6.1 Mobile Communications in Europe

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Trends in the European Union

- Mobile communication is the fastest growing sector in telecommunications
  - cellular: analogue and digital
  - private mobile radio
  - paging
  - data
  - Total number of subscribers: 16 million
- Cellular services are the really dynamic force:
  - 5 million customers mid 92
  - 10 million customers mid 94
  - continuing growth of >50 % per year
- How fast will mobile communication grow long term?
- Will mobile communication replace the fixed network?

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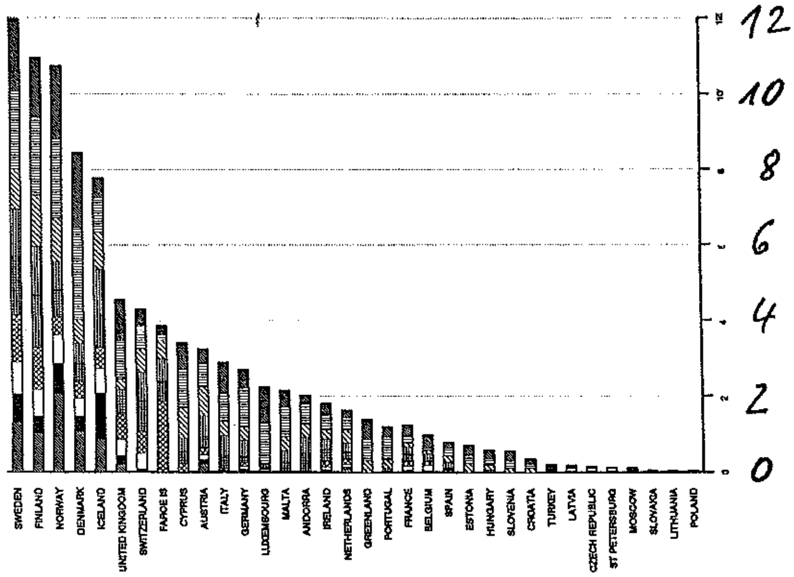
European cellullar Penetration: Subscribers per 100 Population



Strong Growth in mobile Communication

- In the European Union the number of all mobile subscribers has grown by 63 % from mid 93 to mid 94.
- No market saturation: Nordic countries are the leading edge in Europe:
  - market penetration: 8...12 % of the population
  - 46 % growth over the last 12 months
- Trend, that growth in mobile networks is stronger than in fixed networks
  - Nordic countries
  - United Kingdom: June 94 115000 growth in cellular versus 100000 in fixed networks
  - similar in other countries

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Longterm forecasts for the European Union

- Subscribers for all mobile services: cellular, private mobile radio, paging, data etc.
  - 1994 16 million
  - 2000 40 million
  - 2010 80 million
- Penetration of businessmen
  - 2000 20...30 %
  - 2010 30...50 %
- Broadening of mobile communications to personal communications can ultimately lead to
  - a penetration of 80 % of the population
  - >200 million users (153 in the fixed network in 94)

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Big Markets in 1000

1 August 1994

Name	pop/mill.	total/1000	GSM
Denmark	5	471	203
Finland	5	563	58
France	55	725	287
Germany	78	2202	1453
Italy	57	1780	30
Norway	4	470	39
Sweden	8	1040	168
UK	57	2721	193

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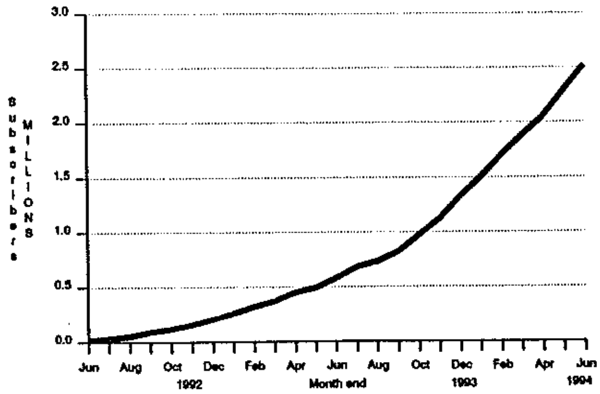
European GSM subscribers



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Trends in the European Market

- Cellular is a market for business customers
  - mainly used by businessmen: >90%
  - relatively high charges
  - analogue networks aare profitable
  - first GSM networks reach break even in 94
- Change is visible
  - Low terminal prices, often subsidized: typical 200 US $
  - Price competition
    - by operators wishing to improve their market share
    - new entries like PCN operators
  - Increased competition, big players
- Mass market is the strategic goal
  - New strategies: services, charging, distribution
  - Competition with the fixed network
  - Integration of fixed and mobile services

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Fixed cellullar at the horizon

- Fixed cellular or wireless access for fixed subscribers: New technologies arrive, cost fall
- Technology allows
  - building a network without digging up streets
  - building a network with a limited initdial investment
  - very rapid roll-out is possible
  - flexible service offerings: e.g. rapid user connection
  - attractive for new market entries e.g. competitors of established operators: Ionica, Telecom Finland
  - attractive for developing regions/countries
- Integration of mobile and fixed network services possible with far reaching impacts
  - People want to call people, not places
  - Fixed networks will introduce subscriber mobility

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Situation in EU member states

- Mid 80s:
  - PTOs introduced analogue mobile services
  - UK introduced competition between two operators
  - analogue networks are cash cows
- Regulators are introducing more competition
  - Most members states licensed a secondGSM operator
  - UK and Germany have introduced DCS1800 operators.
  - EU forces member states to license a second GSM operator
  - 1994 there are license competitions
    - GSM900: in Italy, Belgium, Spain, Ireland, Netherlands
    - DCS1800: in France
  - The Commission of the EU executes pressure, that each member state licenses at least one DCS1800 operator.

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Commercial medium to longterm Trends in the EU

- Handsets become much cheaper:
  - volume: GSM in 93 more than a million production, now major manufacturers have a capacity of >1 million p.a.
  - technology: stable specifications, high level of integration, automated production
- Base stations become smaller, cheaper and easier to install
  - size fis reduced rom a hut to a street cabinet
  - standard configurations are introduced
  - volume in GSM market
  - higher integration
- Interconnection charges are falling
  - regulation
  - competitive pressure
  - technology
- The cost reduction trends will continue since the underlying driving forces technology, market volume, competition and regulation are stable.

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GSM in the European Union

- GSM is the market leader in digital systems worldwide and will remain longterm:
  - >30 million GSM customers world wide 1999 (US forecasts)
- GSM market share in Europe (growth)
  - 1993 40 % GSM, the rest was analogue
  - 1994
    - Germany, France, Greece, Portugal: 100 %
    - Denmark: 75 %
    - In other countries the GSM share is rising sharply
    - 55..60 % GSM can be expected
- GSM subscriber base:
  - 1993 0.2 million
  - 1993 1.3 million
  - 1994 4...5 million

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Mobile Communication in the European Union

- Mobile communication is the industry with the highest growth in the European Union.
- Mobile communication contributes considerably to economic growth, employment and competitiveness.
- GSM900 and DCS1800 are the systems to support this development.
- A highly competitive environment secures that all chances for growth are used.