Qt Developer Days 2012

Why you should be excited about Qt 5

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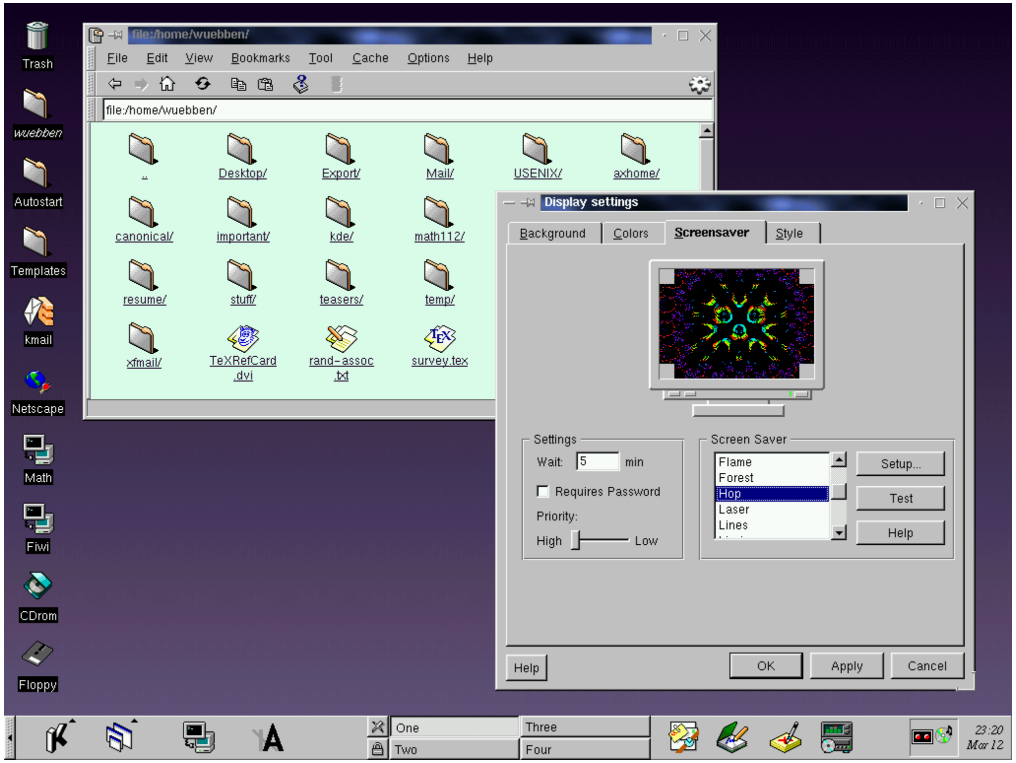
Santa Clara, Dec 6-7, 2012

Who am I?

- **Open Source developer for 15 years**
- **Software Architect at Intel's Open Source Technology Center (OTC) since last year**
  - Living in Portland, Oregon
- **Maintainer of two modules in the Qt Project**
  - QtCore and QtDBus
- **MBA and double degree in Engineering**
- **Previously, led the "Qt Open Governance" project**
  - Ended with the creation of the Qt Project

We’ve come a long way

- 1999-06-25: Qt 2.0
- 2001-10-15: Qt 3.0
- 2005-06-27: Qt 4.0


file:/home/wuebben/

Display settings

Wait: 5 min

☐ Requires Password

Screen Saver: Hop

Habemus Betam 2

- Released today
- Get it while it's fresh!
  - In your hotel, so you don't kill the connection for everyone
  - Or the USB sticks

http://qt-project.org/downloads

Qt
5

Goals

- Works for everyone (desktop, embedded, mobile)
- New features
- State-of-the-art UIs
- Increased modularity
- Reduced footprint
- Compatible with Qt 4.x

What is new in Qt 5.0?

