Bluetooth Applications for Mobile Phones
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Outline

• Bluetooth in mobile phones
  • Current and coming applications
  • Platforms
• Series 60 Platform
  • Bluetooth in Series 60
  • Bluetooth APIs of Symbian
  • Bluetooth examples
  • Development and testing environment
• Forum Nokia services to developers
Nokia’s Vision

Within the Mobile World, an increasing part of all human communication will take place with personal wireless devices. The content of personal mobile communication evolves from voice to text to images to multimedia.

Bluetooth everywhere

- Personal Domain
- Ad hoc Community
- Networked Services
Possible Bluetooth applications

- WAP information services
- Location dependent info
- Headsets
- Car kits
- M-Commerce
- Vending
- Ticketing
- Domestic Appliances
- Audio / Visual
- Home entertainment
- Alarms
- Security Passes
- Desktop PC
- Laptop / Palmtop PC
- Printer
- Scanner / Digital Camera
- LAN connection

Downloadable applications with Symbian OS and Java™

Symbian OS and MIDP Java™ provide increased phone functionality, personalisation and more interactive, fun and dynamic applications

- Multi-player games
- Remote control
- Sharing, Swapping, Chatting, Messaging
Peer-to-peer applications

• Multiplayer games

• Local chat/messaging

Remote control

• For controlling audio/video appliances

• For locking/unlocking doors
Safety and security applications

- alarms
- security passes
- access control

Industrial applications

- industry automation, remote control
- sensors, metering
Local Services with Browsing over Bluetooth

WAP/XHTML is a multi-bearer standard and Bluetooth offers a strong complement to the cellular bearers.

- Browsing locally available services and information
- Local and remote WAP/XHTML Access
- Controlling other devices

Global services with local focus:

- Complements 3G services in hot spots
- Links services to time and place
Current Bluetooth products from Nokia

Phones:
- Nokia 6310
- Nokia 6310i
- Nokia 7650
- Nokia 8910

Accessories:
- Wireless Headset HDW-1
- Wireless Car Kit CARK112

Benefits of Bluetooth

<table>
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<th>Users</th>
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# Benefits of Bluetooth

## Users
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- Faster phone services (WAP, Messaging, Java)
- Personal Trusted Device: phone turns into multi purpose device with keys, wallet, remote control etc.

## Developers
- More business: a wealth of new use models for mobile phones based on possible interoperability with other electronic devices
- Expand current applications: expand current wireless applications with better connection performance and local dimension

## Operators
- Boost current wireless services (i.e. WAP, Messaging, Java)
- Explore new Service Opportunities (i.e. localized services, local Payment etc.)
- Open new channels to end-users (Malls, Airport launches etc.)
Series 60 Platform

This is what Nokia has developed on top.

Series 60 Platform

Applications
User Interface
Symbian OS

Series 60 Platform Is...

Smartphone Software Platform aimed at a one-hand operated smartphones with PDA functionality for rich communication, content browsing and multimedia.

- Available now for licensing by terminal manufacturers
- Interoperability between terminals from a wide range of manufacturers
- Key application software:
  - Series 60 User Interface
  - WAP 1.2.1 Browser
  - Telephony features
  - MMS, SMS, and Email clients
  - PIM with full synchronization support

This is what Symbian provides.
Series 60 User Interface Features

- Large colour screen 176x208 with visual appeal
- 2 soft keys and 4-way navigation system
- One hand operation
- Globally tested for ease of use
  - This UI has been tested more than any previous Nokia developed UI
  - Users will be able to easily accomplish their tasks even without a manual
- Vendors can modify:
  - bitmaps for graphics
  - sounds & animations & colour schemes & fonts
  - localization including terminology
- Video capabilities (QCIF 176x144)
- 3G Ready – UI accommodates also new 3G services

Nokia 7650 is the first Series 60 software enabled phone

- Bluetooth
- Integrated digital camera (VGA, 640x480 pixels)
- Graphical color display (176x208 pixels, 35x41mm)
- Joystick navigation
- MMS
- GPRS
- MIDP Java
- EGSM900/1800
Bluetooth support in Nokia 7650

- Bluetooth v1.1 compliant
- Profiles:
  - Generic Access Profile
  - Serial Port Profile
  - Dial-Up Networking Profile (as gateway)
  - Fax profile (as gateway)
  - Object Exchange Profile
  - Object Push Profile
  - File Transfer Profile (as server)

What does Series 60 Platform mean to developers?

