OPEN REMOTE

Open Source Home Automation

Eric Bariaux

(Home) Automation State of the Union

Why Open Remote ?

Open Remote Details

Home Automation

Audio

Video

Lighting

HVAC

Communications

Energy Management

Security

Blinds

Camera

Health Care

Home Automation

Residential

Hotels

Industrial

Offices

Hospitals

...

Functionality

Control

Automation

Platform

Devices, Actuators and Sensors

Logic

User Interaction

Problems

One protocol per vendor

Proprietary protocols

Fragmented standards

Expensive touch panels

Niche and extremely expensive distribution

Our solution

Open source

Our solution

Open source

+

Adoption of standard

Our solution

Open source

+

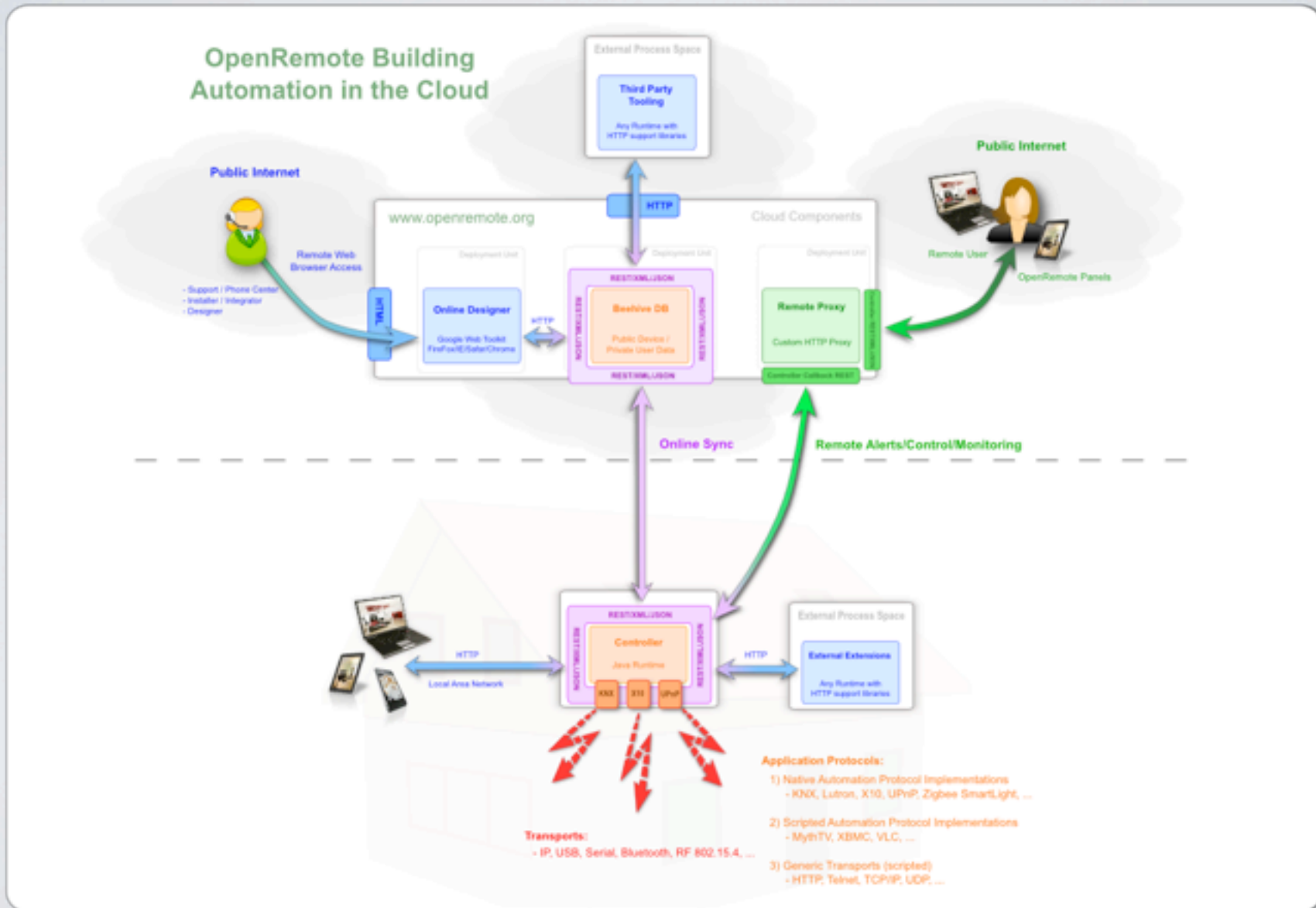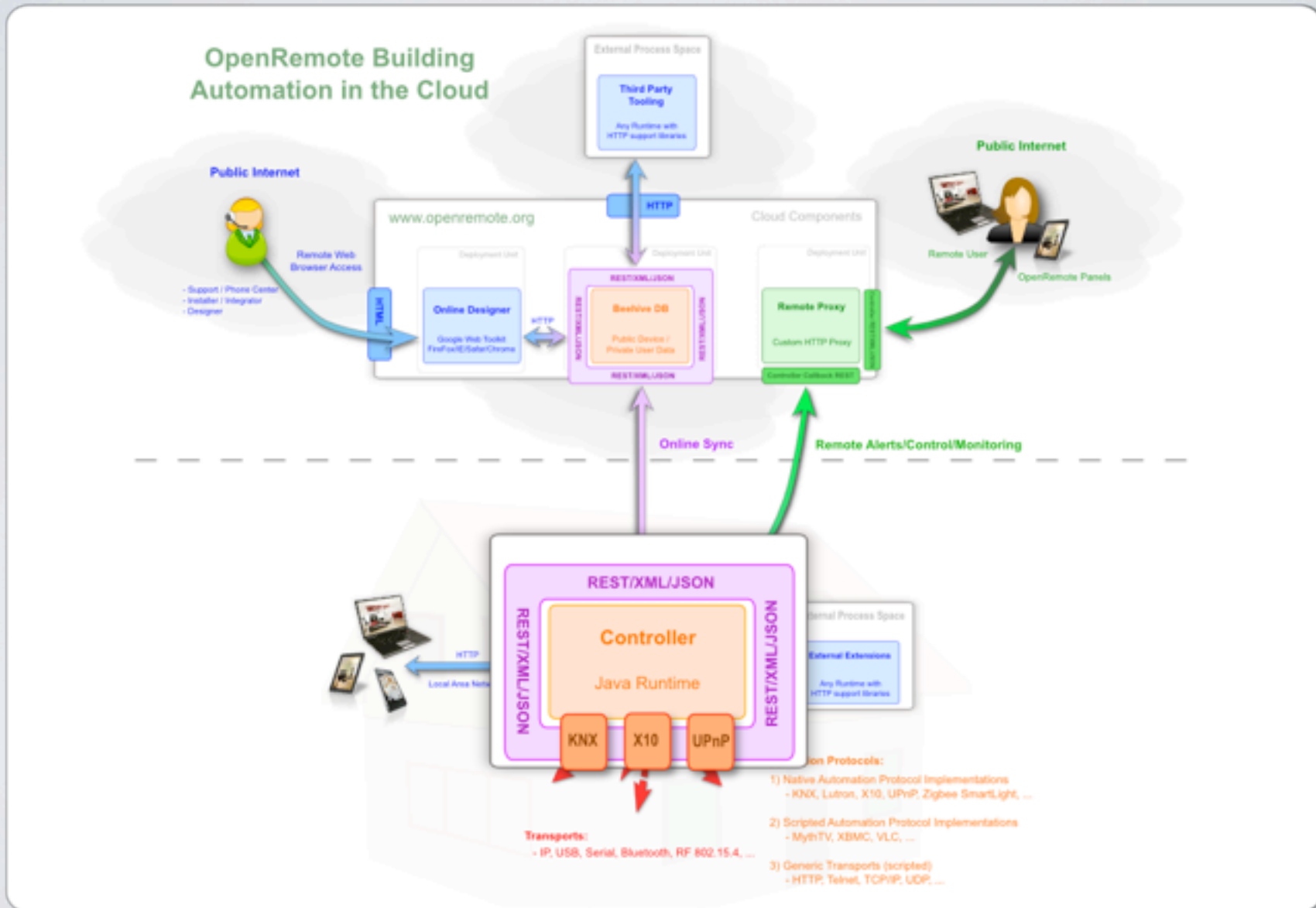Adoption of standard

