching cost = costs the customer bears + costs the new supplier bears
- The present discounted value to a supplier of locked-in customer is equal to total switching costs, plus the quality or cost advantage of current supplier's product

Type of Lock-in

Switching Costs

Contractual commitments

Compensatory or liquidated damages

Durable purchases

Replacement of equipment

Complementary products

Replacement of equipment

Brand-specific training

Learning new system

Information and db

Converting data to new format

Specialized suppliers

Finding of new supplier

Search costs

Learning about quality of altern.

Loyalty programs

Lost benefits from existing supplier

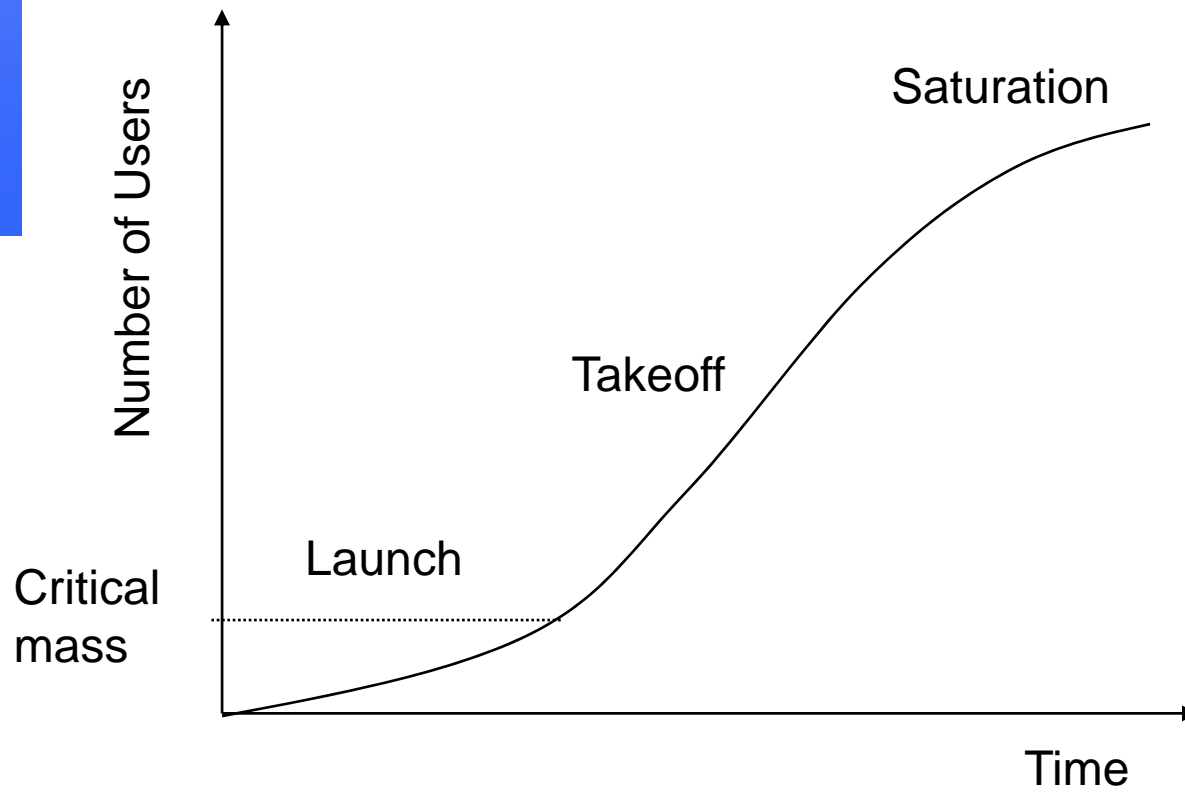
Managing Lock-in – Customer view

- Bargaining before lock-in taking into account life-cycle cost
- Being aware about whole cost structure before investment decision, e.g. maintenance contracts are typically offered afterwards
- Second sourcing and open systems
- Long view to the next supplier choice situation
- Keeping record about perceived cost structure

