

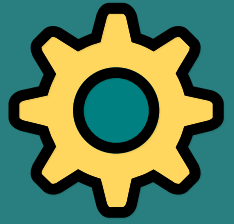


QTQUICKVCP

REMOTE USER INTERFACES FOR MACHINE TOOLS

Alexander Rössler, MSc





- **About Me**
- **Machinekit**
- **QtQuickVcp**
- **Applications**

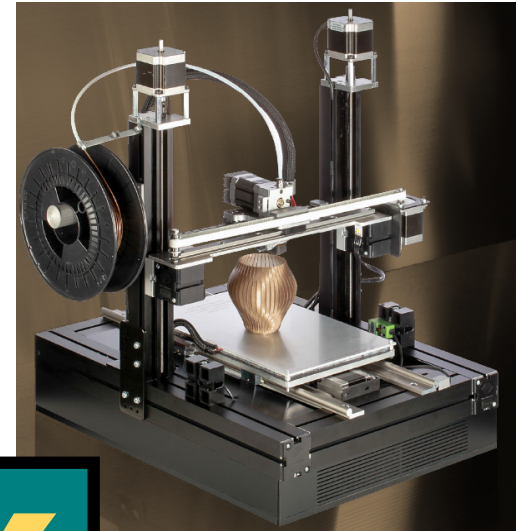
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ABOUT ME

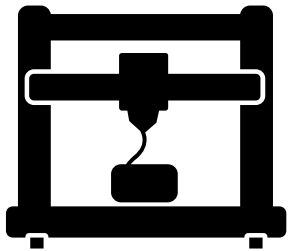
ABOUT ME



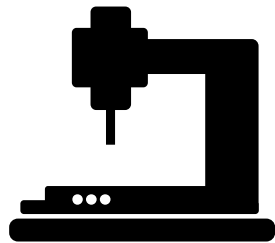
- **Alexander Rössler**
- **Embedded Systems**
- **Open Source**
- **3D printing**