+
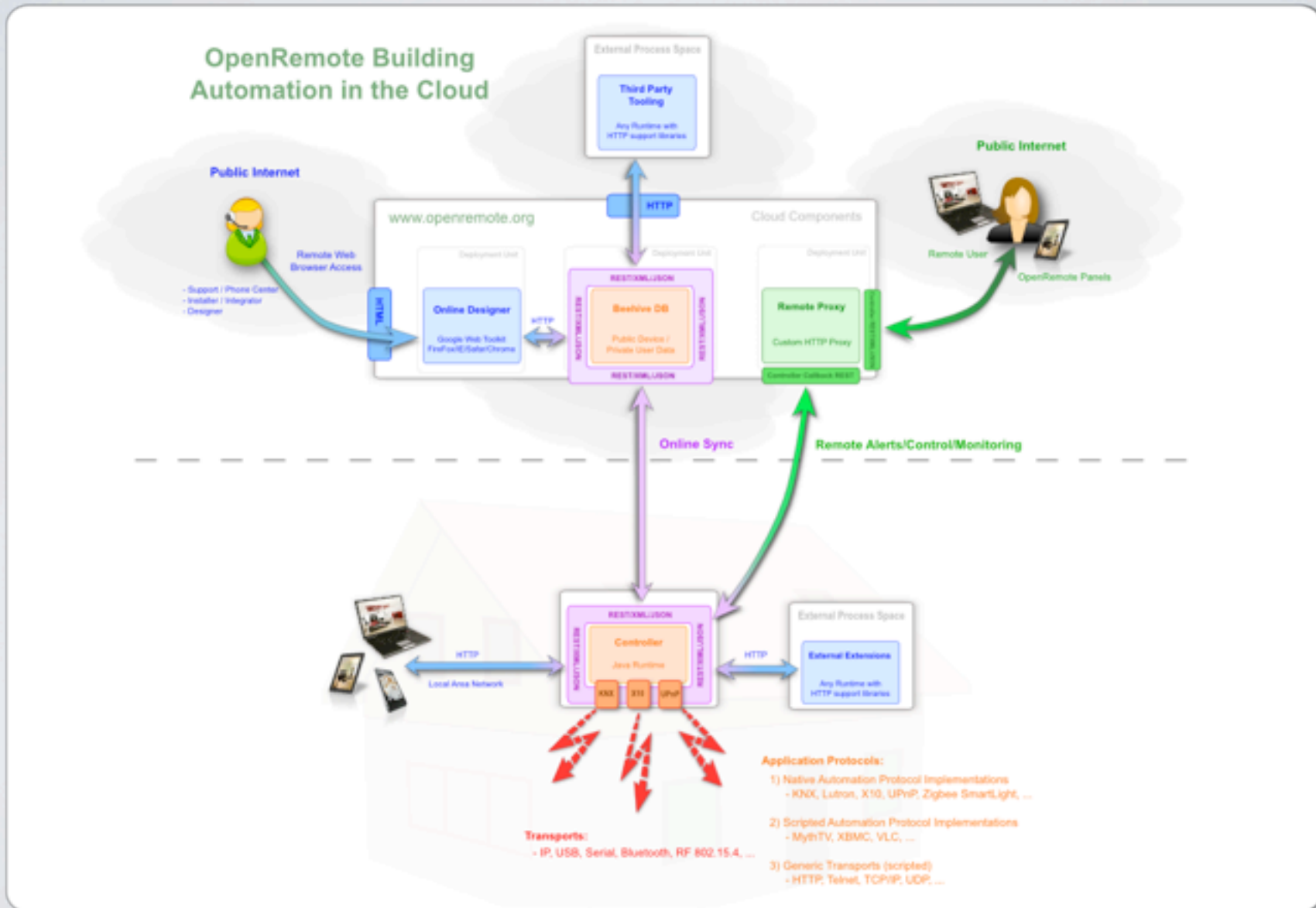
Off the shelf hardware

Hardware

Our solution

Open source
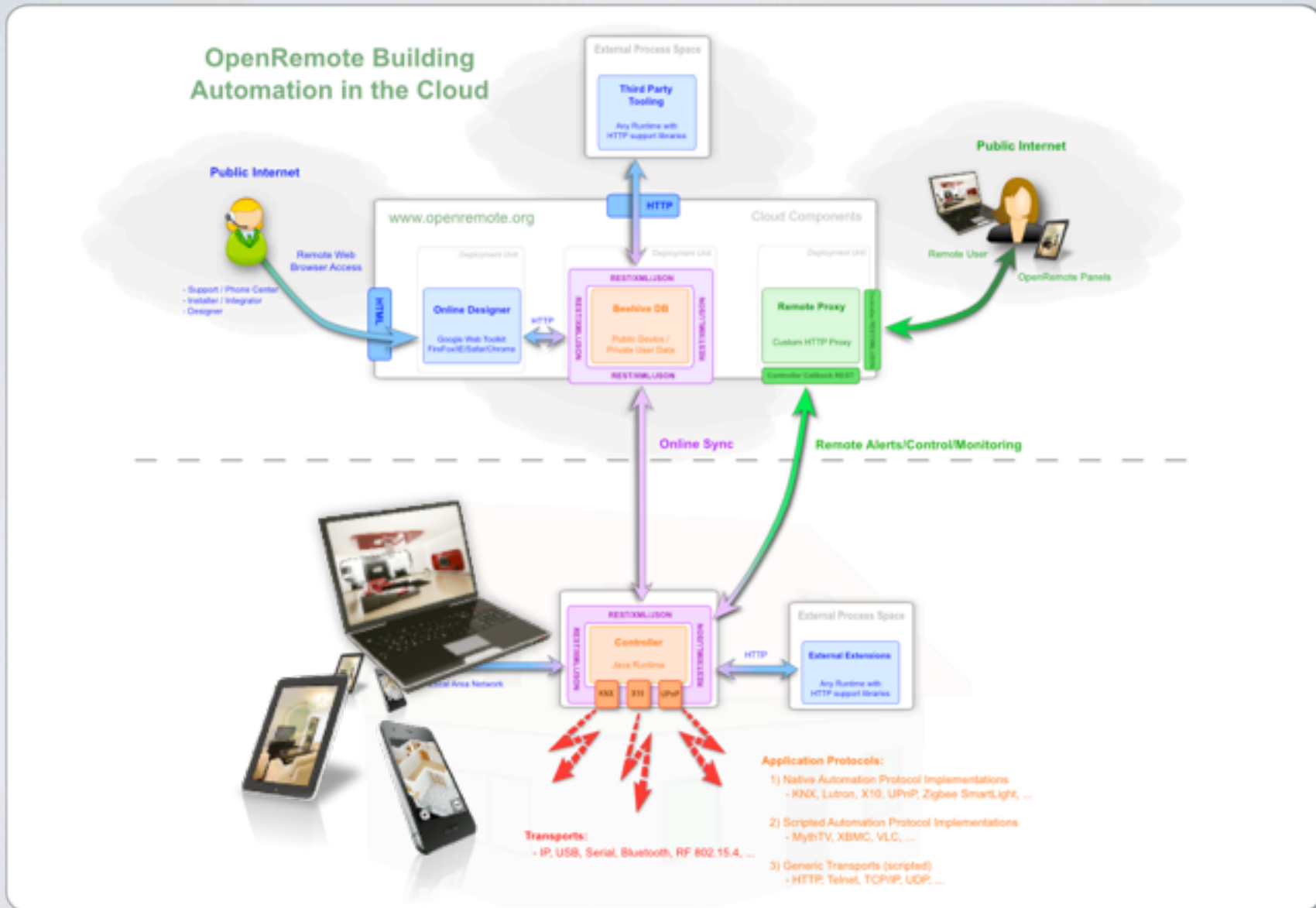