Managing Lock-in – Supplier view

- Investments to build large installed base
- Concentrating on influential customers with high switching costs
- Differential pricing
- Being aware of customer`s timing in brand selection points
- Reselling and bundling of complementary products and long maintenance contracts
- Usage of purchase history of existing customers in the marketing of new products

Diffusion of new technologies



Networks and Positive Feedback

- Increasing returns to scale (economies of scale) exist when the cost per unit decreases as more units of the good are produced.
- Recently, the term "increasing returns to scale" has been used to describe more generally a situation where the net value of the last produced unit [= (€ amount consumers are willing to pay for the last unit) - (average per unit cost of production)] increases with the number of units produced. This effect can be called also demand side of economies of scale.

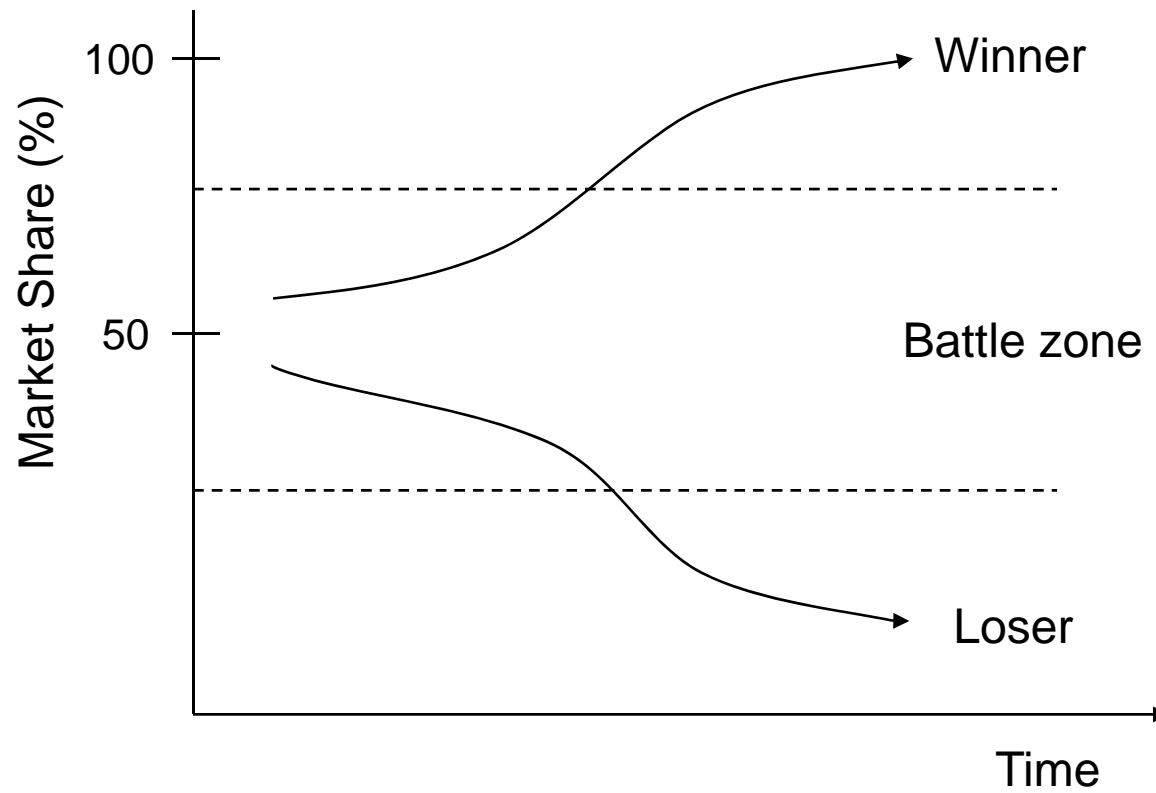
Networks and Positive Feedback

- A network exhibits network externalities when the value of a subscription to the network is higher when the network has more subscribers.
- Metcalfe's law: $n * (n-1) = n^2 - n$
- Dominant design is a technology that wins the allegiance of the market place, it usually takes the form of a new product (or a set of features) synthesized from individual technological innovations introduced independently