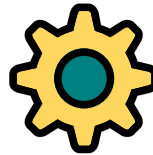
INTRODUCTION



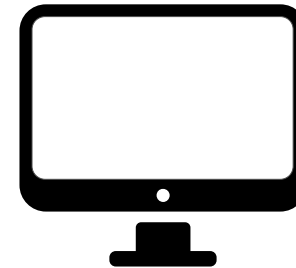
3D Printers



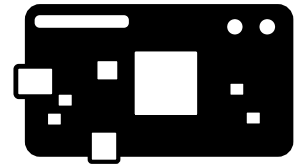
CNC Machines



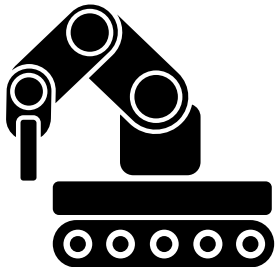
MACHINEKIT



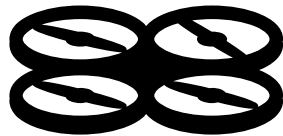
Desktop Computers



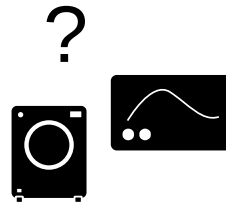
Embedded Devices



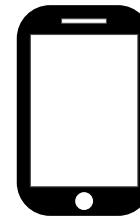
Robots



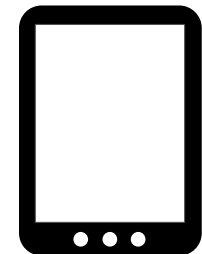
Quadcopters



Other Applications



Smartphones

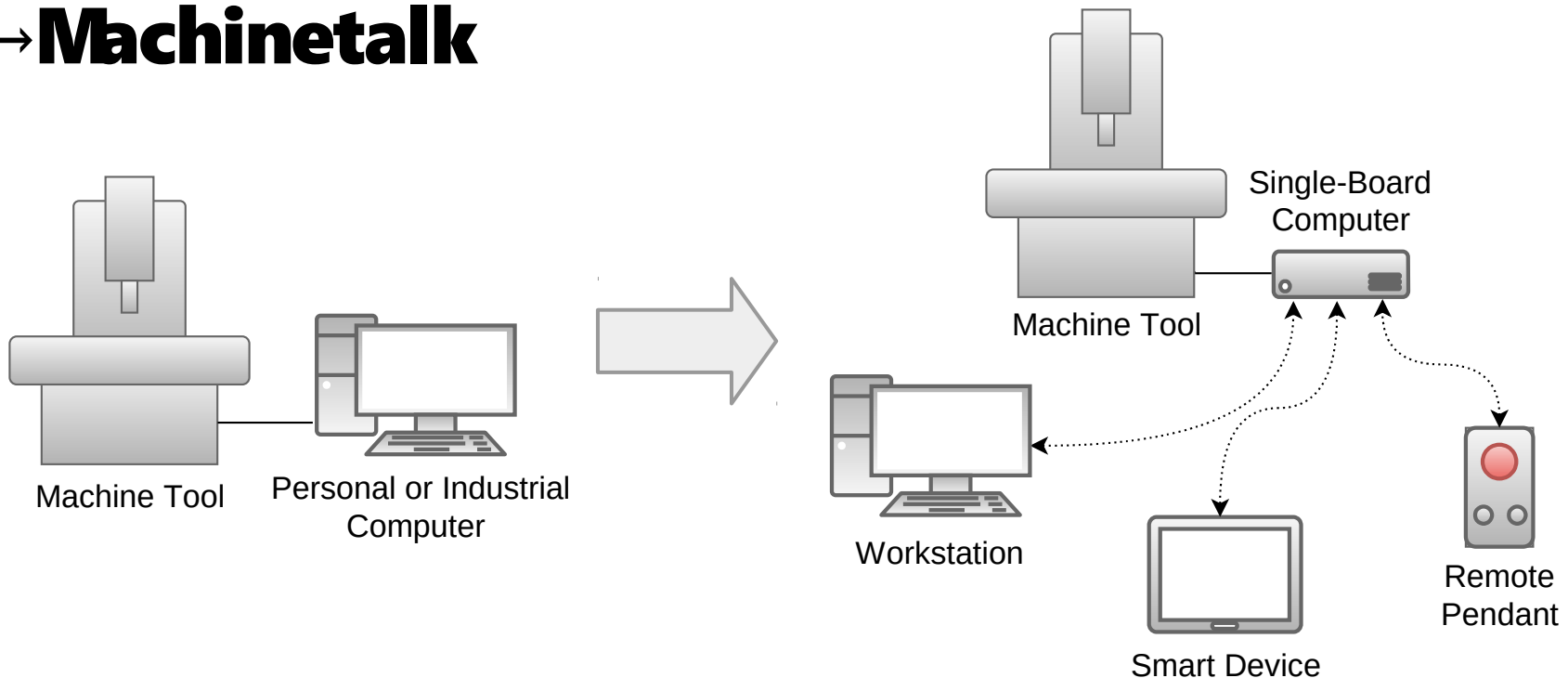


Tablets

TRADITIONAL VS REMOTE UI

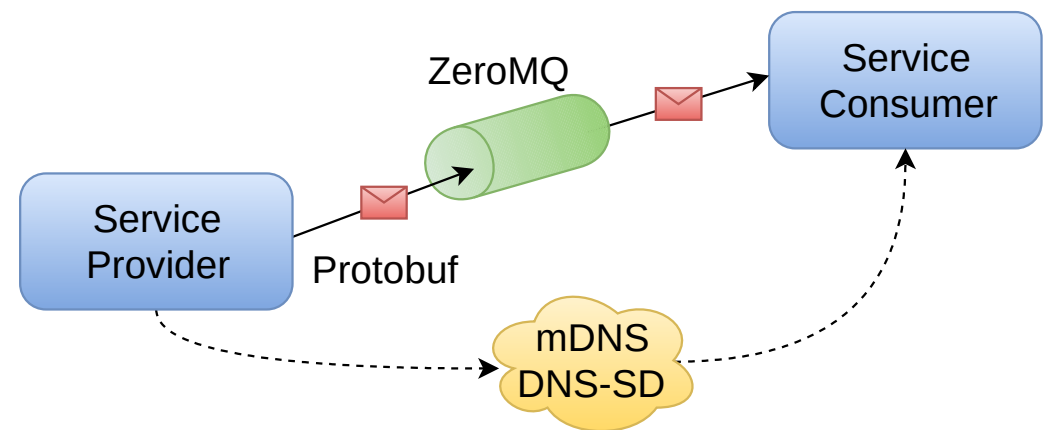


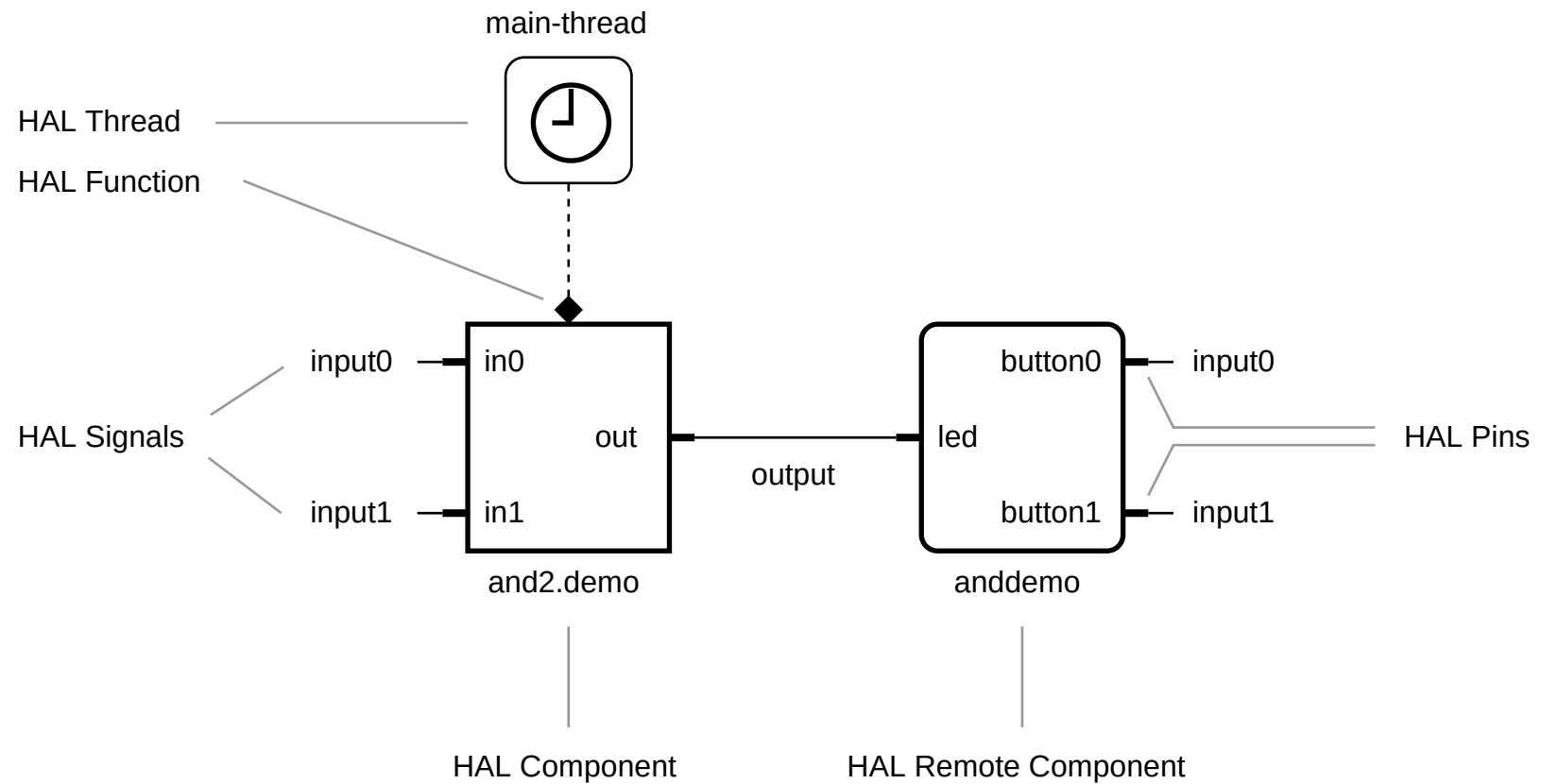
- **Monolithic System**
- **Distributed System**
- → **Machinetalk**