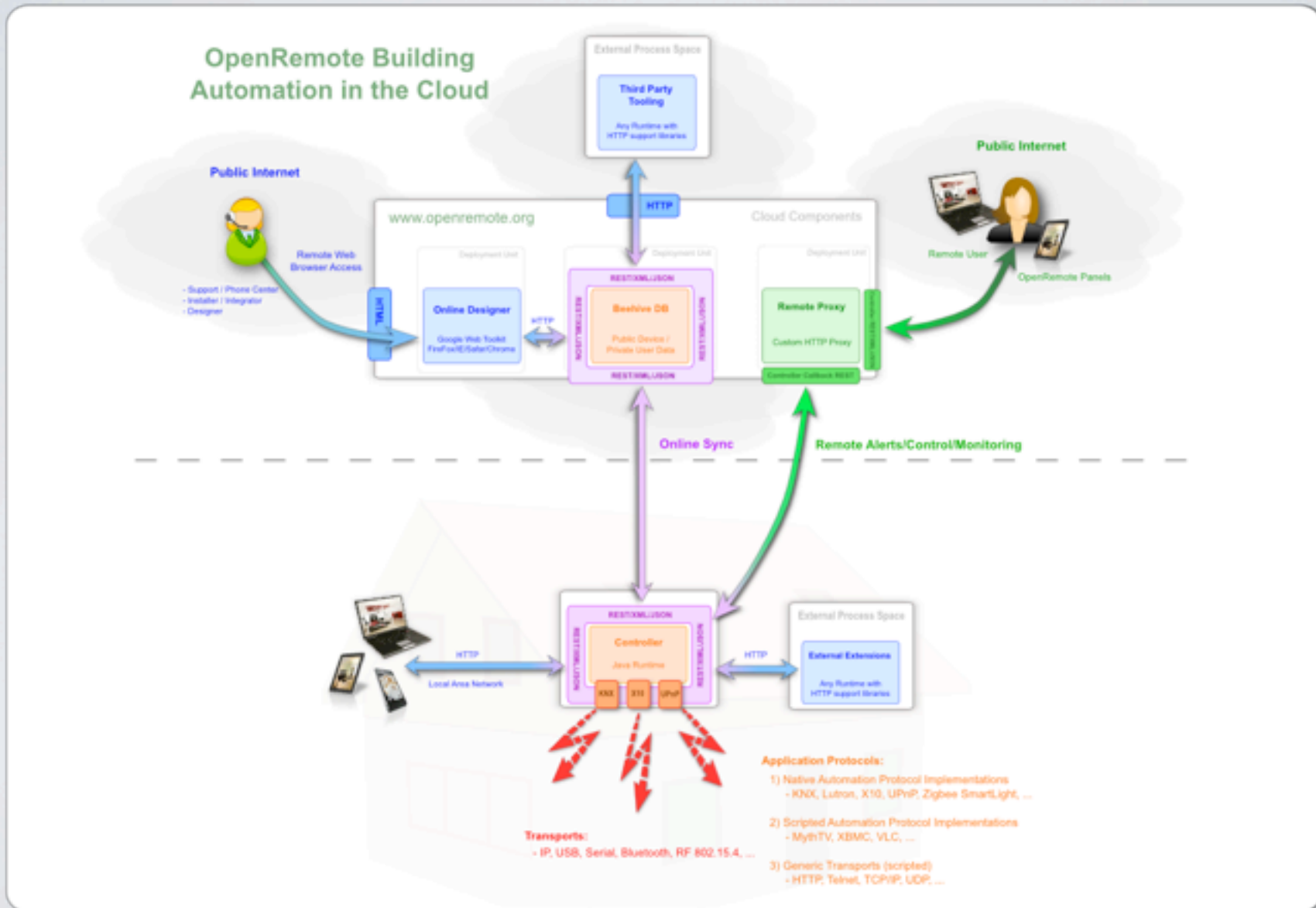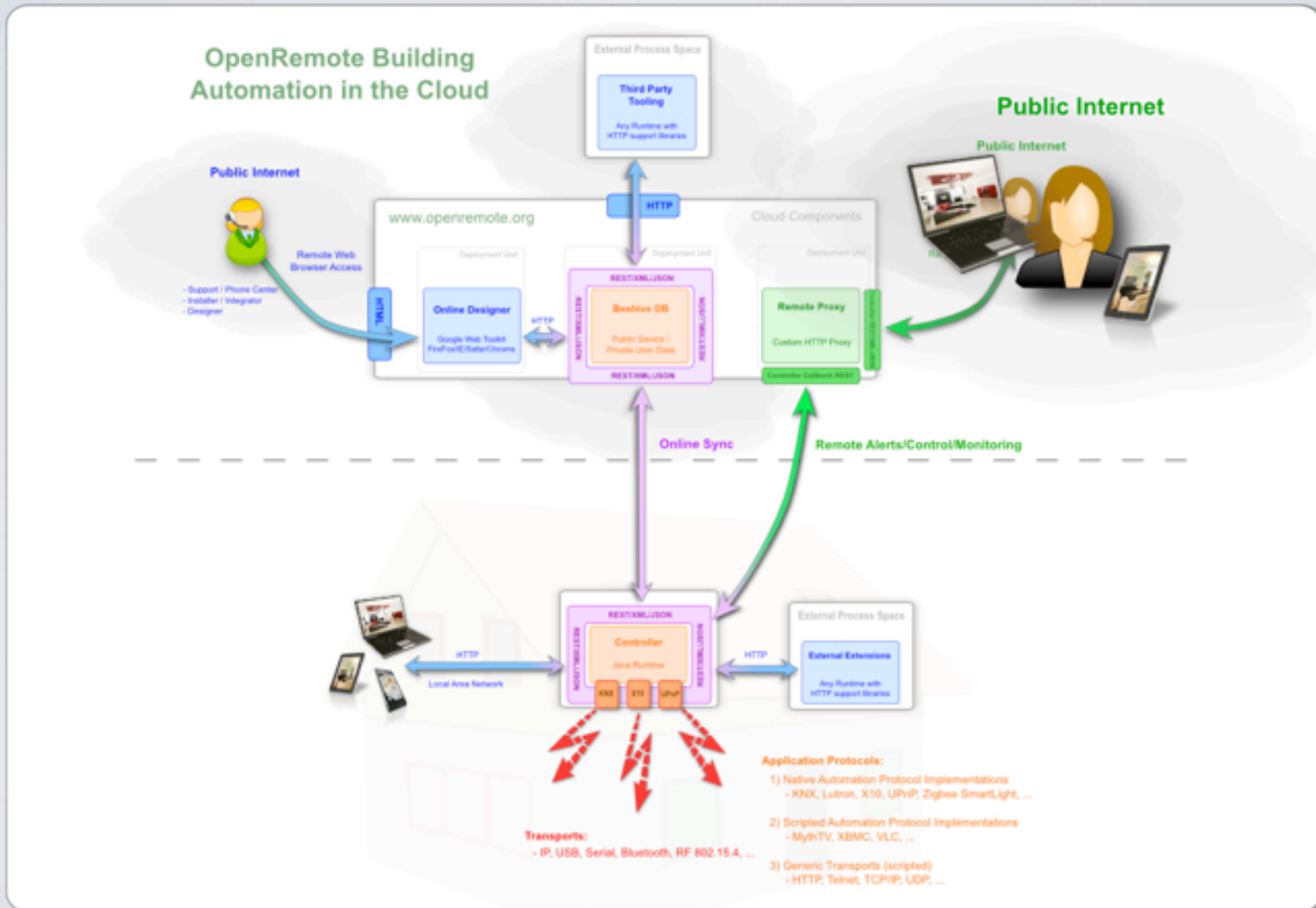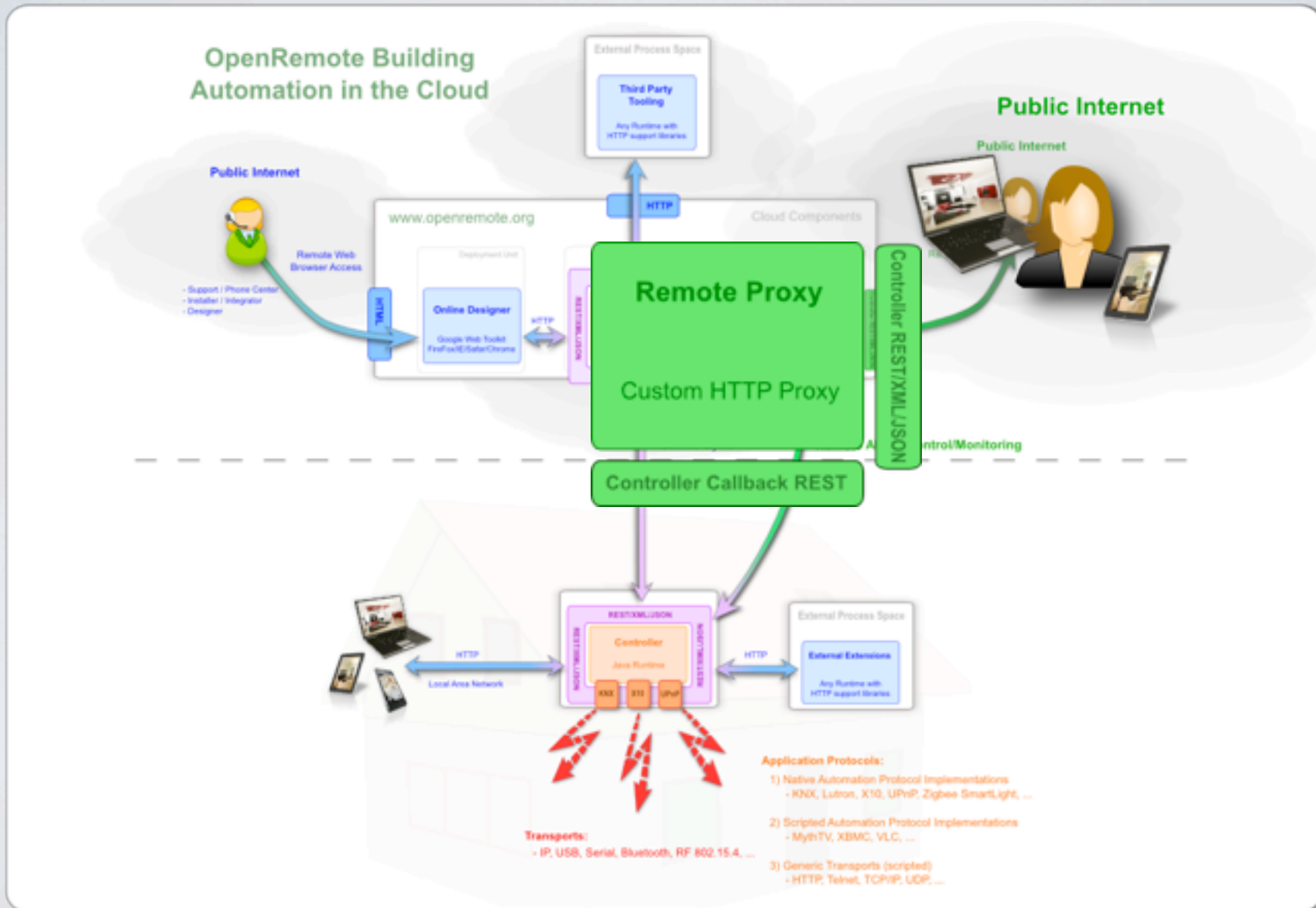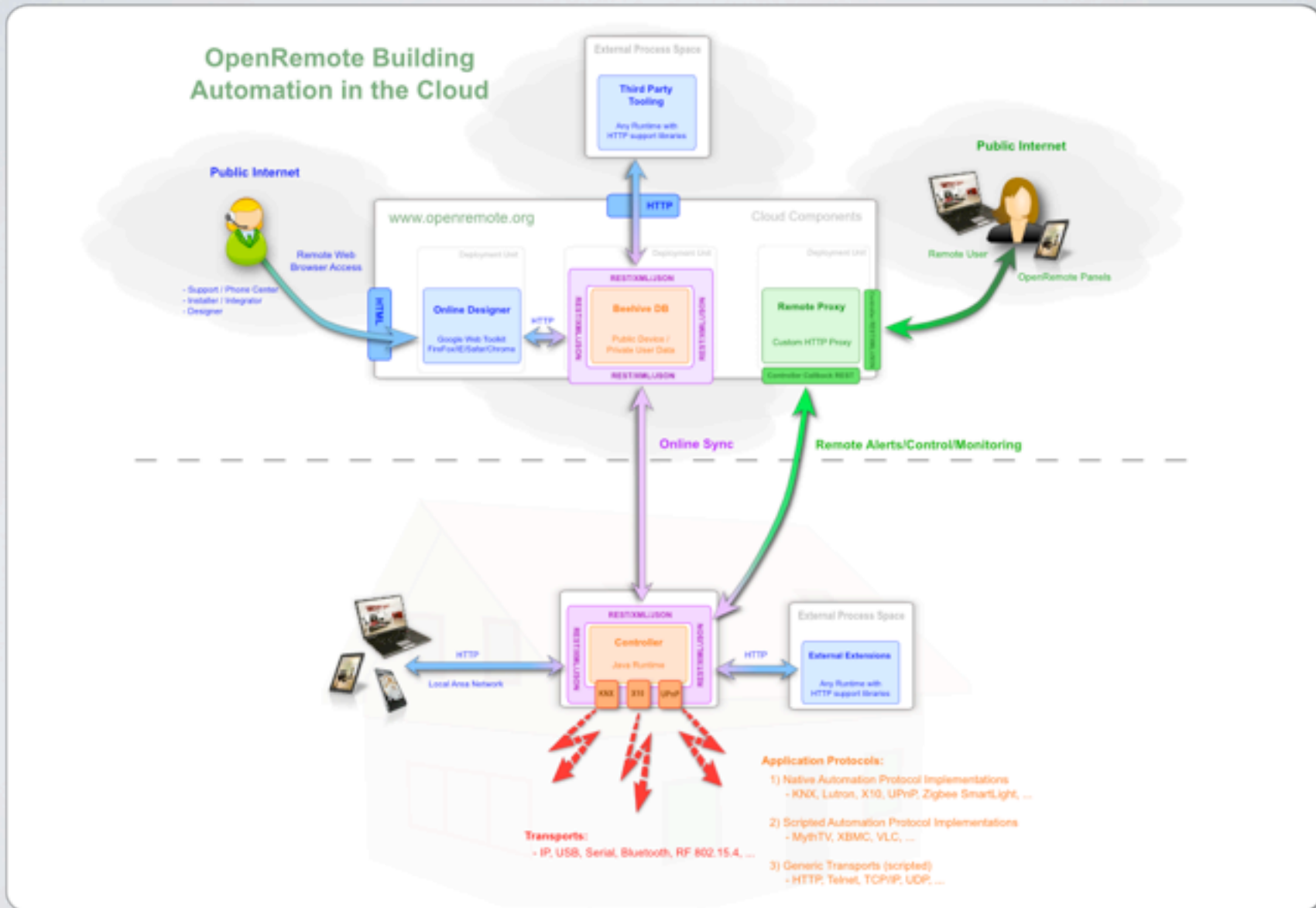
Adopted standard

