

OPEN REMOTE

Open Source Home Automation

Eric Bariaux

(Home) Automation State of the Union

Why Open Remote ?

Open Remote Details

Home Automation

Lighting Audio Video

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

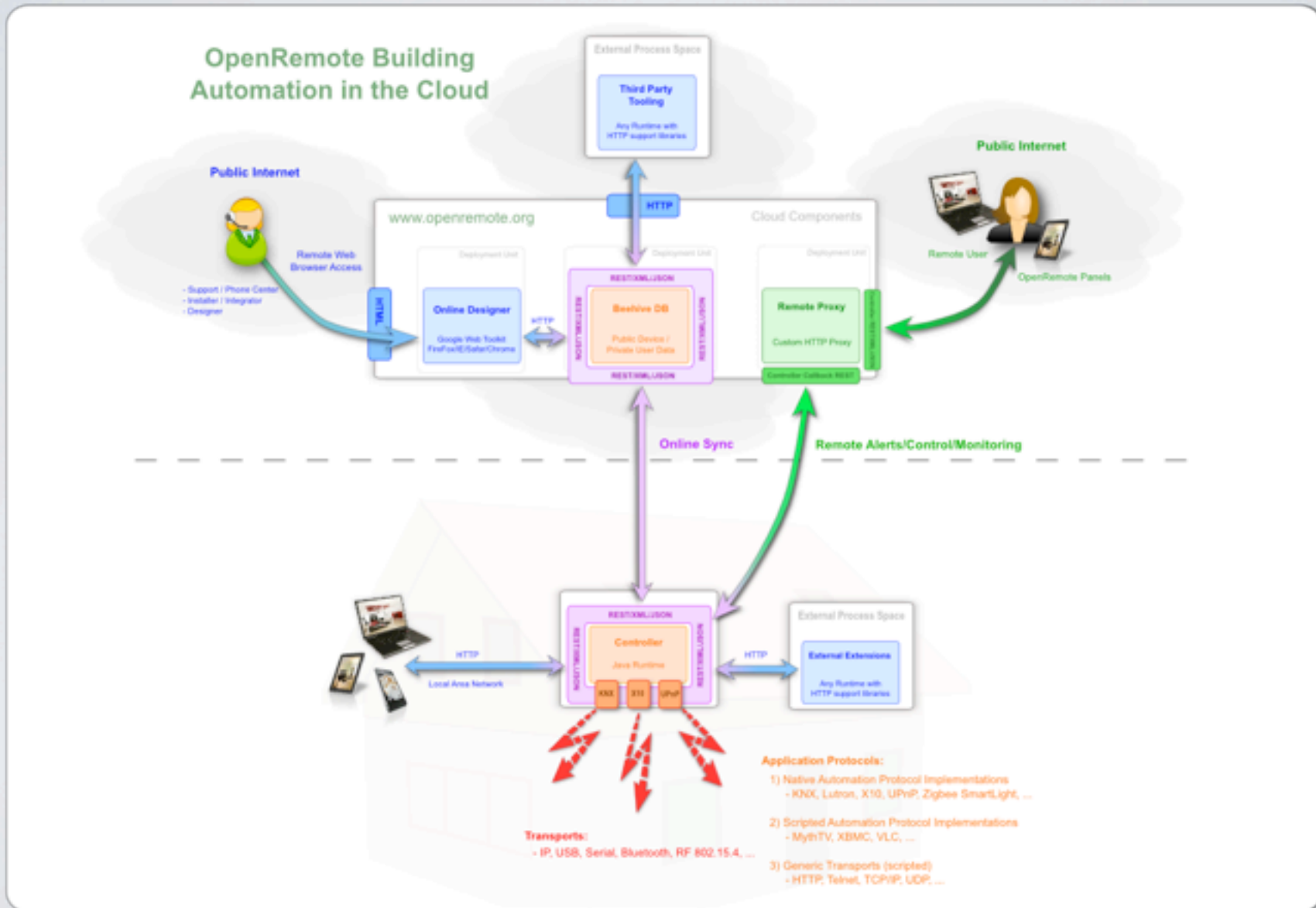
