The Qt Crystal Ball

Insider's View into Qt's Expansion & Technical Advancement Plans

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CTO, The Qt Company

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Growing more and more popular

2.7 Million downloads of Qt since the release of Qt 5.2
Average number of platforms for which users publish their apps developed with a cross platform tool

“Qt is the leader of cross-platform app development”

Source: Research2guidance, CPT Benchmarking 2014
## Top 10 App quality

<table>
<thead>
<tr>
<th>Rank</th>
<th>Tool</th>
<th>Much lower/lower</th>
<th>Same</th>
<th>Much higher/higher</th>
<th>Can't tell</th>
<th># Ratings</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Qt</td>
<td>-6%</td>
<td>35%</td>
<td>56%</td>
<td>3%</td>
<td>342</td>
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<tr>
<td>2</td>
<td>Windows Visual Studio</td>
<td>-8%</td>
<td>32%</td>
<td>51%</td>
<td>9%</td>
<td>201</td>
</tr>
<tr>
<td>3</td>
<td>Cocos 2D</td>
<td>-14%</td>
<td>29%</td>
<td>50%</td>
<td>6%</td>
<td>171</td>
</tr>
<tr>
<td>4</td>
<td>Unity</td>
<td>-17%</td>
<td>27%</td>
<td>48%</td>
<td>9%</td>
<td>312</td>
</tr>
<tr>
<td>5</td>
<td>Windows Azure</td>
<td>-8%</td>
<td>32%</td>
<td>47%</td>
<td>12%</td>
<td>99</td>
</tr>
<tr>
<td>6</td>
<td>Adobe Air</td>
<td>-23%</td>
<td>30%</td>
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<tr>
<td>7</td>
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<tr>
<td>8</td>
<td>V-Play</td>
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<td>39%</td>
<td>11%</td>
<td>138</td>
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<td>jQuery Mobile</td>
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<td>37%</td>
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<td>Sencha Touch</td>
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<td>27%</td>
<td>33%</td>
<td>4%</td>
<td>147</td>
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</tbody>
</table>

Benchmark (Average all tools): -16% 40% 41% 3%

Source: Research2guidance, CPT Benchmarking 2014
Top 10 Cross Platform Tools by time savings

<table>
<thead>
<tr>
<th>Rank</th>
<th>Tool</th>
<th>50%+ slower</th>
<th>10-50% slower</th>
<th>Same</th>
<th>10-50% faster</th>
<th>50%+ faster</th>
<th>Can't tell</th>
<th># Ratings</th>
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</thead>
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<tr>
<td>1</td>
<td>V-Play</td>
<td>0%</td>
<td>0%</td>
<td>0%</td>
<td>31%</td>
<td>69%</td>
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<tr>
<td>2</td>
<td>Unity</td>
<td>0%</td>
<td>0%</td>
<td>5%</td>
<td>25%</td>
<td>62%</td>
<td>8%</td>
<td>106</td>
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<td>3</td>
<td>Qt</td>
<td>0%</td>
<td>-1%</td>
<td>2%</td>
<td>34%</td>
<td>56%</td>
<td>8%</td>
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<tr>
<td>4</td>
<td>Corona SDK</td>
<td>-2%</td>
<td>-5%</td>
<td>3%</td>
<td>39%</td>
<td>50%</td>
<td>2%</td>
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<tr>
<td>5</td>
<td>Xamarin</td>
<td>-2%</td>
<td>-1%</td>
<td>10%</td>
<td>43%</td>
<td>37%</td>
<td>8%</td>
<td>105</td>
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<tr>
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<td>Cocos 2D</td>
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<td>-5%</td>
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<td>28%</td>
<td>20%</td>
<td>60</td>
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<td>Windows Visual Studio</td>
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<td>7%</td>
<td>54%</td>
<td>25%</td>
<td>6%</td>
<td>87</td>
</tr>
<tr>
<td>9</td>
<td>KonyOne</td>
<td>0%</td>
<td>0%</td>
<td>11%</td>
<td>67%</td>
<td>22%</td>
<td>0%</td>
<td>55</td>
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<tr>
<td>10</td>
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<td>-3%</td>
<td>-6%</td>
<td>8%</td>
<td>57%</td>
<td>22%</td>
<td>5%</td>
<td>52</td>
</tr>
<tr>
<td>Benchmark (Average all tools)</td>
<td>-1%</td>
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<td>7%</td>
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<td>7%</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