Off the shelf hardware

The ecosystem

The ecosystem

The ecosystem

The ecosystem

The ecosystem

The ecosystem

The ecosystem

The ecosystem
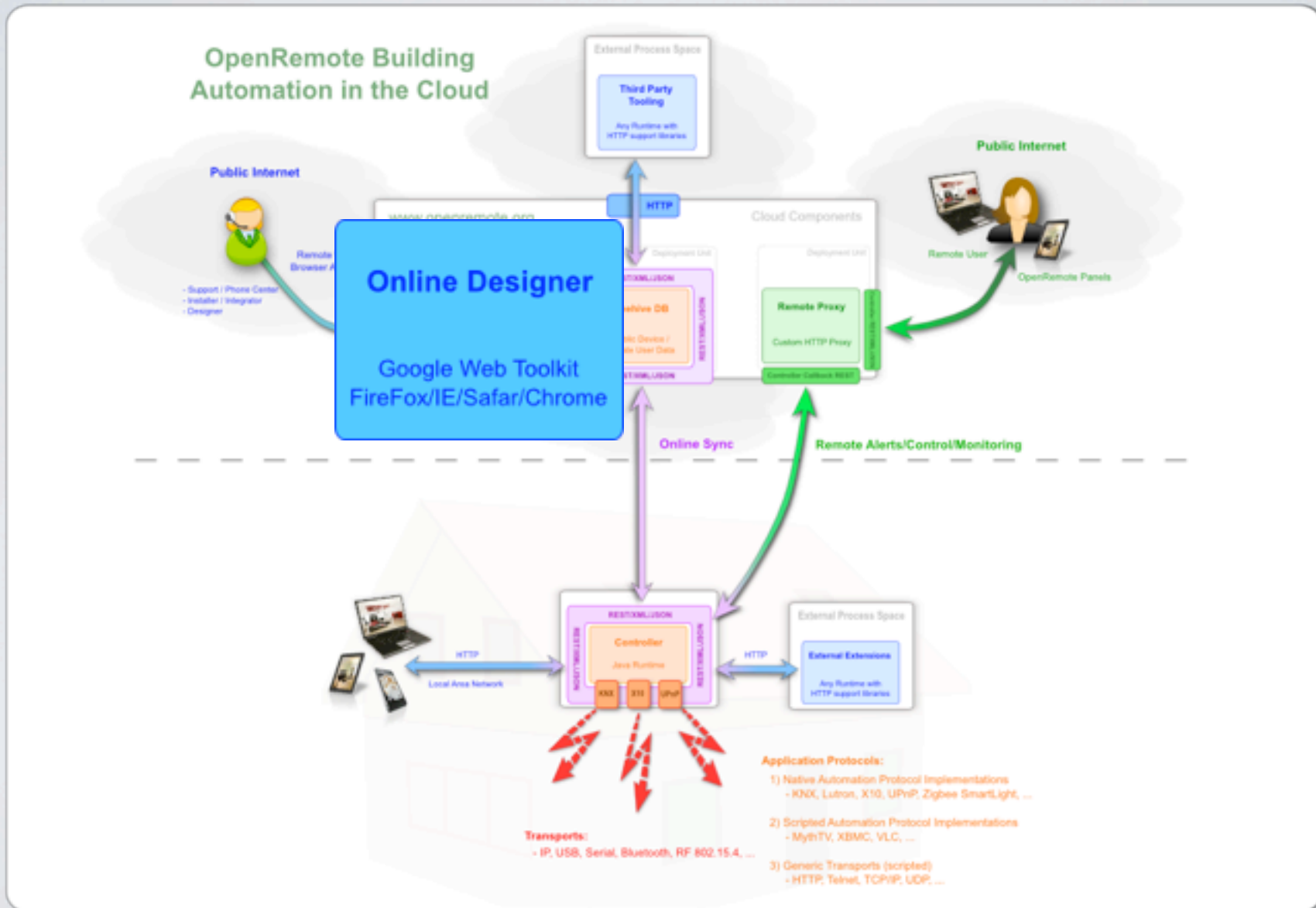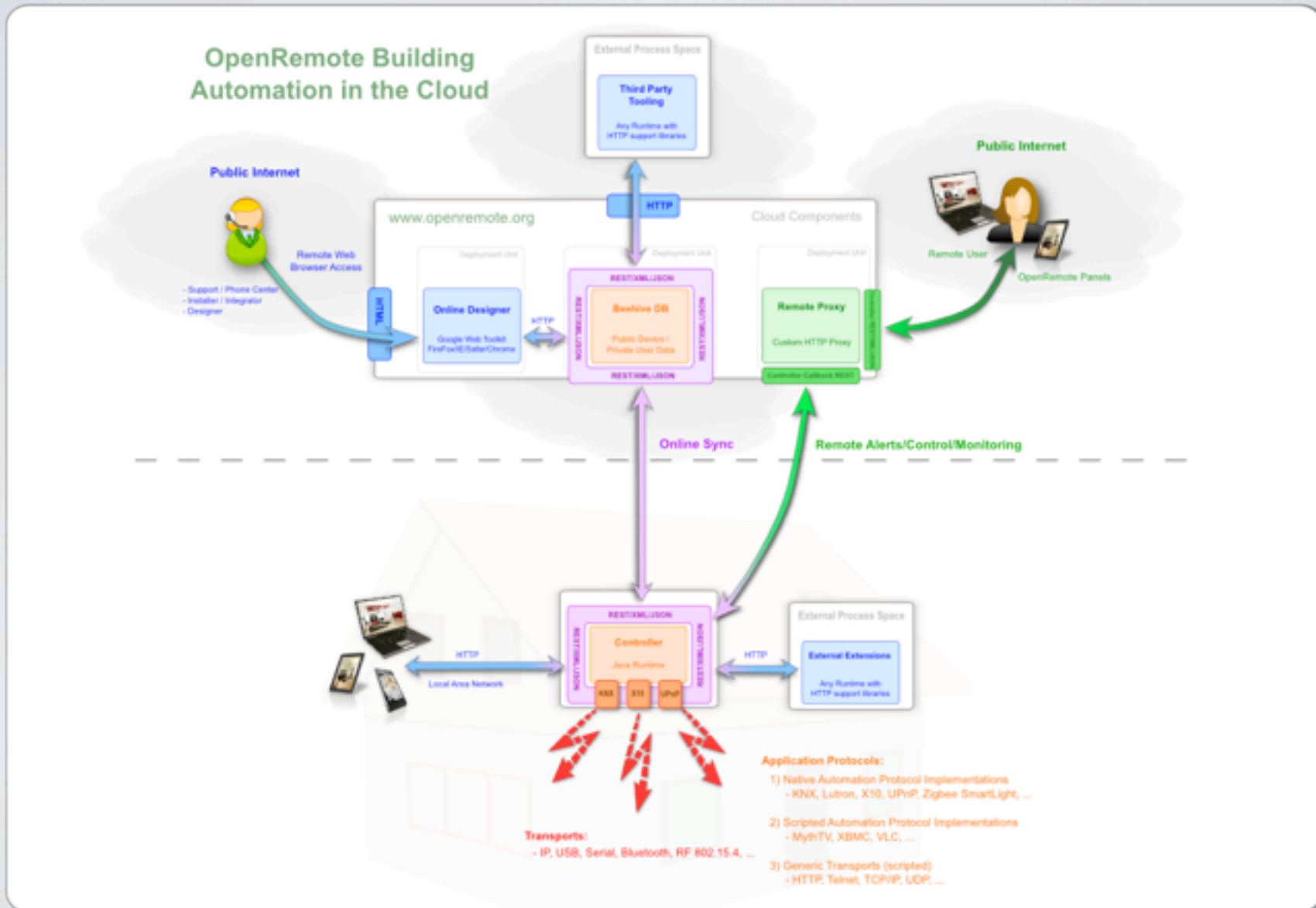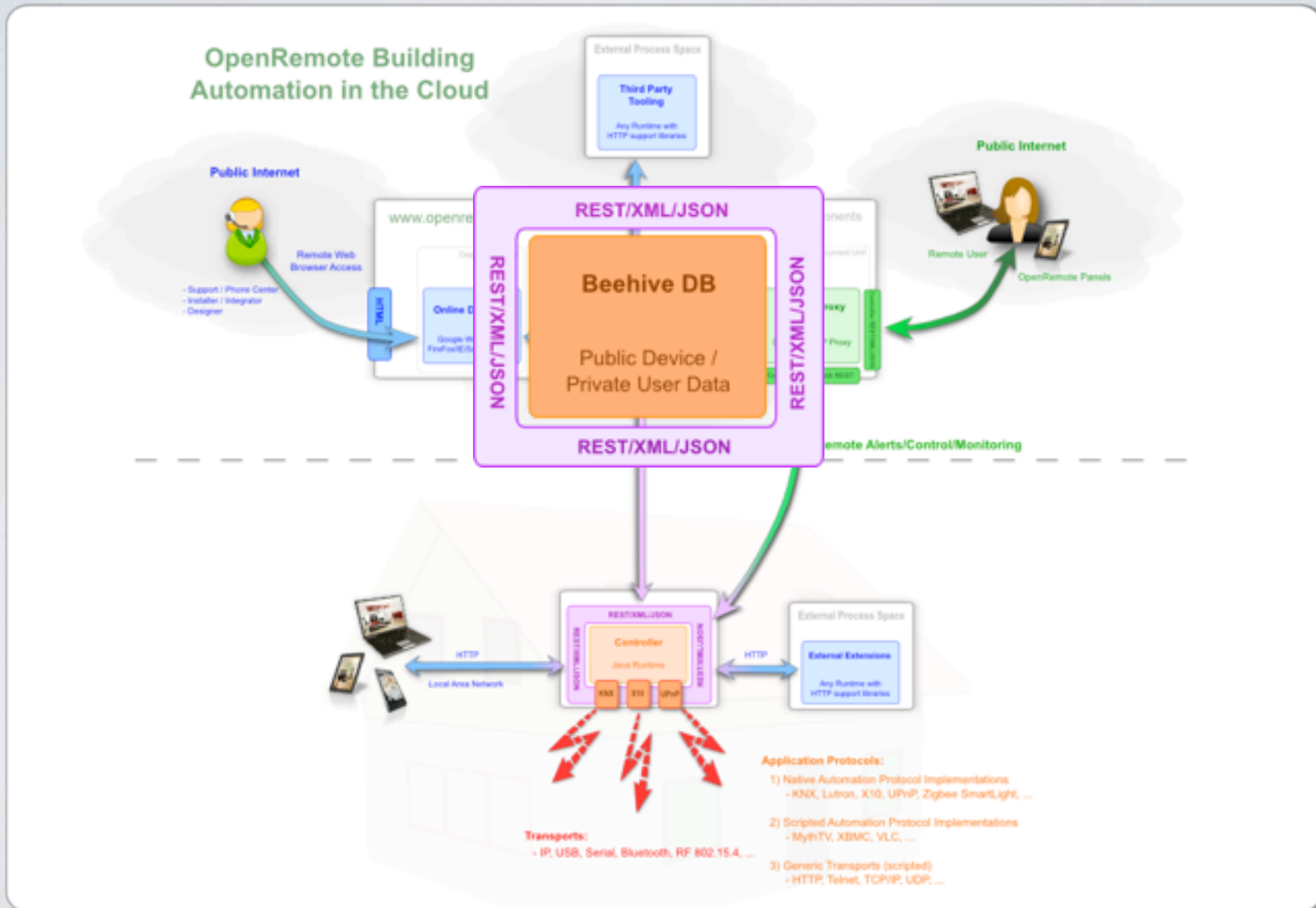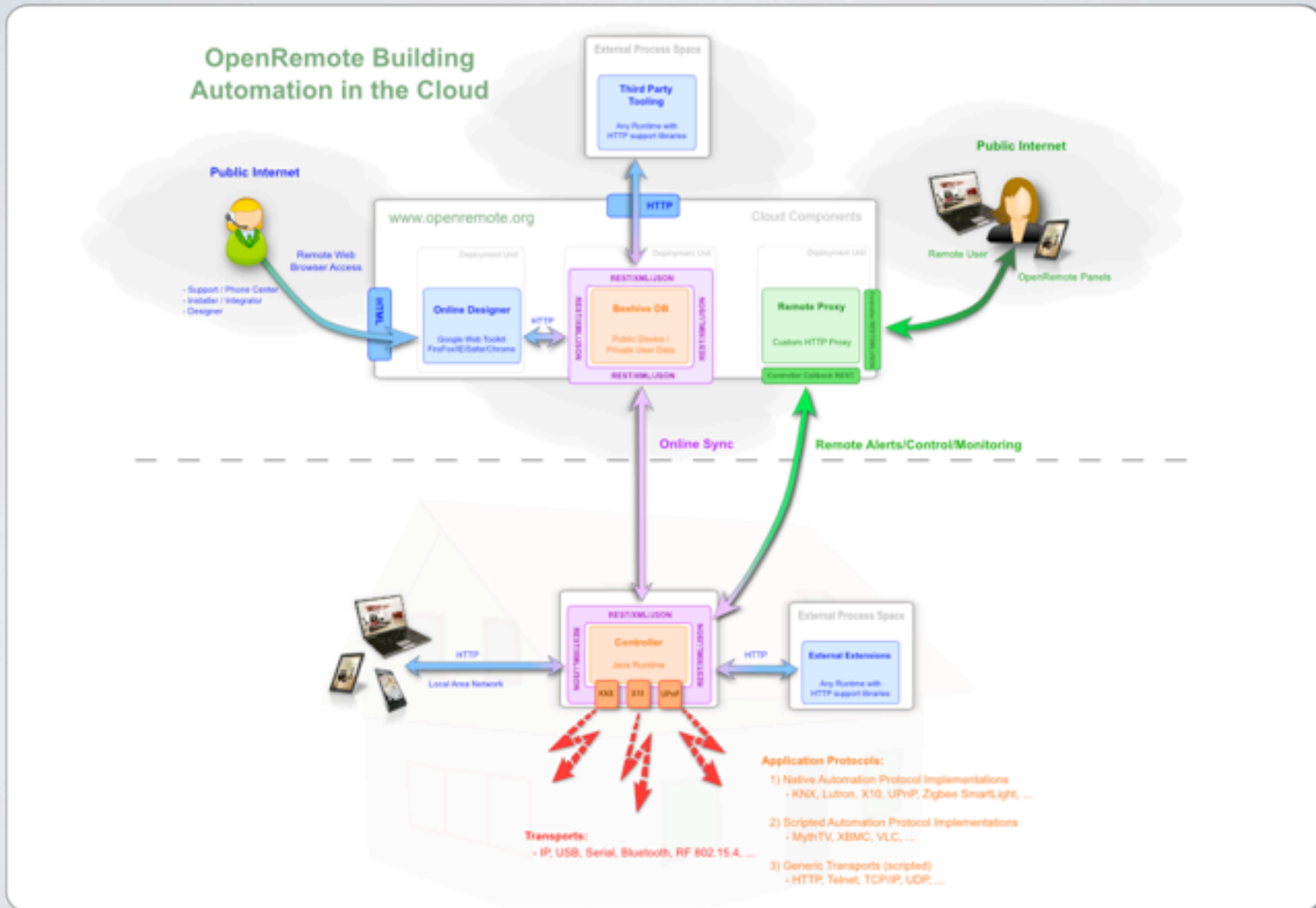
The ecosystem

The ecosystem

The ecosystem

The ecosystem

Controller (ORB)

Runtime brain of the system

Talks to the devices

Implemented as a J2SE application

Runs on off the shelf hardware

Protocols

Exchange WS

WOL

X10

Infra Red

KNX

HTTP

Telnet   TCP

Denon AVRs

UDP

Russound

Lutron

Z-wave   Domintell

Panels

Renders a graphical user interface

Controls the ORB

Receives information from ORB

Wall-mountable visible interface to the system

Panels

Android

iOS

Rich Web Client

...

