

Qt Framework Retrospective

Lukas Kosiński - Scythe Studio



Lukas Kosiński

About me

Qt QML Consulting company owner ↵

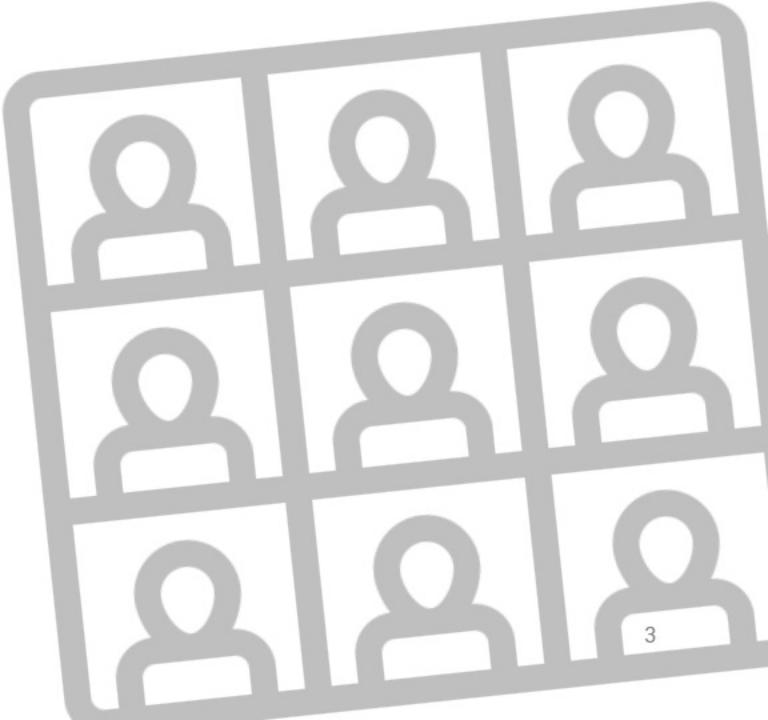
Background as Software Engineer ↵

Qt Champion 2022 (Ambassador) ↵

Agenda

- ↳ Key contents of Qt Framework
- ↳ Qt's cross-platform capabilities
- ↳ Popular use cases
- ↳ Licensing
- ↳ Future of Qt

Estimated time: 1 hour, after **Q&A**



128 Qt and C++ projects later



What I learned in the meantime

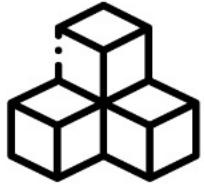
What do you get after this meetup?

- ↳ You are inspired to try and extend your skillset
- ↳ You have a first-hand opinion of the framework
- ↳ You know what to consider choosing Qt for your project

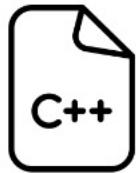
Key contents of Qt framework



Key contents of Qt framework



Numerous modules



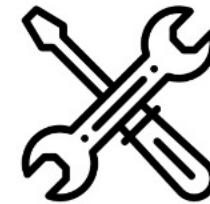
Core C++ concepts



GUI programming



Connectivity



Tooling

Qt Essentials

Qt Core

Qt QML

Qt GUI

Qt Widgets

Qt Network

Qt Quick

Qt Quick
Controls

Qt Quick
Dialogs

Qt Quick
Layouts

Qt Quick
Test

Qt Test

Qt D-Bus

Qt Addons

Active Qt	Qt 3D	Qt Bluetooth	Qt Charts	Qt Concurrent	Qt Data Visualization
Qt Help	Qt Image Formats	Qt Lottie Animation	Qt OpenGL	Qt Multimedia	Qt Network Auth
Qt NFC	Qt Positioning	Qt Print Support	Qt Quick 3D	Qt Quick Timeline	Qt Quick Widgets
Qt Remote Objects	Qt SCXML	Qt Sensors	Qt Serial Bus	Qt Serial Port	Qt Shader Tools
Qt SQL	Qt State Machine	Qt SVG	Qt UI Tools	Qt Wayland Compositor	Qt WebChannel
Qt WebEngine	Qt WebSockets	Qt WebView	Qt Virtual Keyboard	Qt XML	Qt 5 Compability

```
class ObjectA : public QObject  
Q_OBJECT
```

```
void performOperation() {
```



```
signals:
```

```
void iAmDone()
```

```
class ObjectB : public QObject  
Q_OBJECT
```