- Qt Quick 2

- New graphics stack

- New modular structure

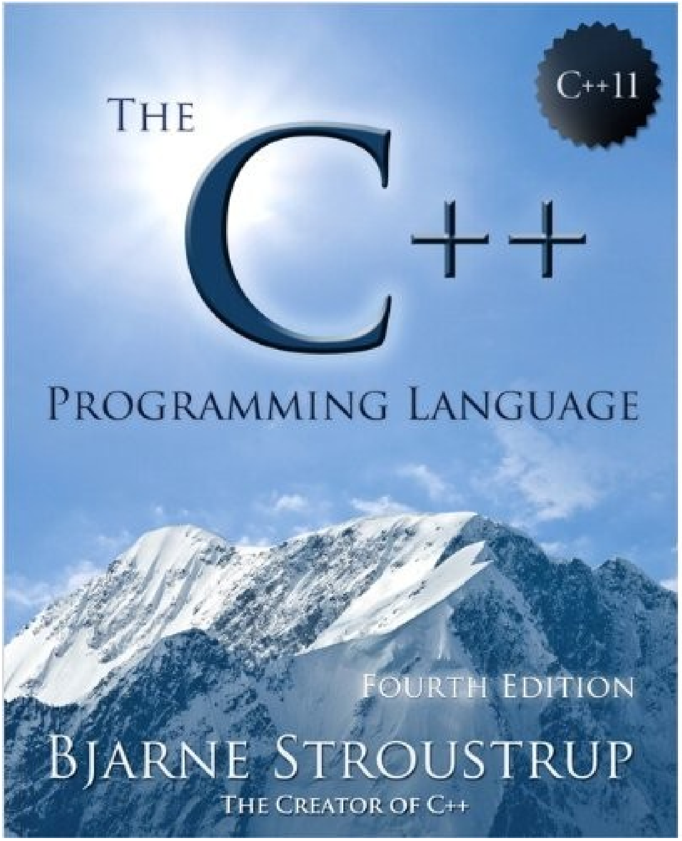
- All platforms based on QPA

New features

- Performance improvements
- OpenGL w/ ANGLE support
- Wayland support
- JSON support
- Mimetype support
- QStandardPaths
- XCB instead of Xlib
- QRegularExpression based on PCRE
- QDnsLookup
- New Signal/Slot connection mechanism
- C++11 support
- WebKit2 architecture in QtWebKit
- V8 as JS engine
- …

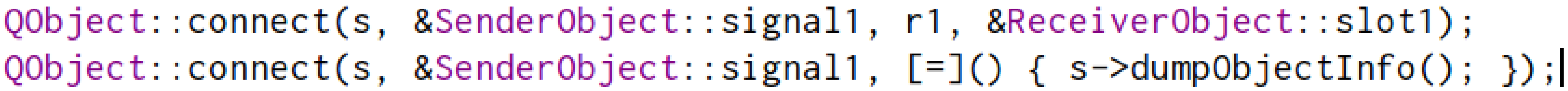
New features: C++11 support

- Certain new functionality only in C++11
  - Inline UTF-16 support for QString
  - New signal / slot syntax
  - Performance
- Qt continues to support C++98 (for now)



New features: new signal/slot connection syntax

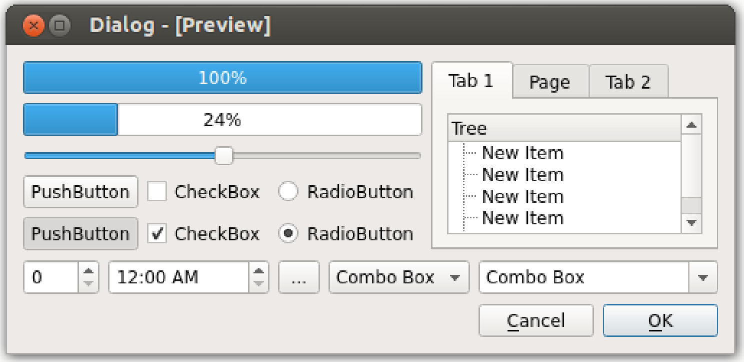
- Compile-time checking of:
  - Existence of the signal and the slot
  - Argument compatibility
- Works best with C++11
- Advantages:
  - Proper namespace and typedef support
  - Automatic type promotion & demotion
    long → int   const char * → QByteArray or QString

