



# Maemo and Symbian S60

EPFL  
October, 10<sup>th</sup> 2009

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# Mobile Platforms



The slide illustrates two mobile operating systems available on Nokia devices. On the left, the Maemo OS is shown on a Nokia N95, displaying a user interface with a profile picture, contact information, and application icons. Below the phone is the text 'maemo.ORG'. On the right, the Symbian OS is shown on a Nokia N95, displaying the 'symbian OS' logo on the screen.



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# Maemo

- Maemo is an open development platform for applications and technology innovation for handheld devices
- It was originally developed by Nokia and afterwards offered to the community as opensource



The diagram shows the Maemo logo in the center, surrounded by a circle of logos for various open-source projects. The projects include: gstreamer, mozilla, glib, libpng, penguin (Linux), ubuntu, debian, and x. Below the circle, the text reads: "Community", "Related open source projects".

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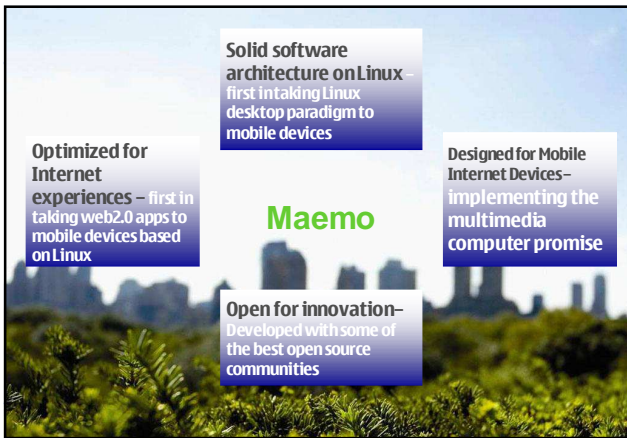
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**Optimized for Internet experiences** – first in taking web2.0 apps to mobile devices based on Linux

**Solid software architecture on Linux** – first in taking Linux desktop paradigm to mobile devices

**Designed for Mobile Internet Devices** – implementing the multimedia computer promise

**Open for innovation** – developed with some of the best open source communities

**Maemo**

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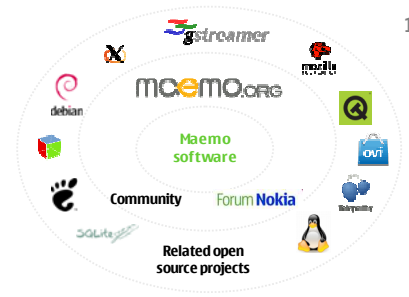
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Open for innovation – developed in collaboration with the open source community



14.000 members  
700 hosted projects  
200 applications

Nokia is a key contributor to projects such as GNOME/GTK+.

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**Maemo.org**

**maemo.org – the community for innovation on Maemo.**

140.000 unique visitors  
14.000 registered users  
700 hosted projects  
200 applications



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## Product evolution

Internet Optimized Multimedia Computer

**Nokia 770**  
1<sup>st</sup> generation of Nokia Internet Tablets  
Easy access to the Internet. High resolution touch screen.

**Nokia N970**  
2<sup>nd</sup> generation of Nokia Internet Tablets  
Bringing the Tablet to a dominantly 'one way' communication device.

**Nokia N810 WMAX Edition**  
Bringing WMAX connection to strengthen the Internet story. With wider wireless Internet coverage, Internet will truly become personal and mobile.

With integrated slide keyboard N810 leads the richly connected, pocketable Web 2.0 experience allowing you to connect to your content and experiences wherever you are.

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## Maemo 5

- Linux based operating system for N900
- Optimized for pocket sized devices and finger use
- Panorama desktop
- Multitasking with dashboard
- New UI style
- Animated UI
- Compositing window manager
- Qt 4.5.3
- New API's added
- Accelerated graphics with OpenGL-ES2

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## Nokia N900

- TI OMAP 3 processor, ARM Cortex-A8 600 MHz
- HSPA/3G support – online anywhere 3G connectivity
- High definition camera support (integrated Image Signal Processor) 5 megapixel camera (2584 × 1938 pixels)
- HW acceleration for OpenGL ES 2.0
- 3.5 inch touch-screen 800 × 480 pixel resolution
- High-speed USB 2.0
- Integrated GPS with A-GPS
- WLAN IEEE 802.11b/g
- 32 GB internal storage

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## Symbian OS



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## Symbian OS

- Symbian OS is a global industry standard for mobile phones systems and build especially for mobile devices
- Forum established in 1998 and owned by leading mobile phone manufacturers
- Symbian OS offers a de-facto standard operating system for wireless devices

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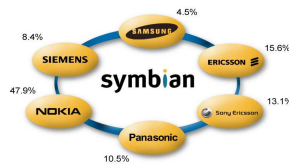
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## Symbian Consortium