Online Designer

Cloud based tool for system configuration

Separation between device declaration and UI definition

Devices

Online Designer

Online Designer Tech

Java Enterprise application

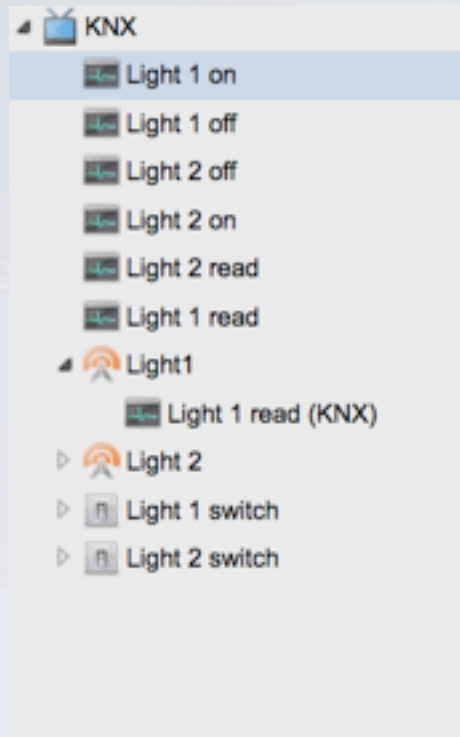XML system description for run-time

Uses Beehive as the backend

Beehive

Service and storage repository

Cloud based

Access via designer

and a REST API

Control command

controller.xml

```xml
<commands>
  <command id="46" protocol="knx">
    <property name="command" value="ON" />
    <property name="groupAddress" value="0/0/1" />
    <property name="DPT" value="1.001" />
  </command>
  <command id="47" protocol="knx">
    <property name="command" value="OFF" />
    <property name="groupAddress" value="0/0/1" />
```

Control command

controller.xml

```xml
<commands>
  <command id="46" protocol="knx">
    <property name="command" value="ON" />
    <property name="groupAddress" value="0/0/1" />
    <property name="DPT" value="1.001" />
  </command>
  <command id="47" protocol="knx">
    <property name="command" value="OFF" />
    <property name="groupAddress" value="0/0/1" />
```

Control command

controller.xml

Control command

controller.xml

```xml
<commands>
  <command id="46" protocol="knx">
    <property name="command" value="ON" />
    <property name="groupAddress" value="0/0/1" />
    <property name="DPT" value="1.001" />
  </command>
  <command id="47" protocol="knx">
    <property name="command" value="OFF" />
    <property name="groupAddress" value="0/0/1" />
```
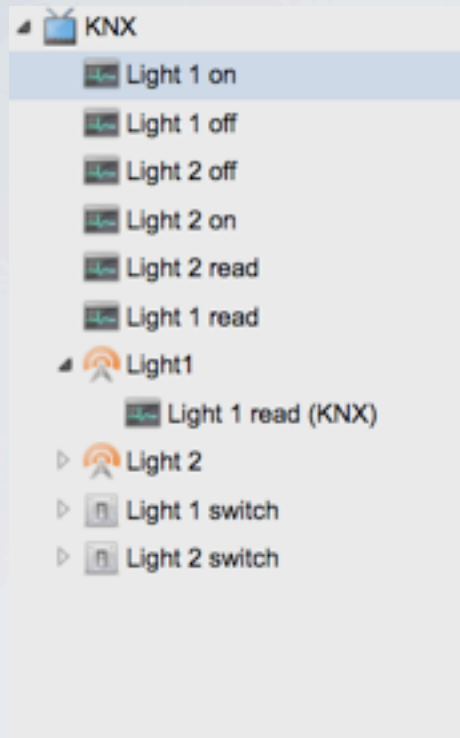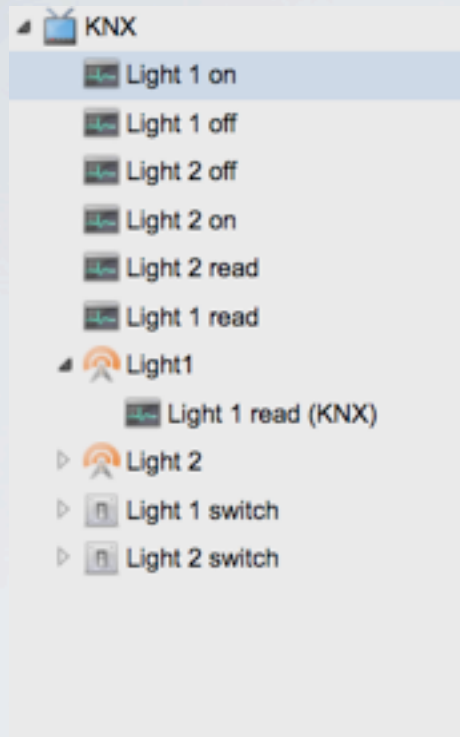
Control command

controller.xml

```xml
<commands>
    <command id="46" protocol="knx">
        <property name="command" value="ON" />
        <property name="groupAddress" value="0/0/1" />
        <property name="DPT" value="1.001" />
    </command>
    <command id="47" protocol="knx">
        <property name="command" value="OFF" />
        <property name="groupAddress" value="0/0/1" />
```

Control command

Button properties

Left:	30
Top:	20
Width:	102
Height:	102
Name:	
Command:	Light 1 on (KNX)

panel.xml

```xml
      </switch>
    </absolute>
    <absolute left="30" top="20" width="102" height="102">
      <button id="40" name="" hasControlCommand="true">
        <default>
          <image src="PowerOn1320938966346.png" />
        </default>
      </button>
    </absolute>
    <absolute left="188" top="20" width="102" height="102">
      <button id="42" name="" hasControlCommand="true">
        <default>
          <image src="PowerOff1320939062377.png" />
```
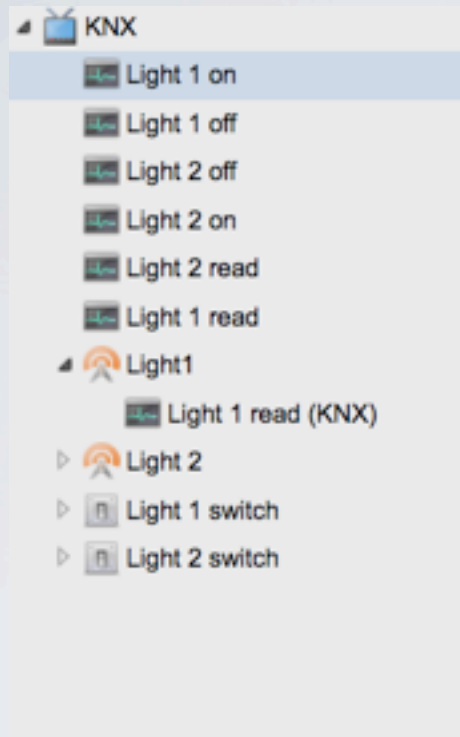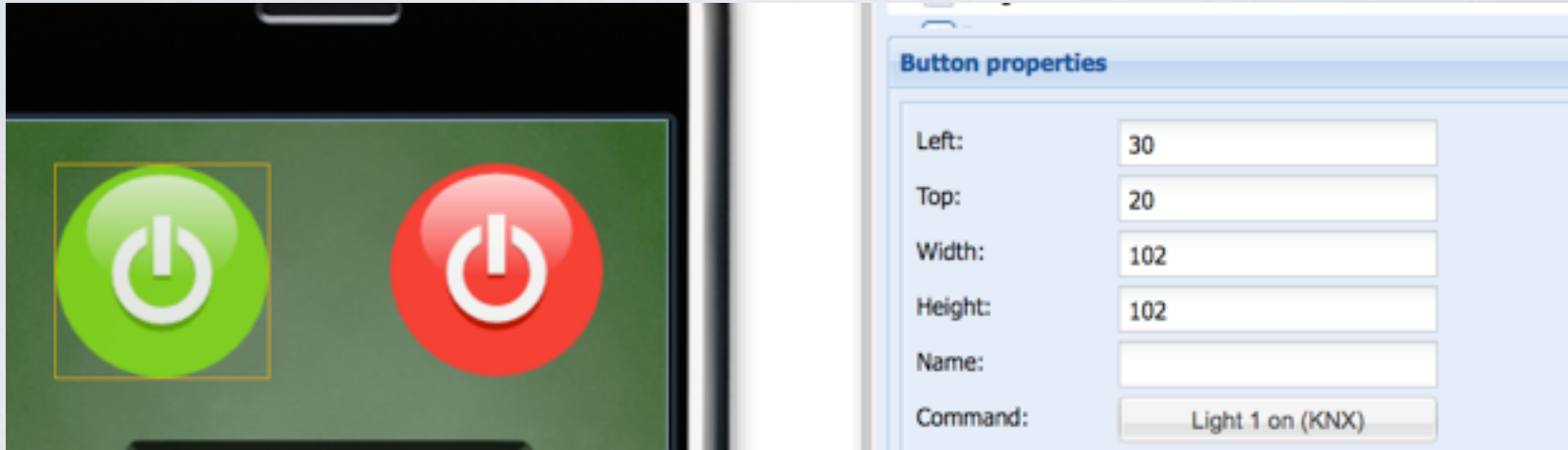
Control command

panel.xml

```
      </switch>
   </absolute>
   <absolute left="30" top="20" width="102" height="102">
      <button id="40" name="" hasControlCommand="true">
         <default>
            <image src="PowerOn1320938966346.png" />
         </default>
      </button>
   </absolute>
   <absolute left="188" top="20" width="102" height="102">
      <button id="42" name="" hasControlCommand="true">
         <default>
            <image src="PowerOff1320939062377.png" />
```

