

# The Qt Company

Qt Software Development Framework - Medical

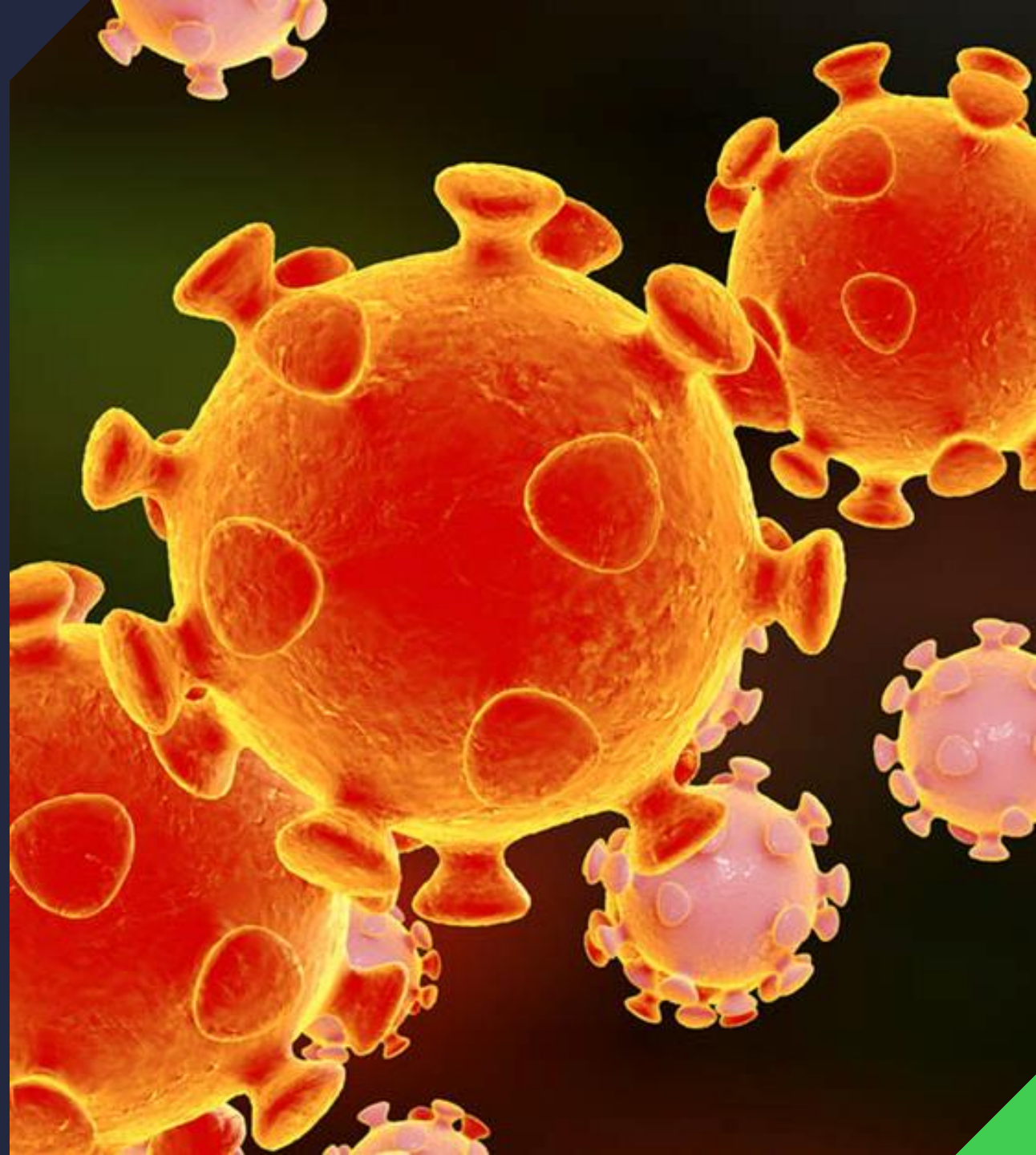
The Qt Company oy  
Account Manager  
Yoshiaki Iida