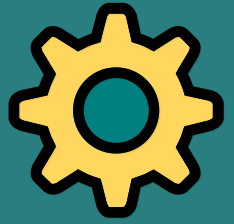
- **Middleware**
- **ZeroMQ - nzmqt**
- **Protobuf**
- **mDNS/DNS-SD - QJDns**





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QTQUICKVCP



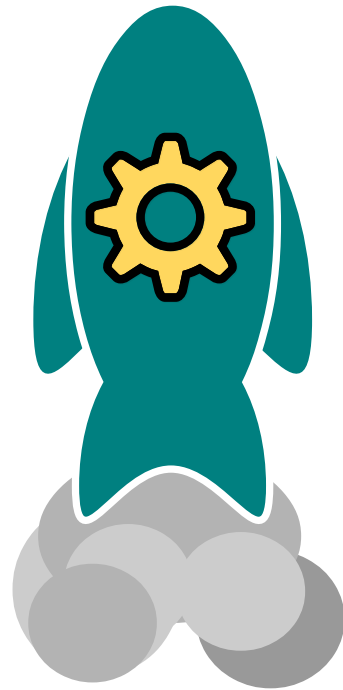
- **Virtual Control Panel**
- **QML modules**
- **Machinetalk**
- **Cross platform**



REMOTE LAUNCHING & DEPLOYMENT



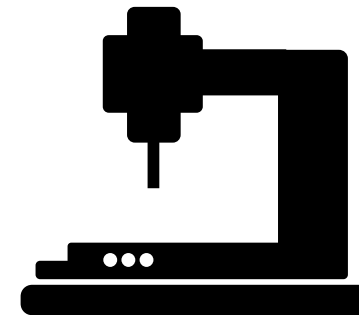
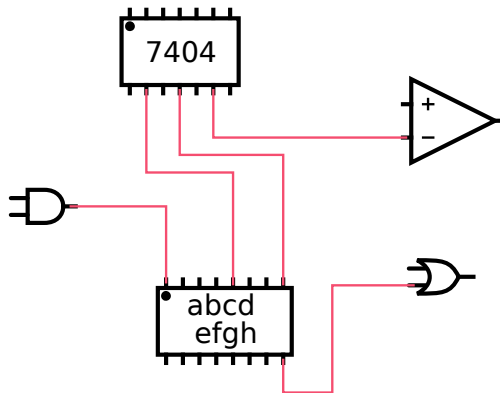
- **Start new instances**
- **Deploy UI files**
- **MachinekitClient**





