



Qt (cute) Development Frameworks

The history and future of Qt

9th FRUCT conference
Petrozavodsk - Russia

by Knut Yrvin – April 2011



Knut Yrvin

Open Source Community Manager

- Telenor in 1986 – technical assistant
- Engineer in electronics – 1992
- Telenor – project planning – 1993
- Master in system development – 2000
- Consultant for three years
 - Norwegian Central Securities Depository, different banks and other industries
- Co-founded Skolelinux in 2001
 - Now a part of Debian Edu
- Trolltech ASA – 2006,
- Qt Software, a Nokia Company – 2008

Finalist Norway got Talent 2010





Agenda

- Qt History
 - How it was developed
- Qt in the future
 - Addressable markets



Qt: A brief introduction

Qt Software (formerly Trolltech) founded in 1994

- Trolltech acquired by Nokia in 2008
- More than 300 employees in 8 locations worldwide
- Trusted by over 4,000 customers worldwide

Qt: a cross-platform application and UI development framework

- For desktop and embedded development
- Used by more than 400,000 commercial and open source developers
- Backed by professional services, support and training



Qt overview

Qt: a tool for software developers to make the user experience better on different types of displays (devices, desktops, machines...)

Using Qt, you can write applications once and deploy them across devices based on different operating systems reusing the source code.