- The freedom to create applications for a single platform
- Efficiency of a common API lowering development costs
- A platform available from multiple manufacturers
- A larger unified application market in which to create
- Symbian C++ applications – for full API access to Series 60 functionality
Bluetooth in Series 60

- Bluetooth API is a part of Symbian OS v6.1
- Applications can take advantage of the versatility of the Series 60 UI
- Bluetooth hardware implementation is vendor dependent

Bluetooth API modules of Symbian

- Bluetooth Sockets
  - Encapsulate access to RFCOMM and L2CAP through a TCP/IP-like sockets interface
- Service Discovery Database
  - Encapsulates one side of SDP: a local service uses it to record its attributes, so that remote devices may discover its presence, and determine if it is appropriate to use
- Service Discovery Agent
  - Encapsulates the other side of SDP: it allows you to discover the services that are available on a remote device, and the attributes of those services
- Bluetooth Security Manager
  - Enables services to set appropriate security requirements that incoming connections must meet
- Bluetooth UI
  - Used for calling a dialog that asks users for remote device selection information
API module relationships

- Bluetooth Socket API is the fundamental API:
  - The other APIs rely on it to perform communications with other devices

Bluetooth examples in the Series 60 SDK

- Help developers to concentrate on their application
Bluetooth advertiser example

- Demonstrates how to enter a new service into a local Bluetooth service database.
- Remote Bluetooth devices use this database to discover the services that are available.

Bluetooth discovery example

- Demonstrates how to:
  - search for Bluetooth devices in range
  - list the Bluetooth accessible services which a selected device is offering

Bluetooth OBEX example

- Demonstrates how to:
  - send a simple 'Hello World' OBEX object from one Bluetooth device to another, using the Bluetooth OBEX (Object Exchange) service
  - receive the object

Bluetooth point to point example

- Demonstrates how to:
  - send a simple 'Hello World' message from one Bluetooth device to another, using the Bluetooth Serial Port service (using RFCOMM)
  - receive the message
Development environment

- Series 60 SDK v0.9 for Symbian OS:
  - Comprehensive set of APIs
  - Documentation
  - Examples
  - Compatible with Nokia 765
  - Can be downloaded or ordered free of charge at www.forum.nokia.com

Bluetooth testing environment

- PC with Windows 2000
  - Series 60 emulator
    - Nokia Connectivity Card DTL-4
    - or Socket Bluetooth CF Card

  - Another Bluetooth device (the other end of the application)

  - Further information on setting up and using the environment can be found in the Bluetooth Documents section at www.forum.nokia.com
Nokia Developer strategy

- Nokia is committed to supporting the open wireless industry standards and protocols both in terminal and server side products
- Nokia is participating many industry forums and standardization driving the development of mobile technologies
- Initiative to build non-fragmented markets by creating Open Mobile Architecture
Forum Nokia
Developer community

Online community bringing together leading mobile application developers around the world

More than 700,000 registered members!

www.forum.nokia.com

Developer resources from www.forum.nokia.com

On-line discussion areas
Tool and SDK downloads

Developer newsletter
Knowledge base
Documents, FAQs, code samples,
### Supported technologies and platforms

<table>
<thead>
<tr>
<th>Messaging</th>
<th>Browsing</th>
<th>Download</th>
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<tbody>
<tr>
<td>• Multimedia Messaging</td>
<td>• WAP</td>
<td>• Symbian OS</td>
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<tr>
<td>• Smart messaging</td>
<td>• XHTML</td>
<td>• Java™</td>
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**Other**

- Bluetooth
- Nokia PC Connectivity

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<td>• M2M</td>
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### Tools and SDKs

Available tools and SDKs:

- Nokia Mobile Internet Toolkit 3.0
- Nokia PC Connectivity SDK
- Symbian OS SDKs
- Several emulators and simulators

Co-operation with world's leading programming and publication tool providers.
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Nokia Software Market
Consumer market

Nokia Tradepoint
B2B market

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- Products with large volumes
- Nokia specific APIs
- Developer support
Build - Test - Sell

1. Download tools
2. Sign-up to newsletters
3. Find guides and code samples
4. Get technical support
5. Test your application with Nokia OK
6. Sell your application

All this and more at www.forum.nokia.com

Have you seen the 3rd party demos?

- Geopod
  - multiplayer game
  - Developed by Fathammer Ltd.

- Irma Bluetooth
  - mobile accessory to show presentations from the phone
  - Developed by Flander Ltd.