Wireless Data Services

Simon Garth
Vice President, Marketing - Symbian
7/3/2006
Overview

- The mobile phone
  - ...Where it is today
  - ...Where it is going
  - ...Modelling the opportunity
- Background - product adoption lifecycle
- Applying this to Wireless Data Services
- Example services
- Conclusion
Phone Evolution

Digital Revolution
Smaller, Faster, Better, Cheaper

From this...

to this...

...in twenty years...
Consumer electronics device sales 2004

- Mobile Phones: 600 million
- Desktop & laptop computers: 182.7 million
- Digital cameras: 53 million
- Film cameras: 36 million
- Digital TVs: 17 million
- MP3 players: 7 million
Worldwide mobile phone subscribers

Source: Merrill Lynch global wireless matrix
Mobile phone penetration by country

Source: Symbian market model, Feb 2004
Enabling smartphone evolution

Different markets have different evolutionary speeds and directions

Established
- Internet
- Micro payments
- Security
- Games
- Multimedia
- Imaging
- Video
- MP3
- ID verification
- Terrestrial TV

Emerging
- Push-to-Talk
- Automatic transactions
- RFID
- Personal monitoring
- Terrestrial TV
- Location based services
- Remote control

TDMA / GSM / CDMA / EDGE / CDMA2000

GSM → W-CDMA

CDMA → CDMA2K

PDC, CDMA → W-CDMA, CDMA2K
The mobile phone today

• 3 Broad technologies
  … GSM (Europe, Asia, Africa, some USA)
  … CDMA (USA, Asia)
  … W-CDMA, (evolution of GSM)

• Transition from voice phone to data phone
  … Data added to voice services
  … Priced by usage rather than connection time
  … Stepping stone to 3G
    • … but what do people want to do with 3G
    • … will it turn out like the Internet?
Economics

- In Europe Licenses sold by auction
  - Total cost of approx $100Bn
  - + Roll-out cost of $150Bn
- Funded by about 50% of the bond market from 1998-2002
- Total investment significant proportion of UK GDP
- Payback over 20 years
  - Approx 2008 with substantial data take up
  - Approx 2011 without
Market Dynamics

1. Voice goes wireless
   - 100 fold market increase in 10 years

2. Stabilisation
   - Some market saturation
   - 3G license debts
   - US economic slowdown

3. Content goes mobile
   - 2.5G, 3G bottleneck clearing
   - Demand for non-voice services
   - Combination of new technologies
   - New device categories imminent

Over-hype!

Over-criticism!

It's easy to exaggerate the short-term impacts of technological change, and under-estimate the long-run effects

Time

Expectations; Reality
The mobile phone device
Why do you need an OS?
Phone software is increasingly valuable

2000
- Software 1-2Mb
- More complex phone technology
- More software applications
- Better user experience
- Standardization of components

Hardware

Effort required to build phone

2006
- Software 20-128Mb

Hardware

Phone software is increasingly valuable
Fundamentally, smartphones will increasingly develop like consumer electronic appliances.

**Phone Functionality**

- **Voice centric**
- **Enriched experience**
- **Increased software**
- **Segment optimised**

**Differentiators**

<table>
<thead>
<tr>
<th>Portability</th>
<th>Features</th>
<th>Fit-for-purpose</th>
</tr>
</thead>
<tbody>
<tr>
<td>Size, weight, battery life</td>
<td>Display, memory, camera</td>
<td>Applications, brand, form factor, end-to-end solutions</td>
</tr>
</tbody>
</table>

**Phone vision**

Fundamentally, smartphones will increasingly develop like consumer electronic appliances.
Projected handset sales

- Growth coming from emerging markets in Asia
- Growing 3G substitution assumed in Europe

Handset sales by region

Source: Symbian market model, Oct 2005
Replacements form the bulk of total sales

Source: Symbian market model, Feb 2006
In the hands of a small number of players

Fraction of sales volume (2004)

2004 Total
= 628m

Source: Dresdner Kleinwort Wasserstein estimates, 21 April 2005
Modelling a consumer electronics device

Typical BOM cost breakdown
(direct cost only at June '02 prices)

(Symbian estimates)

- Software
- Mechanical parts
- PCB
- Camera
- Battery
- Display
- Other semiconductor
- Bluetooth
- CPU
- Baseband + RF
- RAM
- ROM

Cost ($)

- 8210
- T68
- 7650
- P800
Sizing the smartphone market

Addressable market forecast

Source: Symbian market model, Feb 2004
Estimating volumes from price information
What this tells us

• Mobile phone is mass-market
  …One for every 5 humans on the planet
  …One in 2 by end of decade
  …Market won’t tolerate user complexity

• Its personal, not family oriented
  …(unlike PC, TV)
  …Opportunity

• Attractive to emerging economies
  …Limited existing fixed line infrastructure
  …China, India set to become mass markets
The future