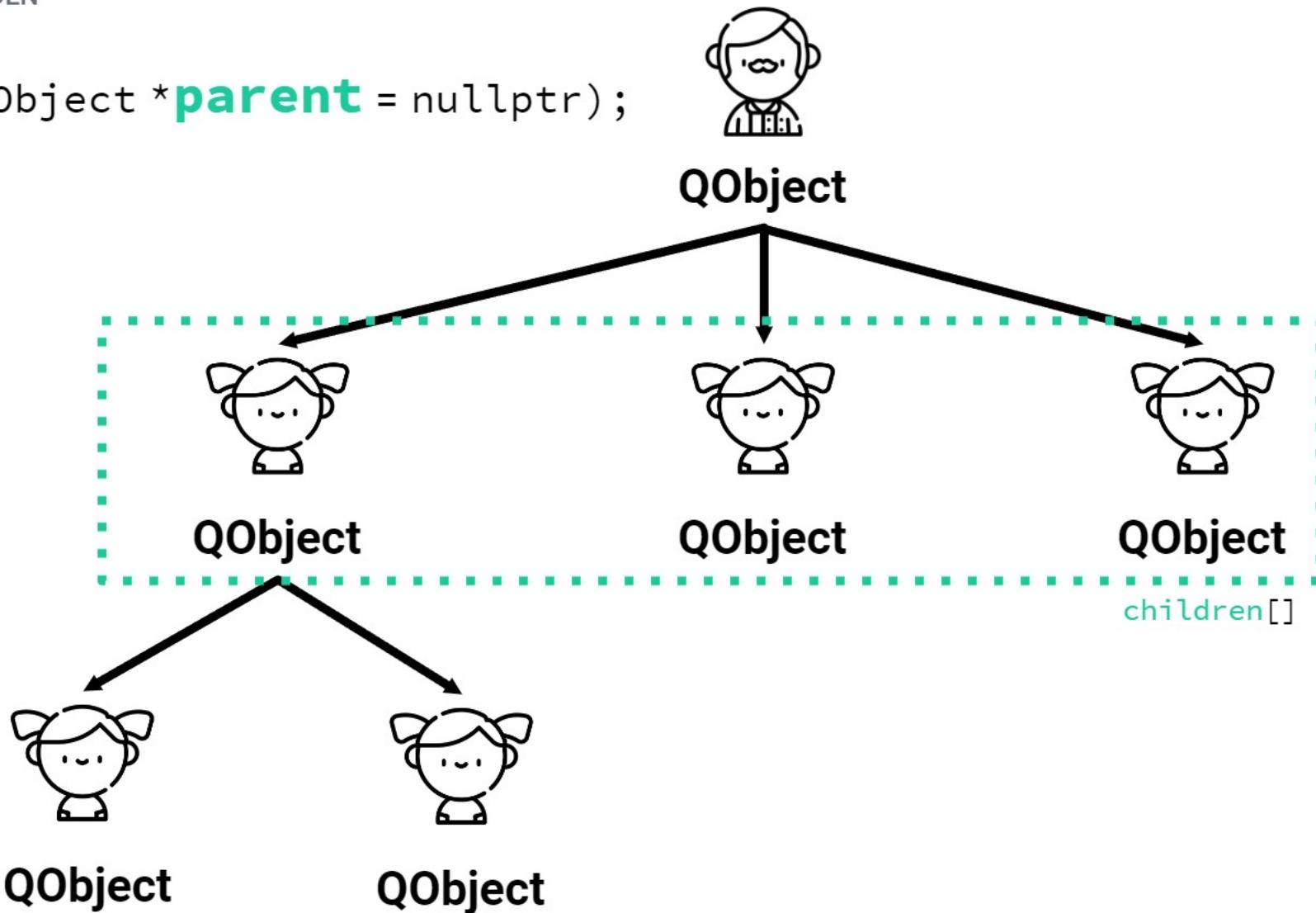
```
public slots:
```

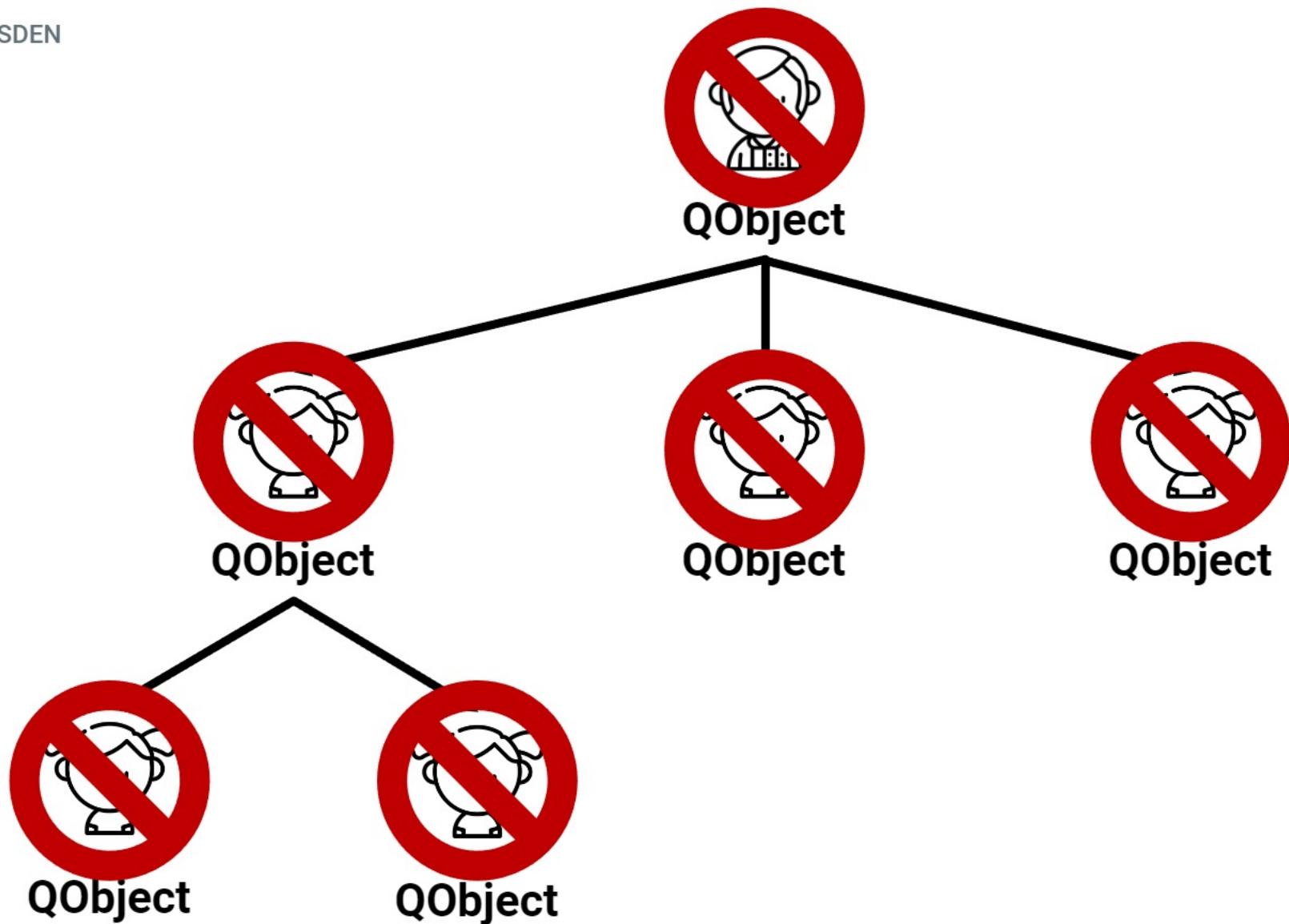
```
void doSomething()
```



`QObject::connect(objectA, &ObjectA::iAmDone,
objectB, &ObjectB::doSomething())`

```
QObject(QObject *parent = nullptr);
```





Qt Meta-Object Compiler (moc)

Magic behind QObject

- ↳ Additional build step
- ↳ Generates code
- ↳ Provides signals and slots
- ↳ Provides property system
- ↳ Provides Real Time Type Information (RTTI)

