Preprocessor Based Approach for Cross-Platform Development with Qt Quick Components

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Motivation

QML does not provide standard components like buttons and lists

Qt Quick Colibri  Qt Quick Components

How to create cross-platform applications using Qt Quick Components?
Qt Components: potential problems

- Incapability to import different platform modules in same QMLs
- Some components implemented only for one of the target platforms
- Different APIs of the same components on different platforms
- Missing or differently named resources
- Issues of component implementation
Preprocessor in work

import com.nokia.symbian 1.1 //@symbian
import com.nokia.meego 1.0 //@meego
Preprocessor in work

Source code:

ToolBar {
    anchors.bottom: parent.bottom
    tools: ToolBarLayout {
        ToolButton { //@symbian
            ToolItem { //@meego
                iconSource: "toolbar-back" //@symbian
                iconSource: "image://theme/icon-m-toolbar-back-white" //@meego
            }
        }
    }
}
Preprocessor in work

Preprocessed code for Symbian platform:

```cpp
ToolBar {
  anchors.bottom: parent.bottom
  tools: ToolBarLayout {
    ToolButton { //@symbian
      iconSource: "image://theme/toolbar-back" //@symbian
    } //@symbian
  } //@symbian
}
```
Preprocessor in work

Preprocessed code for Meego platform:

```c
ToolBar {
    anchors.bottom: parent.bottom
    tools: ToolBarLayout {
        ToolItem { //@meego
            iconSource: "image://theme/icon-m-toolbar-back-white" //@meego
        }
    }
}
```

UI Constants

Item {
    property string listItemTitleFontFamily: "Nokia Pure Text Bold"  //@meego
    property string listItemTitleFontFamily: platformStyle.fontFamilyRegular  //@symbian
    property int listItemTitleFontSize: 26  //@meego
    property int listItemTitleFontSize: platformStyle.fontSizeMedium  //@symbian
}

Label {
    id: participantName
    anchors.verticalCenter: parent.verticalCenter
    text: name
    font.family: uiConstants.listItemTitleFontFamily
    font.pixelSize: uiConstants.listItemTitleFontSize
    color: "white"
}
Evasion of missed properties

```javascript
ToolButton {
  iconSource: "toolbar-menu" //@symbian
  flat: true //@meego
  Image { //@meego
    anchors.centerIn: menuButton //=meego
    sourceSize.height: menuButton.height //=meego
    source: "qrc:images/menu.png" //=meego
  } //=meego

} //=meego
```

ToolButton from Qt Quick Components for MeeGo has no iconSource property
Issues of component implementation

```javascript
QueryDialog {
  id: queryDialogExample
  titleText: "Query dialog title"
  message: "Query dialog message"
  acceptButtonText: "Close"
}
```

```javascript
QueryDialog {
  id: queryDialogExample
  titleText: "Query dialog title"
  message: "Query dialog message
  acceptButtonText: "Close"
}
```
Results

This solution was successfully implemented in our projects:

Octotask

Smart Conference Client

More on http://yar.fruct.org
Results

Smart Conference Client was successfully ported to Android OS using Necessitas
Results

- Cross-platform development involving Qt Quick Components using QML preprocessor becomes easier
- All required platforms supporting
- This tool will help us in future work