# 未曾有のコロナ危機

新型コロナウイルス感染症は  
2019年12月より急速に拡大した感染症で  
ある。

世界保健機関（WHO）は2020年1月30日  
新型コロナウイルス感染症について  
「国際的に懸念される公衆衛生上の緊急事  
態（PHEIC）」を宣言した。

その後、世界的な感染拡大の状況、重症度  
等から3月11日新型コロナウイルス感染症  
をパンデミック（世界的な大流行）とみな  
せると表明した。



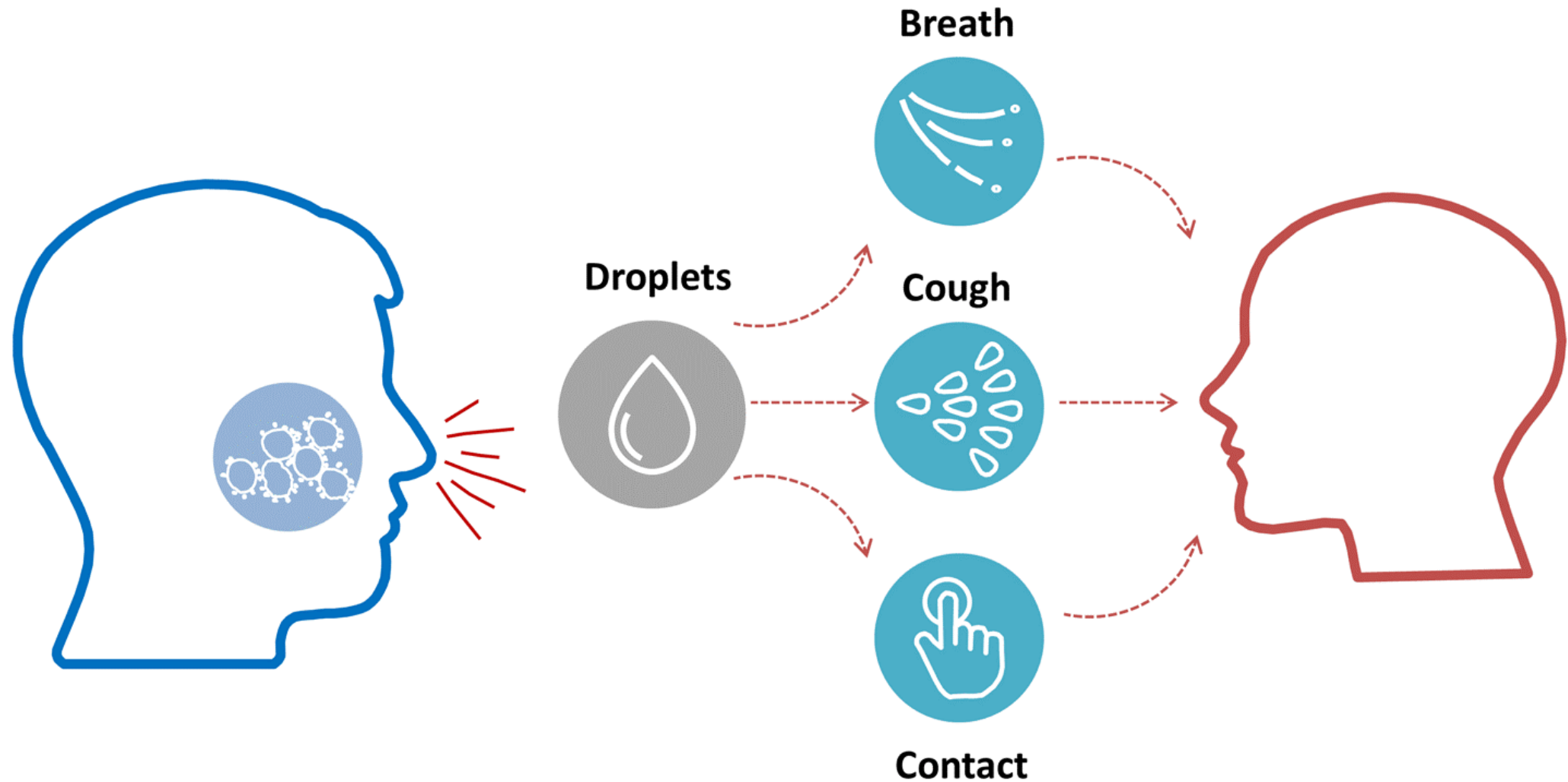


CORONAVIRUS

# 新型コロナウイルス 世界マップ



# Coronavirus transmission is from human to human



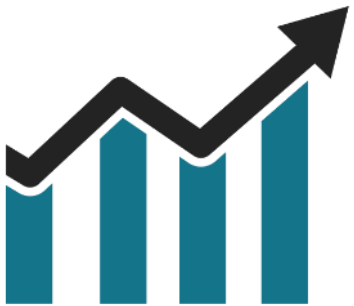
# You may be exposed to the coronavirus in hospital



# In order to avoid catching or spreading the coronavirus.

## Automatic returning patient reception unit

Advanced technology for comprehensive healthcare institution support.



## High Demand



Telehealth technology enables the remote diagnoses of patients.



① No fear of nosocomial infection

② No visit time / waiting time

③ Make an appointment at any time

④ Prescriptions and medicines arrive at home

