



HELSINKI UNIVERSITY OF TECHNOLOGY
Networking Laboratory



GIGA

COIN project

Timo Smura 27.11.2007



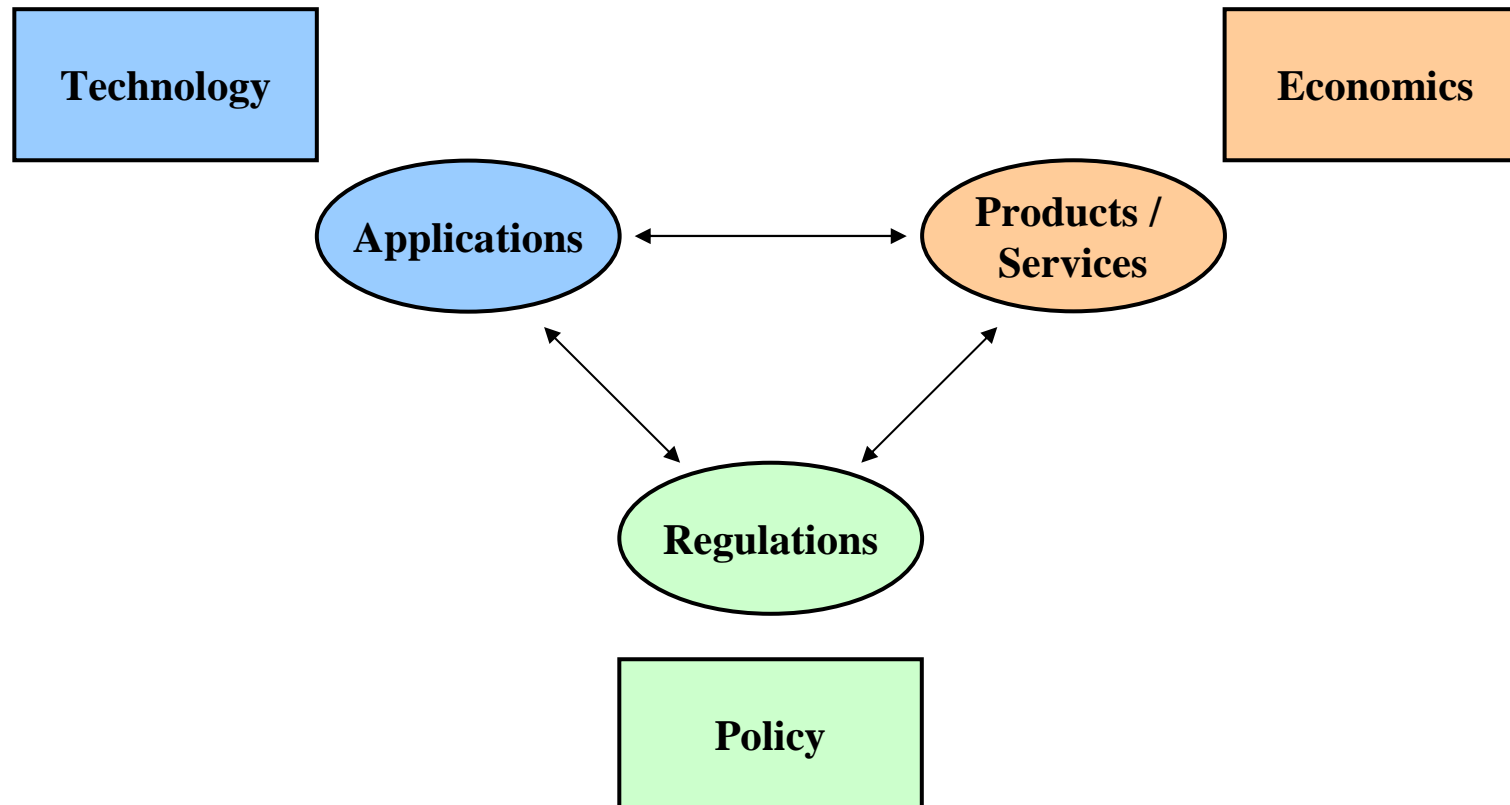
Outline

- Project overview
- Mobile industry trends
- Handset bundling
- DVB-H business models
- WiMAX vs. competition



Techno-economic research

Framework for studying technological change



William H. Melody (2007)