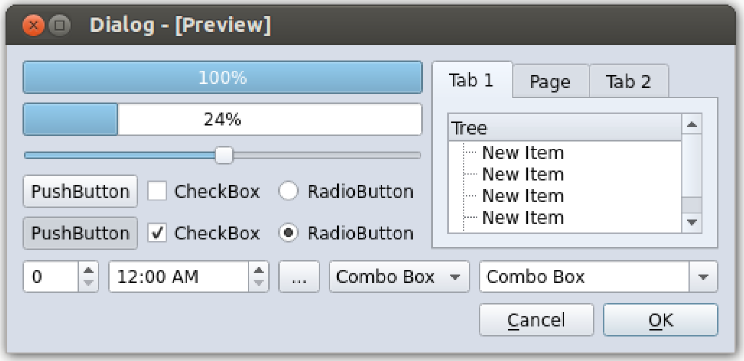


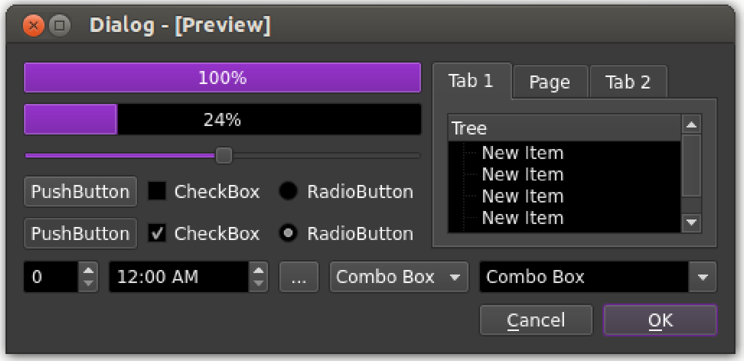
```
QObject::connect(s, &SenderObject::signal1, r1, &ReceiverObject::slot1);
QObject::connect(s, &SenderObject::signal1, [=]() { s->dumpObjectInfo(); });
```

UIs: new style for desktops

- New modern style, called Fusion
- Replaces previous styles
  - Motif, Plastique, Cleanlooks
  - Still available in a separate module





