



# Symbian – Smart Platform for Mobile Innovation

## *Research Opportunities*

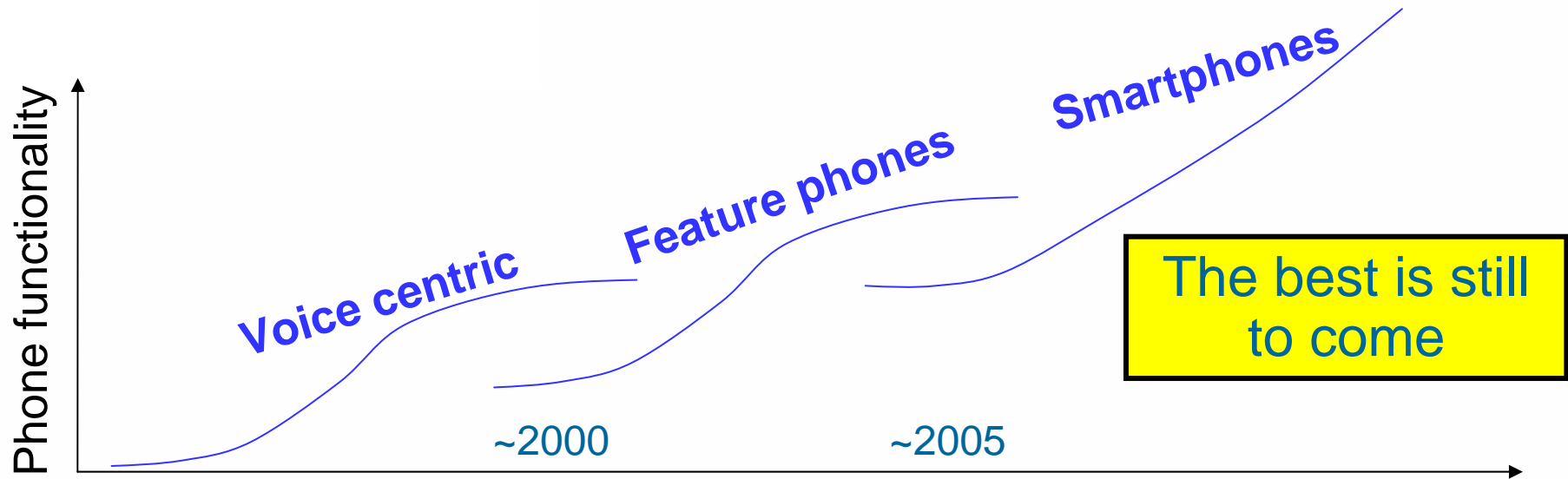
Alexander Zavorine. Symbian Research

## Mobile phones today – some statistics

- **25%** world population had subscribed to a mobile phone service after the first 15 years of availability (2004)
  - **50%** of the world population will have subscribed to a mobile phone service by 2008
    - ... Half the population of the world contactable by mobile phone in 2008
  - **75%** may have mobile phone services by 2012
  
  - 1 billion SMS messages sent in the UK in the **year** 1999
  - 1 billion SMS messages sent in Britain in **1 week** in November 2007
- ... and similar growth around the world.



# Three waves of mobile phones



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

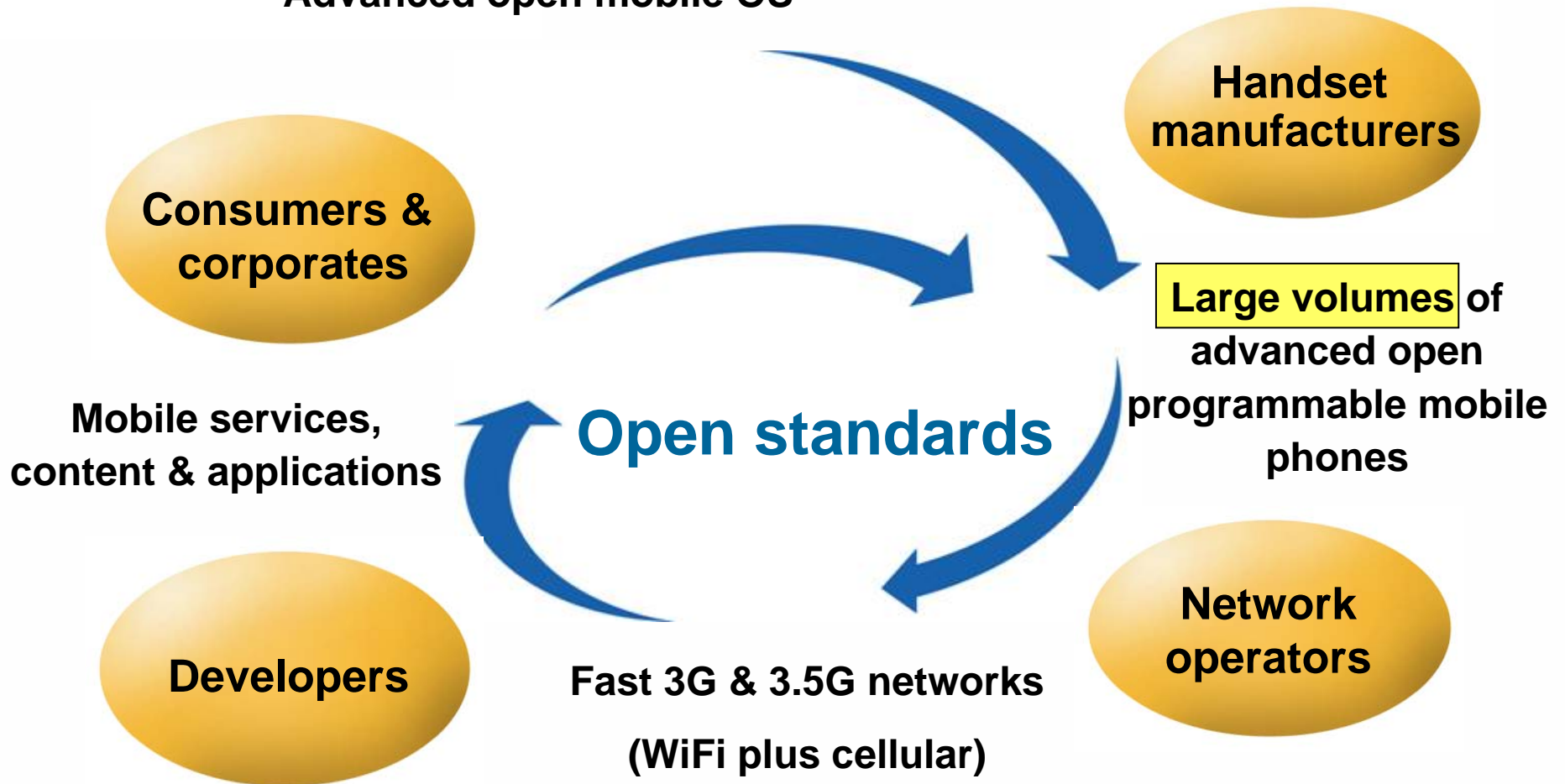
- Graphics display
- Colour
- Camera
- Audio: Ringtones++
- Video
- Memory
- Information
- Personalisation