COIN: Overview

- Part of the GIGA technology program of Tekes
- Co-operation between TKK, Nokia, TeliaSonera, Elisa, DNA, Digita, Ministry of Transport and Communications
- COIN aims to improve the techno-economic understanding of the dynamics of the national mobile and wireless services market
 - Service usage measurements and analysis 2005-2007
 - Mobile networks, operator databases, handset monitoring
 - Handset bundling
 - Effects on the usage of data services
 - Emerging radio technologies
 - Technology competition between WiMAX and 3G / HSPA
 - DVB-H business models, techno-economic modelling
 - Mobile VoIP
 - Industry scenario analysis
 - Mobile Virtual Network Operators
 - Impacts on mobile data services market
 - Investments vs. revenues, techno-economic modelling
 - Mobile Operator Business game



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NOKIA

TeliaSonera

elisa



LIIKENNE- JA
VIESTINTÄMINISTERIÖ



Mobile industry trends

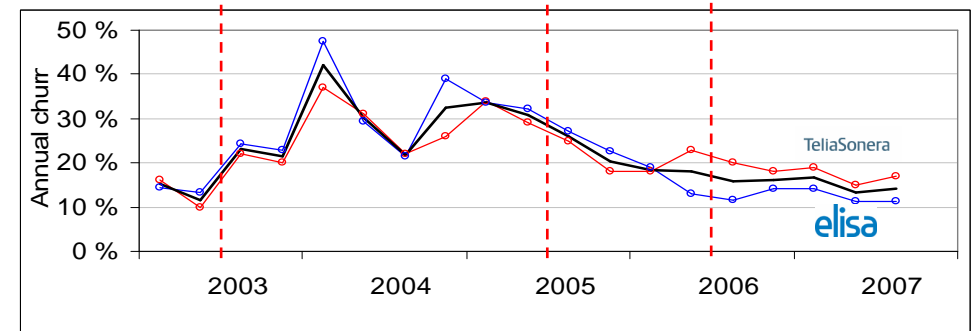
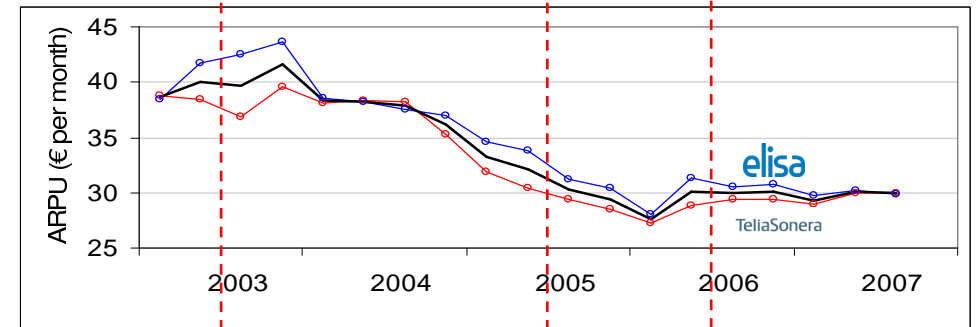
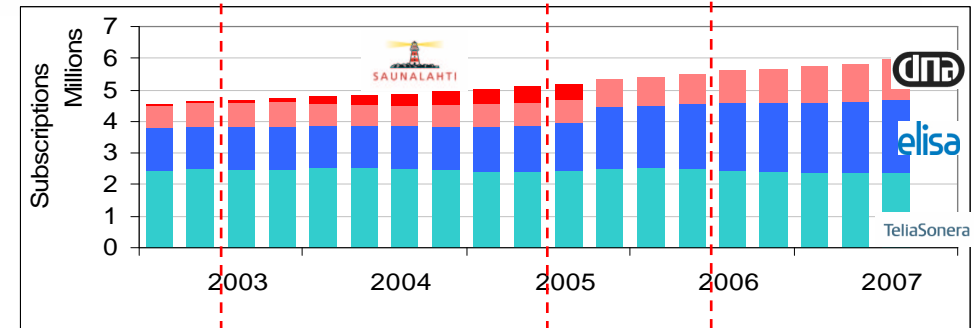
Finland 2003-2007

Elisa + Saunalahti
07/2005

Number portability
07/2003

Handset bundling
04/2006

- Number of subscriptions increasing
 - Increasing penetration
 - 2nd phones and SIM cards
 - Mobile broadband
- Market shares changing
- ARPU stable on a new level
 - From 40€ (2003) to 30€ (2007)
 - Price competition 2004 - 2005
 - Termination fees decreasing
 - 2nd phones and SIM cards
- Churn back to "normal"
 - Mobile number portability 2003
 - Elisa acquires Saunalahti 2005
 - Handset bundling 2006