Qt is used everywhere on any form factor

From embedded devices to desktop applications

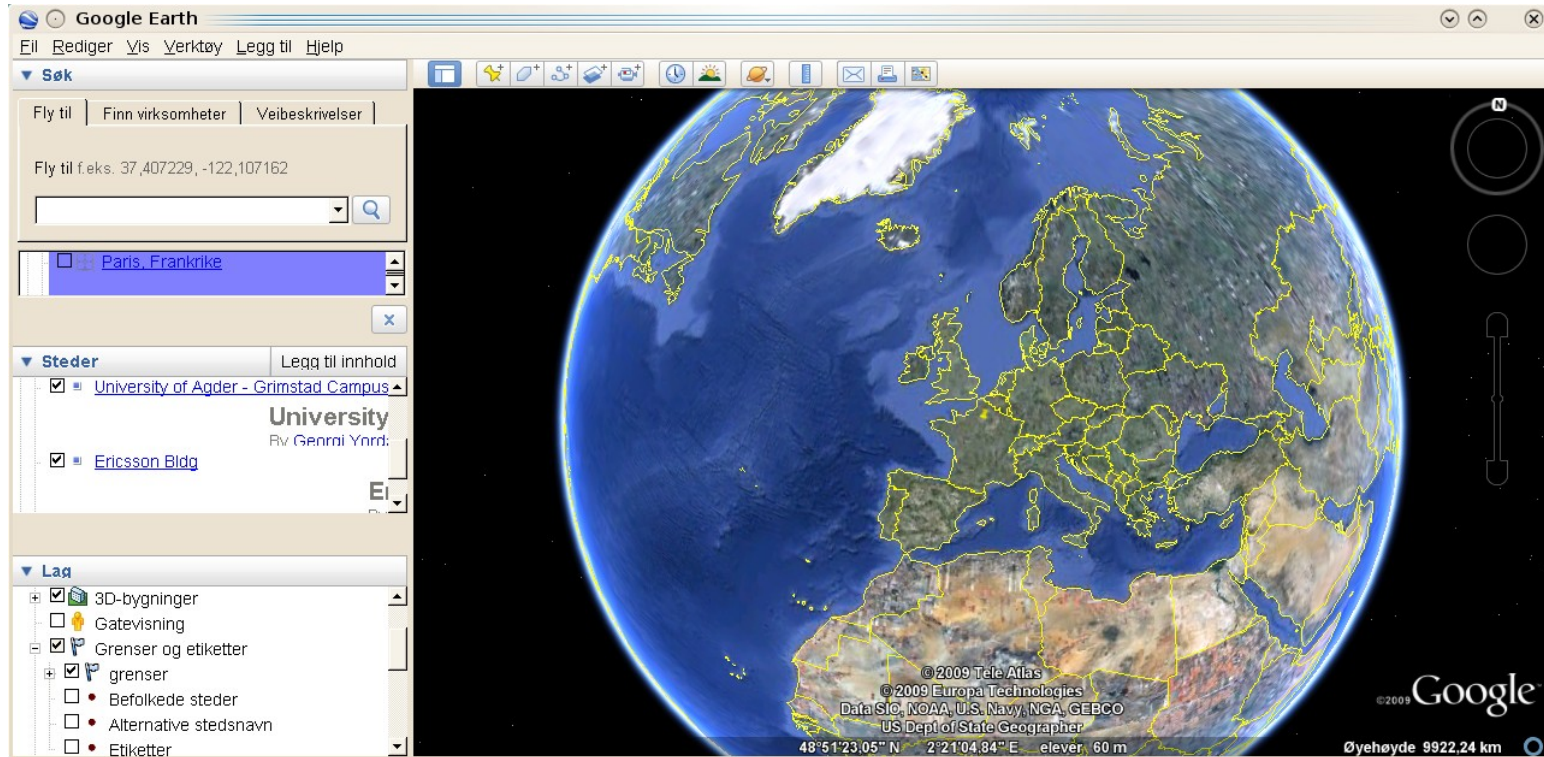


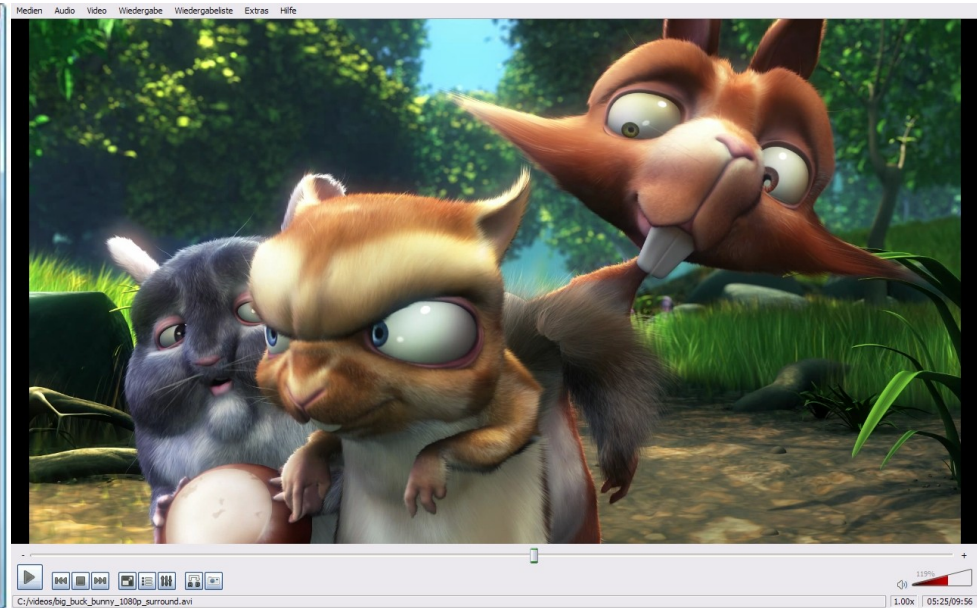
By companies from many industries





Google Earth

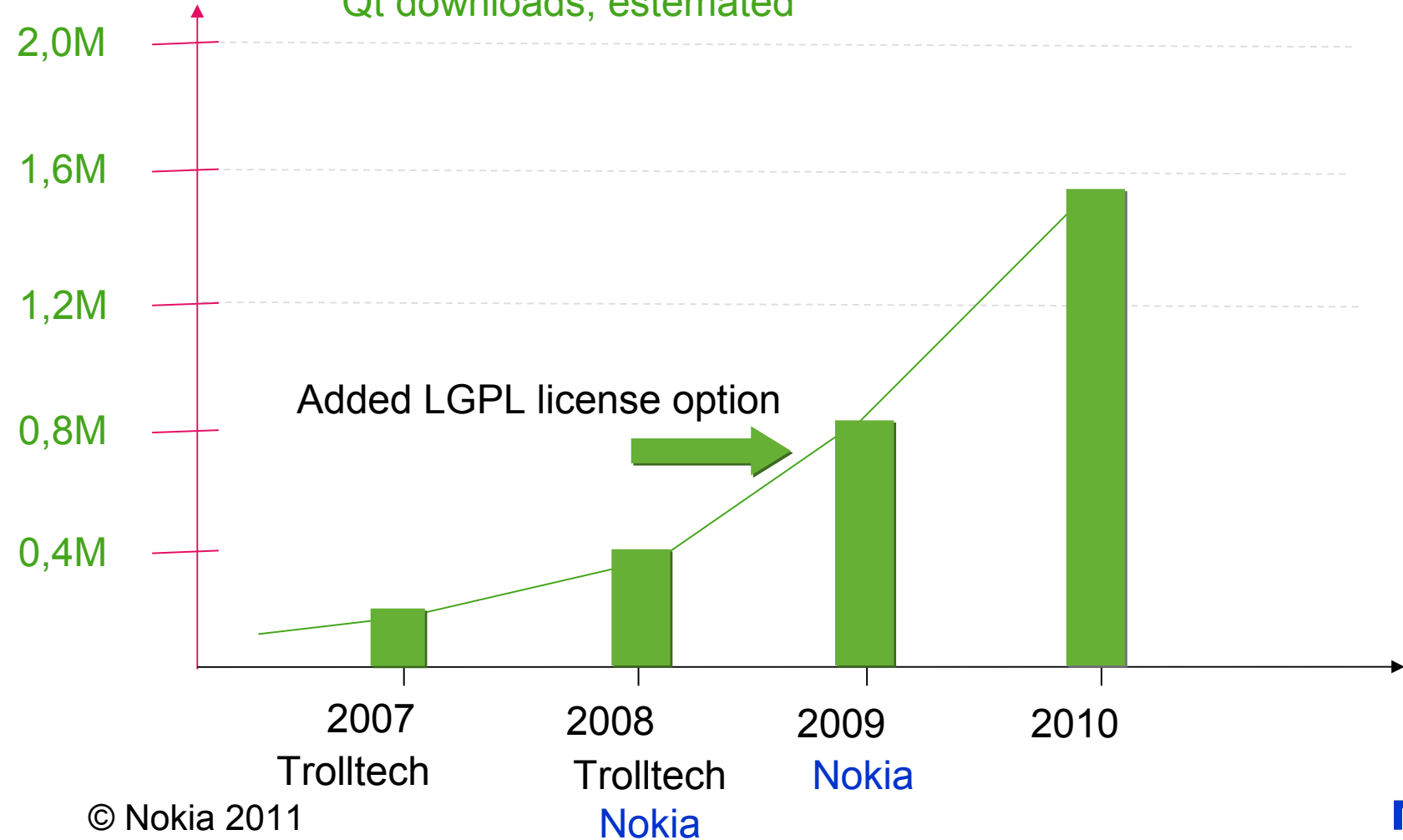






400% Growth since 2008

Qt downloads, estimated





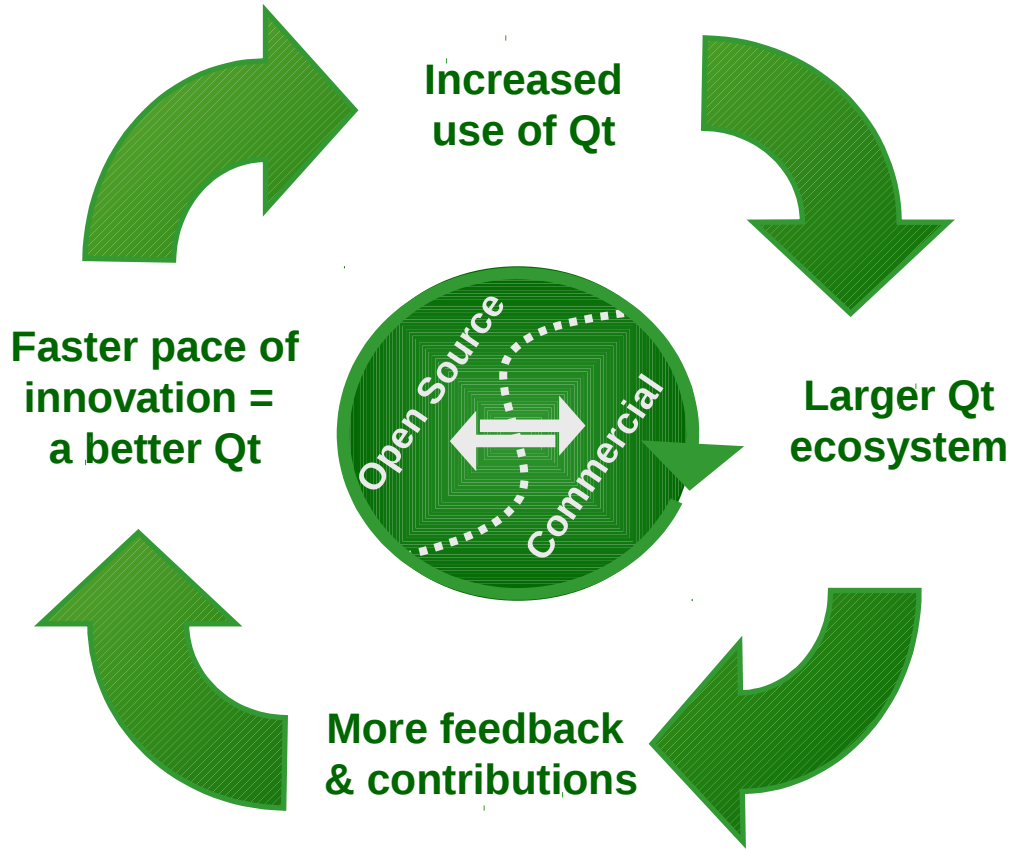
Qt licenses support all business models

	Commercial	LGPL v. 2.1	GPL v. 3
License Cost	License fee charged	No cost	No cost
Must provide source code for changes to Qt	No, modifications can be closed	Source code must be provided	Source code must be provided
Can create proprietary application	Yes—no obligation to disclose source code	Yes, if dynamically linked to Qt library	No, application is subject to the GPL
Support	Yes, with valid maintenance agreement	Not included, available separately	Not included, available separately
Charge for Runtimes	Yes—in some instances*	No, distribution is royalty free	No, distribution is royalty free

*Runtime charges apply when the Qt-based application is part of a joint hardware and software distribution and the main UI of the device is controlled by Qt.



The virtuous cycle





Open Governance

To empower community contributors, Open Governance will provide

- **Fair**: treat everyone under the same rules¹
- **Transparent**: no behind-the-scenes decisions
- **Inclusive**: everyone is welcome to join and contribute according to their skills
- **Meritocratic**: rights and duties according to dedication and work