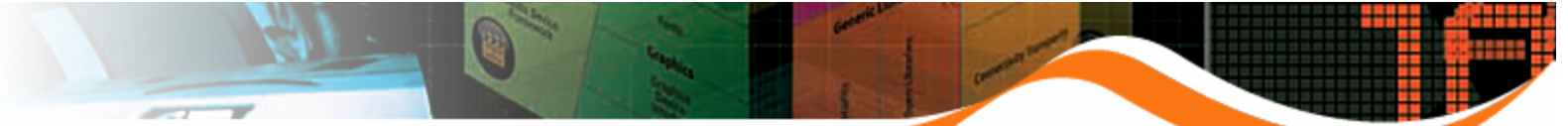
- Rich programmability
- Virtuous cycle
- Innovation
- Applications & services
- *Personal productivity*
- *Business productivity*
- Mobile commerce
- Customisability



# The smartphone market open virtuous cycle

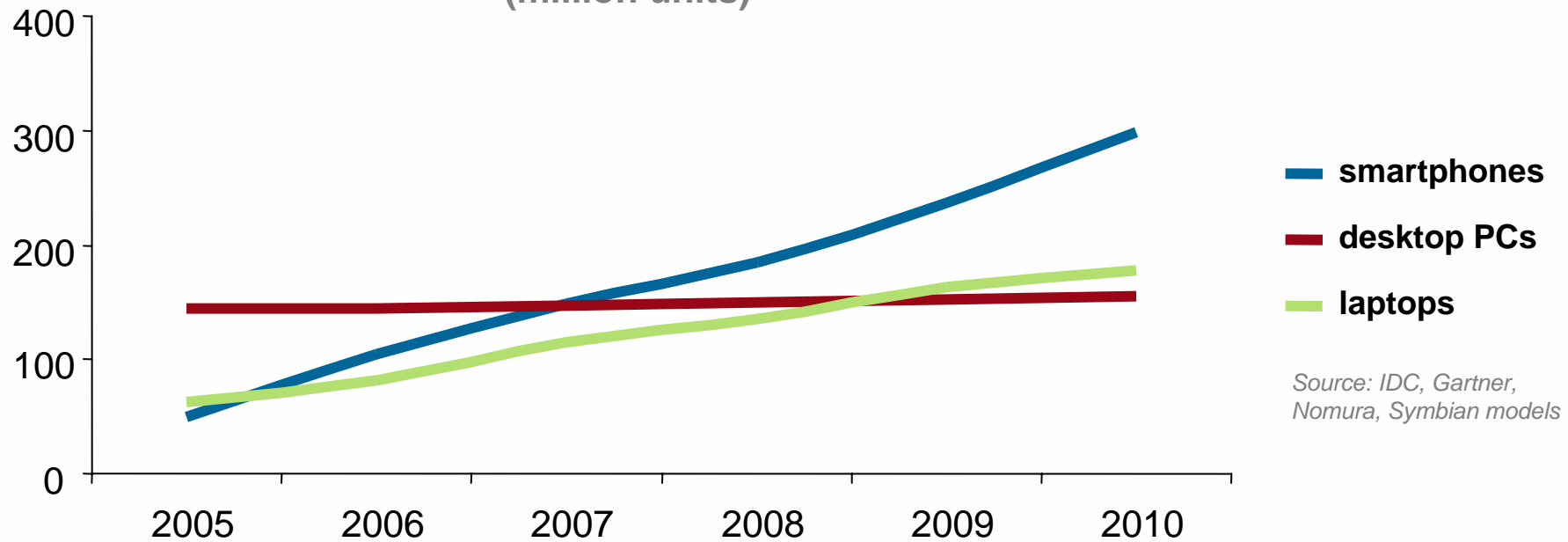
Advanced open mobile OS





## How the world will connect...

**Market Growth Forecasts (pa)**  
**Smartphones, Desktop PCs & Laptops**  
(million units)



Source: IDC, Gartner, Nomura, Symbian models





Overlapping market segments lead us to the “converged mobile device”.