Source: Operators' financial reports



Handset bundling

Impacts on Mobile Data Usage

Five steering options for regulator:

(0) Bundling permission

(1) Max. subsidy size

- Finland: 100%

(2) Technology

- Finland: Non-GSM handsets

(3) Customization

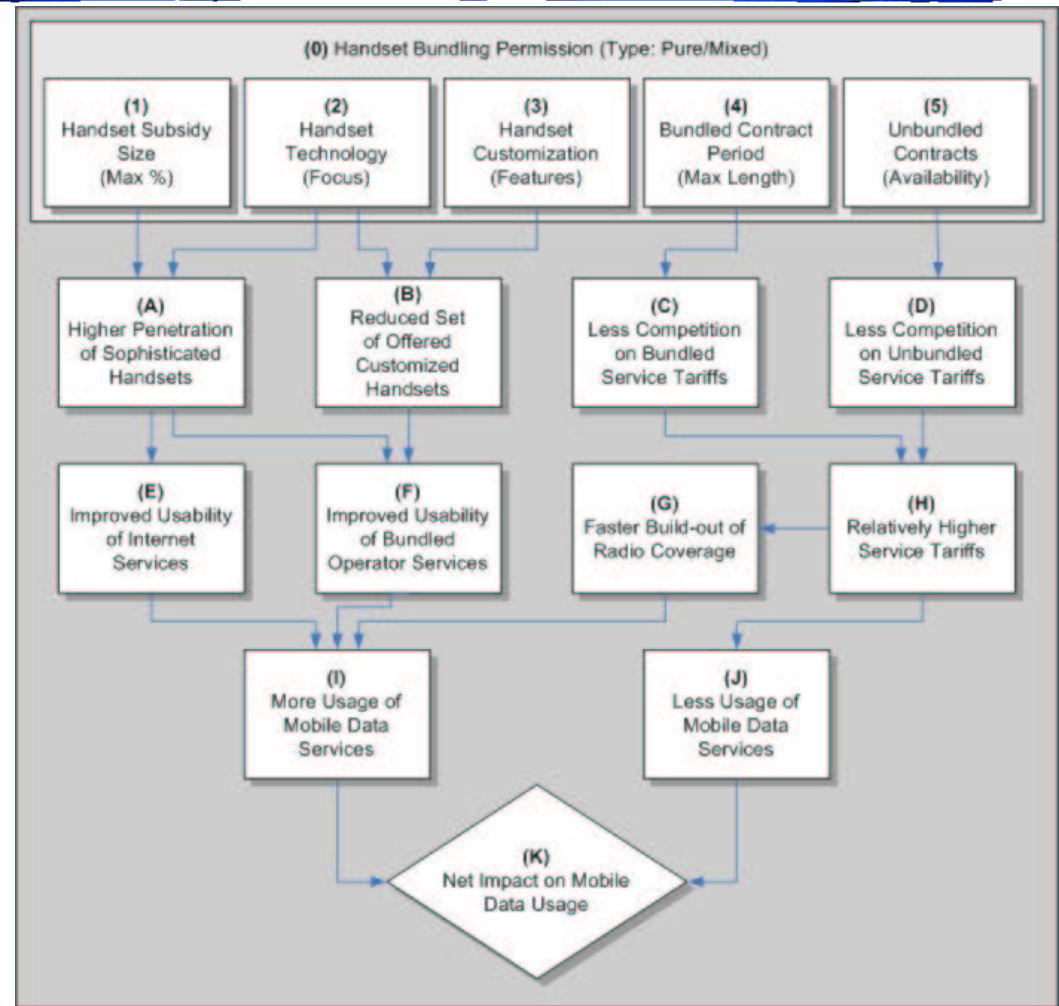
- Finland: No *ex ante* regulation

(4) Max. contract period

- Finland: 24 months

(5) Unbundled contracts

- Finland: Same services for unbundled subscriptions



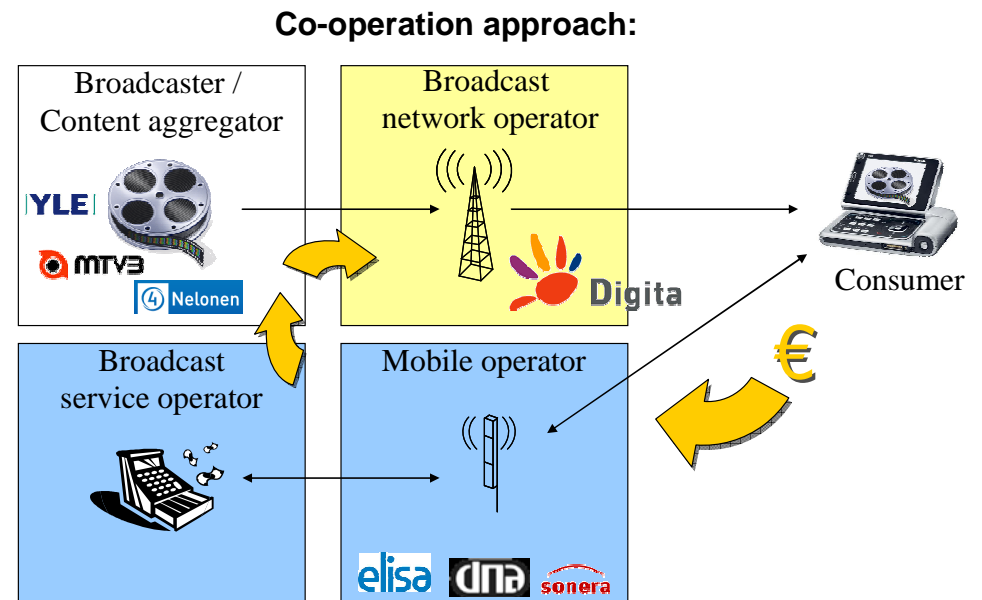
M. Tallberg et al. 2007



DVB-H business models

Techno-economic modelling and analysis

- Possible business models:
 1. Mobile operator approach
 - Mobile operator becomes a broadcaster, buys capacity and programming
 2. Broadcaster approach
 - Broadcaster buys capacity and programming, sells services to consumers directly or indirectly
 3. Co-operation approach
 - Broadcaster buys capacity and programming, mobile operator sells services to consumers
- Co-operation seems easiest for mobile operators, but broadcasters might want to bypass them as a sales channel



T. Autio 2007, H. Hämmäinen 2007



Technology competition

The role of WiMAX in Finland

	Fixed broadband	Mobile broadband
Urban	<p>xDSL / Cable in dominating positions Regulator pushing service competition WiMAX cannot compete against 10-20 Mbps per user alternatives</p>	<p>WiMAX and 3G offer similar performance 3G / HSPA in strong positions</p> <ul style="list-style-type: none">• Industry support, time-to-market <p>Regulator in an important role</p> <ul style="list-style-type: none">• Spectrum policy (e.g. 2.5 GHz), open access
