Developing Applications for MeeGo*

Horace Li
Technical Account Manager
Software & Services Group
Agenda

- MeeGo* Overview
- MeeGo UI Framework
- Create MeeGo Touch App
- MeeGo SDK
MeeGo* Strategy – Spans Multiple Segments

- Netbooks
- Connected TV
- Handsets
- IVI
- Media Phone

MeeGo* = Moblin™ + Best of Maemo

Platforms based on Intel processors

MeeGo is a continuation of the Intel Atom brand software strategy execution
MeeGo* on Intel® Atom™ Processor Features Overview

Segment Specific User Experiences
Connection Manager for data connectivity
Telephony Framework
Cloud-device sync of PIM Data
Integrated Social Networking
Application Development Environment

Improved Power Management
Fastboot & Shutdown Optimization
Support for Multiple Multimedia Framework
Internationalization with UI guidelines
Gesture & MultiTouch Framework
Sensor Framework

Note: Some features listed may be segment-specific
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MeeGo* Application Development Environment

MeeGo offers Qt* and Web runtime for app development:
- Qt for native C++ and Web runtime for Web applications (HTML, JS, CSS, etc.)
- Qt and Web runtime bring cross platform development so apps can span multiple platforms
- Native development tool: Qt Creator
- Web development tools: plug-ins for standard web development tools

MeeGo offers a complete set of tools for developers to easily and rapidly create a variety of innovative applications
• **Libmeegotouch**, a touch friendly visual widget library.

• **Highlighted features,**
  - A complete set of widgets that provides a specific UI style primarily targeting touch screen devices.
  - Various graphics layouts support, including linear layout, grid layout, etc.
  - Native transformations support, including rotated, scaled or perspective adjusted.
  - Seamlessly integration with Qt modules like I/O, SQL & XML programming.
  - Internationalization enabled, 33 languages support.
  - Inter-process communication support, allows applications to simply either use or serve an interface

• **MeeGo touch UI framework is LGPL licensed.**

• **Source repository,**

  ```
  $ git clone git://gitorious.org/meegotouch/libmeegotouch.git
  ```
Libmeegotouch is built on top of Qt library, having native gesture/multi-touch event recognition and handling.

Both Qt and libmeegotouch can be used directly.
- libmeegotouch is primarily used to create the UI layouts, animations, and touch response.
- Qt is used for lower layer logic.

While Qt creates traditional desktop UI, libmeegotouch make scene based applications easier.
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A simple MeeGo touch ‘Hello World’ application, saved as `main.cpp`:

```cpp
#include <MApplication>
#include <MApplicationWindow>
#include <MApplicationPage>
#include <MLabel>

int main(int argc, char **argv)
{
    MApplication app(argc, argv);
    MApplicationWindow window;
    MApplicationPage page;

    page.setTitle("My First Page");
    page.setCentralWidget(new MLabel("Hello World!"));
    page.appear(&window);
    window.show();
    return app.exec();
}
```
Hello World!
MApplication

- The first object to be created in MeeGo* touch application
- Derived from QApplication
- Mainly created to:
  - Handle the main event loop
  - Manage the GUI application's control flow and main settings
  - Construct an instance of QDBus service, MApplicationService
- By default, only a single instance of any application is allowed
- To allow multiple instances of an application...
  - Derive a class from default MApplicationService
  - Override its launch() function
MApplicationWindow

- Derived from MWindow
- Create a top-level application window
  - Status bar
  - Navigation bar
  - Application Page
  - Toolbar
- To insert content into the window, a MApplicationPage has to be created and shown
- Orientation changes and in-scene windows are automatically managed
- Set MApplicationWindow full screen will hide status bar; set back normal mode will show status bar again
Derived from MSceneWindow

Provide a framework for building an application's user interface

Create an pannable viewport

Only one page can be displayed at any given time

Navigation between pages are also technically achievable
  - Call child page appear() will make current page disappear and show child page instead

Page navigation history is managed by MSceneManager

Manage navigation bar display mode
Build Up MeeGo* Touch App

- MeeGo* touch is created on top of Qt*, sharing Qt building system
- Firstly generate project (.pro) file, by using command
  
  ```bash
  $ qmake -project
  ```

- A typical generated project file content

  ```
  # Automatically generated by qmake (2.01a) Tue Apr 20 14:00:01 2010
  TEMPLATE = app
  TARGET = .
  DEPENDPATH += .
  INCLUDEPATH += .
  # Input SOURCES += main.cpp
  CONFIG += meegotouch
  ```

- Add libmeegotouch into building system, edit project file

  ```
  CONFIG += meegotouch
  ```

- Following standard qmake steps

  ```bash
  $ qmake
  $ make
  ```
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- MeeGo SDK
The MeeGo* SDK consists of:

- A MeeGo handset or netbook image, which contains a Simulator for MeeGo applications (Linux* only currently), based on QEMU (a generic and open source machine emulator and virtualizer), and Qt* Creator which can be configured to deploy to remote MeeGo devices.