- Walkman®
- Sport
- Remote Control
- Music
- Multimedia
- Waterproof
- Mobile TV
- Biometrics
- Hybrid
- Business
- Music
- Fashion
- Imaging
- Simple



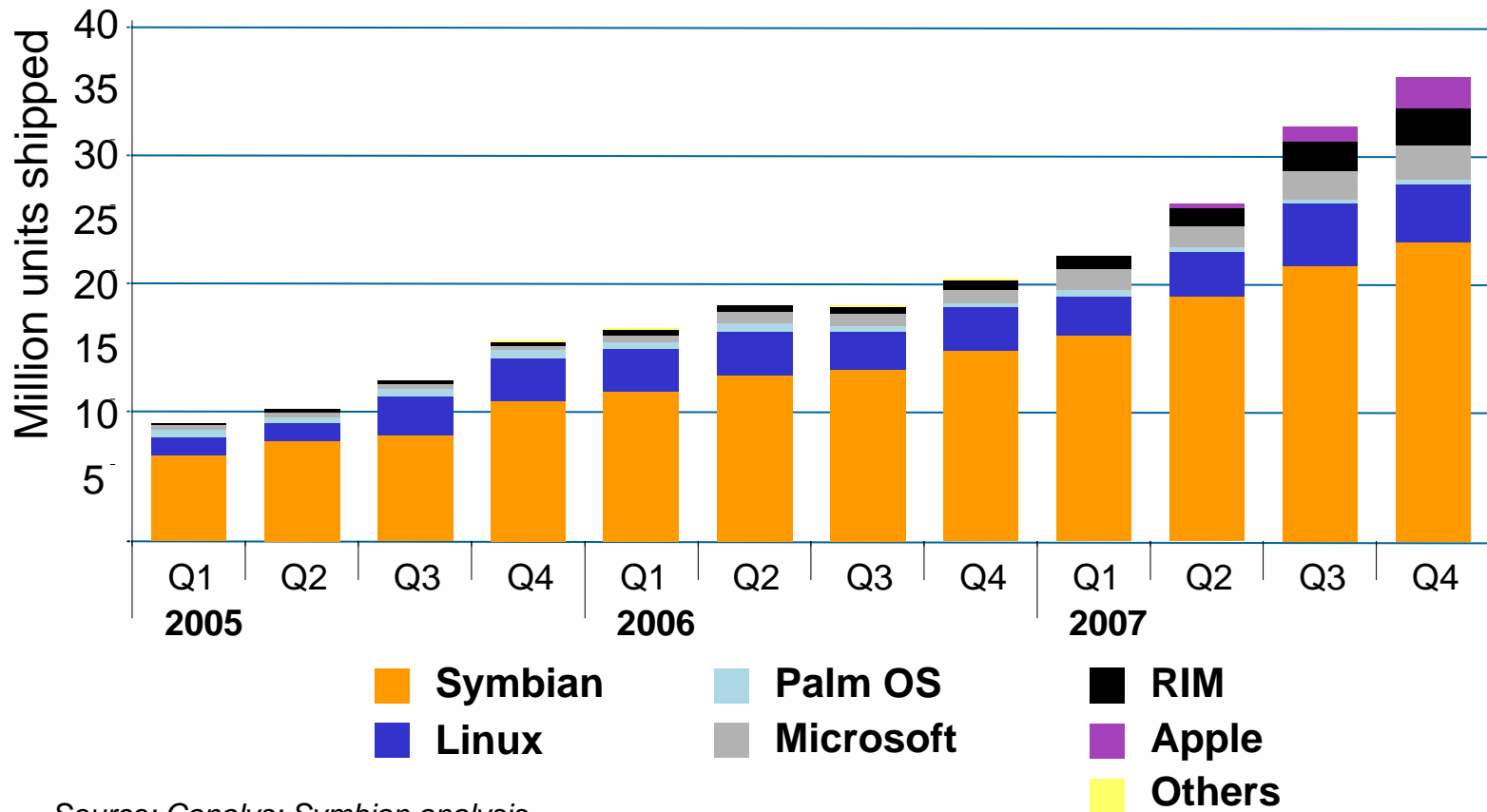
*“...the **mobile phone**...is most likely to carry the dream of the ‘personal computer’ to its conclusion”*



The  
Economist



## Quarterly worldwide smartphone sales by OS



Source: Canalys; Symbian analysis

And the “smartphone” is no longer a niche market:

Over 200 million Symbian phones have been sold.

Symbian's share of the **overall** phone market increased from **5%** in 2006 to **7%** in 2007.