• Move to full IP backbone
• 3G
  …Higher bandwidth
  …Simultaneous voice and data
  …IPv6
• 4G
  …Adds local wireless (integrated telco and wireless)
  …VoIP
  …IEE 802.11 (Wireless LAN), Bluetooth
  …Short range, high bandwidth, low cost potential
Product adoption lifecycle
Industry business concerns

Threats
- Declining voice
- Excess capacity
- Market saturation

Needs
- Grow APPU
- Control churn
- Lower costs

Mobile Industry
- Faster Time-to-Market
- Compelling features
- Triple/Quad plays
- Simplify cost base
Operators seeking future revenue from mobile data

ARPU Breakdown for Orange

Source: DKWR – Corporate information
Product lifecycle

- Early Adopters
- Early Majority
- Late Majority
- Laggards
High Tech adoption lifecycle

- After Geoffrey Moore “Crossing the Chasm”
- Requires “Whole Product Offering”
Services overview
The services

- Voice
- Messaging
- Browsing
- Multimedia
- m-commerce
- games
- applications (delivered over the air)
- location-based services
- Corporate/enterprise
Requirements

• 3 Classes of service
  …Vertical
  …Publish/subscribe
  …Peer to peer

• “Whole product” is critical
  …“Value chain” (who gets what revenue)
  …“Delivery chain” (who delivers what)
  …End user enchantment (cf WAP experience)
Example - Multimedia Messaging

• Peer-to-peer
• “SMS with pictures and sounds”
• Whole product?
  …Value chain
  …Delivery chain
    • Composer on the phone
    • Needs a community
  …Enchanting experience
• How to roll out
  …Viral marketing
  …Trojan horse/market power
Changing behaviour and business models in adjacent markets
Impact on Imaging
Ever present, Always Connected

• Creating new usage models and new experiences
  ... Life Diaries
  ... Video Chat
  ... Interactive content
  ... Remote monitoring
  ... Onboard photo editing
  ... Personalisation
  ... Remote printing

• New Business Models and New winners
Increasing Accessibility

New Sources of Images: Changing the production of Images
e.g. BBC & Cameraphones

... 2003: BBC issues 40 2.5G Symbian OS phones to BBC journalists for fast on-the-scene video capture
... 2004: 3G phones being rolled out to reporters
... Other broadcasters now running similar experiments
  • Fox News, Reuters

More Accessible Content:
e.g. Mobile TV

...Mobile operators offering Mobile TV services on Symbian OS phones
  • Including: TIM, Telefonica, ATT Wireless
Music and Mobility

Market Momentum
• The worldwide ringtone market:
  ... $3.5 billion in 2003, up 40% from 2002
  ... Representing about 10% of the global music market
  ... Forecast global sales > $5.3 billion in 2008
Source ARC Group
• 2007: 52% of data enabled phones will be music enabled.
  Source: Strategy Analytics
• The under-25 age group in the UK spends five times as much on mobile phone calls, texts and content as on traditional music formats
  Source: mobileYouth

Next generation iPod?
• Onboard Storage in increasing e.g. 4Gbyte phone from Samsung
• Integrated Application Architecture, allowing users to do more with music

New Industry Players
• New record labels – Operators..?
• New distributors - Coca Cola, Sony, MSN, Tiscali, Wanadoo, HMV, Virgin, Woolworths, Wal-Mart, Carphone Warehouse, artists direct to customer
• E.g. Carphone Warehouse, European Retailer becomes Content Distributor
  ... Robbie Williams album sold on memory card in phone retailer
Emerging services

• Multimedia Services
  ... TV – DVB-H, DMB
  ... Music

• Convergence Services
  ... Operators looking at fixed and mobile assets
  ... Infrastructure, service and device convergence
  ... Dual-Mode devices shipped will increase rapidly over the next 3 years, reaching 26.8 million by 2009 (Yankee)
    • BT Fusion
    • Orange/FT NExT strategy
    • Telecom Italia, T-Online/T-Com…
Sky Mobile – Content on mobile

• Client-server solution to integrate TV with additional services
  … Performance
  … Functionality (vs browser)
  … Phone Integration

• Shows how content providers will use Smartphones as a delivery channel

• Early example of major content going mobile
Games - consumer applications driver

- Growth market
- Channels are in place
- Very profitable use of data
High performance games
New Service Paradigms

Virtual Identity

Mood

Generic & Custom Messages

Location

Phone Status
Conclusion

• Snapshot of mobile telecoms market
• Complex problem
  …Technology
  …Market
  …Economics
  …Social engineering
• Has the power to reshape the world
  …Rather like the railways
  …But like the railways – who will make the money?
• Questions or comments:

• simon.garth@symbian.com