Do-ocracy - Those who contribute will be recognized

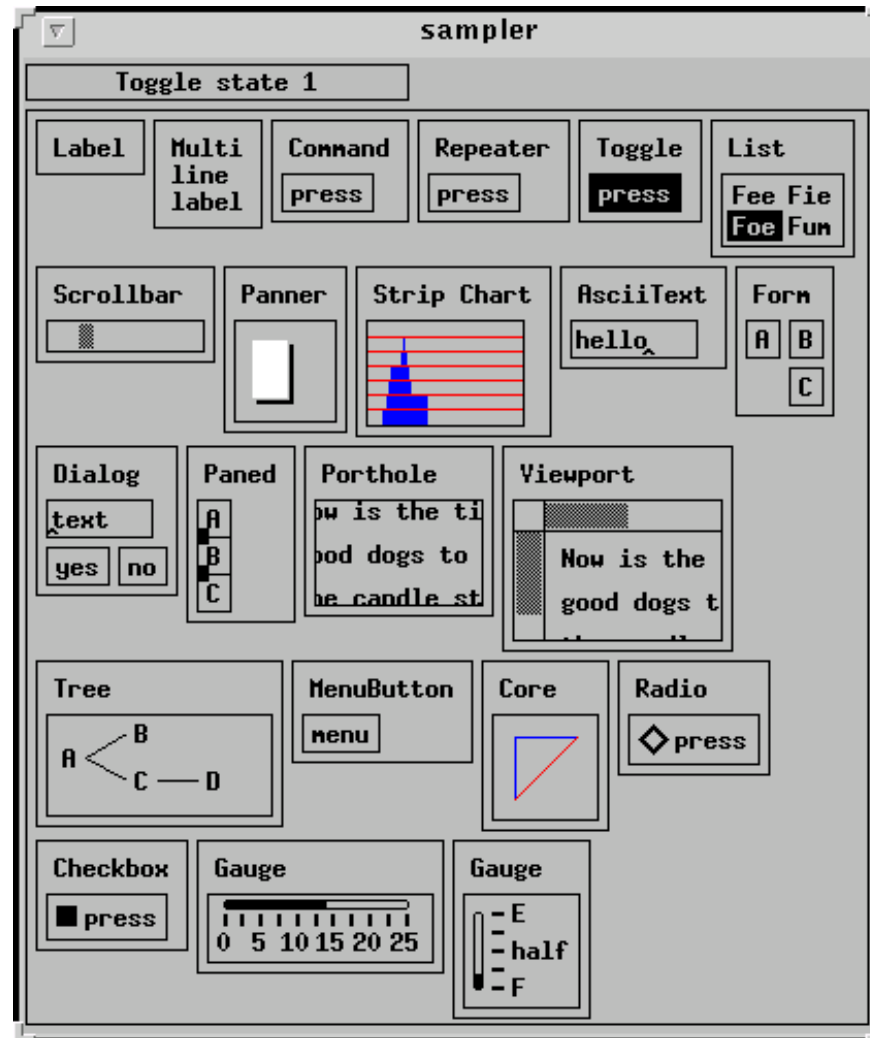


How Qt started

History 101



State-of-the-art UI Widget





Challenge #1



= ~200 LOC



How the whole started



A park bench in Trondheim, Norway - 1990

“We need an object-oriented presentation system”

- Haavard Nord and Eirik Chambe Eng



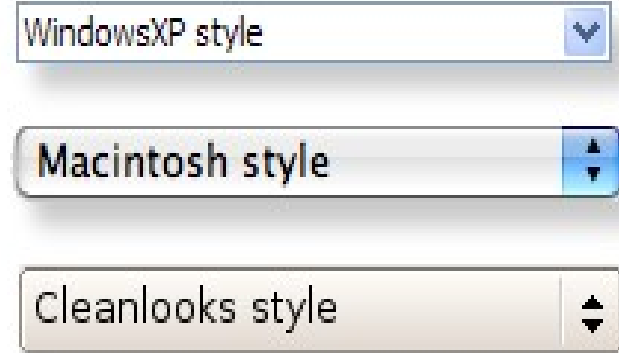
Idea behind Qt

- Framework for Graphical User Interfaces (GUI)
 - Easy to use
 - Works well
- Windows and UNIX



Qt 2

- 40 new classes
 - Adaptive Look & Feel
 - Unicode support
 - Printing
 - Mouse Wheel



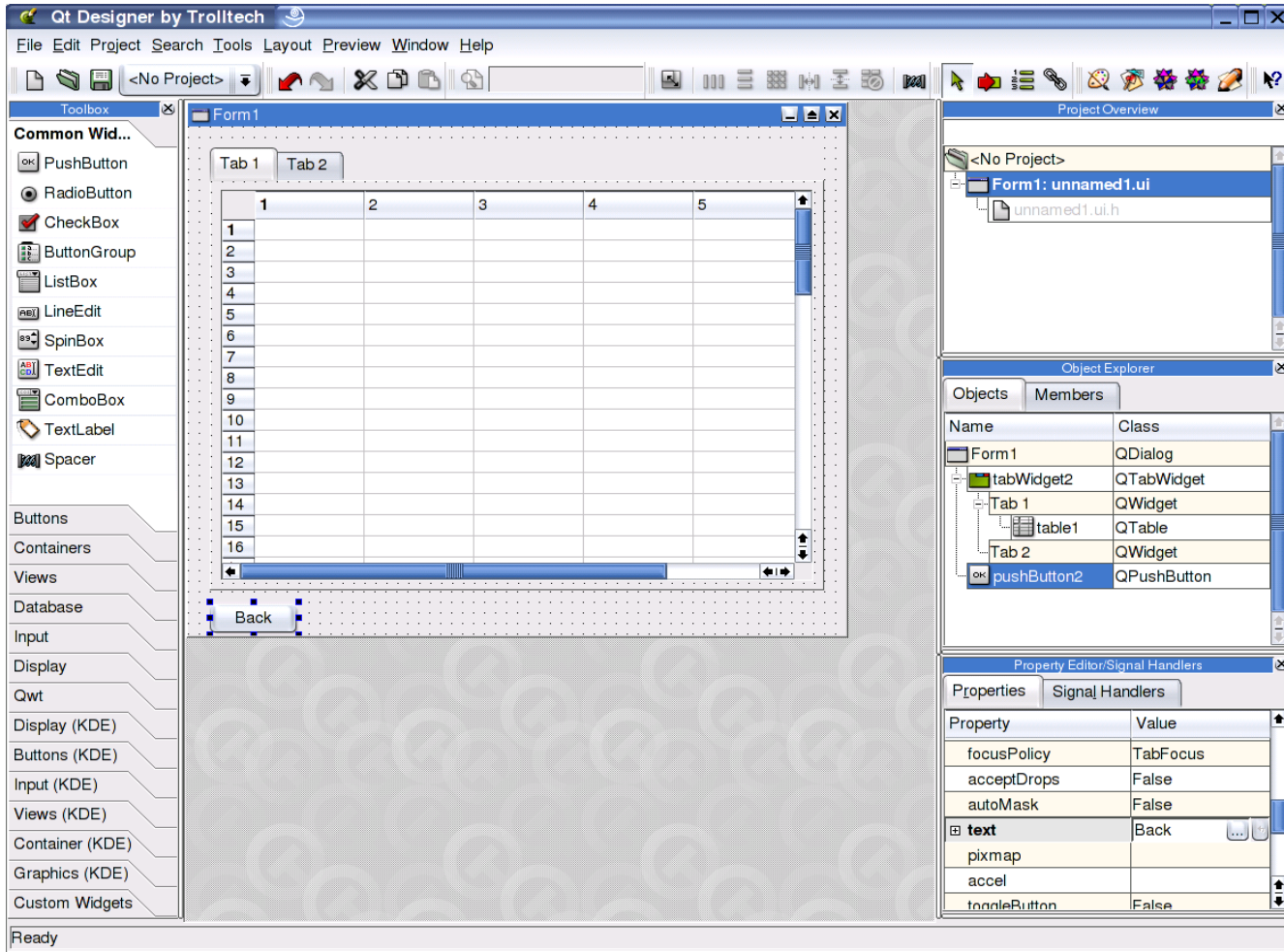
בְּרֵאשִׁית בָּרָא אֱלֹהִים אֶת הַשָּׁמַיִם וְאֶת הָאָרֶץ: וְהָאָרֶץ
 הָיְתָה תֵהוֹ וְנִהוּ וְחֹשֶׁךְ עַל-פְּנֵי תְהוֹם וּרִיחַ אֱלֹהִים מִרְחַפֶּת
 עַל-פְּנֵי הַמַּיִם: וַיֹּאמֶר אֱלֹהִים יְהִי אֹר וְהָיָה-אֹר: וַיֵּרָא
 אֱלֹהִים אֶת-הָאֹר כִּי-טוֹב נִבְרָא אֱלֹהִים בֵּין הָאֹר וּבֵין
 הַחֹשֶׁךְ: וַיִּקְרָא אֱלֹהִים לְאֹר יוֹם וְלַחֹשֶׁךְ קָרָא לַיְלָה וַהֲיָי-
 עֶרֶב וַהֲיָי-בֹקֶר יוֹם אֶחָד:
 וַיֹּאמֶר אֱלֹהִים יְהִי רָקִיעַ בְּתוֹךְ הַמַּיִם וְהִי מַבְדִּיל בֵּין מַיִם
 לַמַּיִם: וַעֲשֵׂת אֱלֹהִים אֶת-הַרְקִיעַ נִבְרָא בֵּין הַמַּיִם אֲשֶׁר
 מִתַּחַת לַרָקִיעַ וּבֵין הַמַּיִם אֲשֶׁר מֵעַל לַרְקִיעַ וַהֲיָי-בֶן:
 וַיִּקְרָא אֱלֹהִים לַרְקִיעַ שָׁמַיִם וַהֲיָי-עֶרֶב וַהֲיָי-בֹקֶר יוֹם
 שֵׁנִי:

Quot from the Hebrew Bible





Qt 2 - Designer





Sharp Zaurus in 2002



- + Qt Embedded started in 2000
- + Kick starting Open Source development for embedded
- + 1200 free software applications available for Zaurus and Open Embedded today



Desktop applications on «mobile» devices





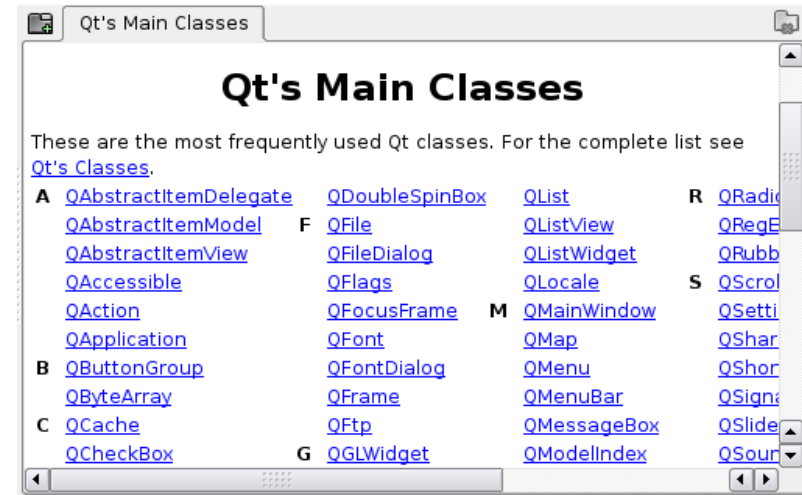
KOffice ... now known as Calligra

A screenshot of a mobile device screen displaying search results for 'maemo'. The screen is framed by a black border. At the top, a status bar shows the time '10:11 am', battery level '2.5', and signal strength. The title bar reads 'Office Viewer - maemo'. The main content area features a circular diagram with 'maemo.ORG' at the top, 'Maemo' in the center, and 'Community' and 'Related open source projects' below. The diagram is surrounded by logos for various projects: debian, Qt, mozilla, Telepathy, and SQLite. Below the diagram, a text block reads: 'On maemo.org you will find more information on what Maemo software is, how to develop with Maemo, and how to make your development work available to users. On maemo.nokia.com you will find more information about the N900 mobile computer powered by Maemo.' At the bottom, a search bar contains the text 'maemo', followed by a checkbox for 'Exact match', a left arrow, the text '10 of 61', a right arrow, and a refresh icon.



Qt 3

- 42 new classes
 - **Rich Text support**
 - **Table Widget**
 - **Accessibility**
 - **XML**
 - **Database**
 - **Network**
 - **IO**



January	6	
February	3	
March	2	
April	3	
May	6	



Qt 3 - Linguist

The screenshot shows the Qt Linguist application window. The main window title is "Qt Linguist by Trolltech - /Qt/translations/qt_fr.ts". The interface includes a menu bar (File, Edit, Translation, Validation, Phrases, View, Help) and a toolbar with various icons. The main area is divided into several panes:

- Context:** A list of translation contexts with their progress. The selected context is "QInputDialog 4/4".
- Source text:** A table showing source text and its translation for the selected context.
- Source text:** A text area showing the source text for the selected context.
- Translation:** A text area showing the translation for the selected context.
- Phrases:** A table showing phrases and their guesses.

Done	Context	Items
✓	QDialogButtons	14/14
✓	QDirModel	4/4
✓	QErrorMessage	5/5
✓	QFileDialog	27/27
✓	QFileDialogPri...	1/1
✓	QFontDialog	13/13
✓	QFtp	20/20
✓	QHostInfo	1/1
✓	QHostInfoAge...	3/3
✓	QHttp	16/16
✓	QIODevice	5/5
✓	QInputDialog	4/4
✓	QInputDialog	2/2
✓	QLineEdit	7/7
✓	QMessageBox	14/14
✓	QNativeSock...	22/22
✓	QObject	13/13
✓	QPrintDialog	59/59
✓	QProcess	1/1
✓	QProgressBar	1/1
✓	QProgressDialog...	1/1
✓	QRegExp	9/9
✓	QScrollBar	13/13
✓	QShortcut	91/91
✓	QSocks5Sock...	1/1
✓	QSql	10/10
✓	QTcpServer	1/1
✓	QTextEdit	7/7
✓	QUdpSocket	1/1
✓	QUnicodeCon...	11/11
✓	QWhatsThisA...	1/1
✓	QWidget	1/1

Done	Source text	Translation
✓	XIM	XIM
✓	XIM input method	Méthode d'entrée XIM
✓	Windows input method	Méthode d'entrée Windows
✓	Mac OS X input method	Méthode d'entrée Mac OS X

Source text

XIM input method

Translation

Méthode d'entrée XIM

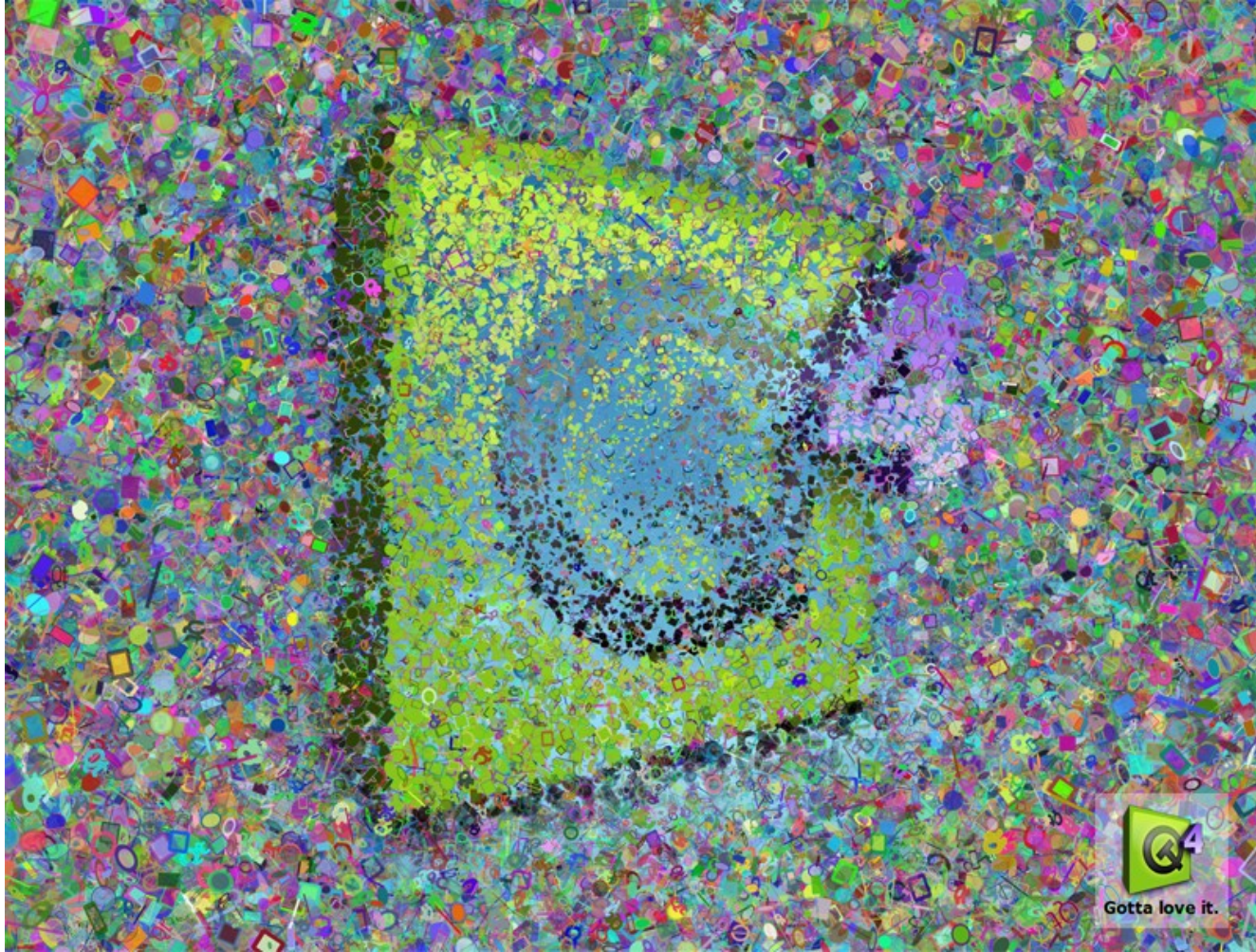
Phrases and guesses:

Source phrase	Translation	Definition
XIM input method	Méthode d'entrée XIM	Guess (Ctrl+1)
Mac OS X input method	Méthode d'entrée Mac OS X	Guess (Ctrl+2)
Windows input method	Méthode d'entrée Windows	Guess (Ctrl+3)
Print destination	Type d'impression	Guess (Ctrl+4)
Printer settings	Configuration de l'impression	Guess (Ctrl+5)

550/550 MOD

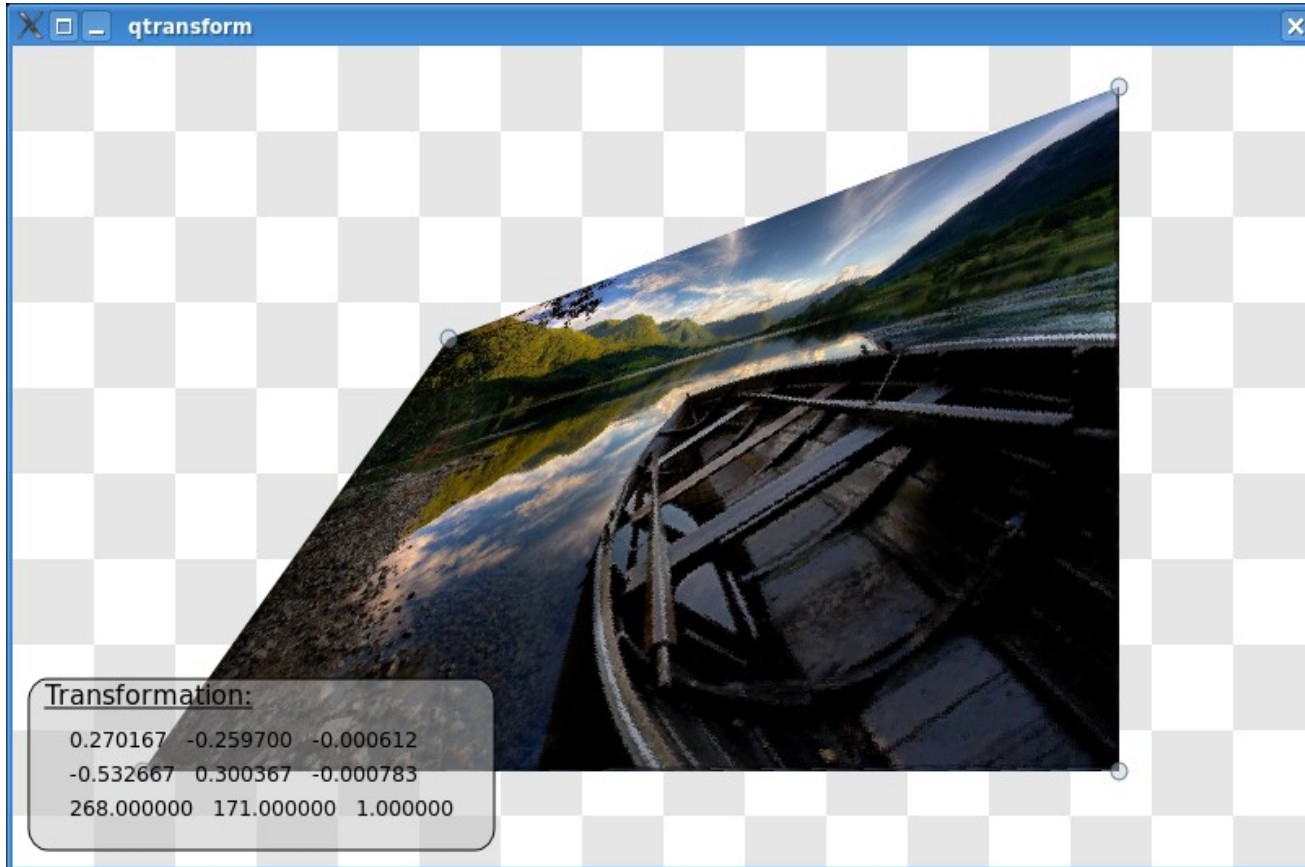


Qt 4 - QGraphicsView





Qt 4 - Perspective





Qt 4 - Transparent





Qt 4 - CSS Widgets

Style Sheet

File Help

Name:

Gender: Male Female

Age:

Password:

Country:

Profession:
Student
Fisherman

I accept the terms and conditions

OK Cancel

Specify your name here



MainWindow

File Help

Name:

Gender: Male Female

Age:

Password:

Country:

Profession:
Student
Fisherman

I accept the terms and conditions

OK Cancel

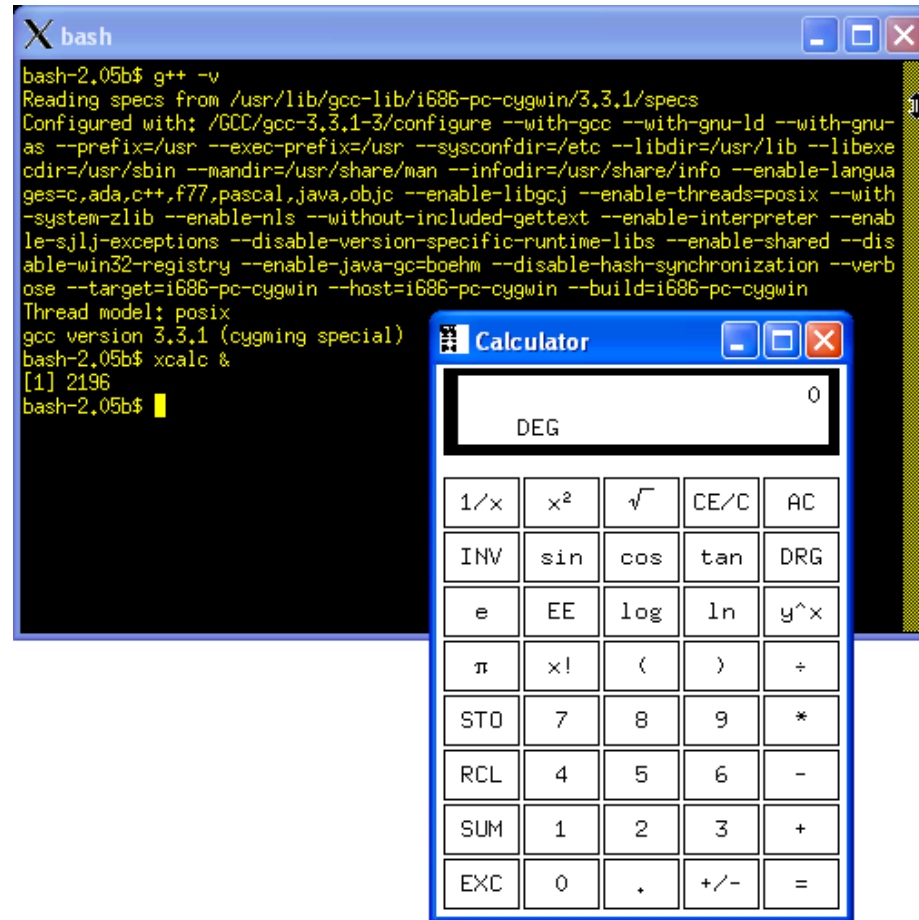
Specify your age



Interesting changes



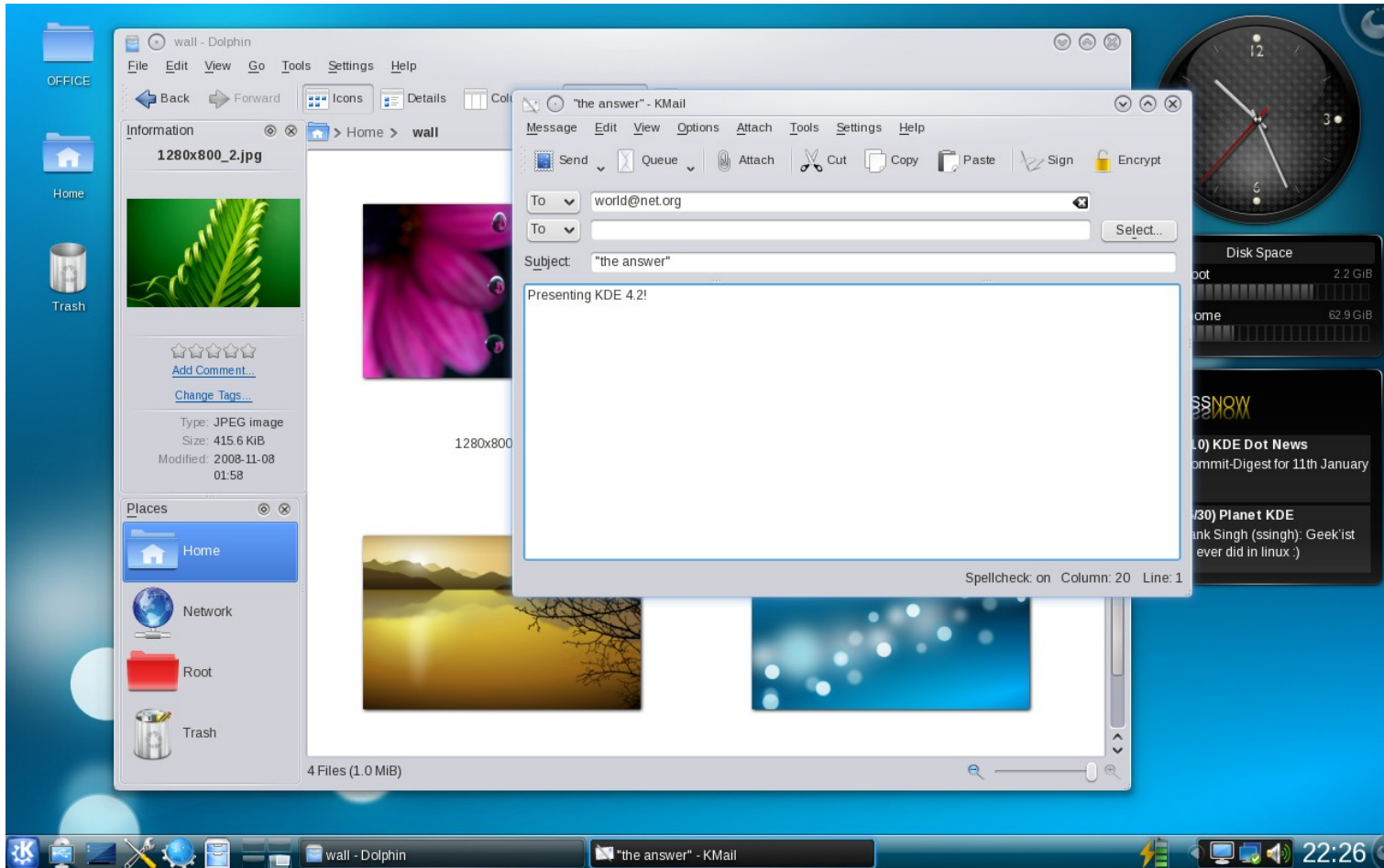
Typical Linux desktop in 1996





KDE

15 year of building better software with Qt



> 5000 applications



Typical phone UI 2008





Next gen phone UI Touch and animations





If you think this was big changes?



Bigger changes are already implemented



Qt 4.5 Creator

Projects: HelloWorld

- HelloWorld.pro
- main.cpp
- mainwindow.cpp
- mainwindow.h
- mainwindow.ui

```
mainwindow.cpp*
1 #include "mainwindow.h"
2 #include "ui_mainwindow.h"
3 #include <QDir>
4 #include <QStringList>
5
6 MainWindow::MainWindow(QWidget *parent)
7     : QMainWindow(parent), ui(new Ui::MainWindowClass)
8     {
9     QStringList list = QDir("/").entryList();
10    ui->setupUi(this);
11    ui->listWidget->addItem(list);
12    ui->pushButton->set
13 }
14
15 MainWindow::~MainWindow()
16 {
17     delete ui;
18 }
19
```

- setAcceptDrops
- setAccessibleDescription
- setAccessibleName
- setAttribute
- setAutoDefault
- setAutoExclusive
- setAutoFillBackground
- setAutoRepeat
- setAutoRepeatDelay
- setAutoRepeatInterval