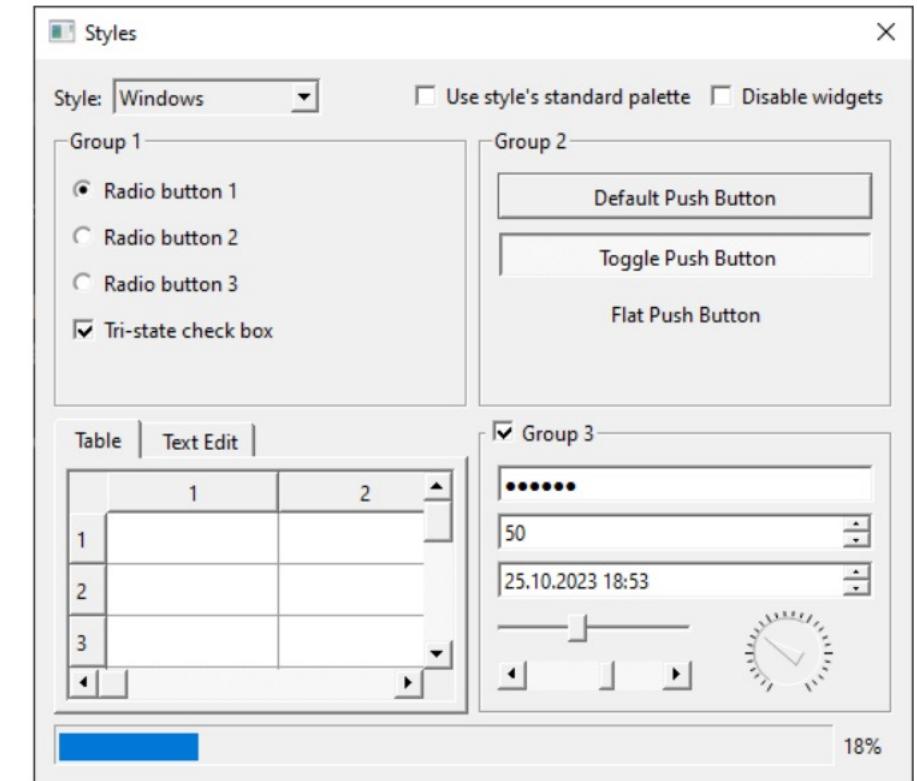
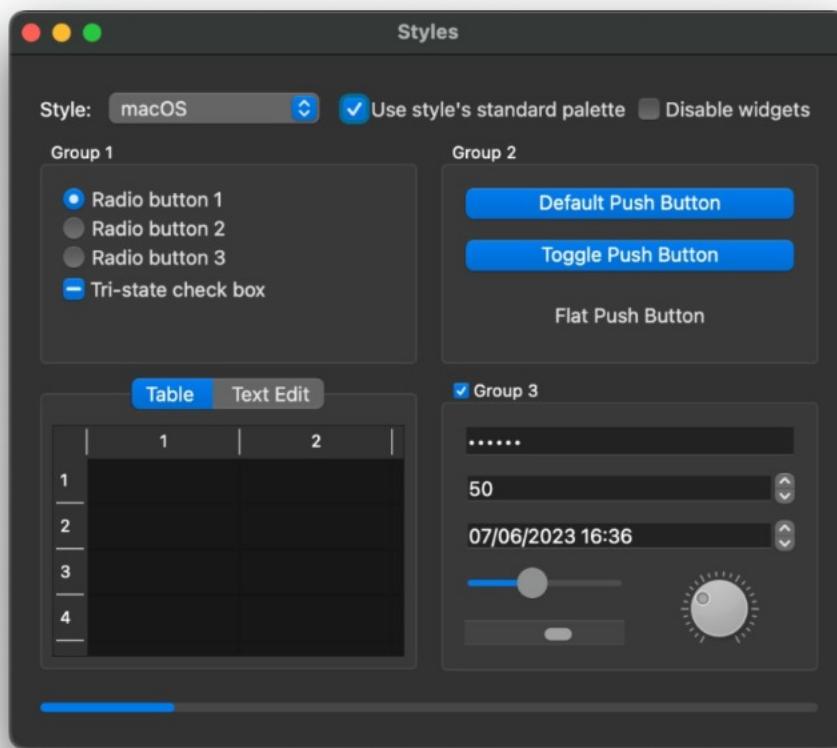


GUI programming

Qt Widgets

Qt Quick

The Qt Widgets Module



The Qt Quick Module

Statistic

XRP 0.9 XRP ▲ \$0.40 +0.48%

Open \$0.40 24H High \$0.40 24H Low \$0.39



1d 1w 1m 6m 1y 5y

Open	\$0.40	Vol	1.81B	52W H	\$0.40
High	\$0.40	P/E	0.48	45W H	\$0.39
ATH	\$3.40	Mkt C...	\$20.16B	Avg Vol	1.81B

Live Prices

24h Price Change

Search...

 Bitcoin BTC \$21.71k ▼ -1.26%
 Ethereum ETH \$1.54k ▼ -0.78%
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 BNB BNB \$290.15 ▲ +1.44%
 USD Coin USDC \$1.00 ▲ +0.02%
 XRP XRP \$0.40 ▲ +0.48%

```
import QtQuick
import QtQuick.Controls

import pages
import helpers
import customItems
import customItems.controls.popups

Window {
    id: root

    width: 400
    height: 850
    visible: true
    title: qsTr("VALUET_TRANSLATION")

    color: Theme.backgroundColor // qmlint disable unqualified

    CryptocurrencyDetailsPage {
        id: detailsPage

        visible: false

        onVisibleChanged: function () {
            if (detailsPage.visible) {
                cryptocurrencyController.detailsPageAppeared()
            }
        }
    }
}
```



Choose your UI
Qt Quick & Qt Widgets

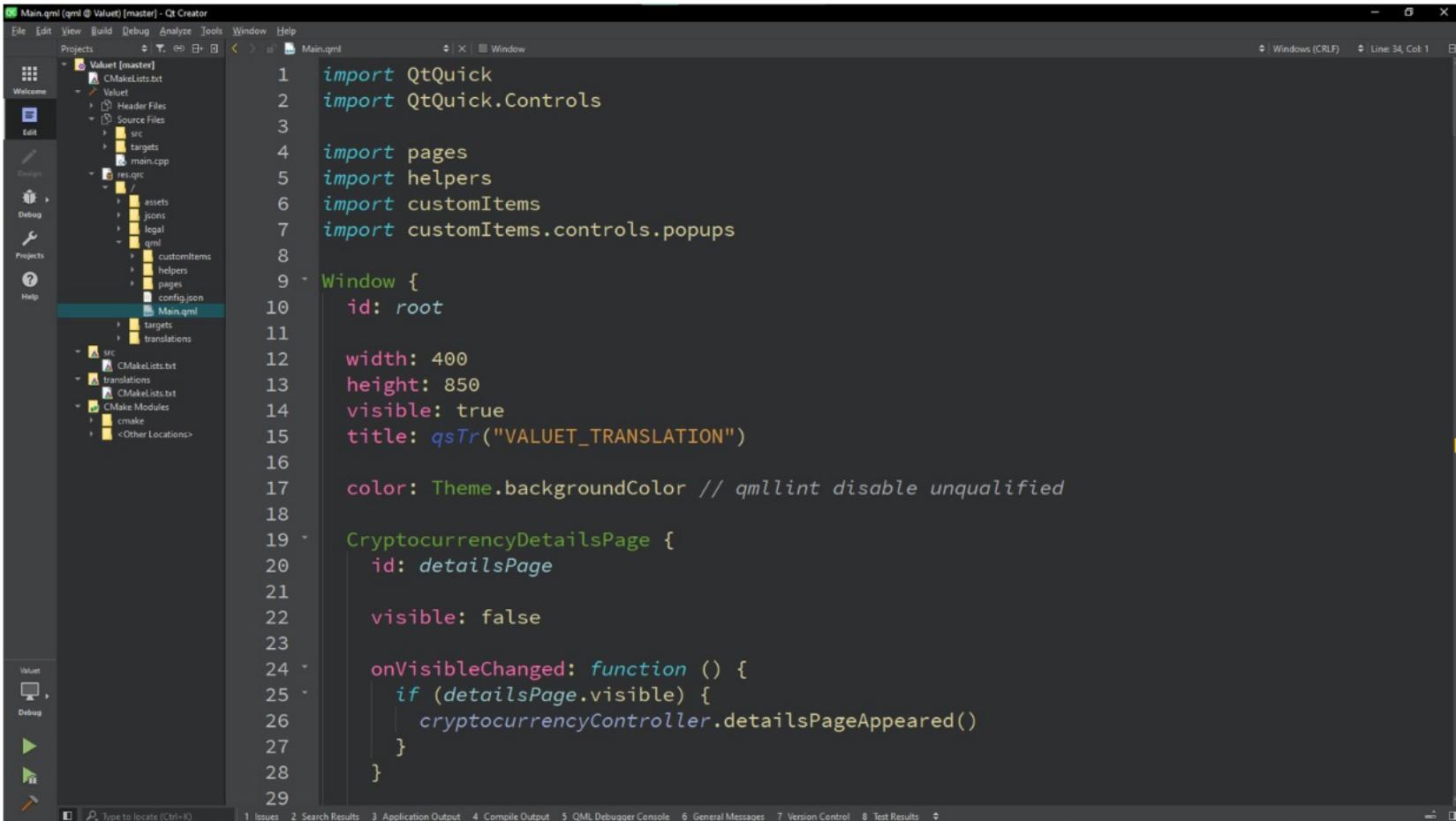


Check it out!



