The mind-boggling future of the mobile phone

Learning from an example of accelerated technology?

David Wood, Co-Founder & EVP Research, symbian
Personal context: Three brains

- **My biological brain**
  - 47 years of data
  - In need of a very serious de-frag (and lots more besides)

- **My Psion Series 5mx PDA**
  - 18 years of data
  - Closest to my heart

- **My smartphone** (Nokia, Sony Ericsson, Samsung, or Motorola...)
  - Communications, community, content, commerce – and convenience
  - Mobile window to the digital world (Google, Wikipedia, BBC, EBay...)

- Forgetting my Compaq Evo nc4010 laptop
  - Love-hate relation
  - In some ways the most powerful, in many ways the least immediate

Before long, most people will have two active brains.
Two possible learnings from the rapid progress of mobile phones

1. To what extent can improvements in mobile phones make humans smarter, wiser, kinder, better?

2. To what extent can aspects of the rapid improvements in mobile phones inform similar rapid & valuable improvements in other areas of technologies of human enhancement?
Three waves of mobile phones

Voice centric

~2000

Feature phones

~2005

Smartphones

The best is still to come

Phone functionality

- Great communications
- Voice (& text)
- Pocketability
- Size
- Weight
- Battery life
- Robustness
- Reliability

- Graphics display
- Colour
- Camera
- Audio: Ringtones+
- Video
- Memory
- Information
- Personalisation

- Rich programmability
- Virtuous cycle
- Innovation
- Applications & services
- Personal productivity
- Business productivity
- Mobile commerce
- Customisability

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The smartphone market open virtuous cycle

**Advanced open mobile OS**

Consumers & corporates

Mobile services, content & applications

Developers

Handset manufacturers

Fast 3G & 3.5G networks

Open standards

Large volumes of advanced open programmable mobile phones

Network operators

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Driving costs down and volumes up

• Need to drive down costs:
  … Device build costs, and service deployment costs, and usage costs

• Costs are reduced, in part, by the working of Moore’s Law
  … More computing power in a smartphone than put a man on the Moon?

• Moore’s Law is driven by ingenuity in real companies
  … Eg ARM

• An even bigger effect is
  … Economies of Scale, and the Learning Effect, and the Free Market

• “Practice makes perfect”
  … Companies will practice very hard, if the potential rewards are very high
Smartphone Bill Of Materials cost decline

Notional threshold BOM

- Software
- Manufacturing
- Accessories
- Mechanical
- PCB
- Camera
- Battery
- Display
- Other semiconductor
- Bluetooth
- CPU
- DBG
- ABB + GSM
- RAM
- ROM
- Total

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But just because something’s technically possible, it doesn’t mean it will happen!
Technology adoption life-cycle

- **Innovators, technology enthusiasts**
  - Can accept poor usability

- **Early majority**
  - Customers want complete solutions, reliability, and convenience

- **Late majority**
  - Customers want complete solutions, reliability, and convenience

- **Laggards, sceptics**
  - Won’t accept poor usability

**THE CHASM**

*source: Geoffrey Moore – “Crossing the Chasm”*
Smartphones are crossing the chasm because:

• They allow users to build on & do more of the things that caused users to buy phones in the first place
  …Communication (and messaging)
  …Safety & connection (timely info in context)
  …Fashion & fun (personalisation)
• AND they allow users to do these things simply
  …(Even though the phones themselves are increasingly complex)
• AND on that basis, provide additional functionality of genuine value to users
  …For example, becoming people’s preferred personal mobile gateway into the digital universe…
Mobile gateway into the digital universe
Accessing the digital world, while mobile

- Improved bandwidth – faster networks
- Improved screens
  - Number of pixels, Resolution, Colour depth, Sharpness
- Improved input
  - Handwriting recognition, Intelligent word completion
  - Bluetooth keyboards, Gestures, Voice recognition, Brainwaves…
- Intelligent software!
  - Proxies, Layout engines, optimised transmission…
  - Intelligent sentence completion and comprehension…
The increasing value of software

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

Hardware

2005 onwards
- Operator Customisation
- Open Software
  - 10-20Mb
  - Hardware

Effort required to build phone
Pocket melting pot

Mobile gateway into the digital universe

- Diary
- Keys
- Alarm clock
- PDA
- Camera
- Health monitor
- Games console
- Newspapers
- To-do list
- Tickets
- Vouchers
- Camcorder
- Wallet
- Dictionary
- Map
- TV
- Books
- BlackBerry
- Watch
- Calculator
- Radio
- Music player
Mind-transforming effects of smartphones

Users cope – younger users take them in their stride

Smarter users

- Better memory
- More in touch with key information
- More in touch with key people
- Better organised and more productive
- Better mentored
- More choice
- Smartphones will increasingly become smarter than their human users
Smart Phones = Smart Lives

More achieved
More leisure
More pleasure…
New waterproof Japanese phone

• Sony Ericsson shipped the SO902iWP – a completely waterproof phone
• Commercially available on June 30
• Can be used in the bathroom, seaside and even under water
For more information about smartphones

- *Smart mobs: the next social revolution*  
  ... by Howard Rheingold

- *Communities Dominate Brands, 3G Marketing, M-Profits, and Services for UMTS* [4 books]  
  ... by Tomi Ahonen

- www.Symbian.com

- The Symbian Smartphone Show  
  ... 17-18 OCTOBER 2006, EXCEL, LONDON
  ... 120 exhibiting companies
  ... 60 free seminars
  ... 3000+ attendees from the entire smartphone industry
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💡 To what extent can aspects of the rapid improvements in mobile phones inform similar rapid & valuable improvements in other areas of technologies of human enhancement?

Two kinds of driver for progress
Commercial drivers for smartphone progress

• Smell of money! **The smell of feasible money!**
  … “The business of business is business”
• The mobile phone industry’s version of TV06?
• 3GSM: Barcelona – Enormous hustle and bustle
  … 50,913 attendees (up from 33,793 last year), 2085 media people
  … Up to 20 seminar tracks and presentations happening in parallel
• Technical feasibility is not enough to guarantee progress
• The technology has to satisfy a strong human need…
• At a sufficiently attractive price to individual end users
• Where the product has sufficiently usability
  … Not requiring prolonged learning or disruptive changes in lifestyle
• But even this is not sufficient…
Open virtuous cycle

• “Evolution, not creation”
  … The eventual version of massively innovative technology is almost always attained through a series of incremental steps
  … Where each individual step adds some extra value
  … And makes commercial sense in its own right

• Credible roadmap

• Help in dealing with bottlenecks
  … The system must encourage and enable sufficient amounts of fresh new thinking to be brought to bear on the central problems

• So, the development process must be Open
  … To accept new ideas

• And Continuously commercially attractive
  … To encourage companies to come up with new ideas AND to continue to search for ways to successfully execute their ideas

Execution is the hardest task in innovation
The smartphone market open virtuous cycle

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Hugely simplified!

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Beyond commercial drivers

• The Hacker Ethic and the Spirit of the Information Age
  … Pekka Himanen & Linus Torvalds

• Compare with “The Protestant Ethic and the Spirit of Capitalism”
  … Max Weber

• Rich intelligence at the edges
• Not dominated by central companies
• Beyond thin partnership
• Wider investment of passion and creativity
Classical work ethic vs “hacker ethic”

- Money
- Work
- Optimality
- Flexibility
- Stability
- Determinacy
- Result accountability

- Passion
- Freedom
- Social worth
- Openness
- Activity
- Caring
- Creativity
+ Emerging technology
+ Open markets, open virtuous cycle, open minds
+ Collaborative approach
+ Heart as well as brain

The best is still to come