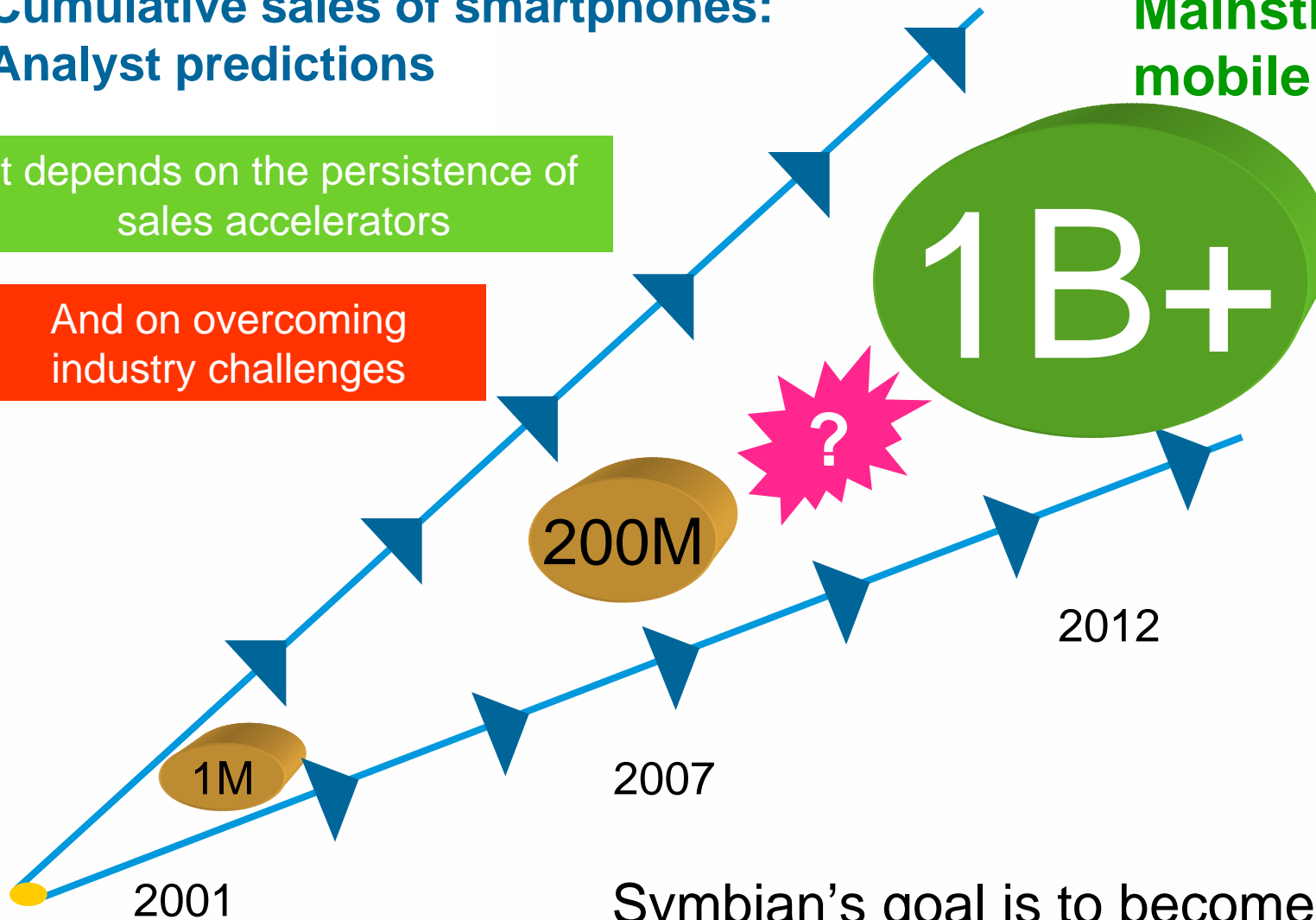


## Cumulative sales of smartphones: Analyst predictions

Mainstream  
mobile devices

It depends on the persistence of  
sales accelerators

And on overcoming  
industry challenges



Symbian's goal is to become  
the most widely-used software on the planet.



## Symbian - some background



- Symbian OS is the market-leading smartphone operating system.
- Symbian was formed in 1998, by PDA-maker Psion and partners in the mobile phone industry.
- Symbian now has offices in Bangalore, Tokyo, Beijing, Seoul, the USA and has its headquarters in the UK.



- At present, Symbian is a private company, owned mainly by mobile-phone manufacturers: Nokia, Ericsson, Sony-Ericsson, Panasonic, Siemens, Samsung.
- User interfaces designed for Symbian OS include Nokia's S60 & S80, NTT DoCoMo's MOAP, and UIQ.



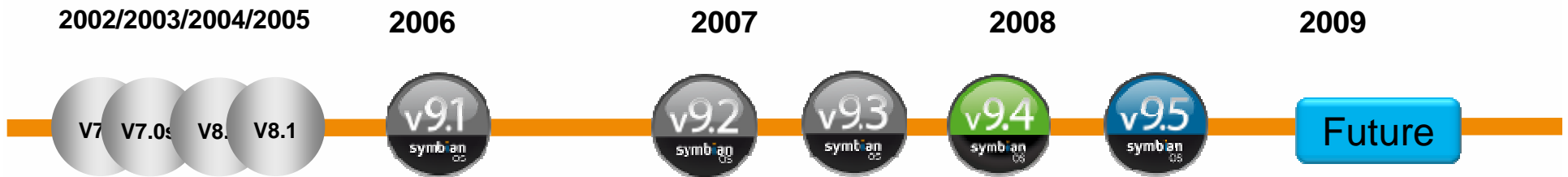
## Symbian moves toward open source

LONDON, UK; June 24, 2008 -- Nokia, Sony Ericsson, Motorola and NTT DOCOMO announced today their intent to unite Symbian OS™, S60, UIQ and MOAP(S) to create one open mobile software platform.

- The **Symbian Foundation** will own and distribute this combined open-source platform.
- Other founder members of the Foundation will include AT&T, LG Electronics, Samsung Electronics, ST Microelectronics, Texas Instruments and Vodafone
- To enable the Foundation, Nokia announced plans to acquire the remaining shares of Symbian Limited that Nokia does not already own
- Currently this is still in the planning phase, and relevant government approval is currently being sought.
- Once the Symbian Foundation is in operation, the entire system still cannot be immediately “open sourced” ... it is necessary to ensure we do not expose suppliers’ confidential source. Symbian OS source will be made available over time as we address these issues. This process is expected to take several months.
- This is a history-making large-scale move to open source.  
See [symbianfoundation.org](http://symbianfoundation.org)