- **2 types of user interfaces**

- HAL Remote
- Application/EMC

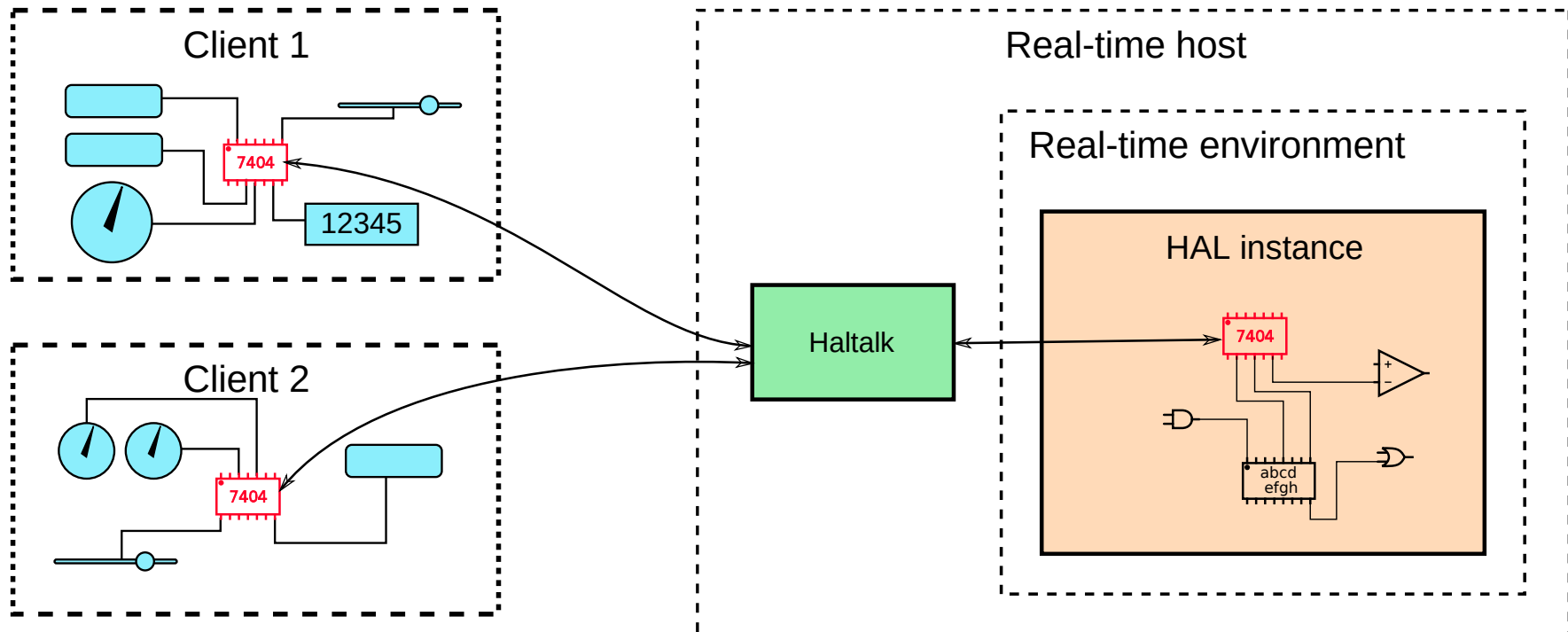


CNC Machines

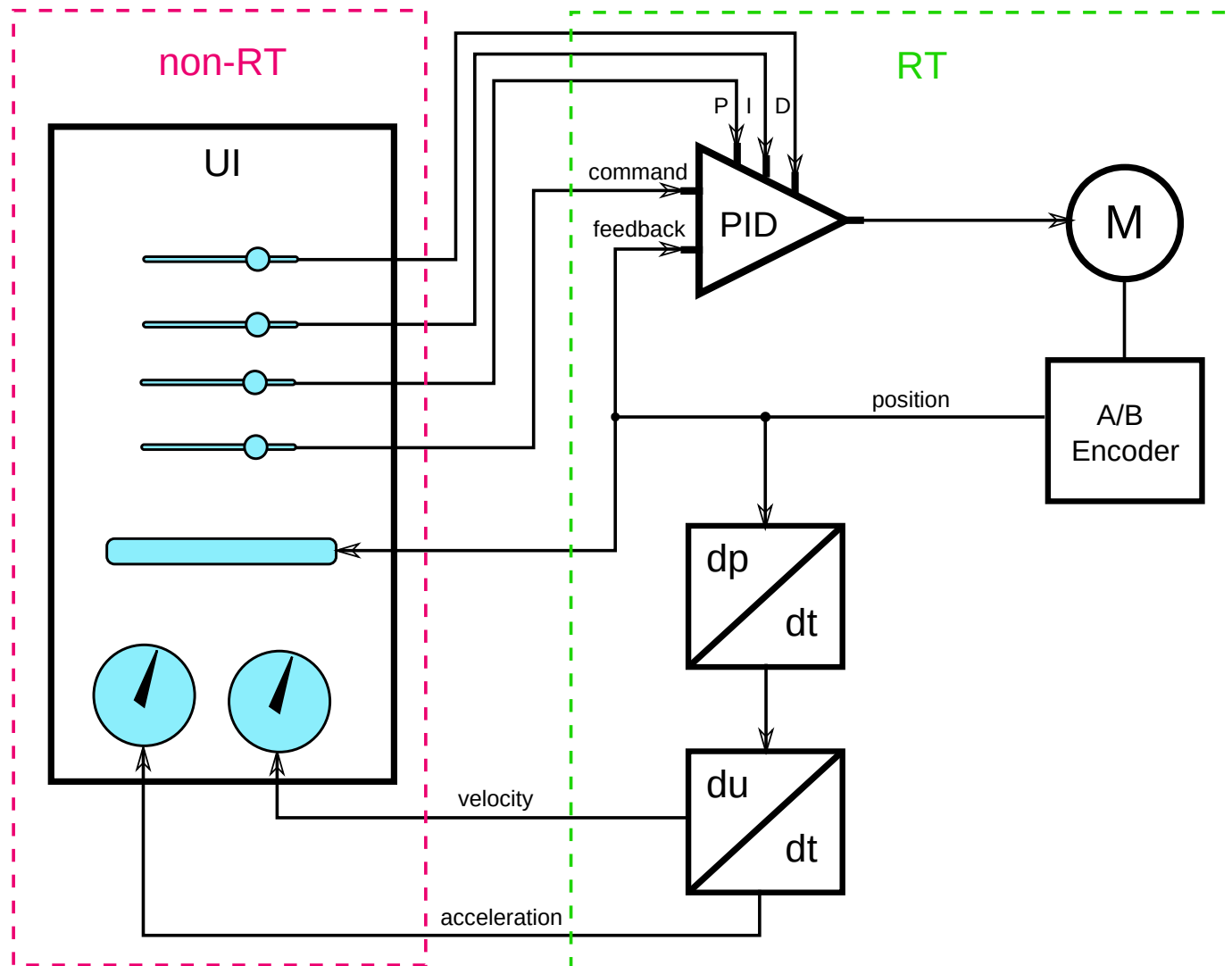
HAL Remote Components



- **Like normal components**
- **Remote API**



EXAMPLE APPLICATION



CONNECTIONWINDOW



```
ConnectionWindow {
    id: connectionWindow

    anchors.fill: parent
    defaultTitle: "Machineface"
    autoSelectInstance: false
    autoSelectApplication: true
    remoteVisible: false
    lookupMode: ServiceDiscovery.MulticastDNS
    applications: [
        ApplicationDescription {
            sourceDir: "qrc:/Machineface/"
        }
    ]
    instanceFilter: ServiceDiscoveryFilter{ name: "" }
}
```


HAL REMOTE COMPONENTS

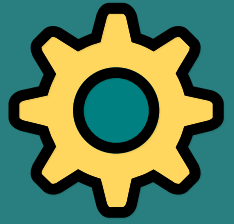


```
import QtQuick 2.0
import Machinekit.Controls 1.0
import Machinekit.HalRemote.Controls 1.0
import Machinekit.HalRemote 1.0

HalApplicationWindow {
    id: main

    name: "foo"
    title: qsTr("HAL-0-World")

    HalButton {
        anchors.centerIn: parent
        name: "button"
        text: "Hello World!"
    }
}
```