Tooling

↳ Qt Creator



The screenshot shows the Qt Creator IDE interface. On the left is the Projects panel displaying a CMake-based project named 'Valuet' with sub-directories like Header Files, Source Files, and res.qrc. The main central area shows the QML code for 'Main.qml'. The code defines a Window with an id of 'root' and a width of 400 pixels. It includes a CryptocurrencyDetailsPage component with an id of 'detailsPage' and sets its visible property to false. An onVisibleChanged function is defined for this component, which checks if it is visible and calls a method on the 'cryptocurrencyController' object named 'detailsPageAppeared'.

```
import QtQuick
import QtQuick.Controls

import pages
import helpers
import customItems
import customItems.controls.popups

Window {
    id: root

    width: 400
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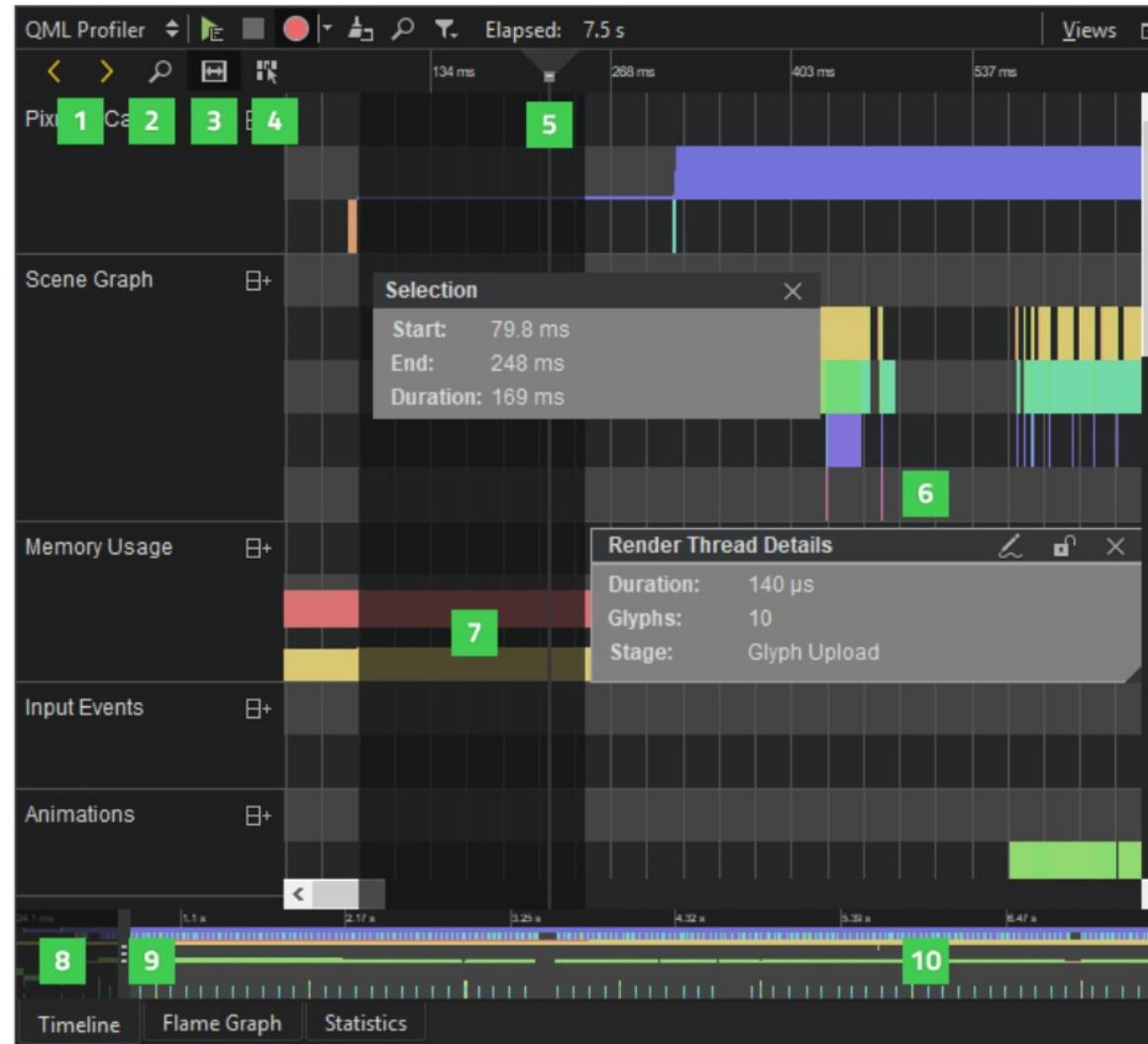
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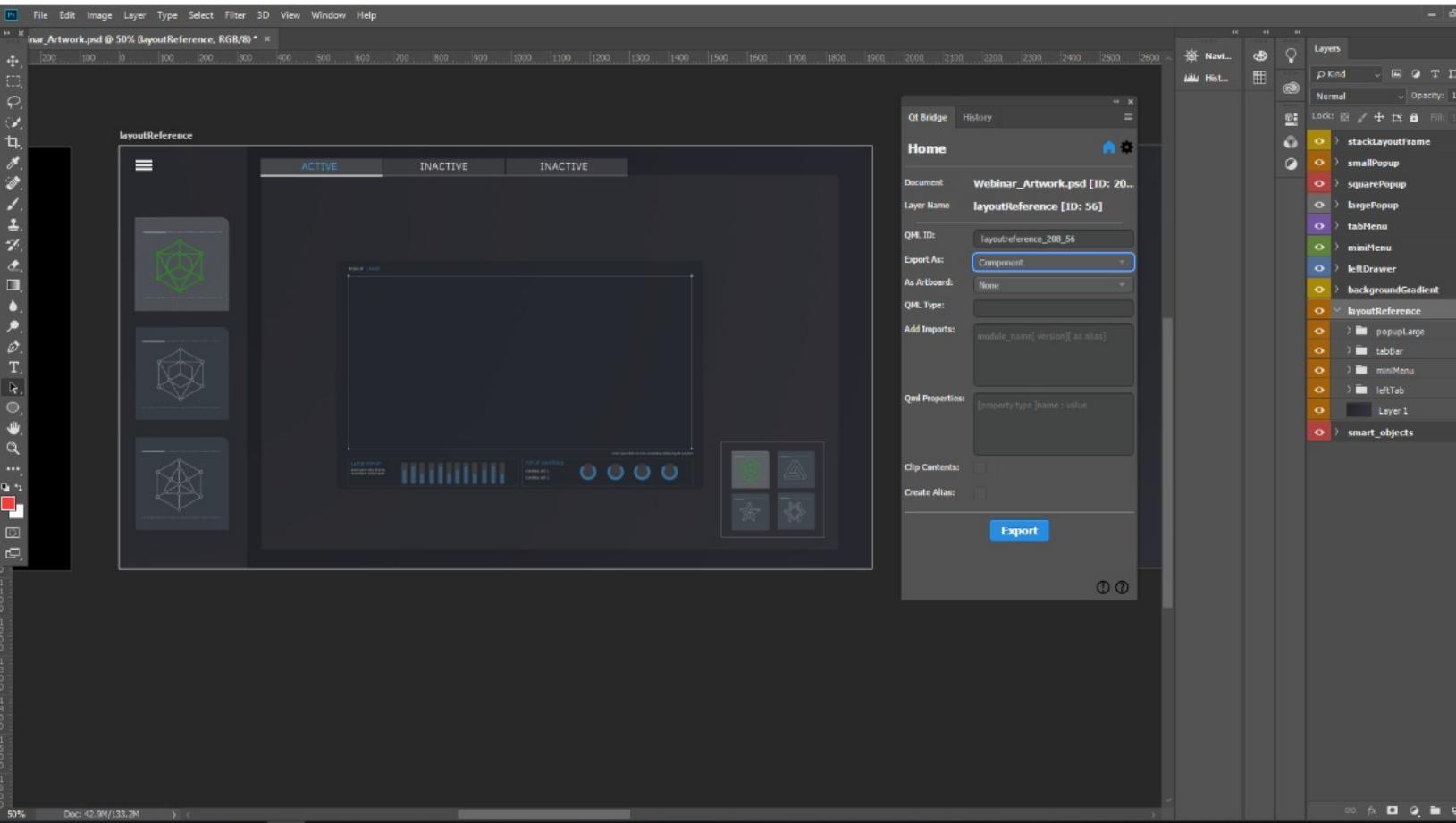