Hardware



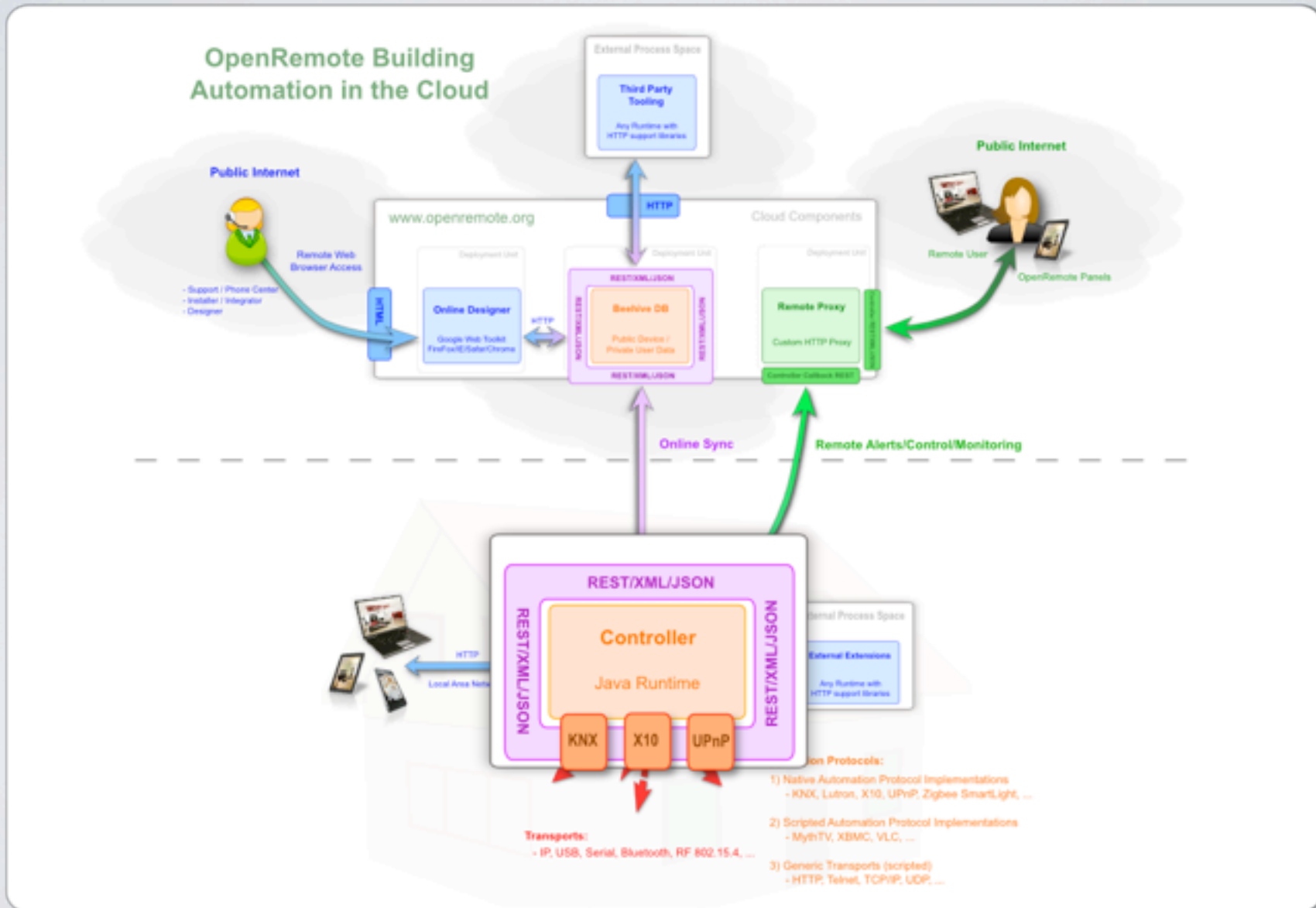
Our solution