# Value-enabling technology in Symbian OS



## SQL

Scalable Data Management



## ScreenPlay

Next Generation Graphics



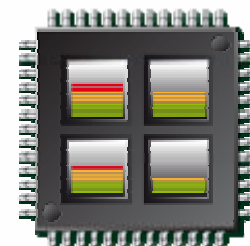
## FreeWay

Next Generation Network speed

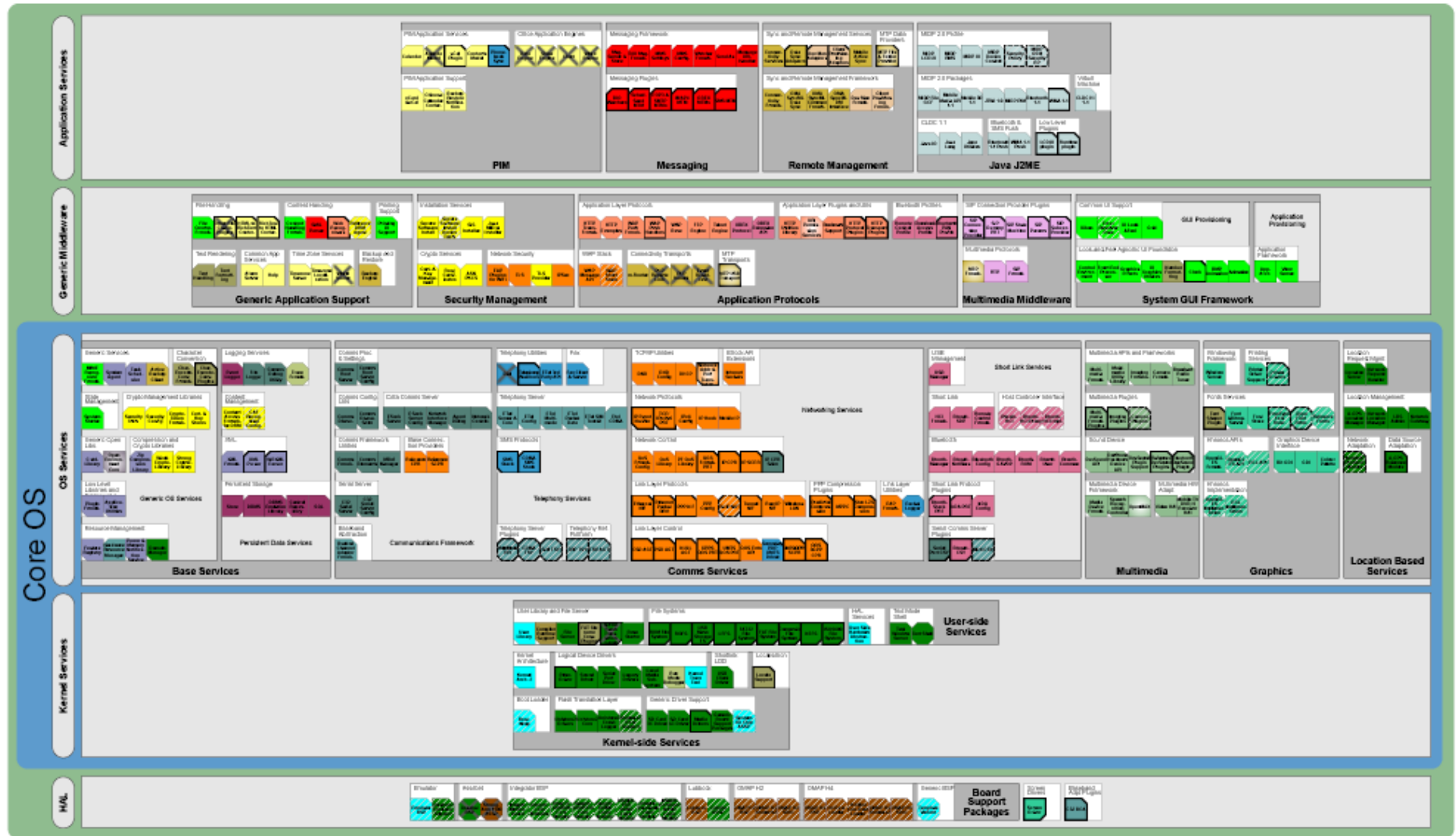


## SMP

Multi-Core Phones



# Symbian OS component level view





## Symbian's interest in Universities

- To point out the opportunities with Symbian and smartphones
  - ... Opportunities for ground-breaking, market-relevant Research
  - ... Opportunities to nurture valuable IP
  - ... Opportunities to gain marketable (employable) skills
- To encourage university Research Agendas towards specific platform/technologies
  - ... To improve the supply of skilled programmers in and on Symbian OS
  - ... To stimulate the creation and improvement of tools and software for the development of smartphones and smartphone applications
  - ... To challenge and validate ideas about technologies, platforms, development methodologies, market evolution, etc



# Symbian University Engagement – three facets

[www.symbian.com/universities](http://www.symbian.com/universities)

## Symbian Academy

[developer.symbian.com/academy](http://developer.symbian.com/academy)

- Primary goals:     Increasing the innovation and popularity of mobile software development.  
                          Grow the number of Symbian skilled graduates available to the Symbian ecosystem.
- ... Provides teaching support; course material and other teaching resources, and support through SDN.
  - ... Symbian Academy jobs board ties students with employers in the Symbian ecosystem
  - ... Growth in specific regions based on Symbian ecosystem needs

## University Research Relations (URR)

[research@symbian.com](mailto:research@symbian.com)

- Primary goals:     Promote awareness and use of Symbian as a platform among academic researchers.  
                          Increase Symbian presence in research on ubiquitous computing & converged devices.
- ... Engages with universities' research programmes.
  - ... Supports research on Symbian-related topics or other research that uses Symbian as a platform.
  - ... Also promotes Symbian presence and presentations at academic conferences & journals.
  - ... A new role in the Symbian Research dept, created June 2008.