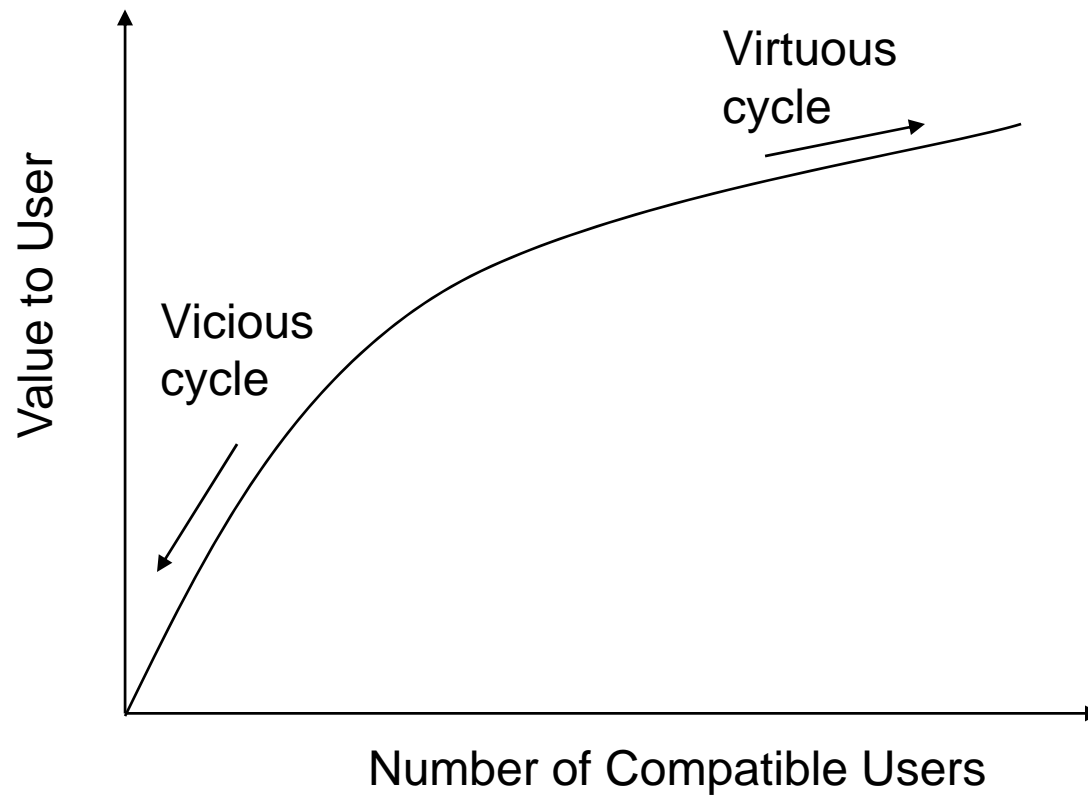
Networks and Positive Feedback

- Virtual Network is a collection of compatible goods (that share a common technical platform).
- In a virtual network network externalities arise because larger sales of component A induce larger availability of complementary components B_1, \dots, B_n , thereby increasing the value of component A. The increased value of component A results in further positive feedback.
- For example, video players, cassettes and accessories make up a virtual network. Similarly computers or mobile phones and their accessories can be thought of as a virtual network.