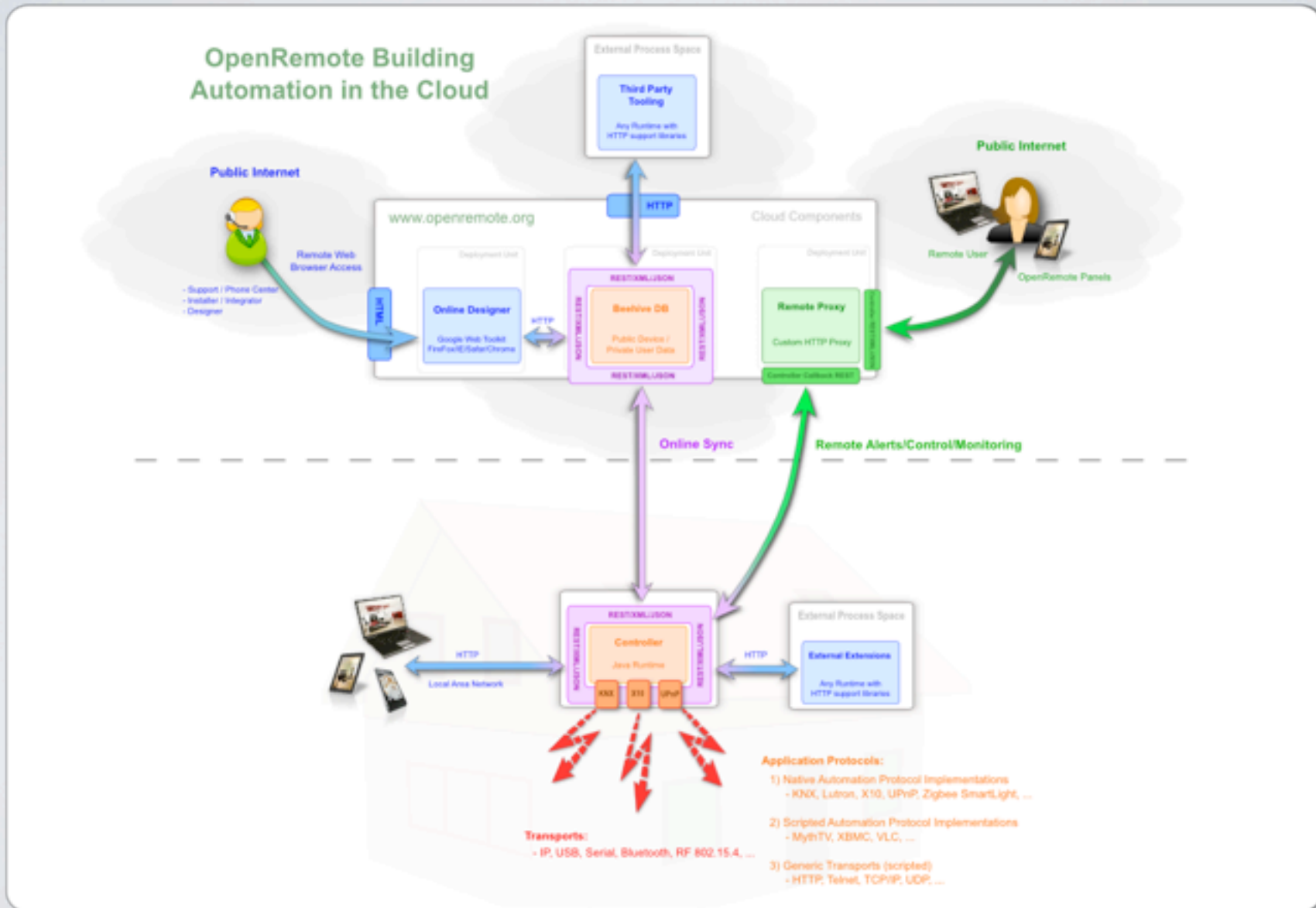
The ecosystem



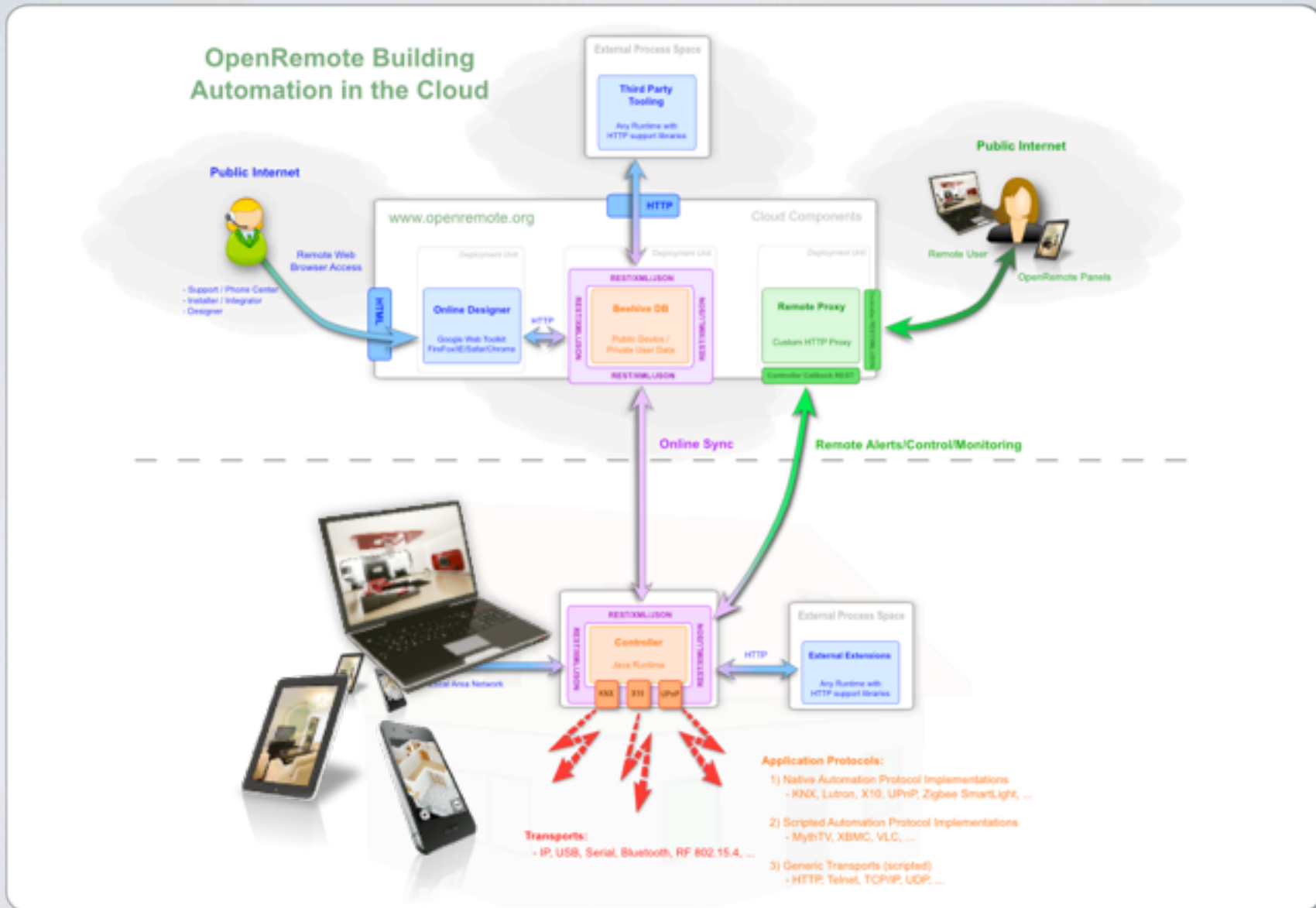