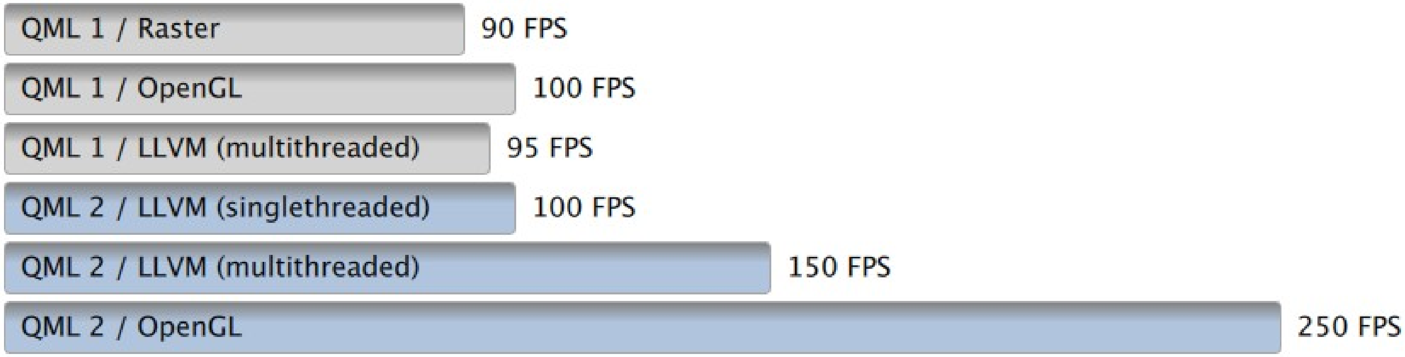


UIs: QML in the spotlight

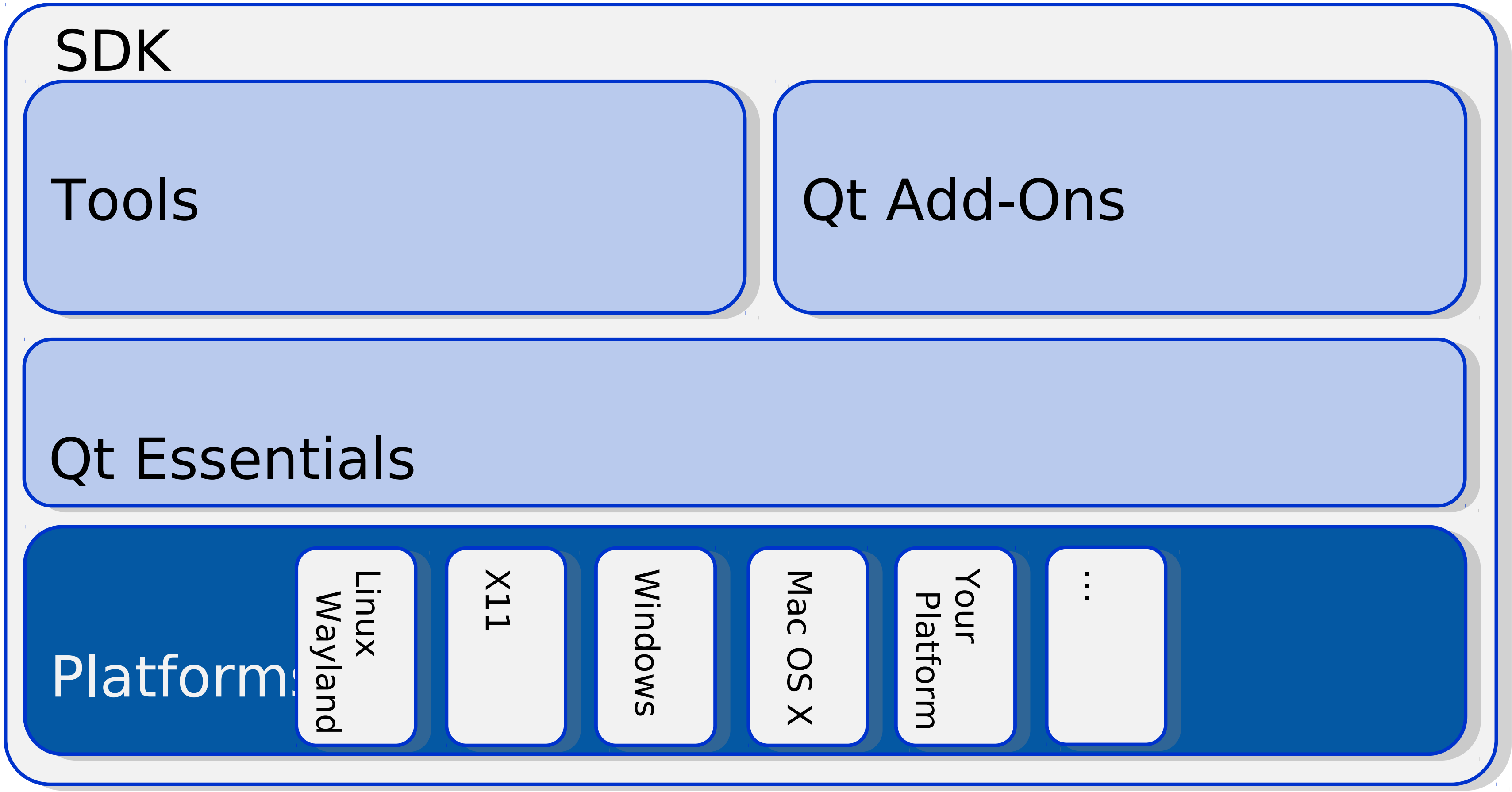
- QML is our bet in “the next step in GUI programming”
- Easier interaction with designers
- Easier to modify, update, maintain
- Implementations:
  - Qt Quick 1
  - Qt Quick 2
  - Cascades
  - Desktop Components

UIs: Qt Quick 2 and OpenGL (ES)

- Qt 5 supports two rendering paradigms
  - Software rasteriser/QPainter: used by QWidgets
  - OpenGL (ES): used by Qt Quick 2
- QPainter
  - Optimised for many years
- Qt Quick 2 is built and optimized for OpenGL
  - Even SW rasterisation can give great performance



Modularity: Structure of Qt 5



SDK

Tools

Qt Add-Ons

Qt Essentials

Platforms

Linux Wayland

X11

Windows

Mac OS X

Your Platform

...

Modularity: Qt 5 Platforms

Reference platforms

- Linux* (X11 and Wayland)
- Mac OS X*
- Windows*

Other supported platforms

- QNX, DirectFB
- Android, iOS being worked on

* Other names and brands may be claimed as property of others

Modularity: Tiers

Tier 1

- Tested all the time, especially at release time
- Team behind it is committed to supporting it