Source: Research2guidance, CPT Benchmarking 2014
On the Radar (IT): Digia

Qt, the cross-platform development environment for mobile, enterprise desktop, and embedded applications
Unifying our Ecosystem
Qt provides different licensing and pricing models to fit all needs.
One Website: www.qt.io
Qt 4.8.x support

Maintenance and commercial support will continue for one more year
Indie Mobile

20€ / $25
Promotion: 11% discount on any online subscription

Indie Mobile – Get commercial licensing rights for Android, iOS and WinRT deployment

Professional – Get the full Qt experience with commercial licensing for development and deployment on all desktop and mobile platforms

Buy Qt:
qt.io/download

Promo code:
DD14BEROS

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Trends in computing & Qt long term vision
Platform diversity

Source: Gartner, IDC, Strategy Analytics, BI Intelligence estimates, and company filings

Source: IDC, Strategy Analytics
Multi screen

• Access functionality from different devices
  • Laptop, Phones & Tablets
  • TV
  • Car IVI
  • Wearables (e.g. Watch)
  • Virtual and augmented reality
  • Specialized Device
  • …
will continue to support all relevant platforms
Qt will continue to support all relevant platforms

- Support new compilers
- Support new OS versions
- Support new OSes
- C++14
- Bug fixing
Application Stores

- Hard requirement on mobile
- Apple and Microsoft pushing them for Desktop as well
- Windows 10 and WinRT are all about the Windows Store

Downloads from Apple App Store

© Statista 2014
Time to market
more and more critical
helps cover more parts of the application lifecycle
Application lifecycle

• Design
• Development
• Packaging
• Deployment
• Customer Feedback
• Maintenance
Embedded is growing

*Worldwide market expected to grow at a projected compound annual growth rate (CAGR) of 5.4% over the next five years

\[2014 \approx \$152.4 \text{ billion}\]

\[2019 \approx \$198.5 \text{ billion}\]

*Source: BCC Research 2014
Connected Devices

- More and more devices get touch screens
- Need a simple to configure, flexible stack
- Machine to Machine (M2M)
  - Common data protocols
  - Discovery
- Issues
  - Data processing and analytics
  - Security, access control
  - Software updates
  - Data control and sharing

The Internet Of Everything

Source: BI Intelligence Estimates
makes device creation faster and easier
helps connect applications and devices
Device Creation

• Improve productivity with professional tooling

• Improve our Linux offering
  • Provide a more complete stack
  • Easy to configure and tune
  • Fast boot times
  • Work on lower end hardware
    • Work on devices with very low energy profile
    • Devices without OpenGL

• Remote displays
  • Stream a UI to a different device
  • Connect to device through a browser
Data storage and processing

• Exponential growth of the amount of data gathered/received
  • Data collection happens at different places

• Stored in different, disconnected clouds
  • How to connect with different clouds
  • Combine data from different sources

• Processing the data
  • Analytics
  • Visualization
  • How to use it in a meaningful way
Data and system security

- Where to store data
  - Cloud
  - Decentralized

- How to keep the users or companies data safe
  - Encrypted connections
  - Encrypted data
  - How and with whom do I share data

- Authentication and access control
- Avoid single points of failure
- Maintain and deploy security updates
will help manage your data and keep it safe
What’s cooking?
Qt for Desktop