The ecosystem



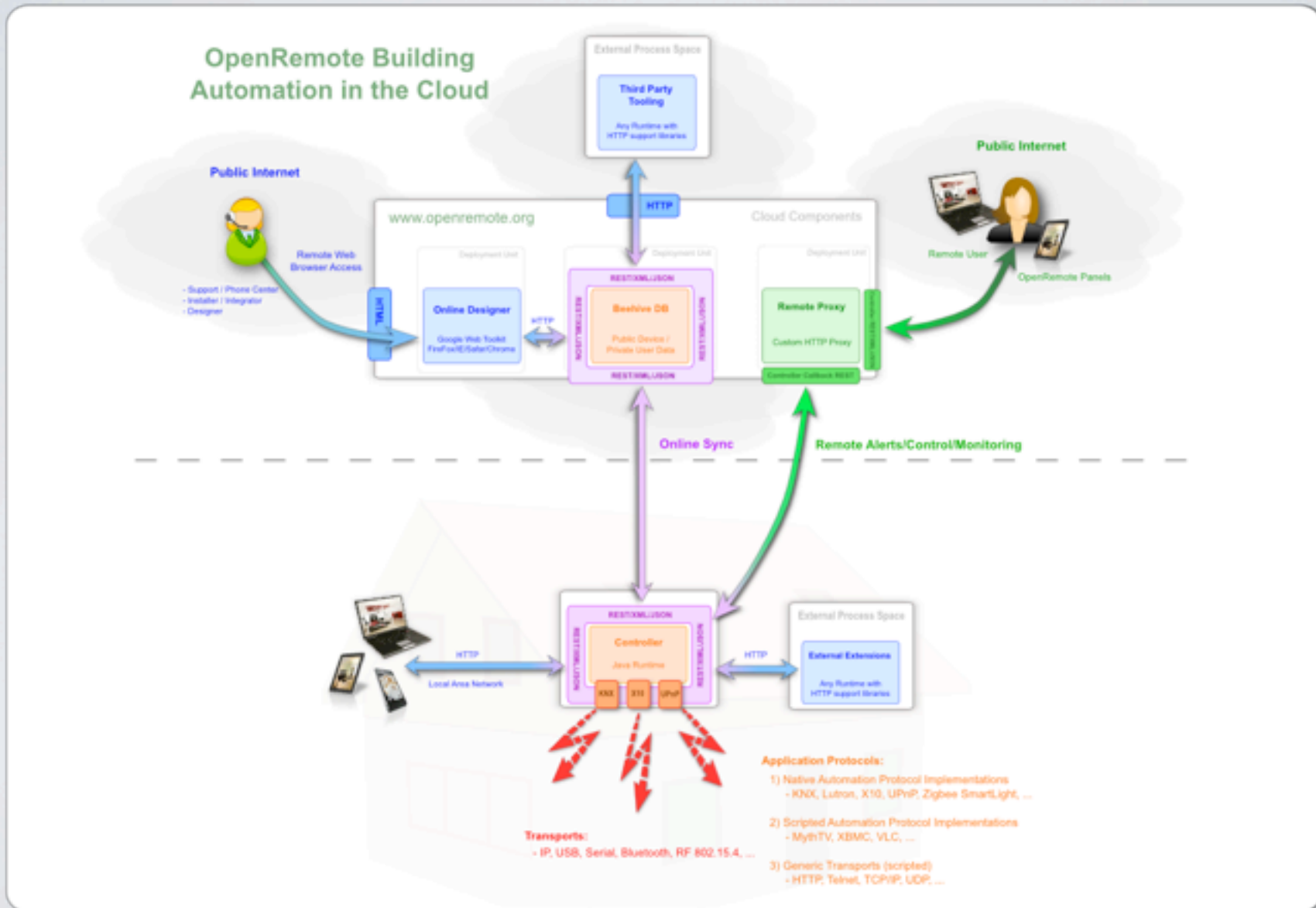
The ecosystem