# Problem Definition

01

## Multi Device

- Need to wide support for off-the-shelf hardware and operating systems.
- Need to keep the latest maintenance.

02

## Development speed

- Need to deploy, debug and test on target device.
- Need to Develop the best, user-adopted, efficient User Experiences with Qt Design Tools and the ability to rapidly Prototype on your Target Device.

03

## Human Factors Risk

- Risk a product will not be used as intended.
- Risk a product will not work as intended.



Applications developed using Qt can operate on multi platform.



# Providing software libraries and tools for over 23 years

Qt's Functions

Library



Network



Multimedia



Virtual Keyboard



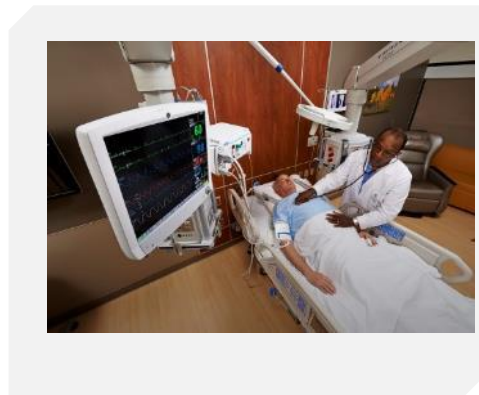
Data Visualization

etc...

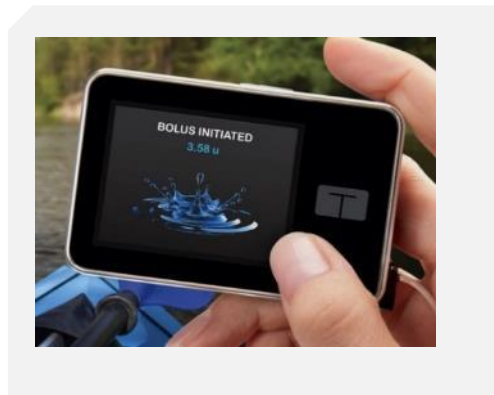
# Where there's a Medical Application, there's Qt ...