Tooling

- ↳ Qt Creator
- ↳ QML Profiler



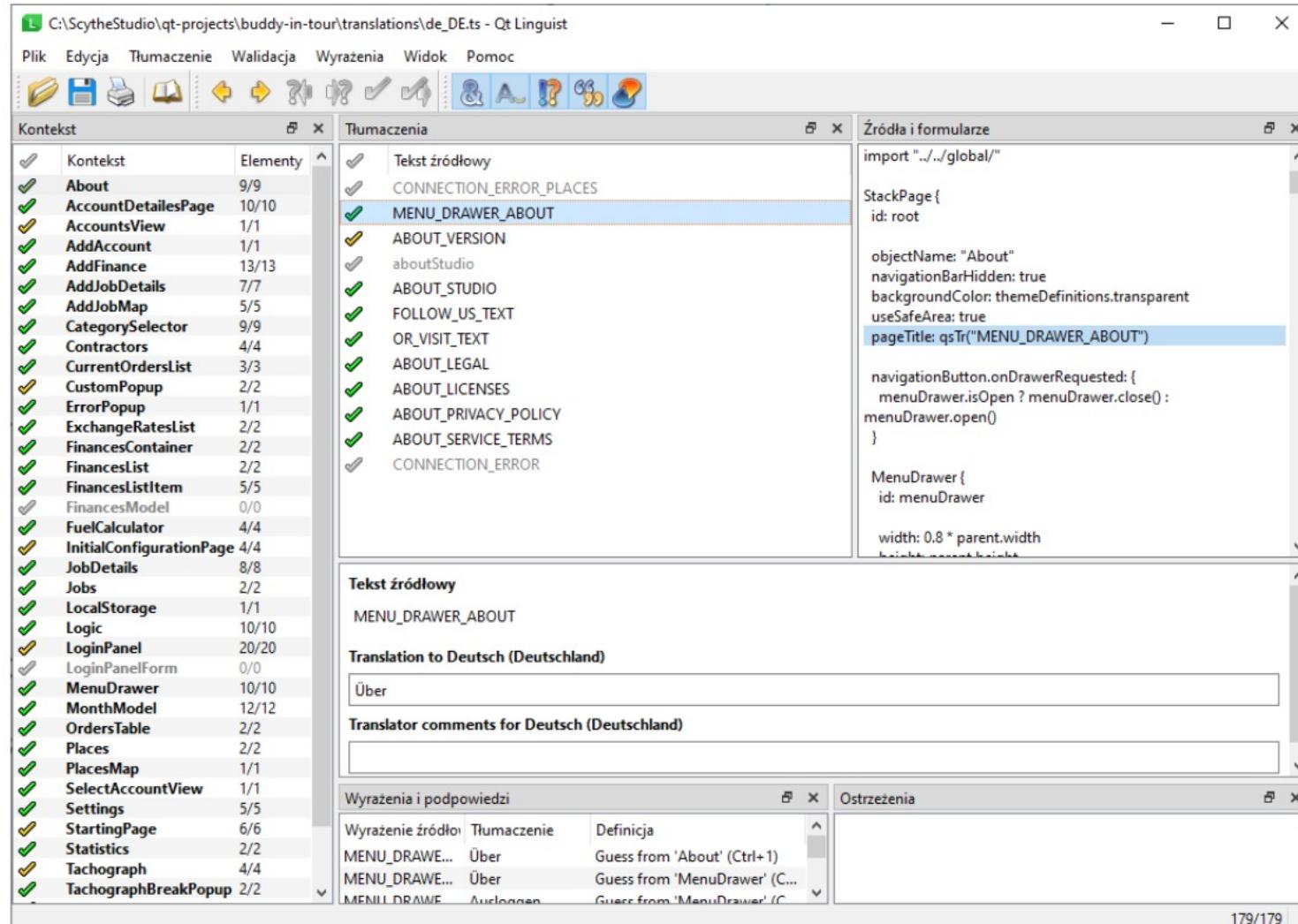
Tooling

- ↳ Qt Creator
- ↳ QML Profiler
- ↳ Qt Design Studio
- ↳ Qt 3D Studio



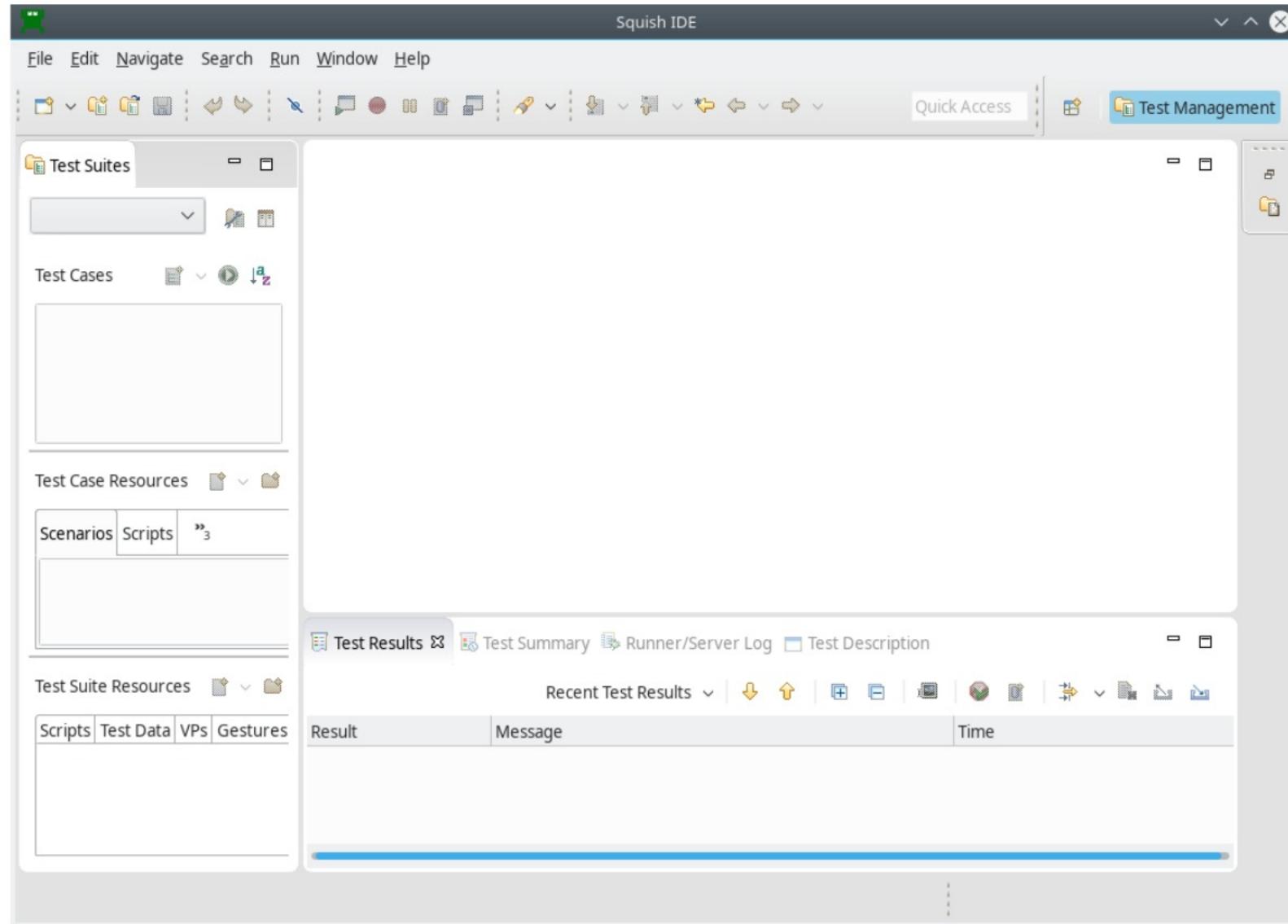
Tooling

- ↳ Qt Creator
- ↳ QML Profiler
- ↳ Qt Design Studio
- ↳ Qt 3D Studio
- ↳ Qt Linguist



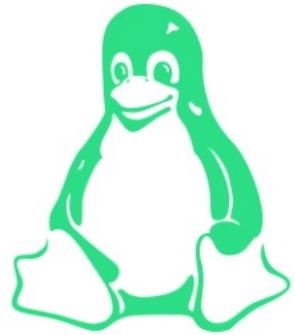
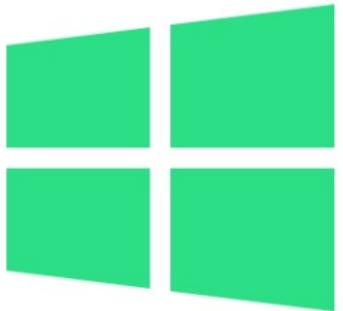
Tooling

- ↳ Qt Creator
- ↳ QML Profiler
- ↳ Qt Design Studio
- ↳ Qt 3D Studio
- ↳ Qt Linguist
- ↳ Squish and Coco



Qt's cross-platform capabilities

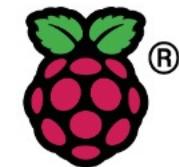
Desktops



Mobiles



Embedded - supported devices



Boot to Qt

- ↳ Lightweight, cross-platform framework enabling the **development and deployment** of your software to embedded platforms
- ↳ Bases on **Yocto** project



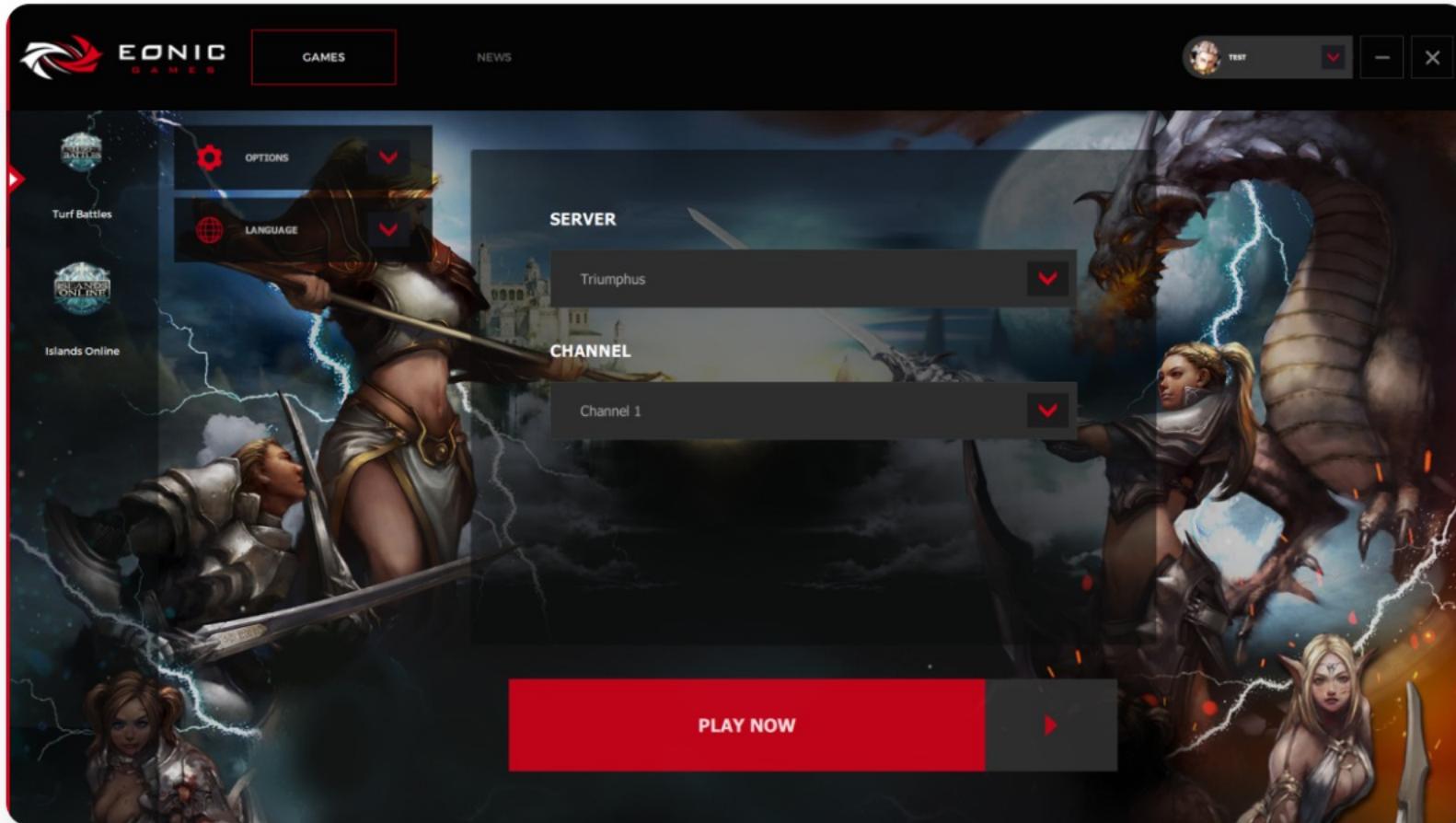
Qt for MCU

- ↳ Allows running Qt on microcontrollers
- ↳ Bare-metal and RTOS systems