Rural	<p>Techno-economic performance often better than competitors' Latent demand in underserved areas Suits basic needs, but how about high throughput services? (IPTV, P2P, VoD)</p>	<p>Currently available spectrum not sufficient Competing solutions on good positions Flash-OFDM, CDMA @ 450 MHz UMTS/HSPA @ 900 MHz? Vs. WiMAX @ 3500 MHz</p>

T. Smura 2007



Summary

- Mobile services market is constantly and rapidly changing
 - New devices, networks, services, business models, regulations...
- Measurements on mobile networks, operator databases, and smartphones provides a starting point for a wide array of research topics
 - Adoption and diffusion of new technologies and services
 - Market effects of regulatory decisions
 - Evolution of business models
- Co-operation with key market actors has enabled the COIN project to gain a broad understanding of the market
- The work has just begun



References

- *M. Tallberg, H. Hämmäinen, J. Töyli, S. Kamppari and A. Kivi, **Impacts of handset bundling on mobile data usage: The case of Finland**, Telecommunications Policy, vol. 31, pp. 648-659, 2007*
- *T. Autio, **Broadcast Mobile Television Service in Finland: A Techno-Economic Analysis**, Master's thesis, Helsinki University of Technology, 2007*
- *H. Hämmäinen, **Finland Counting on DVB-H**, Nordic and Baltic Journal of Information and Communications Technologies, vol. 1, pp. 12-15, 2007*
- *T. Smura, **Competition between Emerging Wireless Network Technologies: Case HSPA vs. WiMAX in Europe**, in 17th European Regional ITS Conference, August 22-24, 2006, Amsterdam, Netherlands, 2006*

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<http://www.netlab.tkk.fi/tutkimus/coin/>