IVD



Cardiology



Diabetes Care



Diagnostic Imaging



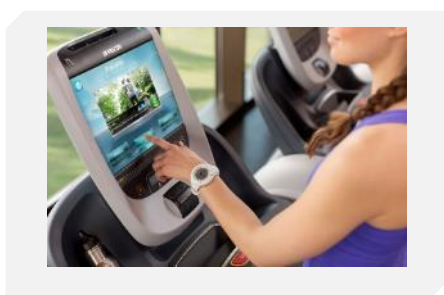
Kidney Dialysis



Robotics



Anesthesia & Respiratory Care



Fitness



Wound Management



Wearables

50 out of the Top 100  
Medical Device  
Manufacturers Build  
Products with Qt



# Configurable



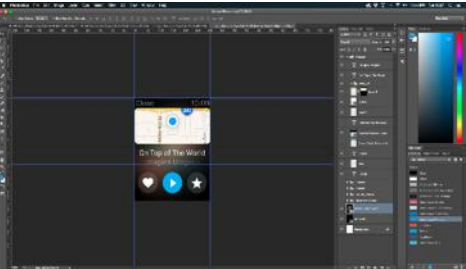
# Qt Design Studio & Qt Creator

## Qt Design Studio

- Design Tool
  - Photoshop, Sketch
  - Or other standard 2D tools
  - Autodesk Maya
  - Blender, 3ds MAX
  - Or other standard 3D modeling tools
- Animation, Scene
  - Qt Design StudioDevelop GUI elements, screens, and animations in tool's Drag&Drop editor

## Qt Creator

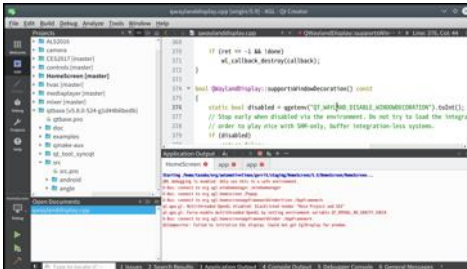
- Integration/Coding
  - Qt/C++, Qt Quick
  - Qt CreatorIntegrate application logic (data providers, screen transitions) using C++ and QML code.
- Deploy for all models
  - All platform supported
  - Validation on Target HW



Graphi  
cs



2D/3D  
HMI



Prototype



[input] design  
[output] QML UI files & image files  
[output] 3D object & texture \*.bae, \*.fbx

2D/3D rendered scene  
[output] Refined QML files  
[output] 3D rendered scene, File format \*.uiip

+ logic  
[output] GUI with animations and using simulation data

デザインを即座に  
Qtへの移行

グラフィック効果を  
簡単に反映

豊富なQtのライブラリで  
開発工数削減

開発されたSWをそのまま  
HWへ適用

# Qt understands Medical Product Developers Up at Night

## Three main areas of concern when developers of medical products select COTS software



Clinical Risk

Risk a product will  
not work as intended



Human Factors Risk

Risk a product will  
not be used as  
intended



Cybersecurity Risk

Risk a product will  
be hacked and  
compromised

**Qt works with our customers to support and create solutions for each**

# Qt Safe Renderer certification

- ▶ ISO 26262:2018-6; ASIL D
  - ▶ Road vehicles — Functional safety — Part 6: Product development at the software level
- ▶ ISO 26262:2018-8 section 11; ASIL D
  - ▶ Road vehicles — Functional safety — Part 8: Supporting processes - Chapter 11: Confidence in the use of software tools
- ▶ IEC 61508:2010-3 – 7.4.4; SIL 3 and IEC 61508-3
  - ▶ Functional safety of electrical/electronic/programmable electronic safety-related systems - Part 3: Software requirements – and Requirements for support tools – 7.4.4
- ▶ EN 50128:2011 6.7.4; SIL 4
  - ▶ Railway applications – Communication, signalling and processing systems – Software for railway control and protection systems; Software-Tools
- ▶ [ IEC 62304:2006 C.7, fit- for-use ]
  - ▶ Medical device software – Software life cycle processes [relationship to IEC 61508 - best practice]. Up to Class C application



# Qt is a member of several medical organizations

It is in The Qt Company's interest to actively collaborate and help companies in the industry to create safe, effective, intuitive, and user friendly medical devices.



Qt is a full member of AdvaMed and part of the Digital, Software and Standards working groups.



Qt is included in QMed's directory of pre-qualified suppliers to the medical device and in vitro diagnostics industry.



Qt is part of The Massachusetts Medical Device Industry Council.



# THE FUTURE

ヤマシタHD  
is written with