- ↳ Contains ultra lite version of Qt Quick



Popular use cases

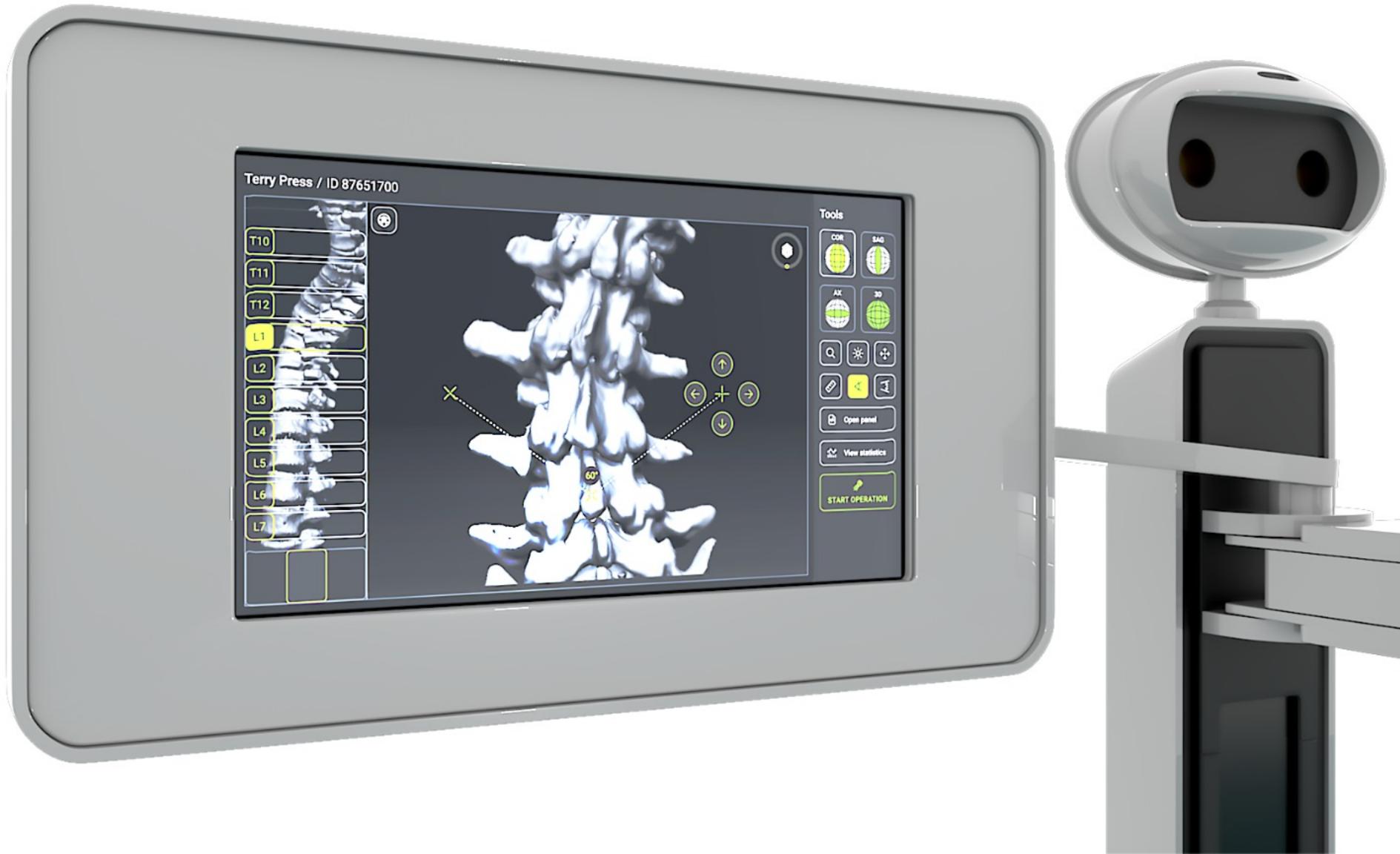
Desktop apps



HMI Screens - Medical



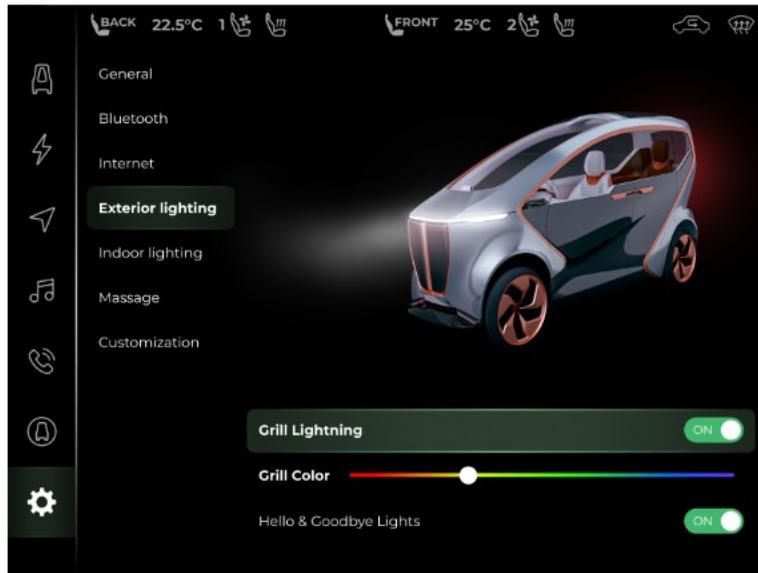
HMI Screens - Medical



HMI Screens - Industrial & Machinery



Automotive





Companion app

For already existing software



Licensing

Licences options



Contact me for license
compliance check

Commercial Qt offering

Multiple and flexible choices



- ↳ Qt for Small Business
- ↳ Qt for Application Development
- ↳ Qt for Device Creation <- depends on the devices volume
- ↳ Design and Q&A tools are under other pricing



Contact me for license
compliance check

Is it possible to use Qt in commercial projects for free?

Yes!



Contact me for license
compliance check



Future of Qt

Qt's community

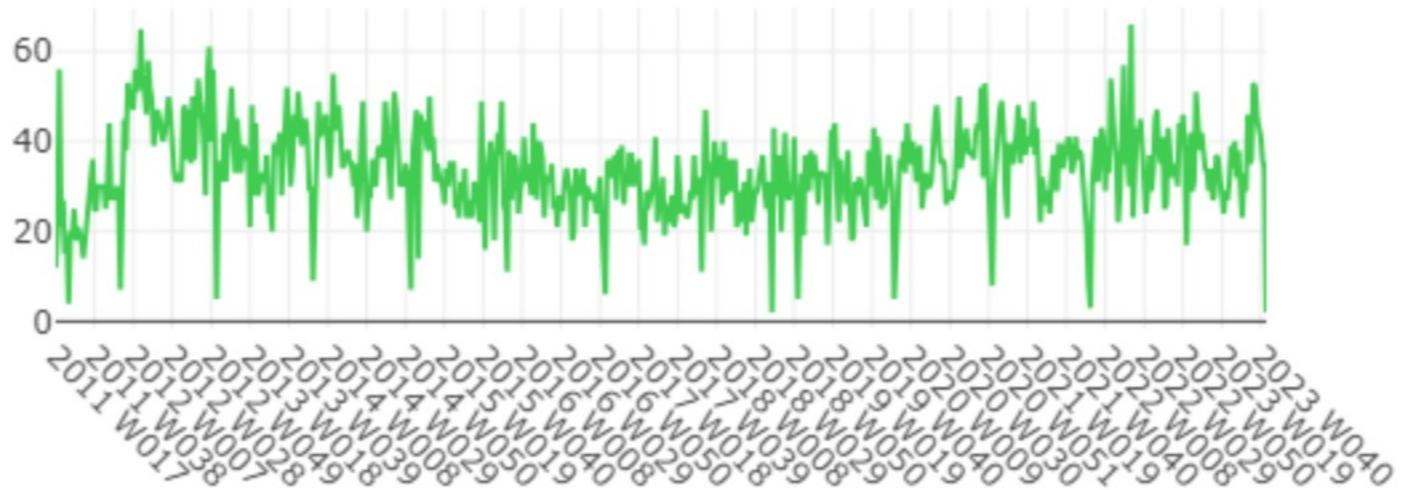


Qt's community



It is solid!

Number of contributors



"Qt framework" phrase in Google Trends



Commercial eco-system

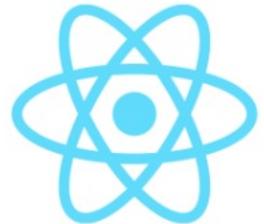
