

# Mobile Phone Programming

## Presentation of Track

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## Agenda

- Course overview
  - General info
  - Lectures
- Why mobile development
- Qt Overview
- Project proposals

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## Overview course

- 10 Lectures (45 min)
  - Most lectures include exercises to help understand the material.
- Project work with final presentation and small exam.
- Group work (6 persons / group)
- Devices for testing:
  - Nokia N900 (Meamo)
  - Nokia N97 mini (Symbian)
  - Focus on Qt for mobile, but also general app. development
- Feedback welcome (mvp@es.aau.dk)
- My room is A5-118

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## Lectures - Main topics

- Lecture 1: Qt quick start
- Lecture 2: Qt core
- Lecture 3: Mobile development overview (iPhone, Android and Java ME).
- Lecture 4: Widgets and layouts
- Lecture 5: Custom widgets and painting, event handling, Qt collections, ...
- Lecture 6: Qt Mobility
- Lecture 7: Qt Networking and general networking
- Lecture 8: Qt Networking and general networking
- Lecture 9: Internationalization, resources, multithreading
- Lecture 10: Deploy your applications. Mobile app. stores etc.

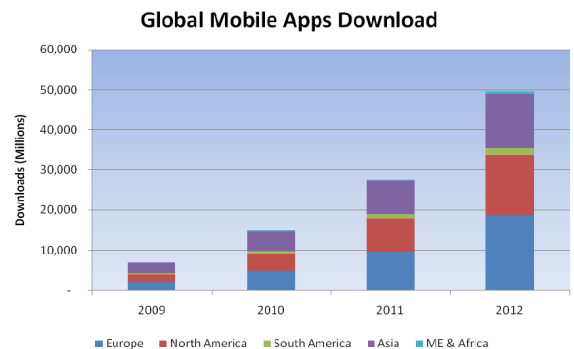
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## Ready to start :)

- Any questions?

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## Why mobile?



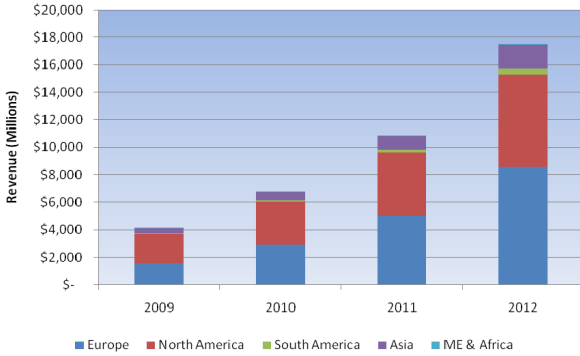
Mobile apps downloads are expected to increase from over 7 billion in 2009 to almost 50 billion by 2012

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Source: Chetan Sharma 2010

## Why mobile?

### Global Mobile Apps Market



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Source: Chetan Sharma 2010

## Development Considerations

- Many different platforms
  - Understand you "customers"
  - Investigate the market
  - Make you business model
    - Free, ad-based, subscription, licensee, others..
- Distribution
  - Signing
  - Application Stores
- Platform capabilities / differences
  - Hardware
    - Screen sizes, numeric keyboard, pen base input, etc.
    - Battery, CPU, RAM
  - Software
    - Remember "Write once, run everywhere"?
    - Fragmentation

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## Development Considerations

**Table 2**  
Worldwide Smartphone Sales to End Users by Operating System  
(Thousands of Units)

| Company                  | 2009             |                  | 2008             |                  |
|--------------------------|------------------|------------------|------------------|------------------|
|                          | Units            | Market Share (%) | Units            | Market Share (%) |
| Symbian                  | 80,878.6         | 46.9             | 72,933.5         | 52.4             |
| Research In Motion       | 34,346.6         | 19.9             | 23,149.0         | 16.6             |
| iPhone OS                | 24,889.8         | 14.4             | 11,417.5         | 8.2              |
| Microsoft Windows Mobile | 15,027.6         | 8.7              | 16,498.1         | 11.8             |
| Linux                    | 8,126.5          | 4.7              | 10,622.4         | 7.6              |
| Android                  | 6,798.4          | 3.9              | 640.5            | 0.5              |
| WebOS                    | 1,193.2          | 0.7              | NA               | NA               |
| Other OSs                | 1,112.4          | 0.6              | 4,026.9          | 2.9              |
| <b>Total</b>             | <b>172,373.1</b> | <b>100.0</b>     | <b>139,287.9</b> | <b>100.0</b>     |

Source: Gartner (February 2010)

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## Project proposals

- You need to form two groups, based on your interests
  - 6 people in each group (this is a MUST).
- The groups should be formed no later than 16.00 Tuesday.
- When you have formed the groups and selected a project:
  - Notify me and your the project supervisor to have the first supervisor meeting arranged.
- You are allowed to change and shape the projects in agreement with the supervisor.

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## Viral Content Distribution

So far it is assumed that content will be delivered in a client-server manner. But in the future content might be distributed also among peers – so direct device to device communication. In highly mobile environments e.g. catastrophe areas peers might see each other only for a small time window. This project should investigate different data delivery mechanisms for content distribution in such networks.

This project proposes that the students investigate how the mobile phone may be used to spread content among peers.

Possible topics include:

- Service discovery
- Ad-hoc networking
- Peer-to-peer communication
- Content aggregation
- Data delivery mechanisms e.g. file download or streaming.

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## Distributed walkie-talkie / speaker system

In catastrophe areas the parts cellular infrastructure may be damage and therefore non-functional. This project proposes the use of the mobile phone to for a distributed walkie-talkie / speaker system. The system should allow audio clips to be transferred.

Possible topics include:

- Service discovery
- Ad-hoc networking
- Peer-to-peer communication
- Content aggregation
- Routing
- Multi-hop
- Audio recording/playback

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