- **Qt Creator**
- **Wizards**
- **Plugins**
- **Templates**

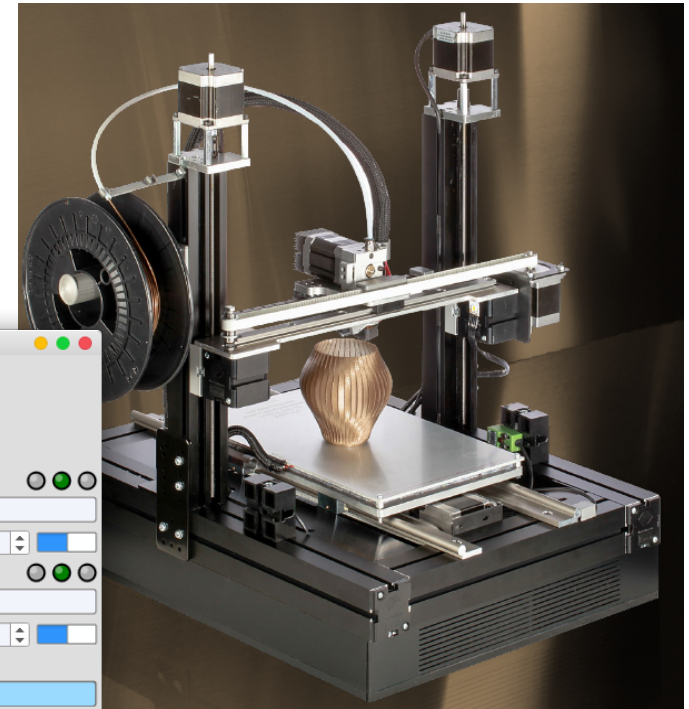
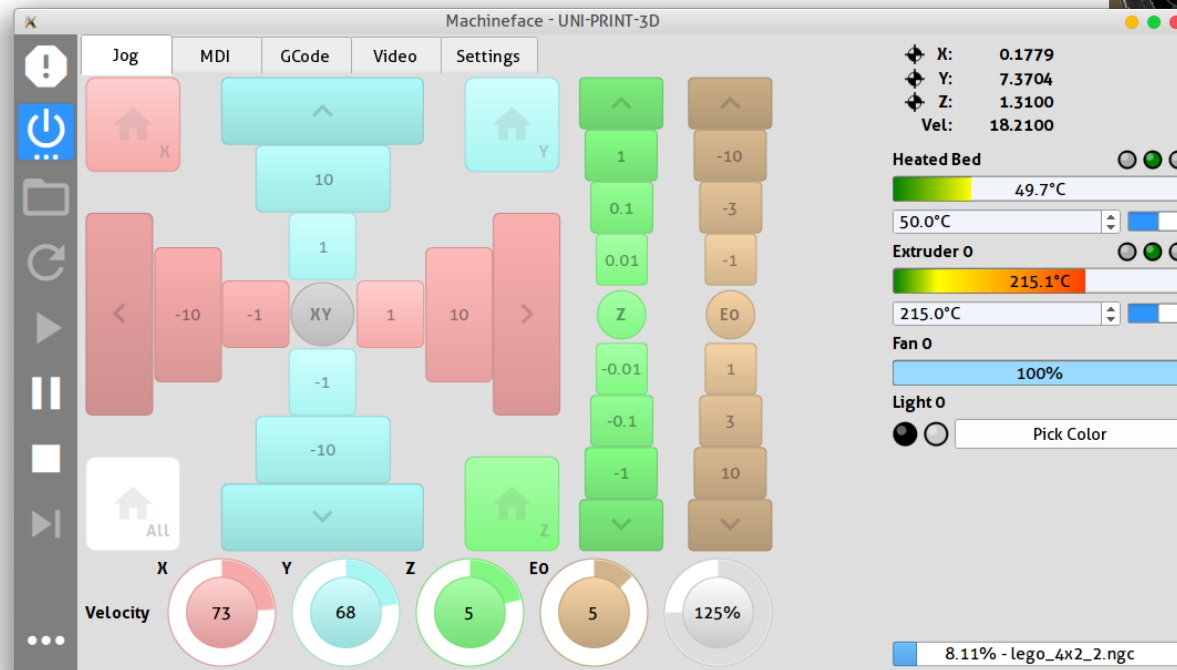