Tier 2

- Tested at release, but not all fixes in
- May raise in the future

Tier 3

- Code is present, but support level is unknown

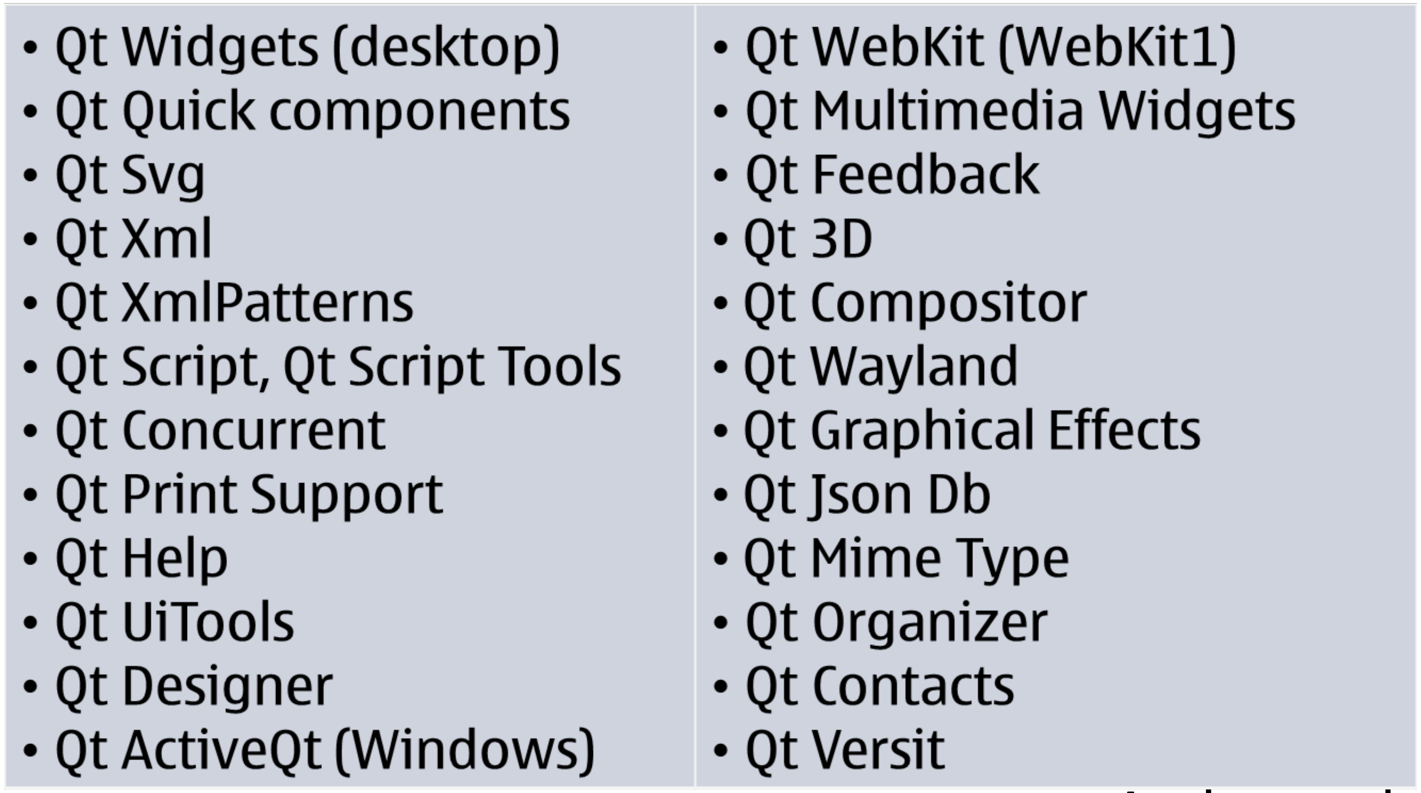
Modularity: Qt Essentials

Always available:

- Qt Core
- Qt Network
- Qt Gui
- Qt Widgets (for desktops only)
- Qt WebKit
- Qt Multimedia
- Qt Sql
- Qt Quick 1 and 2

Modularity: Add-on modules

For specific contexts



- Qt Widgets (desktop)
- Qt Quick components
- Qt Svg
- Qt Xml
- Qt XmlPatterns
- Qt Script, Qt Script Tools
- Qt Concurrent
- Qt Print Support
- Qt Help
- Qt UiTools
- Qt Designer
- Qt ActiveQt (Windows)
- Qt WebKit (WebKit1)
- Qt Multimedia Widgets
- Qt Feedback
- Qt 3D
- Qt Compositor
- Qt Wayland
- Qt Graphical Effects
- Qt Json Db
- Qt Mime Type
- Qt Organizer
- Qt Contacts
- Qt Versit

And more being added...

Modularity: why addons?