Control command

panel.xml

Control API

controller.xml

```xml
      <include type="command" ref="47" />
    </button>
    <button id="8" />
    <button id="40">
      <include type="command" ref="46" />
    </button>
    <button id="12">
      <include type="command" ref="46" />
```
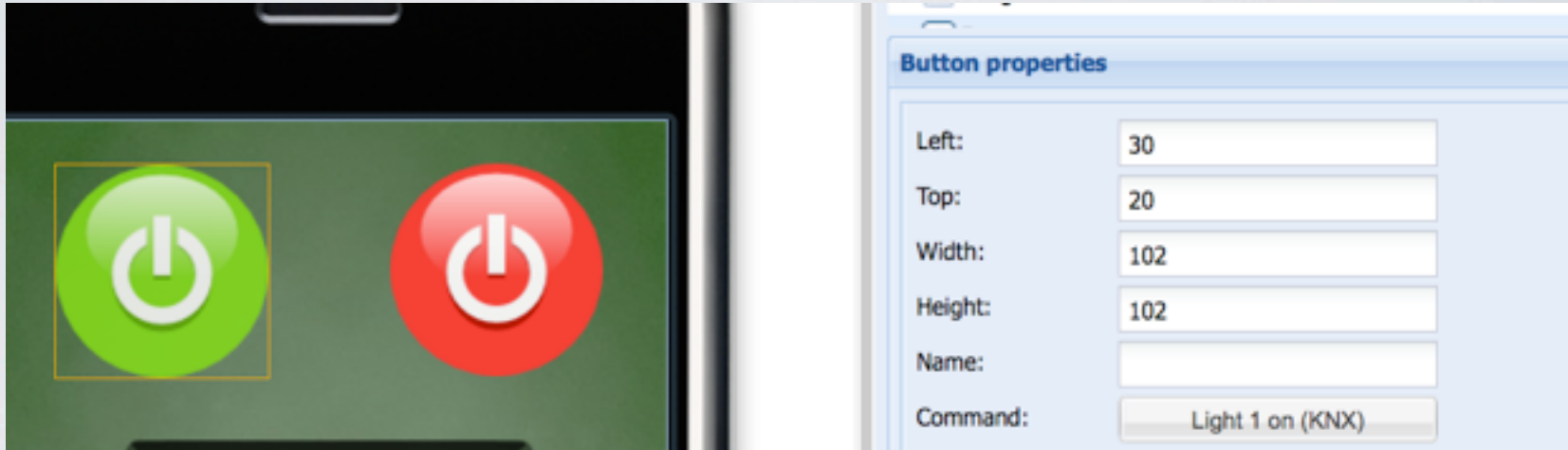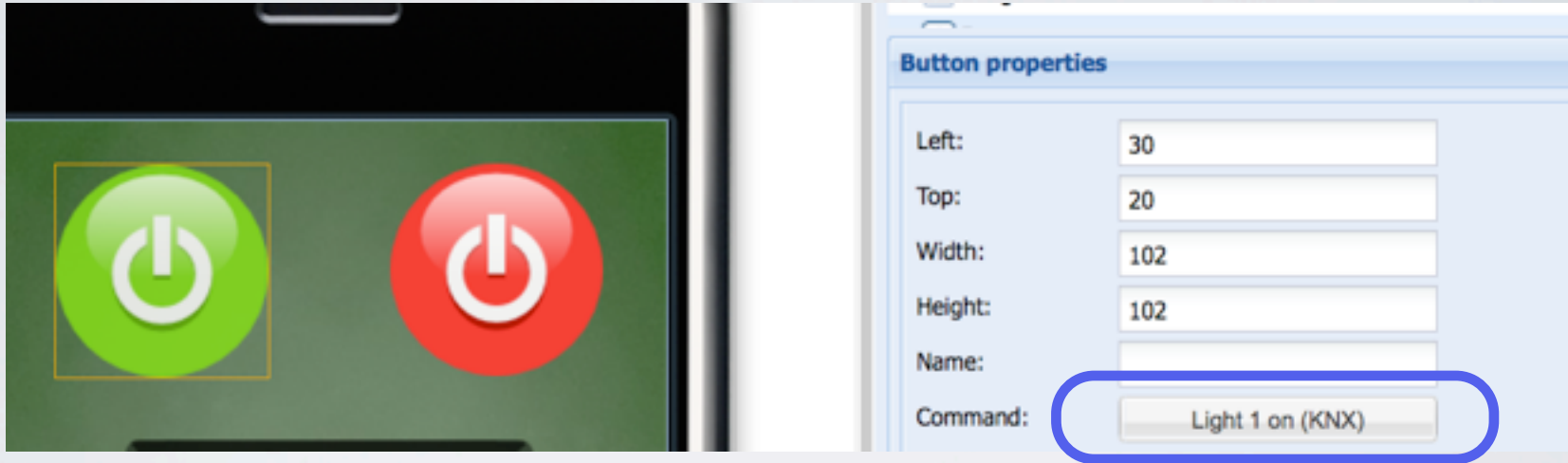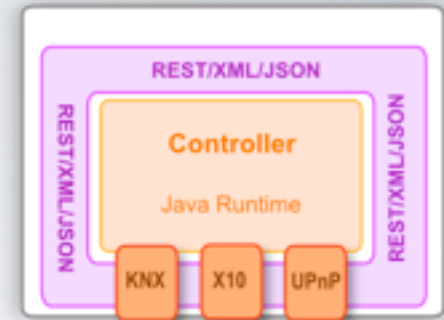
```xml
<commands>
  <command id="46" protocol="knx">
    <property name="command" value="ON" />
    <property name="groupAddress" value="0/0/1" />
    <property name="DPT" value="1.001" />
  </command>
  <command id="47" protocol="knx">
    <property name="command" value="OFF" />
    <property name="groupAddress" value="0/0/1" />
```

Control API

/rest/control/40/click

controller.xml

```xml
      <include type="command" ref="47" />
    </button>
    <button id="0" />
    <button id="40">
      <include type="command" ref="46" />
    </button>
    <button id="12">
      <include type="command" ref="46" />

<commands>
    <command id="46" protocol="knx">
      <property name="command" value="ON" />
      <property name="groupAddress" value="0/0/1" />
      <property name="DPT" value="1.001" />
    </command>
    <command id="47" protocol="knx">
      <property name="command" value="OFF" />
      <property name="groupAddress" value="0/0/1" />
```
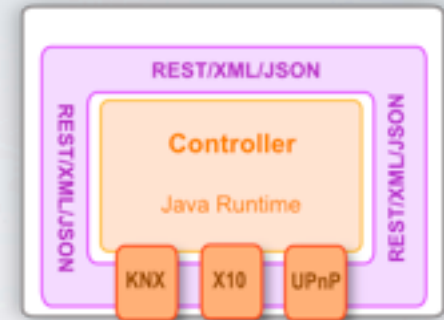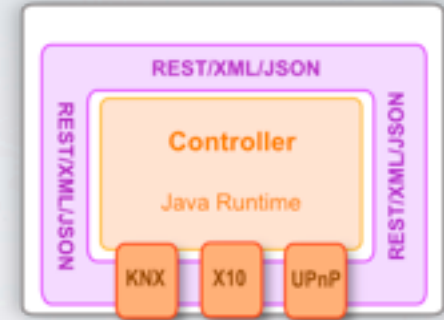
Control API