- High-DPI support on all platforms
  - QT_DEVICE_PIXEL_RATIO
  - Transparent support for 5.5
- Support for OS X 10.10 ‘Yosemite’
- Support for Windows Store Apps
- Support for Windows 10
- Dynamic GL switching on Windows
  - Native OpenGL
  - ANGLE
  - Software rasterization
- Continue fixing the “long tail” of minor issues.
  - Smaller bugs
  - Look and feel issues on OS X
Qt on Windows Runtime (Windows Store Apps)

- Integrated into Qt Creator
- Compliant with Windows Store
- New Modules
  - Geopositioning
  - Qt Quick Enterprise Controls
  - Engin.io
  - Qt Quick Compiler
  - Multimedia
- Qt 5.5 and later
  - Bluetooth, BT LE, …
  - In-app purchasing

Supports
- Windows 8.1 and newer
- Windows Phone 8.1 and newer
- Windows 10 mostly working

Fully supported with Qt 5.4
Qt for Android

• Deployment
  • Optimize package sizes
    • Support for QML import scanner
  • Improve start-up time
    • Pre-generated assets cache

• Native Look and Feel
  • Android style for Qt Quick Controls

• Bearer management improvements

• Native input handling
  • Marking and selecting text

• Gradle build system support
• Supports Android ‘L’ since Qt 5.3
Qt for iOS

- Supports iOS 8
- XCode 6 Support
- Make applications behave and look more native
  - Pop-up menus
    - some in Qt 5.4
    - more in Qt 5.5
  - Native dialogs
    - Qt 5.5
- Native input handling
  - Marking and selecting text
  - VKB integration
Graphics

- **OpenGL**
  - Adopt native OpenGL contexts
  - Improved support for OpenGL ES 3.0/3.1
  - QOpenGLWidget / QOpenGLWindow

- **Software drawing**
  - QRasterWindow

- **Qt Quick**
  - QQuickWidget (5.3)
  - QQuickRenderControl
  - Canvas 3D (Tech preview for Qt 5.4)
  - 2 new styles for Enterprise Controls

**Qt OpenGL module**

deprecated with Qt 5.4

(Qt Gui provides all required functionality)
Qt Quick 2D renderer

- Renders Qt Quick without OpenGL
- Can render fully in Software
- Makes use of 2D Hardware acceleration
  - DirectFB (Linux)
  - Direct 2D (Windows)
  - Others possible

New commercial add-on for Qt 5.4
Qt Quick Engine & Qt Quick Compiler

- Typed array support (Qt 5.5)
- C++ JS integration bridge (Qt 5.5)
  - Provide a replacement API for Qt Script
  - Improve QML/JS ←→ C++ integration
- New garbage collector (Qt 5.5)
  - Better performance
  - Kicks in more optimally
- Qt Quick Compiler (enterprise)
  - Cmake integration
  - Bug-fixes
  - 2.0 release for 5.4
- Bugfixing and other improvements
Bluetooth and Bluetooth LE

- APIs for Bluetooth and Bluetooth LE in Qt 5.4
- Support for
  - Linux
  - Embedded Linux
  - Android
  - Can use BlueZ 4 or BlueZ 5
- Further platforms (WinRT, iOS, ...) planned for future Qt versions
- Support for Bluetooth LE (Low Energy)
  - Included as a Tech preview in Qt 5.4
Qt WebEngine

Next generation web integration for Qt
Goals

- APIs for embedding web contents
- Simple to create a fully functional browser
- Deeply integrated with the Qt graphics stack
- Easy to use
- Cross platform
Based on Chromium

- Full support for Qt Widgets and Qt Quick
- Great performance
- Full compliance with latest Web standards
Some numbers

**HTML5Test.com** (on Mac OS X)

- Qt WebEngine: 506 points
- Google Chrome: 512 points
- Safari 7.1: 405 points

**SunSpider**

- Qt WebEngine: 139.0ms +/- 1.7%
- Google Chrome: 135.9ms +/- 1.4%
Features

• Full QWidget integration
• Combine seamlessly with Qt Quick
  • Tight integration with Qt Scene Graph
  • Best in class performance
  • Combine with graphical effects
    • Apply any shader effect to WebEngineView
• Interface with native code through Qt WebChannel
• Web features through Chromium
• Standards compliant
Platforms