- A new development tool, MADDE, integrated with Qt Creator to provide common application development and debug environment.

MeeGo SDK Portal URL: [http://meego.com/developers/getting-started](http://meego.com/developers/getting-started)

Pre-requisites

- Intel® Architecture hardware platform, both 32bit Intel® Atom™ Processor and Intel® Core™2 Duo Processor are acceptable.

- A reasonably modern Linux distribution (e.g. Fedora* 12, Ubuntu* 10.04)

- Access authority as root user,

```
$ su -i
```
Using QEMU for MeeGo development requires:
- capable of VT (Virtualization Technology) support in your system.
- hardware accelerated graphics installed.

To check for VT support, run the following from a terminal:

```
$ egrep '^flags.*\(vmx|svm\)\/' /proc/cpuinfo
```

Any output is success. Here’s an example:

```
flags : fpu vme de pse tsc mcr pae mce cx8 apic mtrr pge mca cmov pat pse36
clflush dts acpi mmx fxsr sse sse2 ss ht tm pbe lm constant_tsc arch_perfmon
pebs bts pni dtes64 monitor ds_cpl vmx smx est tm2 ssse3 cx16 xtr pdcm
ssse4_1 lahf_lm tpr_shadow vnmi flexpriority
```
Install KVM Module

• Check that the `kvm_intel` or `kvm_amd` modules are loaded:

```
$ lsmod | grep kvm
kvm_intel 43816 0
kvm 164576 1 kvm_intel
```

• If needed, load the module.

• For an Intel graphics chipset:

```
$ sudo modprobe kvm_intel
```

• For an AMD graphics chipset:

```
$ sudo modprobe kvm_amd
```

• If the `kvm` modules are not available or fail to load, VT may not be enabled in the BIOS. Reboot your system, go into the BIOS, and enable VT.
Configure Distributions Package Manager

- Take Ubuntu distribution as example.
- Add the following line to /etc/apt/sources.list file or create a /etc/apt/sources.list.d/meego-sdk.list file containing the following line:

```sh
# deb http://repo.meego.com/MeeGo/sdk/host/repos/ubuntu/10.04/ /
```
- Add the repository public key:

```sh
# gpg --keyserver subkeys.pgp.net --recv 0BC7BEC479FC1F8A
# gpg --export --armor 0BC7BEC479FC1F8A | sudo apt-key add -
```
- Update packages database:

```sh
# aptitude update
```
- Check that the MeeGo repository has been added to the file with,

```sh
# apt-cache policy madde
```
Install MeeGo SDK

- To install the whole MeeGo SDK:
  ```
  # aptitude install meego-sdk
  ```

- For ARM only:
  ```
  # aptitude install meego-sdk-armv7l
  ```

- For IA32 only:

- To install MeeGo SDK components individually:
  - QtCreator
  - MADDE
  - QEMU
  - Toolchains for ARM and IA32
  ```
  # aptitude install meego-sdk-qtcreator
  # aptitude install madde qt-tools
  # aptitude install arm-2009q1
  # aptitude install meego-sdk-i586-toolchain
  # aptitude install qemu-arm qemu-gl
  ```
Simulator Screenshot
Create and test a target with MADDE

- Create MeeGo target in MADDE:

  ```bash
  # mad-admin create -f <target>
  ```

  - `<target>` is `meego-core-armv7l-1.1`, `meego-handset-ia32-1.1` or `meego-netbook-ia32-1.1`.
  - The `-f` flag instructs MADDE to download and install the appropriate sysroot tarball first.

- To check that target and toolchain are found in MADDE:

  ```bash
  $ mad -t <target> pscreate -t qt-simple qthello
  $ cd qthello
  $ mad -t <target> qmake
  $ mad -t <target> make
  ```

- To check that the qt-simple application is created for the correct target, run:

  ```bash
  file build/qthello
  ```
**Configure Qt Creator to use MeeGo toolchain(s)**

- Start Qt Creator by selecting **Applications > Programming > Qt Creator**.
  1. Go to **Tools > Options > Qt4 > Qt Versions**
  2. On the right side of the **Qt Versions** view, click on the plus sign button to add a new version.
  3. On the **Version Name** line, specify a name for the new version.
  4. On the **qmake location** line, specify a qmake location for the new version. The toolchain installs by default to `/usr/lib/madde/linux-i686/targets/<target>/bin/qmake`
  5. Click **Rebuild**, **Apply**, and **OK**.
Summary

• MeeGo = Best of Moblin + Best of Maemo
• MeeGo is a fully open source software platform
• MeeGo offers a complete set of tools for developers
• Both Qt and libmeegotouch can be used directly
• MeeGo SDK simulates MeeGo environment on your computer
Q&A
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