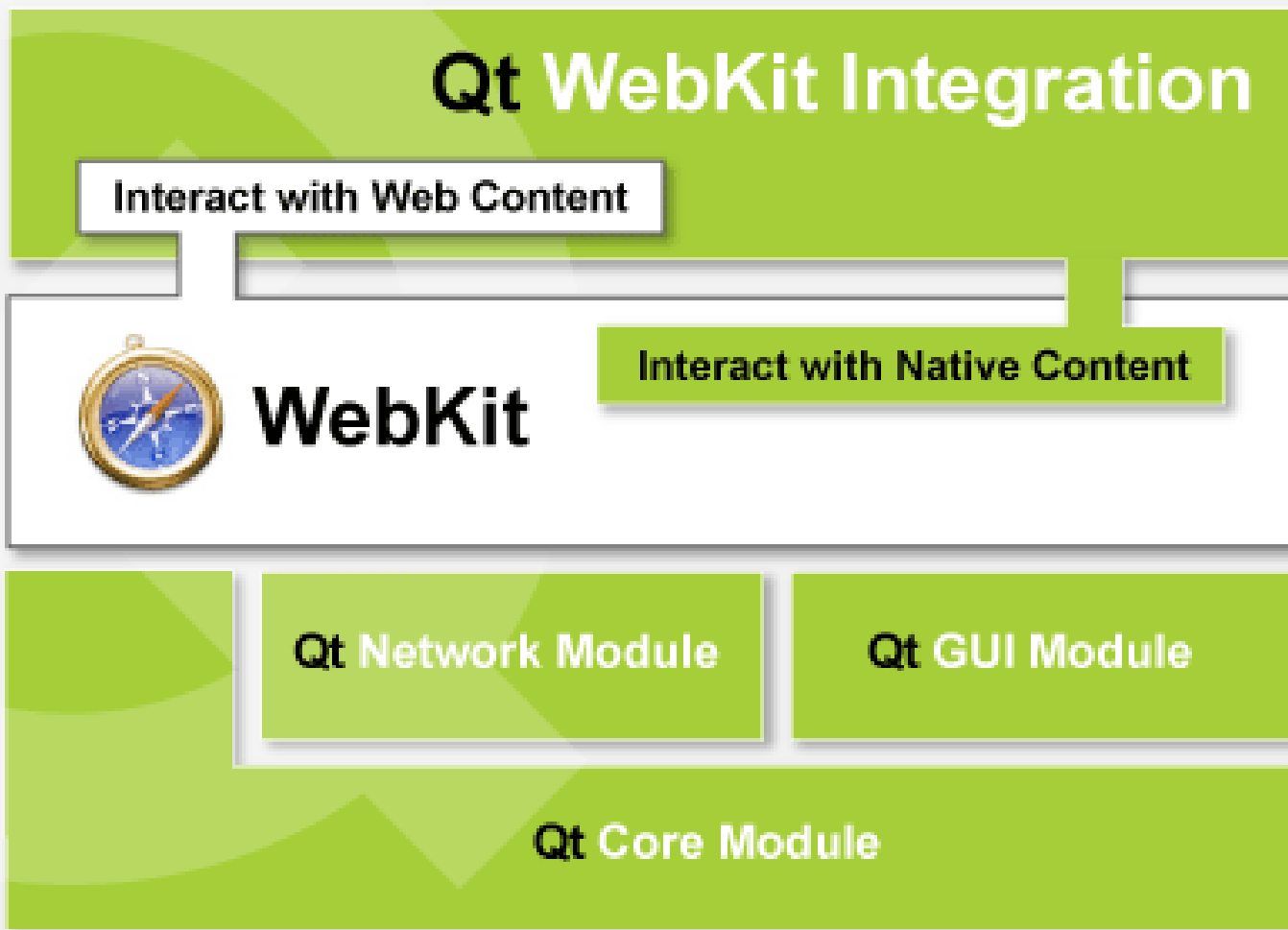
Build: 0 errors, 0 warnings

1 Build Issues 2 Search Results 3 Application Output 4 Compile Output



Qt Webkit Integration

Application



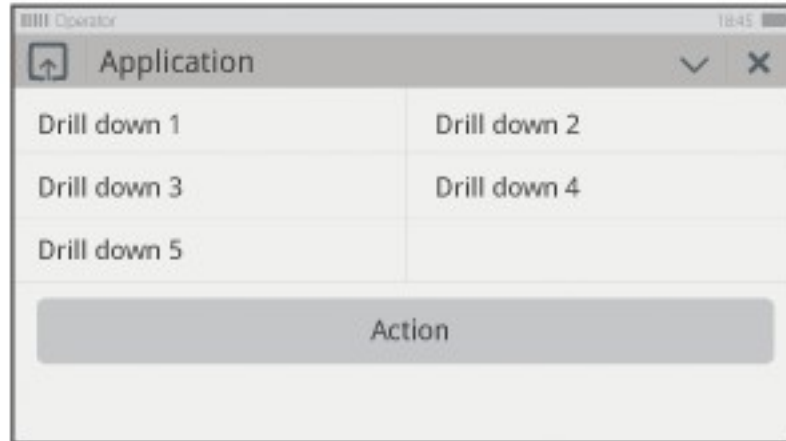


Integrating Web into your apps





Touch and rotate





Animation with Qt Quick





Addressable Qt marked



Qt is default on Symbian

100
Million

+

150
Million

=

250
Million



Installed



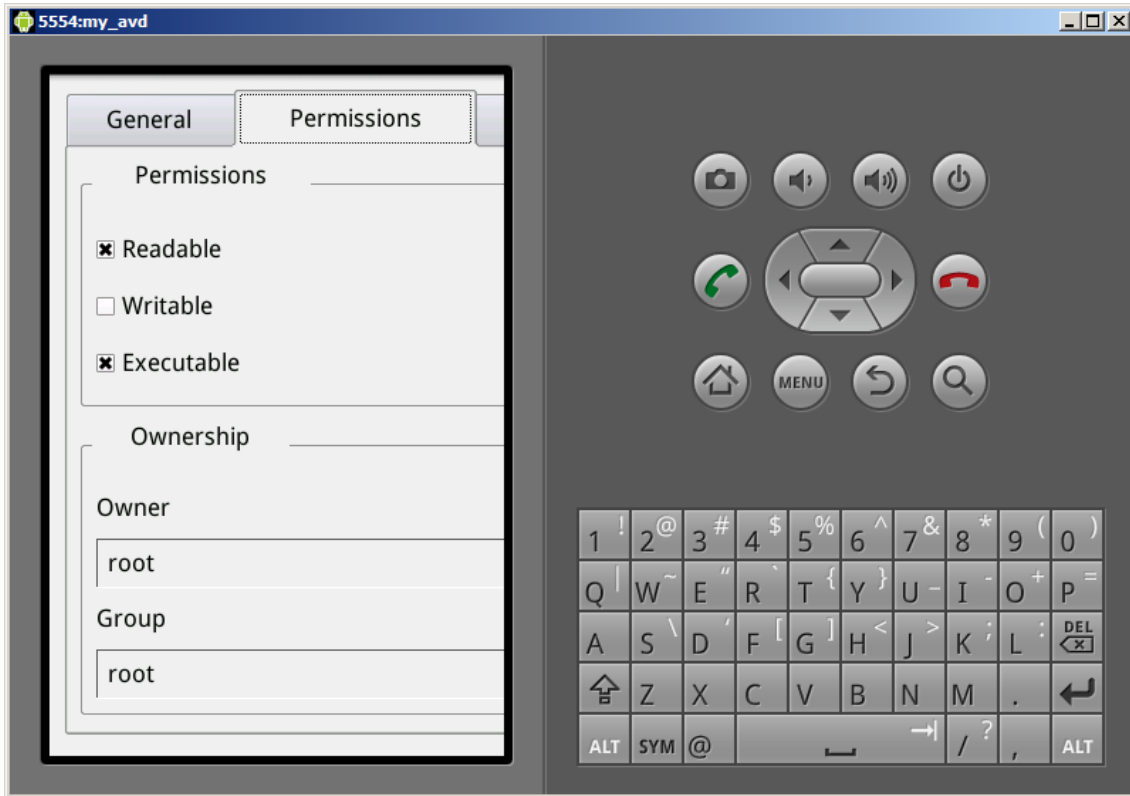
To be sold



Symbian



ANDROID





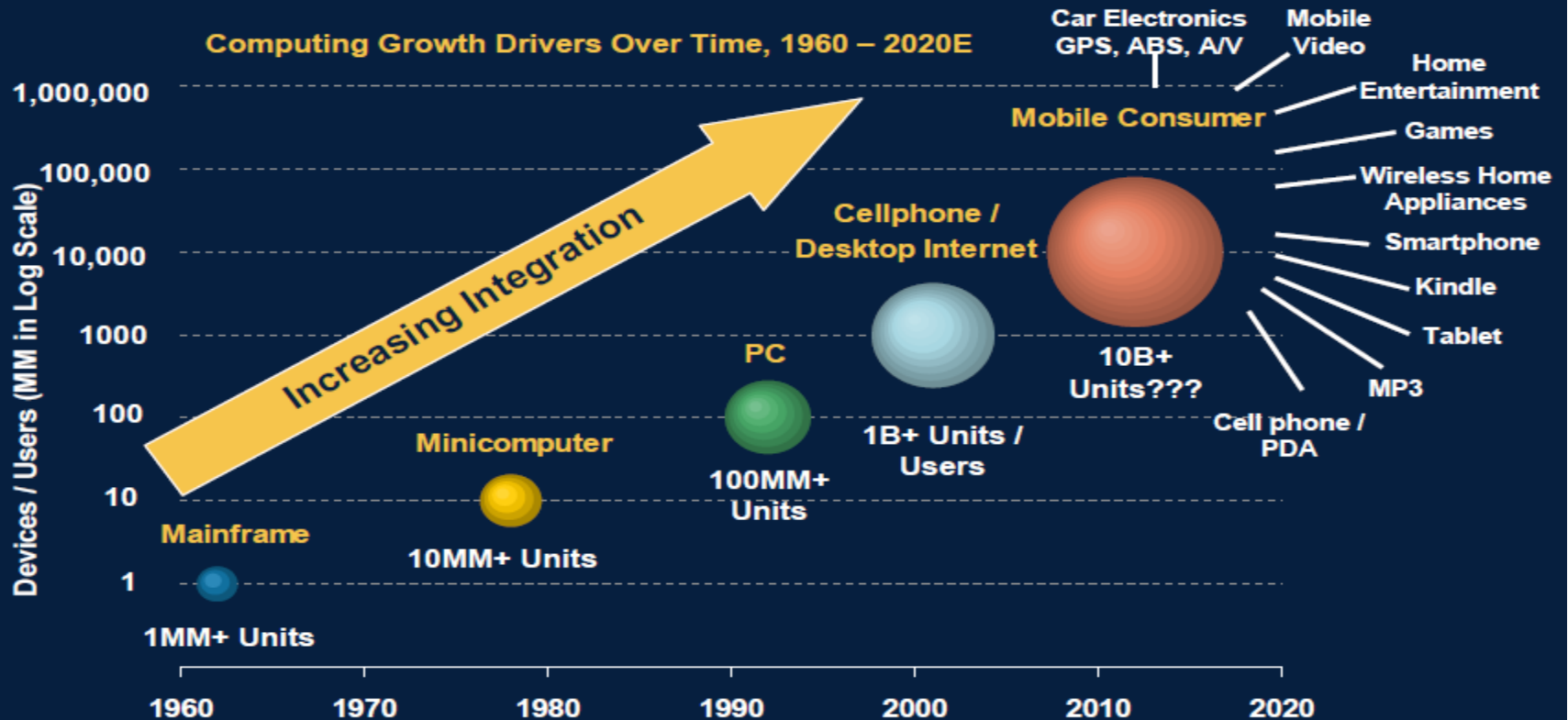