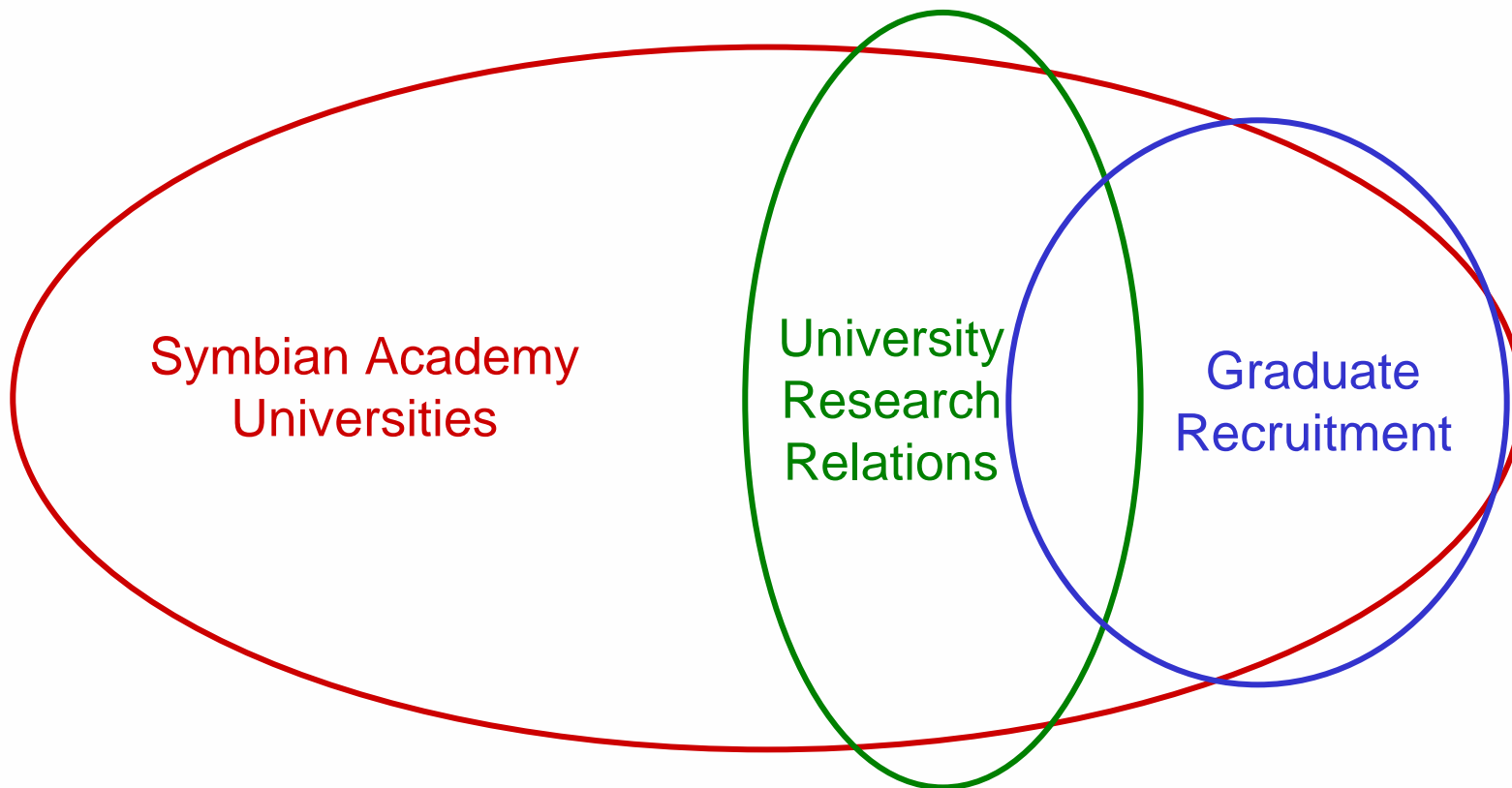
## Graduate Recruitment

[recruitment@symbian.com](mailto:recruitment@symbian.com)

- Primary goals:     Recruit excellent graduates from universities for positions in Symbian.  
                          Provide structures for training, networking, and career development of the new grads.
- ... Engages UK universities in a series of recruitment events.
  - ... Manages the graduate recruitment process and Bootcamp training programme.
  - ... Works with universities to provide student placement & internship in Symbian.



- These programmes are designed for *complementary overlap*.
- Symbian Academy provides a base for most other University Engagement.





## University Engagement with Symbian – step by step

1	For background documentation & support, sign up with SDN – the Symbian Developer Network.	<a href="http://developer.symbian.com">developer.symbian.com</a>
2	For overall university engagement & support, and/or course materials contact Symbian Academy.	<a href="http://developer.symbian.com/academy">developer.symbian.com/academy</a>
3a	Interested in Symbian-related research projects? Send enquiries or proposals by email.	<a href="mailto:research@symbian.com">research@symbian.com</a>
3b	Enquiries about Graduate Recruitment – internship and permanent positions.	<a href="mailto:recruitment@symbian.com">recruitment@symbian.com</a>

- If your interest is commercial / non-academic, see [symbian.com/partner](http://symbian.com/partner)
- For non-graduate career opportunities, see [careers.symbian.com](http://careers.symbian.com)



## Symbian Research Challenges & Themes

The next wave of smartphone innovation  
Issues and opportunities with smartphone technologies

### Challenge areas

- A. Device evolution / revolution through 2012-2015
- B. Improved development and delivery methodologies
- C. Success factors for mobile applications and mobile operating systems
- D. Possible breakthrough applications and markets
- E. Possible breakthrough technology improvements





# A Device evolution / revolution through 2012-2015

1984

1996

2008

2015...

## PDA

## Smartphone

## Converged mobile devices

- Electronic organiser
- Interactive manipulation of local data
- Battery life
- Memory constrained
- Instant-on
- Fast task-switching
- Graphical screen (overlapping windows)
- RAM persisted application state
- PC Connectivity