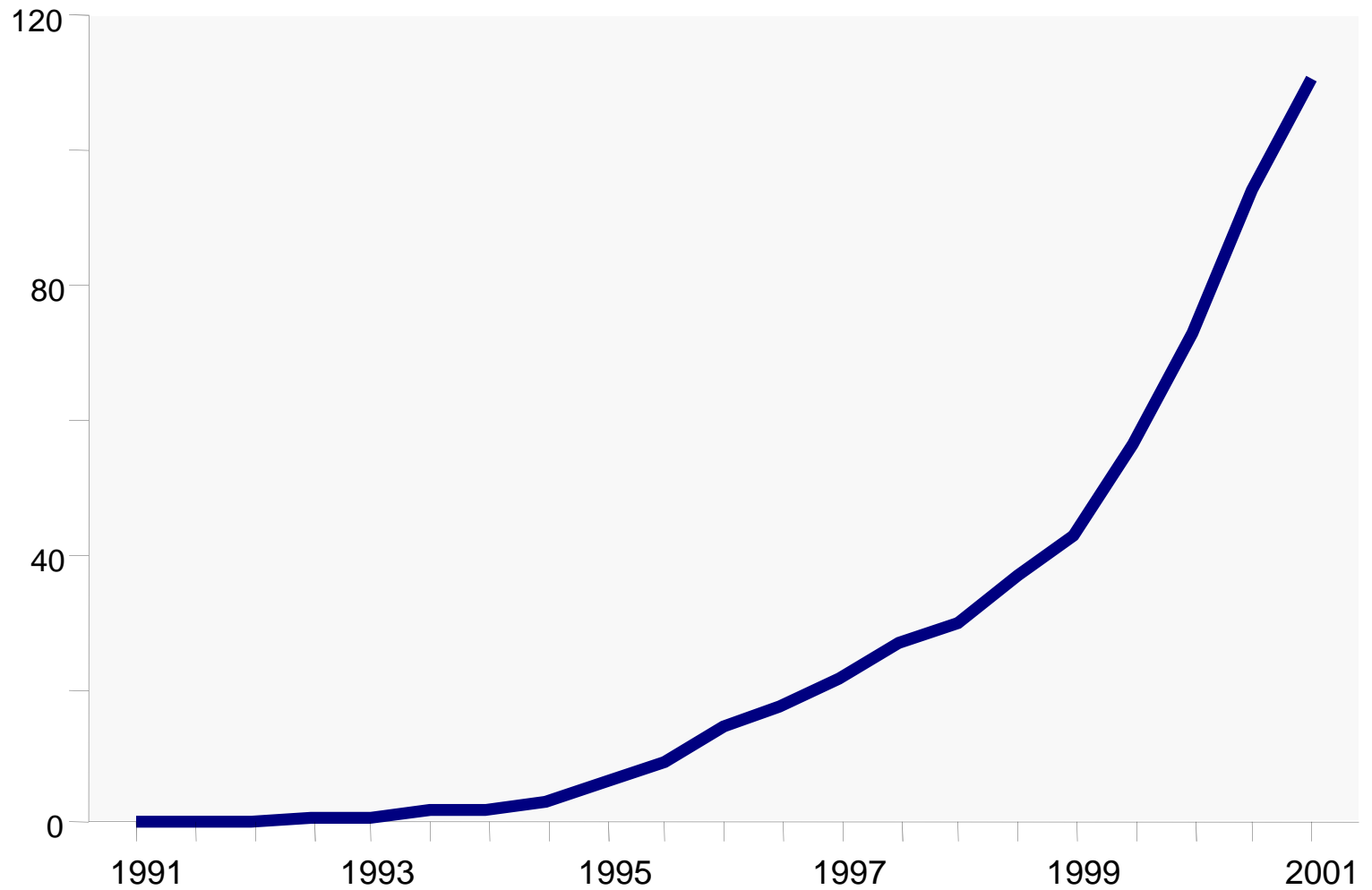
Positive Feedback



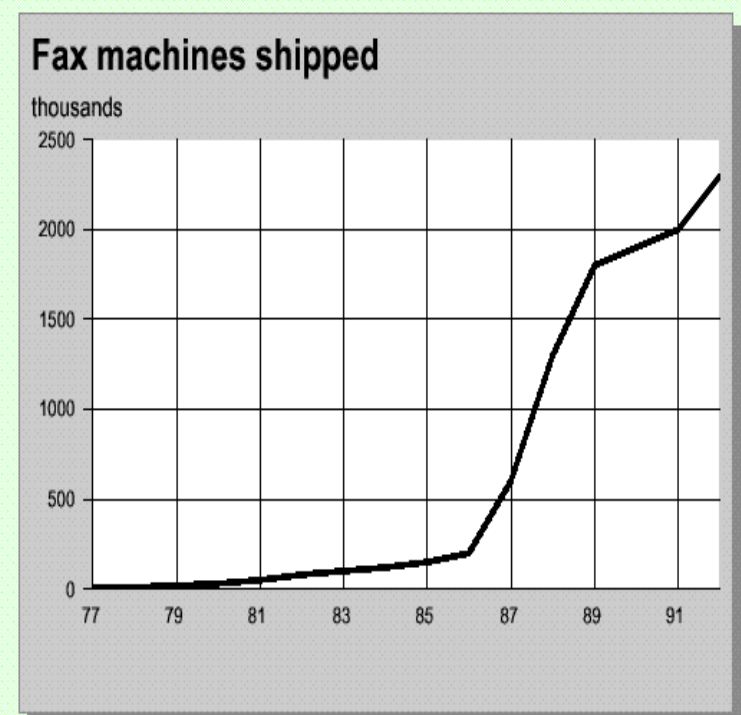
Demand-side Economies of Scale



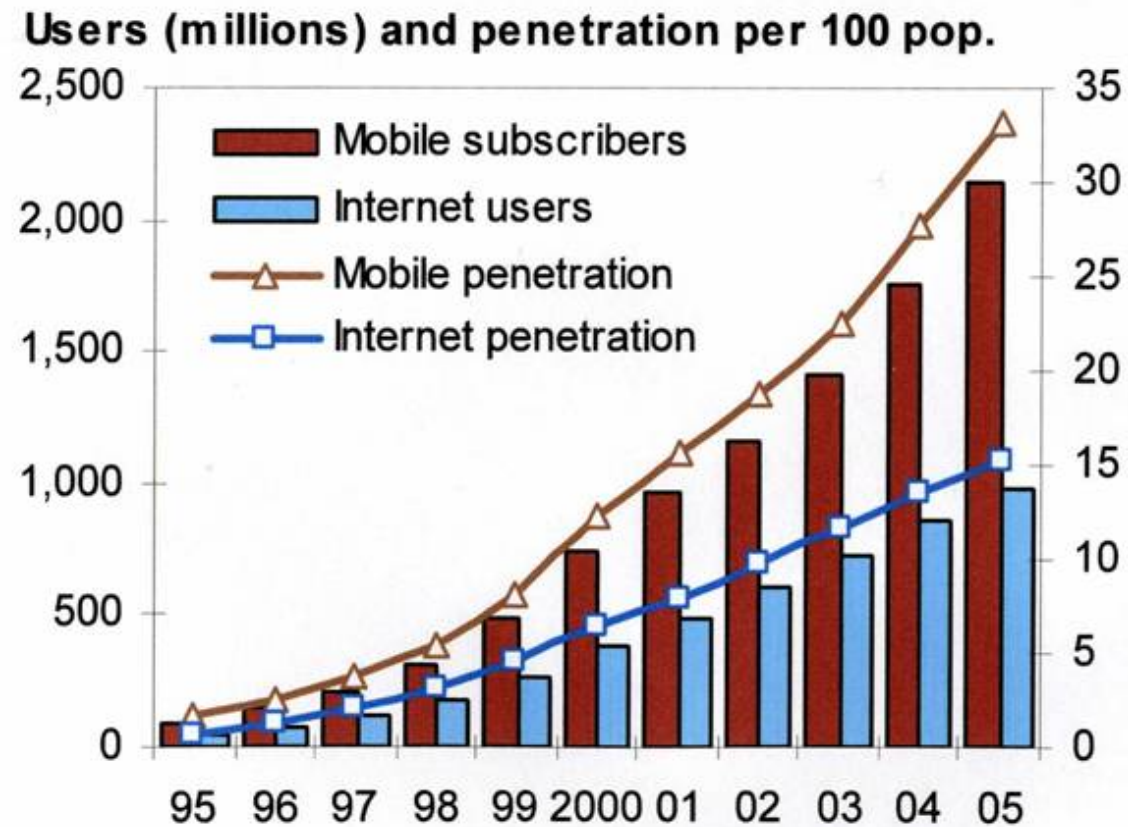
Internet Servers



Fax-service



Mobile communications



Source: Srivastava, Lara, "from the mobile internet to the ubiquitous internet", ITU, July 24, 2006