- Ericsson (15.6%)
- Nokia (47.9%)
- Panasonic (10.5%)
- Samsung (4.5%)
- Siemens (8.4%)
- Sony Ericsson (13.1%)



symbian  
OS

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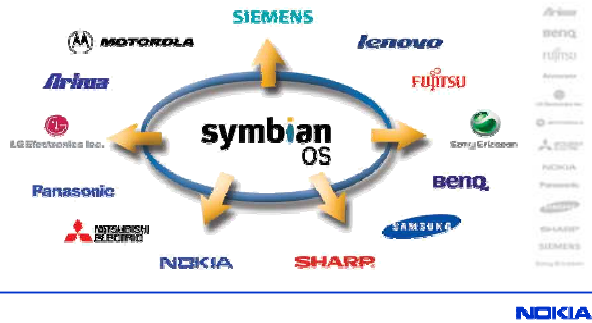
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## Symbian Licenses



## Symbian Foundation

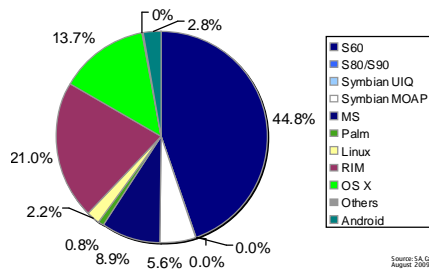
- In 2008 the **Symbian Foundation** was established
  - A new, independent non-profit organization called
  - The former Symbian Software Limited was acquired by Nokia
- The objective of the foundation is to make the Symbian platform as royalty-free, open source software.
  - The process of publishing the source code under the Eclipse Public License (EPL) was aiming to be completed in 2010.

**SYMBIAN  
FOUNDATION**

Things are developing nicely

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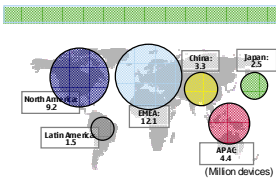
## Worldwide market shares 2009/Q2



Source: S.A. Canalys, August 2009  
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## Smartphones, regions 2009/Q2



### Overall Smartphone market grows

- 14-15% growth YoY
- 14% of Total handset market

### Nokia share continues to grow

- Volumes increase 22%
- Gained Market share from 42 to 45%

### Large Addressable Market

- Approx 65M S60 devices 3.2 and 5.0
- Approx 160M S60 devices 3.0 and above

Source: S.A. Canalys, August 2009  
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## Some questions.....

Who doesn't have a mobile phone?

Who knows which OS is on his phone?

Who has Symbian OS on his phone?

Who knows which version of Symbian OS is on his phone?

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## Different Nokia Series

- Series 20
- Series 30
- Series 40
- S60
- Series 80
- Series 90

- Largest number of shipped terminals for S60

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## Series 20

- Mobile phones with the following services

- SMS

- Monochrome Display

- 84 x 48 Pixel



Nokia 6130    Nokia 1100    Nokia 6210



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## Series 30

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML

- Monochrome and color Display

- 96 x 65 Pixel



Nokia 8280    Nokia 3510



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## Series 40



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### Series 40 1<sup>st</sup> Ed.

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML

- Display

- 96 x 65/68 Pixel
- 128 x 128 Pixel



Nokia 3100



Nokia 5100



Nokia 6100



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### Series 40 2<sup>nd</sup> Ed.

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML

- Display

- 128 x 128 Pixel
- 128 x 160 Pixel
- 208 x 208 Pixel



Nokia 5140



Nokia N-Gage



Nokia 6230



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### Series 40 3<sup>rd</sup> Ed.

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML

- Display

- 240 x 320 Pixel

- Connectivity

- Bluetooth, Infrared, USB



Nokia 6280



Nokia 6275i



Nokia 6265i



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### Series 45

- Mobile phones with the following services

- First 3G phones
  - 6650

- Display

- 128 x 160



Nokia 6650



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### Series 40 3<sup>rd</sup> Ed. FP1

- Mobile phones with the following services

- SMS, EMS, MMS, IM, J2ME, HTML, XHTML
- Bluetooth 2.0 +EDR

- Double display

- 240 x 320 Pixel
- 128 x 160 Pixel



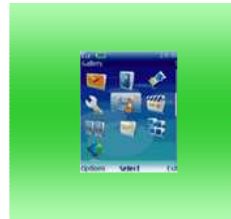
Nokia 8800



Nokia 6131 NFC



Nokia 6234



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### Series 40 3<sup>rd</sup> Ed. FP2

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML
- Flash Lite 2.0
- Bluetooth 2.0 +EDR

- Double display

- 240 x 320 Pixel
- 128 x 160 Pixel



Nokia 5200



Nokia 7373



Nokia 7390



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### Series 40 5<sup>th</sup> Ed.

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML
- Flash Lite 2.1
- MIDP 2.1
- Bluetooth 2.0 +EDR

- Double display

- 240 x 320 Pixel
- 128 x 160 Pixel



Nokia 2730



Nokia 7100



Nokia 6600 i slide



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### Series 40 5<sup>th</sup> Ed. FP1

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML
- Flash Lite 2.1
- MIDP 2.1
- Bluetooth 2.0 +EDR
- USB 2.0 High-Speed.

- Double display

- 240 x 320 Pixel



Nokia 2730



Nokia 3600



Nokia 5220 Xpress Music



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### Series 40 6<sup>th</sup> Ed.