Qt Group



Partners



Qt competitors



Web technologies



Summary

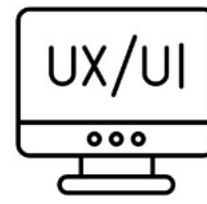
Factors to consider choosing technology



Purpose



Target platforms



UX/UI requirements



Your background



Industry needs



Business factors

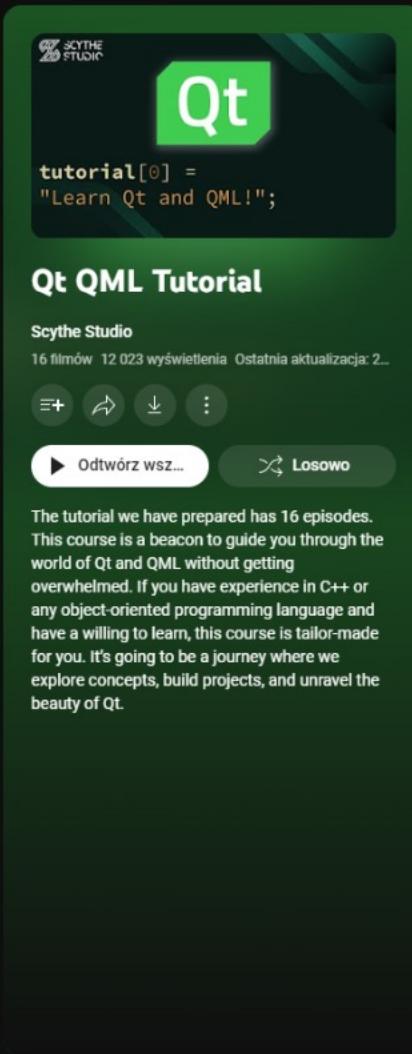
Is Qt right for your project?

IT DEPENDS

Good things about Qt

- ↳ I truly believe it's a great framework
- ↳ The only fully cross-platform framework
- ↳ All-in one! **Incredibly rich** framework
- ↳ Flexible licensing
- ↳ Another level of GUI development

Free YouTube tutorial



- 1 [Qt QML Tutorial #0: Introduction to Qt/QML | Scythe Studio](#)
Scythe Studio • 3,5 tys. wyświetleń • 3 miesiące temu
- 2 [Why Qt? Is Qt Framework Right for You? | Qt QML Tutorial #1 | Scythe Studio](#)
Scythe Studio • 1,5 tys. wyświetleń • 3 miesiące temu
- 3 [How to Install Qt Creator | Qt QML Tutorial #2 | Scythe Studio](#)
Scythe Studio • 1,6 tys. wyświetleń • 3 miesiące temu
- 4 [Signals and Slots in Qt | Qt QML Tutorial #3 | Scythe Studio](#)
Scythe Studio • 1,7 tys. wyświetleń • 3 miesiące temu
- 5 [Objects in Qt: Understanding Object Trees and Relationships | Qt QML Tutorial #4 | Scythe Studio](#)
Scythe Studio • 985 wyświetleń • 3 miesiące temu
- 6 [How to Use Qt Meta Object Compiler: QObject and MOC | Qt QML Tutorial #5 | Scythe Studio](#)
Scythe Studio • 764 wyświetleń • 3 miesiące temu
- 7 [Qt GUI Application Development: Qt Quick or Qt Widgets? | Qt QML Tutorial #6 | Scythe Studio](#)
Scythe Studio • 1,2 tys. wyświetleń • 3 miesiące temu
- 8 [Qt Quick Application Development Basics: Learning QML | Qt QML Tutorial #7 | Scythe Studio](#)
Scythe Studio • 1 tys. wyświetleń • 3 miesiące temu
- 9 [Qt Quick: Positioners and Layouts in QML | Qt QML Tutorial #8 | Scythe Studio](#)
Scythe Studio • 811 wyświetleń • 3 miesiące temu





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Thank you
Stay with us for Q&A!