+ MeeGo =





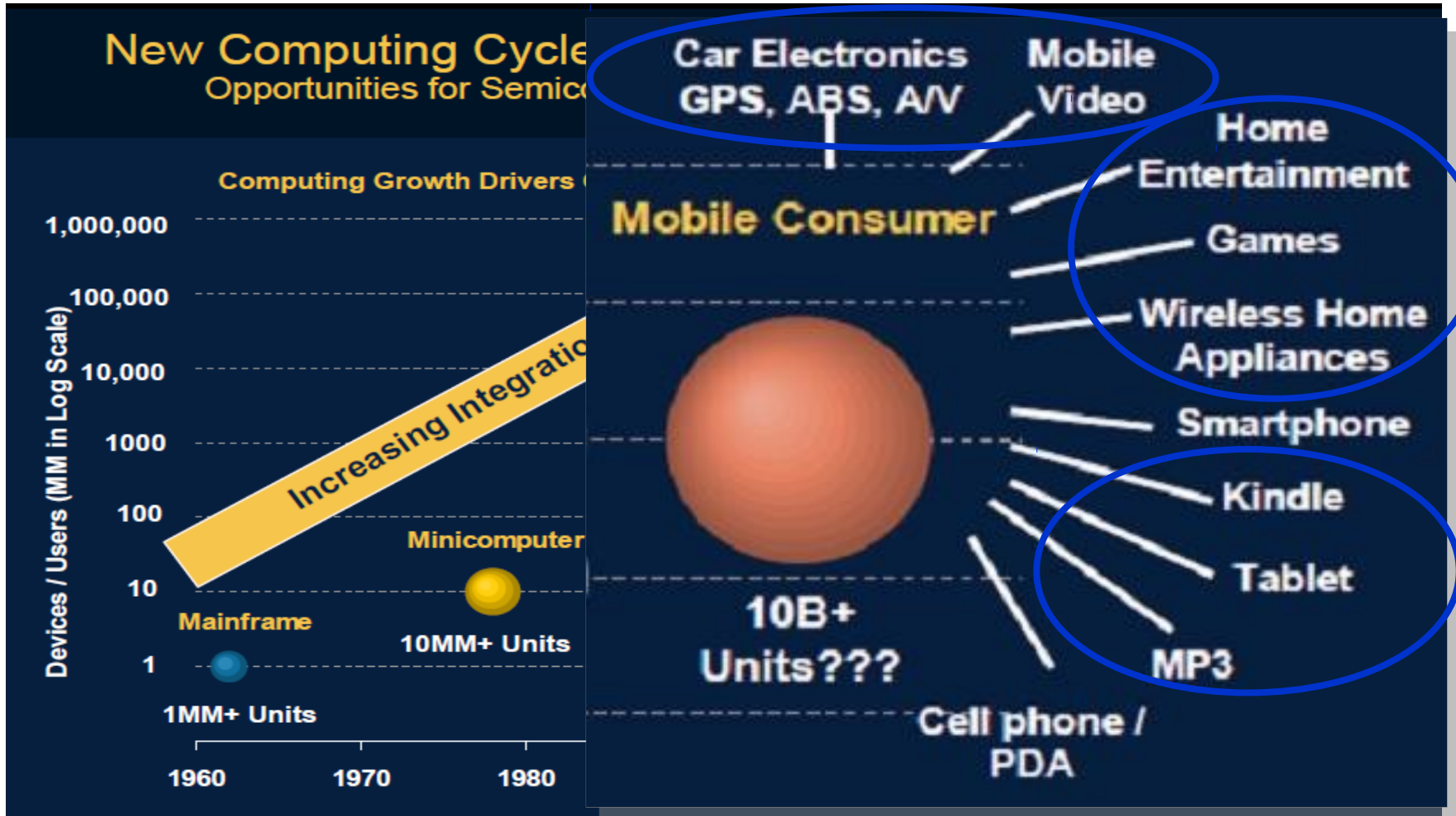
Open Source Convergence – A game changer

New Computing Cycles Supported by 10x More Devices
Opportunities for Semiconductor / Hardware / Software / Services





Open Source Convergence – A game changer





300% relative growth in Qt jobs

Job Trends from Indeed.com

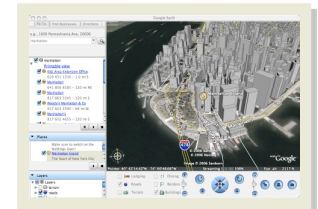
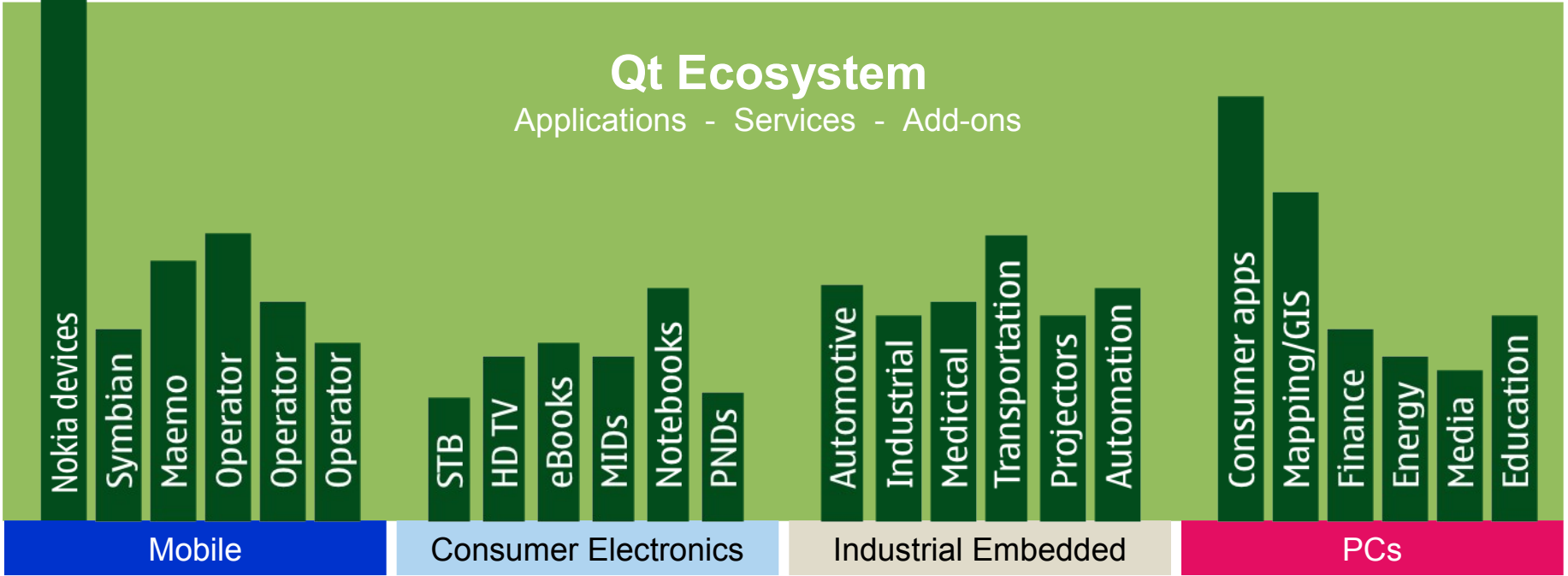
— Qt C++





Qt in 70 industries

Innovation can come from anywhere...





Knowing Qt and Qt Quick

You are prepeared!



Thank you!

Q & A