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML
- Flash Lite 3.0
- MIDP 2.1
- Bluetooth 2.1+EDR
- A-GPS with included maps
- 5.0 megapixel camera with LED flash

- Double display

- 240 x 320 Pixel



Nokia 6750



Nokia X3



Nokia 6303



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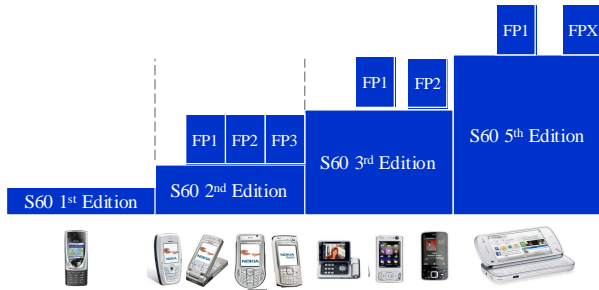
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## S60 Evolution



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## S60 1<sup>st</sup> Edition

- Mobile phones with the following services

- SMS, EMS, MMS, J2ME, XHTML

- Operating System

- Symbian

- Display

- 176 x 208 Pixel



Nokia 7650



Nokia 3600



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## S60 2<sup>nd</sup> Edition

- Mobile phones with the following services

- Display

- 176 x 208 Pixel (Standard)
- 208 x 176 Pixel [Landscape]
- 240 x 320 Pixel (Quarter QVGA)
- 320 x 240 Pixel [Landscape]
- 352 x 416 Pixel (Double)
- 416 x 352 Pixel [Landscape]

- Feature Pack 1:

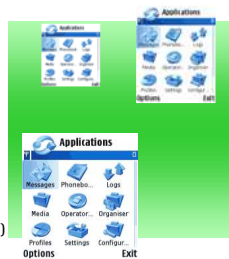
- HTML Browser-Extensions
- EDGE support

- Feature Pack 2:

- Support for WCDMA (UMTS)

- Feature Pack 3:

- Larger resolutions (240 x 320 und 352 x 415 Pixel)



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## S60 Evolution

- S60 2nd Ed.



Nokia 6600

- S60 2nd Ed. FP 1



Nokia 6670



Nokia 6270

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## S60 Evolution

- S60 2nd Ed. FP2



Nokia 6630



Nokia 6680



Nokia 6681



Nokia 6682

- S60 2nd Ed. FP3



Nokia N90



Nokia N70

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## S60 3<sup>rd</sup> Edition

- As before for the 2<sup>nd</sup> edition
- More attention on the security issues



Nokia E61



Nokia E61



Nokia E70



Nokia N71



Nokia N80



Nokia N91



Nokia N93



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### S60 3<sup>rd</sup> Ed. FP1

#### •N95

- GPS
- 5.0 MegaPixel camera
- Local Connectivity:
  - Bluetooth 2.0 +EDR
  - Infrared
  - Mini USB
  - USB 2.0
  - WLAN
- And much more.....



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### S60 3<sup>rd</sup> Ed. FP2

#### •N96

- GPS
- 5.0 MegaPixel camera
- 16 GB storage
- Local Connectivity:
  - Bluetooth 2.0 +EDR
  - Infrared
  - Mini USB
  - USB 2.0
  - WLAN
- DVB-H Video
- Flash Lite 3.0



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### S60 5<sup>th</sup> Edition

#### •N97

- 640 x 360 pixels and 16:9 aspect ratio TFT color display
  - resistive touch screen and tactile feedback.
- 5 mega pixel camera with dual LED flash
  - Automatic geotagging of images and videos
- WLAN
- HSDPA (3.5G)
- A-GPS and included maps
- Flash Lite 3.0
- Bluetooth 2.0 +EDR
- Micro USB
- Nokia AV 3.5mm
- UPnP
- USB 2.0 High-Speed



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## Series 80

- Mobile phones with the following services
  - SMS, EMS, MMS, Personal Java, XHTML, PIM
  - WLAN
- Operating System
  - Symbian
- Display
  - 462x200 Pixel (92x)
  - 640x200 Pixel (93x/95x)
- External Display
  - Series 30/40



Nokia 9300



Nokia 9500



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## Intermediate Discussion

- Large number of series for the mobile phones
- Largest number of shipped mobile phones for Series 40 and 60.
- Evolution of Series 80 and Series 90 are not the future in terms of wide spread application.
- Let's focus on S60

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## Mapping S60 and Symbian OS

### Edition and FP Symbian OS

- 1<sup>st</sup> Ed → OS v6.1
- 2<sup>nd</sup> Ed → OS v7.0s
- 2<sup>nd</sup> Ed FP1 → OS v7.0s
- 2<sup>nd</sup> Ed FP2 → OS v8.0a
- 2<sup>nd</sup> Ed FP3 → OS v8.1a
- 3<sup>rd</sup> Ed → OS v9.1
- 3<sup>rd</sup> Ed FP1 → OS v9.2
- 3<sup>rd</sup> Ed FP2 → OS v9.3
- 5<sup>th</sup> Ed → OS v9.4



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## Software development

- How to program a smartphone?
- What are the supported languages / technologies?
- How to get started?

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