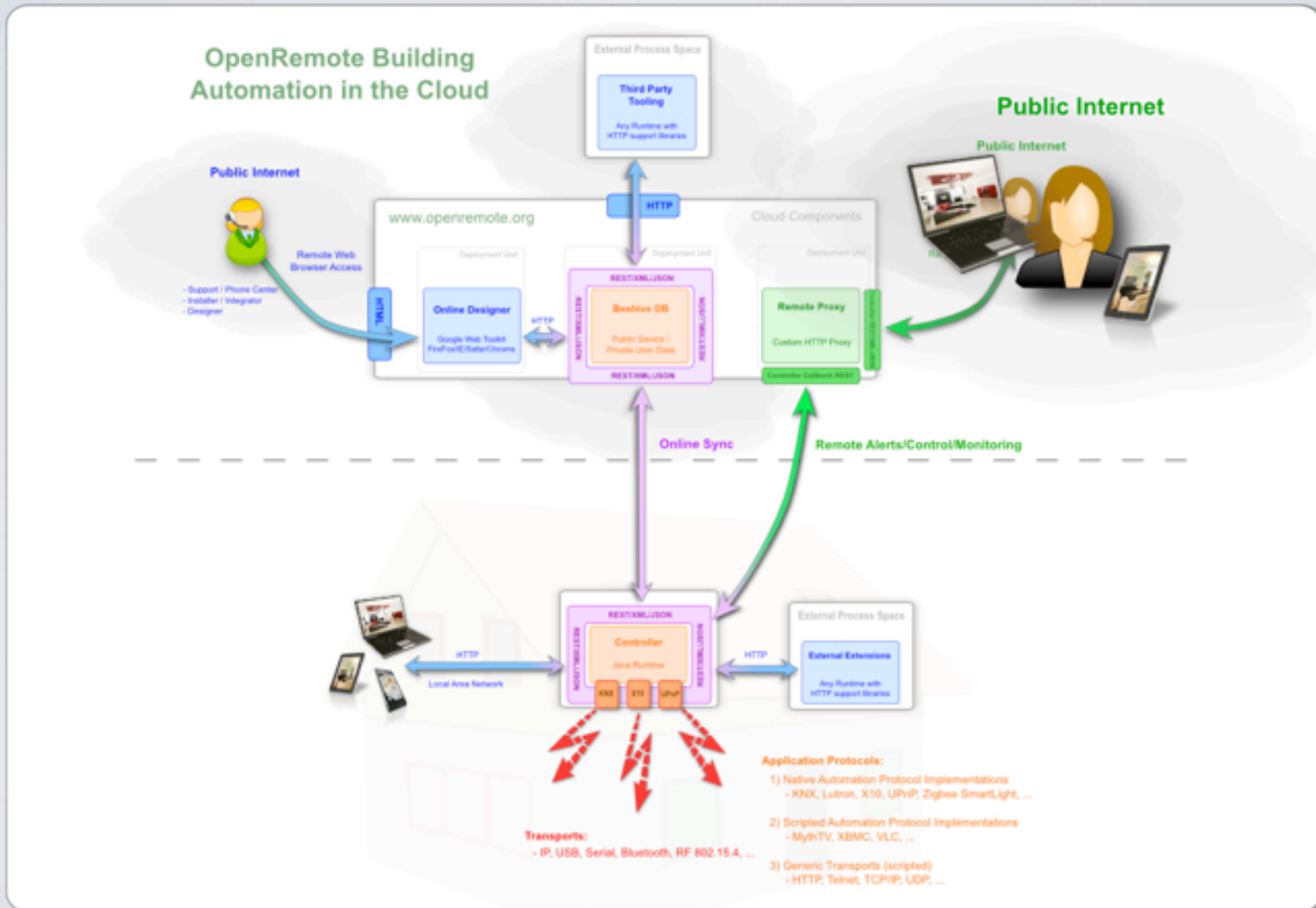
The ecosystem



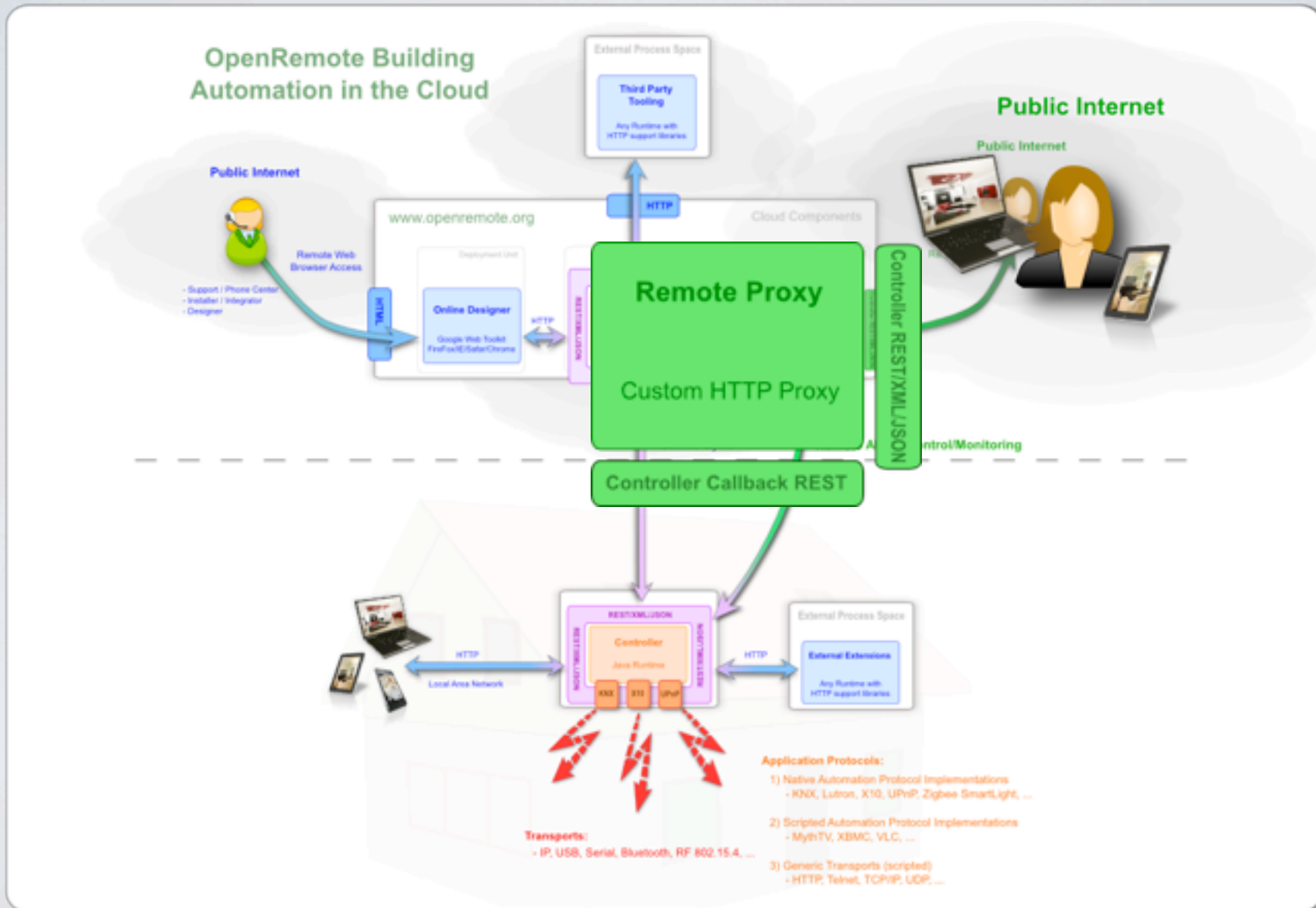