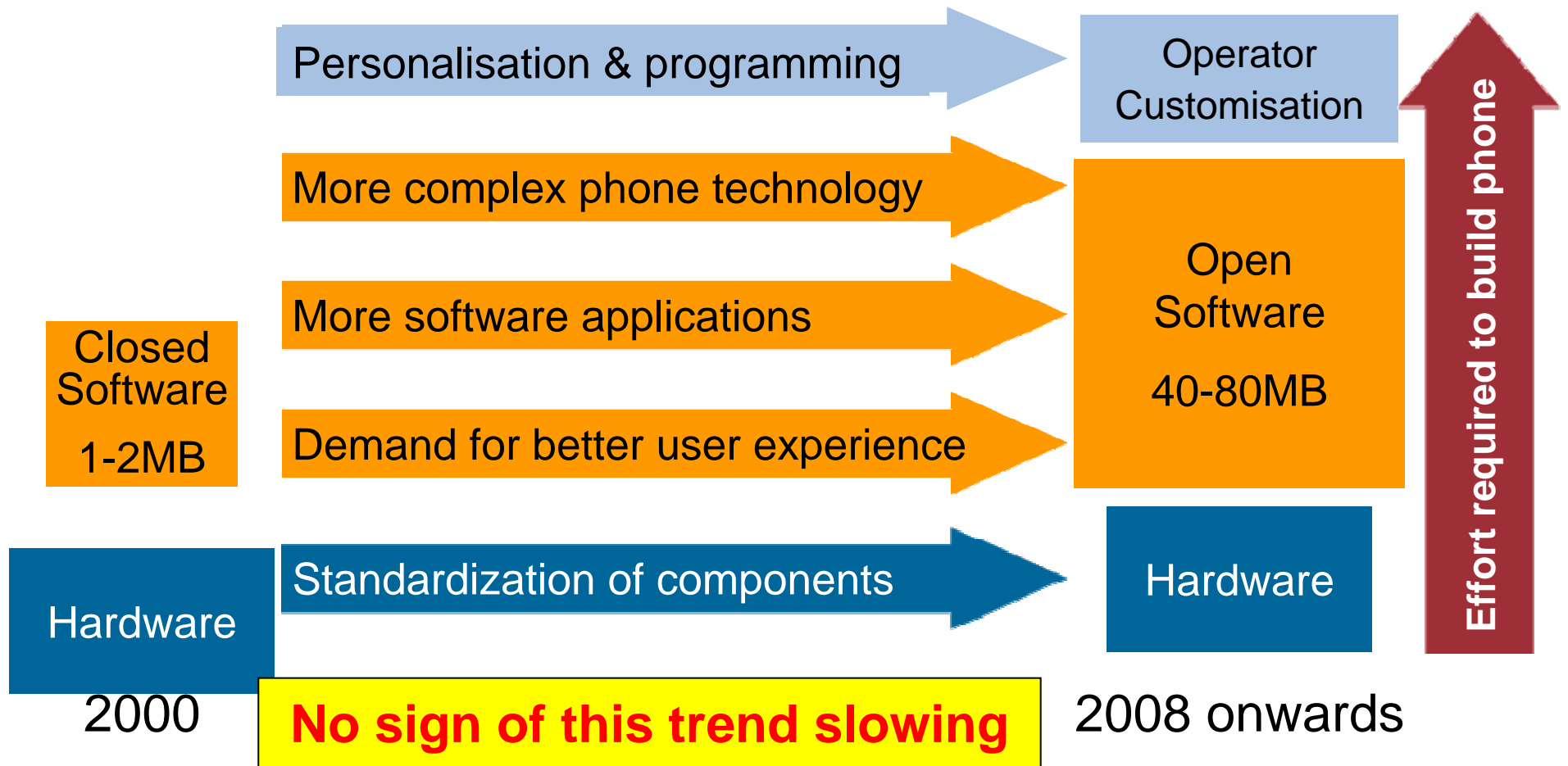
- Phone as the most important application
- Smartphone as “Phone Plus...”
- Smartphone as “simply great phone”
- Device start-up
- Cellular baseband abstraction
- Flash persisted state
- IP connectivity and networking

- All-IP wireless broadband and multiple bearer management
- Real-time networking
- Multimedia (creation, consumption, communication)
- Graphics and multimedia hardware acceleration
- Broadcasting and positioning
- Large fast persistent storage
- Content protection/rights management
- Energy & thermal constraints
- **Disruptive new technologies**



## Ⓑ Improved development and delivery methodologies

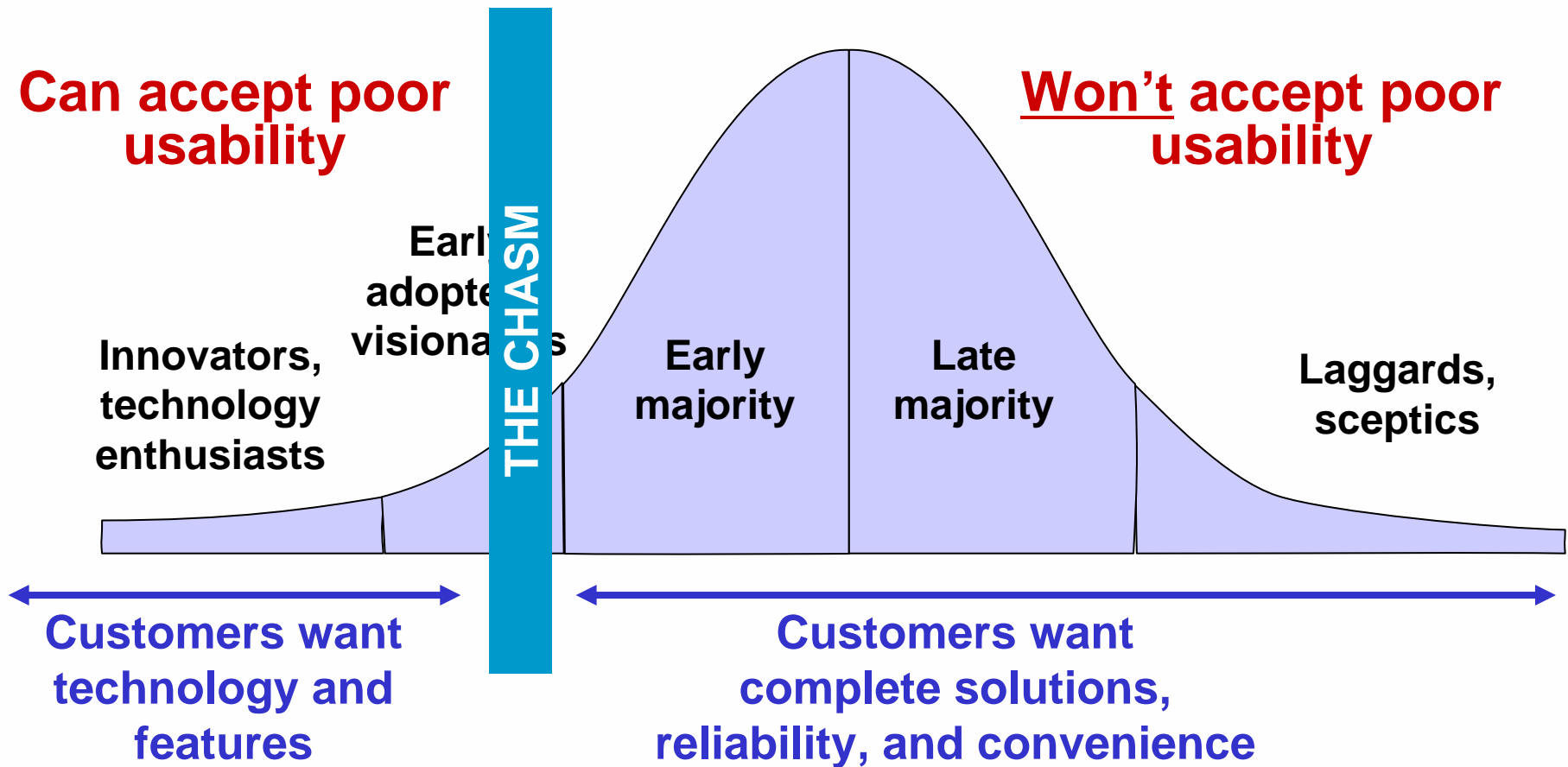
### The increasing scale of mobile software