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APPLICATIONS

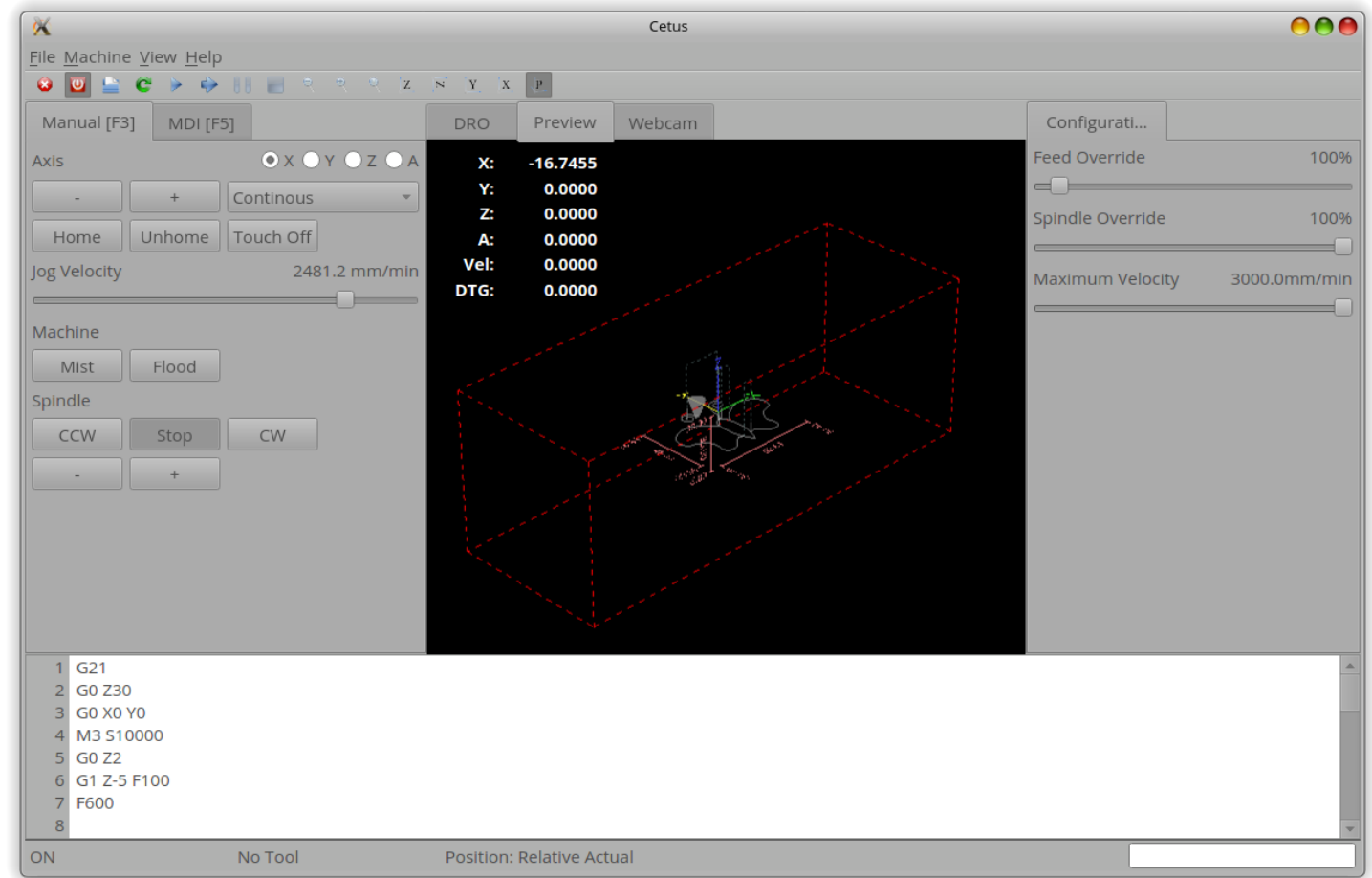


- **3D printing**





- **CNC**
- **Mill**
- **Lathe**
- **Router**



OTHER APPLICATIONS



- **Commercial CNC UI**
- **Generic machine control UIs**
- **“Small” applications**
- **Prototyping**
- **Testing**
- **...**

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LINKS

MORE INFORMATION AND CODE



- [**http://machinekoder.com**](http://machinekoder.com)
- [**http://machinekit.io**](http://machinekit.io)
- [**https://github.com/machinekoder/QtQuickVcp**](https://github.com/machinekoder/QtQuickVcp)
- [**https://github.com/machinekoder/machinekit-vagrant**](https://github.com/machinekoder/machinekit-vagrant)
- [**https://github.com/machinekoder/MachinekitSDK**](https://github.com/machinekoder/MachinekitSDK)

