

# Mobile communications in Europe:

Two steps forward and one not really getting anywhere

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# Center for Information and Communication Technologies

- ◀ Center at Technical University of Denmark
- ◀ Existed 12 years
- ◀ Multi-disciplinary
  - Network and service development
  - Use of IT in companies
  - Policy and regulation
- ◀ Last 4-5 years, focus on mobile and wireless



# Overview

- ◀ Mobile development in Europe
- ◀ Present major regulatory issues in mobile and wireless in Europe
- ◀ Own present activities



# Mobile development in Europe

- ◀ *First Generation – analog*
  - Incompatible national/regional standards
  - Low penetration
- ◀ *Second Generation – digital*
  - GSM - European standard
  - Overwhelming success – 100%
  - European international mobile strength
- ◀ *Third Generation*
  - Slow growth
  - Asia leads
- ◀ *Beyond 3G*
  - A lot of EU research
  - Growing heterogeneity



# Second Generation

- ◀ *Penetration far exceeded expectations*
- ◀ *Why?*
  - Demand for mobility and voice
  - Common standard – decreasing prices
  - Competition
- ◀ *Fixed / mobile substitution*
  - E.g. new EU members
  - Also Finland
  - Young people
  - But more expensive than fixed for users
  - DSL maintains fixed connections
- ◀ *Great success for the European GSM standard*
  - All countries, app. 100%
  - Pre-paid also important in Europe
  - Unexpected success with SMS, e.g. in Denmark 4-5 per subscriber per day
  - Important basis for vendors: Nokia, Ericsson
- ◀ *Mobile data not really a success*
  - Most used current applications: Gaming, e-mail and music



# Third Generation

- ◀ *Slow take-up, e.g. Denmark*
  - 4 licenses, only services from one operator ('3') really marketed
  - 200,000 out of 5.6 mill. mobile users
- ◀ *Why?*
  - Search for real 'killer application'
    - ◀ No single homogeneous application
    - ◀ '3', trying first cheap voice and now mobile VoIP
  - Lack of successful business models
  - Financial distress – frequency auctions and 'dotcom' crash
  - Decreasing ARPU because of 2G competition
- ◀ *Not a standards problem*
  - WCDMA
  - CDMA2000
- ◀ *Asia leads*
  - Japan
  - Korea
- ◀ *It will eventually grow*



# Beyond 3G

- ◀ *Open window of opportunity*
- ◀ *Vision or fact*
- ◀ *Heterogeneity*
- ◀ *Much research in Europe, especially in EU IST programme*
- ◀ *WiMAX licenses have also been distributed – but not much take-up yet*
- ◀ *WiFi – public access*
  - Discussion on disruptiveness
  - To some extent owned by incumbents
  - But e.g. FON
- ◀ *Mobile TV*
  - Much European focus on mobile TV, for instance from the European Commission
  - Different models implemented
  - However, most important thing: Interpersonal communications
  - Web 2.0



# Major regulatory issues

- ◀ *Frequency allocation*
  - Not yet a problem for 3G in Europe
  - Mobile TV, focus of European Commission
  - Allocations for unlicensed use
- ◀ *Frequency assignment*
  - Presently more important for mobile TV
  - WAPECS
- ◀ *Competition policy*
  - Retail market is considered competitive
  - Regulation on wholesale, origination as well as termination
- ◀ *International roaming*
  - European Commission intervenes in excessively high prices
- ◀ *AVMS* (important for mobile content)
- ◀ *Copy right* (important for mobile content)



# CICT activities

- ◀ MAGNET and MAGNET Beyond
  - Personal Networks
  - Heterogeneous network environment (ad hoc, infrastructure)
  - User profiles, usability, business models
    - ◀ Self-organized and/or operator-organized
- ◀ DVB-H: Technology, business models, and regulation
- ◀ Cooperation with Nokia, e.g. distribution of 500 770 tablets
- ◀ Use of mobile technologies in e.g. operational services – building on work on mobility in Nexway project