# © Success factors for mobile applications and mobile operating systems

Technology adoption life-cycle



(source: Geoffrey Moore)



# D Possible breakthrough applications and markets

Health monitor

Games console

Newspapers

To-do list

Diary

Alarm clock

Tickets

Vouchers

Keys

Camera

Camcorder

Wallet

PDA

Radio

Dictionary

Map

TV

Books

BlackBerry

Watch

Calculator

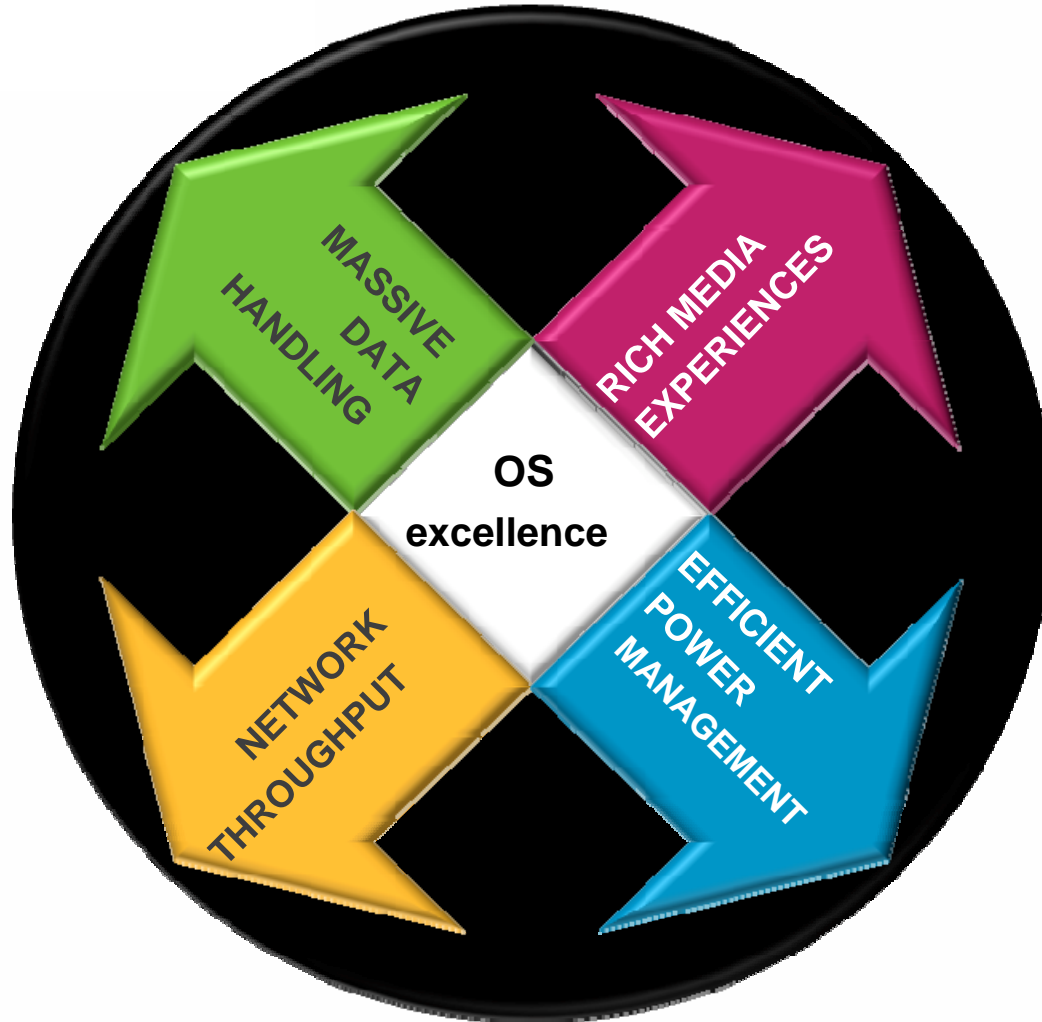
Web tablet

Music player





# Ⓔ Possible breakthrough technology improvements





## University Research Essay Contest

**The next wave of smartphone innovation**  
Issues and opportunities with smartphone technologies

- **Open to all university students worldwide**
- **Up to ten prizes of £1000 each**
  - ... **Essays will be rated for relevance, insight, clarity, readability, timeliness, originality, evidence provided, and technical expertise**
- **Contest announced early May on [www.symbian.com](http://www.symbian.com)**
- **Essays should be submitted – via email – during September**
  - ... **No longer than 8 pages – written in English – optional supporting software**
- **Winners announced at Smartphone Show, October**
- **Winning essays (along with those “specially commended”) will be published in the forthcoming **Symbian Research Journal****

*We're looking forward to hear from you.*