- Simpler to maintain for us
  - Different release schedules
  - Quicker to QA and test
- Simpler for new projects to be added

Footprint: Lean and mean QtGui

- Widget classes moved to a separate module (QtWidgets)
- QtGui concentrates on basic tasks
  - Window management (QWindow) & windowing system integration
  - Raster painting (QPainter, QImage)
  - OpenGL / OpenGL ES support

Footprint: Widgets in Qt 5

- In “Done” state of development
  - Will fix important bugs
  - Community is not adding new features or improving performance
- Currently recommended for desktop GUI
- Does not require OpenGL or JS engine

Compatibility: Migrating from Qt 4 to Qt 5

- Compatible with Qt 4 with very few exceptions
- Qt Widgets are supported in Qt 5
- Doesn’t require migration to Qt Quick
- Doesn’t require OpenGL
- Doesn’t require JavaScript

Compatibility: Embedded support

EGLFS

- Uses EGL
- Full screen applications
- Single process only

DirectFB

- Blitting acceleration
- Input handling
- OpenGL support possible

Wayland

- Designed for HW acceleration
- Wayland 1.0
- Qt Compositor API
- Integrates with other Wayland clients and servers

Done under the Qt Project

The Qt Project
celebrated
1 year on October 22

http://qt-project.org

Current state

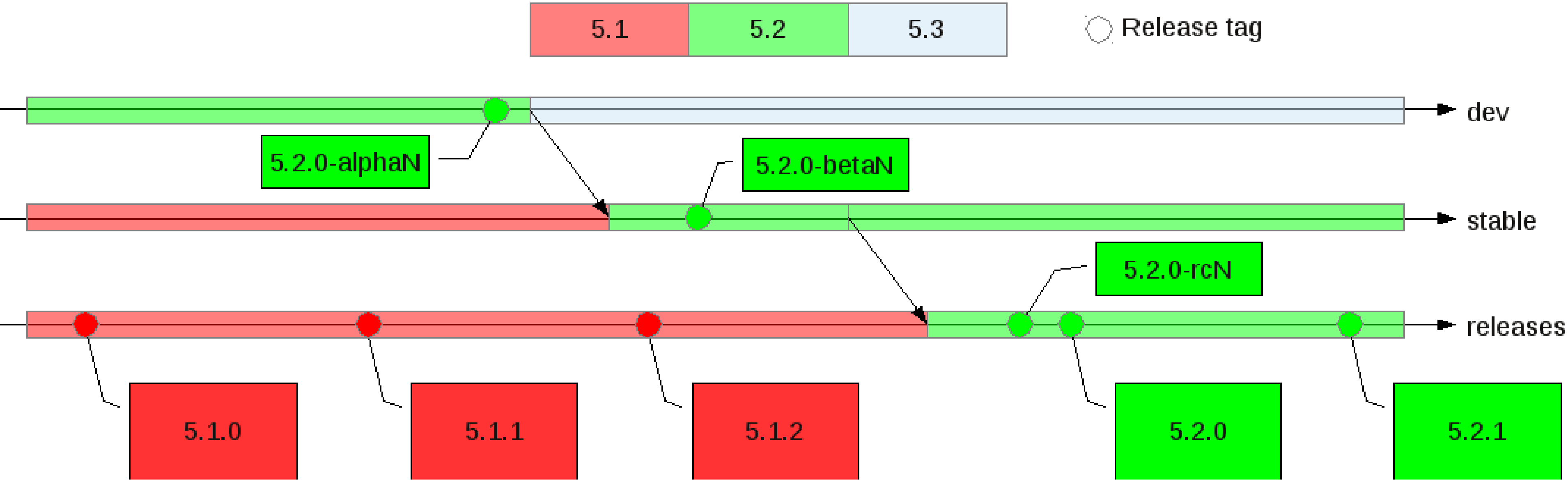
We’re in Beta!

- Feature freeze: March 2012
- Alpha: April 4 2012
- Beta 1: August 30 2012
- Beta 2: **today**
- Final: by the end of the year

After 5.0: Releases

Hybrid time / quality based release schedule

- 2 feature releases per year



After 5.0: Embedded systems

Recover time lost

- Cooperate with vendors and embedded Linux distributions
  - Ready for your use
  - Yocto Project, Open Embedded, etc.
- Investigate Android on embedded
- Tooling support
  - Cross-compiling, remote debugging, deployment, etc.
  - Integrated into Qt Creator

After 5.0: More platforms

- Definite support for Blackberry and QNX
  - RIM contributing directly to the Qt Project

- Investigating support for
  - Android
  - IOS
  - Windows 8 / RT

After 5.0: Others

- Full Desktop support in Qt Quick
- Integrated Software OpenGL renderer
- Continue to evolve the WebKit2 based Qt WebKit
- More processor architectures for JavaScript
- Improvement on the V4 engine
- Your ideas?

Questions?

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Links:
Website: http://qt-project.org
Mailing lists: http://lists.qt-project.org
IRC: #qt and #qt-labs on Freenode

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