Wireless Data Services

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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...

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Consumer electronics device sales 2004

Units (Millions)

- 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

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Worldwide mobile phone subscribers

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

- Korea
- W. Europe
- Japan
- North America
- E. Europe
- China
- World
- South America
- Rest of Asia
- Africa & ME
- India

Source: Symbian market model, Feb 2004
Different markets have different dynamics

USA...
- TDMA / GSM / CDMA
- Established
  - Voice
  - Messaging
  - Enterprise apps
  - Photo messaging
  - VoIP
- Emerging
  - Corporate apps
  - Photo messaging
  - VoIP

Europe...
- GSM → W-CDMA
- Established
  - Voice
  - SMS
  - Games
  - Photo messaging
- Emerging
  - Imaging
  - Multimedia
  - Video
  - MP3
  - Internet

Japan, Korea...
- Japan - PDC, CDMA → W-CDMA, CDMA2K
- Korea - CDMA → CDMA2K
- Established
  - Voice
  - Messaging
  - Games
  - Imaging
  - Multimedia
  - Video
  - MP3
  - Internet
- Emerging
  - ID verification
  - Micro payments
  - Automatic transactions
  - RFID
  - Security
  - Personal monitoring
  - Terrestrial TV
  - Location based services
  - Remote control
The mobile phone today

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

• 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 what 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 Dynamic

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

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

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

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

2004 onwards
- Software 10-20Mb
- Hardware
Evolving the phone with software

Phone Functionality

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

Differentiators

- Portability
  - Size, weight, battery life

- Features
  - Display, memory, camera

Fit-for-purpose

- Applications, brand, form factor, end-to-end solutions

Phone vision

Fundamentally, smartphones will increasingly develop like consumer electronic appliances
Symbian OS phones announced / launched Aug 2004 to Dec 2004
Modelling a consumer electronics device

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

(Symbian estimates)

Cost ($)

- 25
- 50
- 75
- 100
- 125
- 150
- 175
- 200
- 225
- 250

8210 T68 7650 P800

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

Modelling a consumer electronics device

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

(Symbian estimates)
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 6 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
  - IEEE 802.11 (Wireless LAN), Bluetooth
  - Short range, high bandwidth, low cost potential
Product adoption lifecycle
Product lifecycle

Early Adopters
Early Majority
Late Majority
Laggards
High Tech adoption lifecycle

- After Geoffrey Moore “Crossing the Chasm”
- Requires “Whole Product Offering”
Operators seeking future revenue from mobile data

ARPU Breakdown for Orange

Source: DKWR – Corporate information
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
Imaging and Mobility

Market Momentum

- 2004: Worldwide camera phone sales (150 million) will triple that of worldwide digital camera sales, (53 million)
  Source: InfoTrends
- The wider adoption of high-resolution camera phones is set to cannibalize up to 40% of digital-camera sales around the world by 2008
  Source: LG Economic Research Institute in South Korea.
- 64% of all NTT DoCoMo phones have a camera

LG announces first 6-Megapixel Camera Phone for Japan

SAMSUNG Introduces World’s First 5-Megapixel Camera Phone
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
  - Pornography

- 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. 1.5Gbyte 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
Ever-present, Always Connected - Music

• Creating new usage models and new experiences
  ... Streamed music
  ... New formats
    • Shorter track lengths, ringtones, ringback tones
  ... New merchandise bundles
    • Track, fanclub information, ringtone, updates, etc
  ... Personalisation
  ... Onboard remixing
  ... Superdistribution
  ... Cross-media DRM
  ... PVR capability for digital radio

Sony service StreamMan offered across Symbian phones by TeliaSonera (Finland) & Orange

FirePlayer – onboard music remixing to create bootlegs and ringtones

Siemens SX1 music phone from O2 in partnership with Sony Music
Symbian OS as a Mobile Gaming Platform

• Symbian OS is Games Friendly
  …Advanced Audio, Video and Graphics support
  • We supply Open Standard APIs such as Khronos OpenGL ES
  • Can make use of hardware acceleration
    …Major semiconductor and graphics suppliers working with Symbian
  • Roadmap includes new APIs in 2005
    …OpenMAX for Open Standard Audio, Video, Maths acceleration
    …OpenVG for 2d and Vector Graphics, Transparency etc
  …Multiplayer support through IP over Bluetooth, GPRS, 3G
  …Secure Content handling with DRM, Platform Security
  …Over-the-Air Download of Games Content
  …Optimisations for Micro-drive disks in 2005
• So far only one Licensee has produced Games deck phone – N-Gage
• But all phones are used for simple games….there is more to come here
Mobility Markets and the Infinite Machine

Mobile Phone is largest consumer electronics market, still growing and developing fast

Mobile Phone is disruptive to

existing markets

existing business models

existing technology platforms

Mobile value chain is complex and differs by country/region
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 - will it make money itself?
• Questions or comments:

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