• Desktop Linux
• Mac OS X
• Windows Vista and above
  • requires MSVC 2013 (Express) and ANGLE
• Embedded Linux
Available under

LGPLv3

or

Commercial licensing

(Chromium parts licensed under LGPLv2.1)
WebKit

Lightweight component for embedding web content

Qt native UI elements

Cross-Platform WebView API

Web documents

Safari

Android Chromium

Native

QtWebEngine

iOS

Android

Desktop OSs

Embedded OSs

Technology preview with Qt 5.4 (Android & iOS)
Qt WebChannel

Easy interaction between Qt and HTML/JavaScript

• Works with
  • Qt WebEngine
  • Qt WebView
  • Qt WebKit
  • Any browser supporting Web Sockets

• Exposes objects from Qt to HTML5
  • Replacement for the QObject bridge in Qt WebKit
Qt Virtual Keyboard

• Keyboard layouts supported
  • Western keyboard layouts
  • Russian
  • Pinyin (Chinese input)
  • Farsi
  • Hindi
  • Japanese and Korean upcoming

• 2 way and 5-way navigation support

• Change theme at run-time

• Windows support
Other items

- QStorageInfo
  - Provide info about mounted storage volumes and drives

- Data Visualization
  - Volume Rendering & Performance improvements

- Official support for Wayland

- Qt Location
  - Work ongoing
  - Goal: Technology preview this year

- Qt 3D
  - Most of the new architecture in place
Qt for device creation

- Qt 5.4 libraries, updated reference stacks and add-on components (December 2014)
- Qt Quick 2D Renderer plugin for devices without OpenGL
- Integration of Wayland for multi-process support
- New meta-Qt layer for building your own stack in Yocto
- New utility library for controlling audio, display, network etc
- Qt Creator wizard for flashing device images
- Performance optimizations, improvements and bug fixes
Managed Application Runtime
How does it work?

- Write Application Code
- Use Local Version Control
- Deploy to Qt Cloud Services
Scalable

Your Application
- Configure
- Deploy
- Scale with your business

Native Add-Ons
- MySQL
- MongoDB

Application Instances

Load Balancer

Scaling

myawesome.com
Qt Creator and Tooling
Qt Creator 3.3

Qt Quick Designer
- Clean split of user interface design and application logic
- Support for Tabview Control
- Extended Anchoring options

QML Profiler
- JavaScript Heap Profiler (Commercial)
- Improved Scenegraph Profiler (Commercial)
- Annotations on profile view
- Static code analyzer support using clang

Create your own wizard using simple scripting

Drag around edited documents between views

New Quick-fixes
- Switch between Stack & Heap allocation
- Convert “old-style” connect call to “new-style”

Improved High-Dpi support
## Schedule

<table>
<thead>
<tr>
<th>Date</th>
<th>Event</th>
</tr>
</thead>
<tbody>
<tr>
<td>16. September</td>
<td>Qt 5.3.2 released</td>
</tr>
<tr>
<td>Within 2 weeks</td>
<td>Qt 5.4 beta</td>
</tr>
<tr>
<td>Beginning of November</td>
<td>Qt 5.4 Release Candidate</td>
</tr>
<tr>
<td>End of November</td>
<td>Qt 5.4 Final</td>
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<tr>
<td>December</td>
<td>Qt Creator 3.3</td>
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<tr>
<td>December</td>
<td>Qt for device creation</td>
</tr>
<tr>
<td>Q1 2015</td>
<td>Qt 4.8.7</td>
</tr>
<tr>
<td>April 2015</td>
<td>Qt 5.5 &amp; Qt Creator 3.4</td>
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Qt Champions

Champions

http://qt-project.org/champion
Thank you!

www.qt.io