/rest/control/40/click

controller.xml

```xml
            <include type="command" ref="47" />
        </button>
    <button id="10" />
    <button id="40">
        <include type="command" ref="46" >
    </button>
    <button id="12">
        <include type="command" ref="46" />
```

```xml
<commands>
    <command id="46" protocol="knx">
        <property name="command" value="ON" />
        <property name="groupAddress" value="0/0/1" />
        <property name="DPT" value="1.001" />
    </command>
    <command id="47" protocol="knx">
        <property name="command" value="OFF" />
        <property name="groupAddress" value="0/0/1" />
```
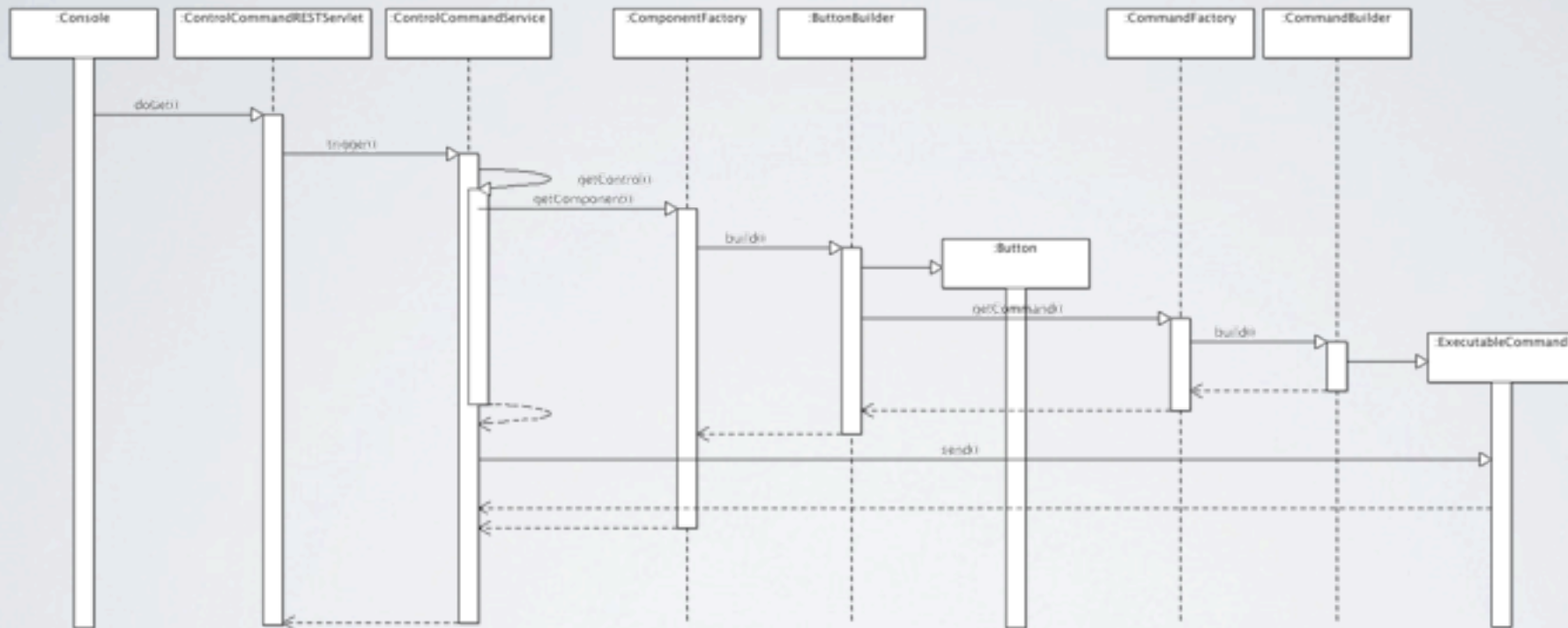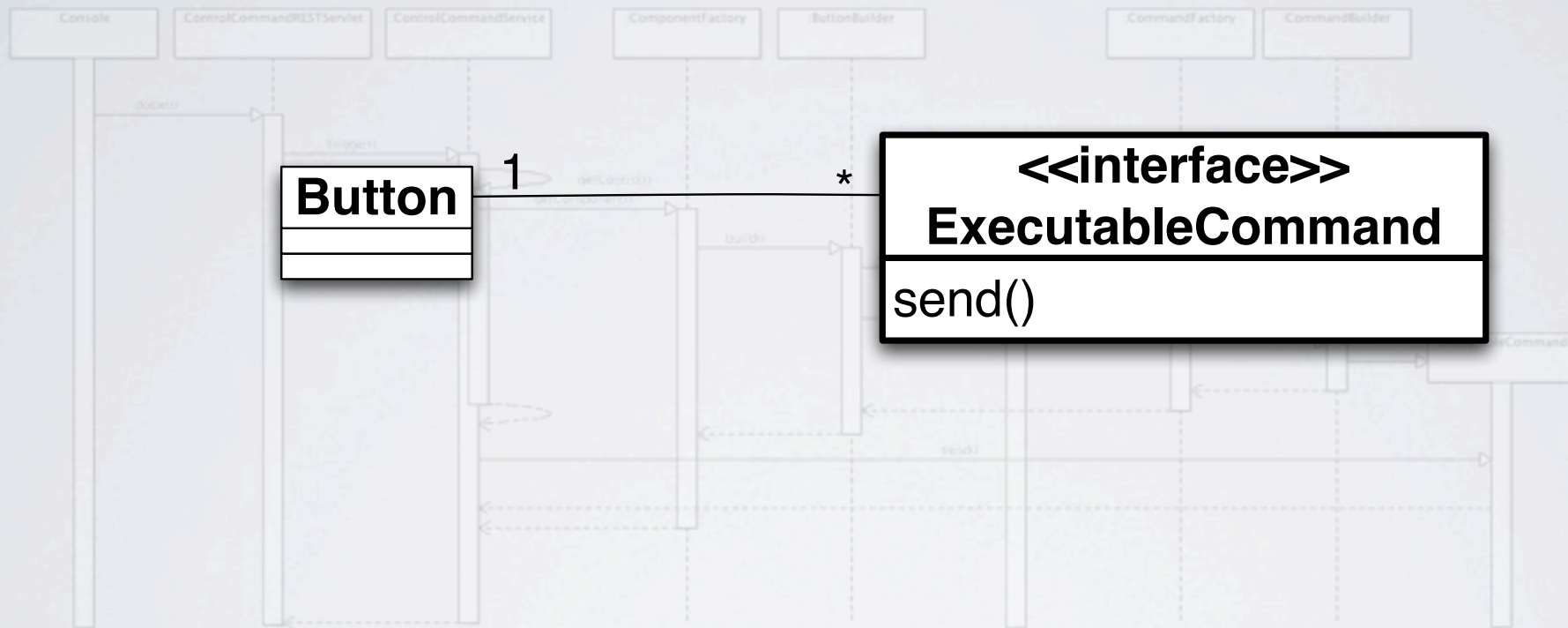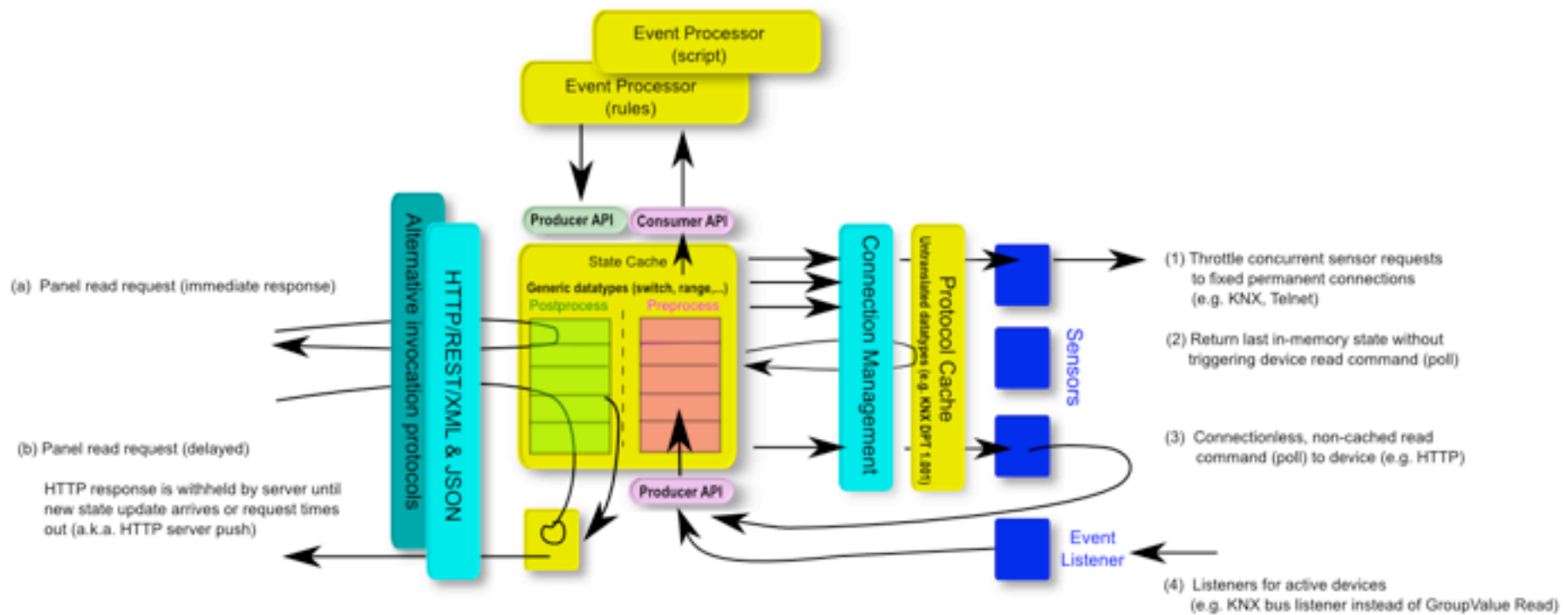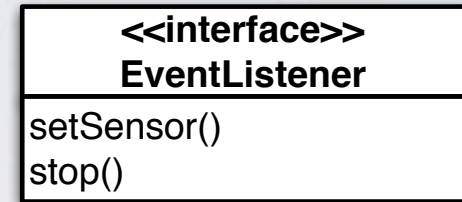
ORB details
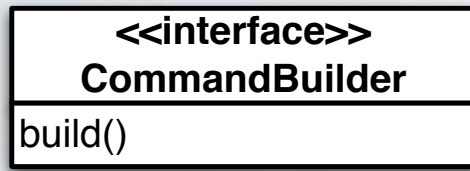
ORB details

Button 1   *

<<interface>>
ExecutableCommand

send()

Read Command Flow

Protocol implementation

<<interface>>\n**CommandBuilder**
build()

<<interface>>\n**ExecutableCommand**
send()

<<interface>>\n**EventListener**
setSensor()\nstop()

Community

Fantastic platform for hobbyists

Active open source community

Community has many professionals

THANK YOU

www.openremote.org
eric@openremote.org