The ecosystem



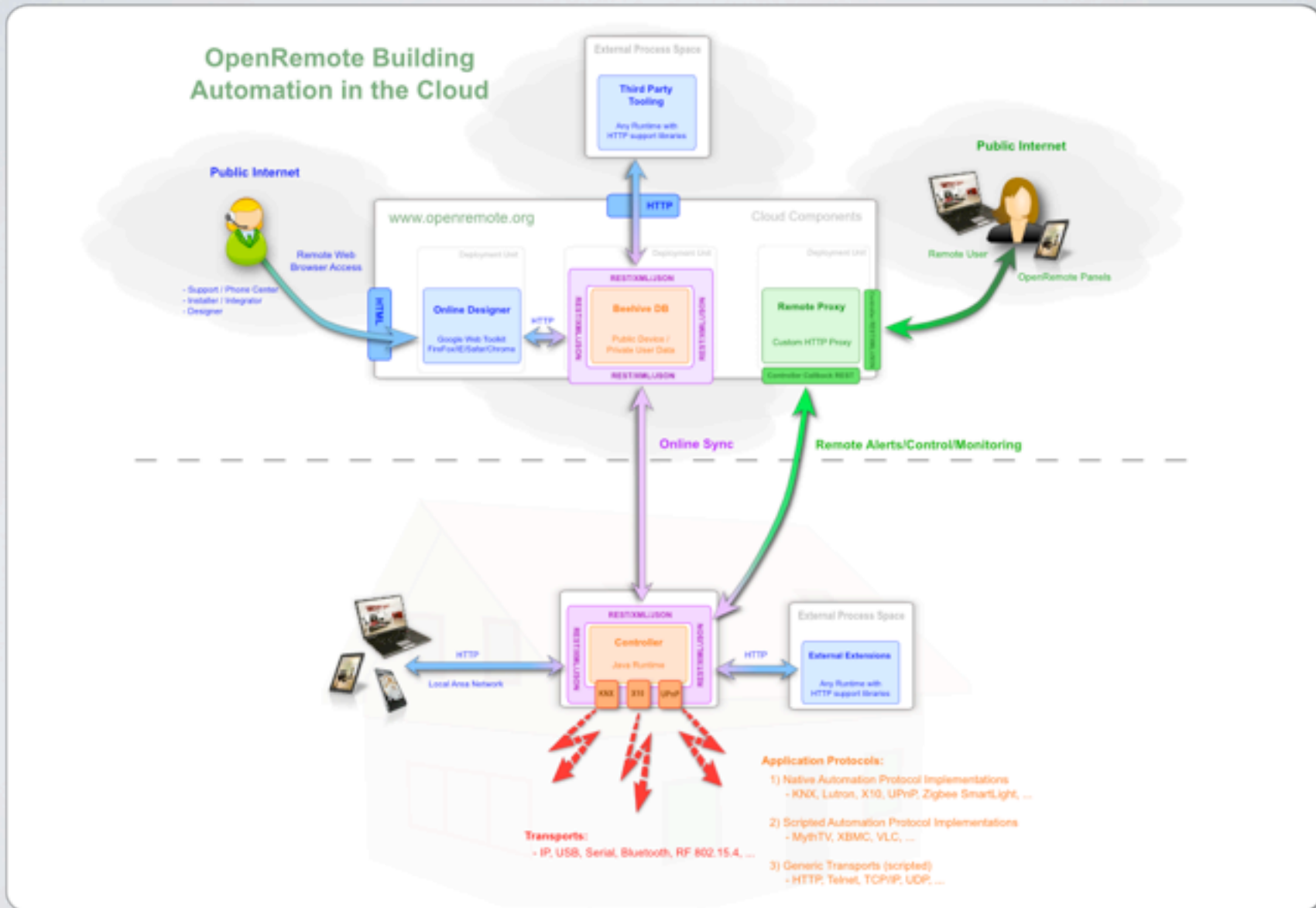
The ecosystem



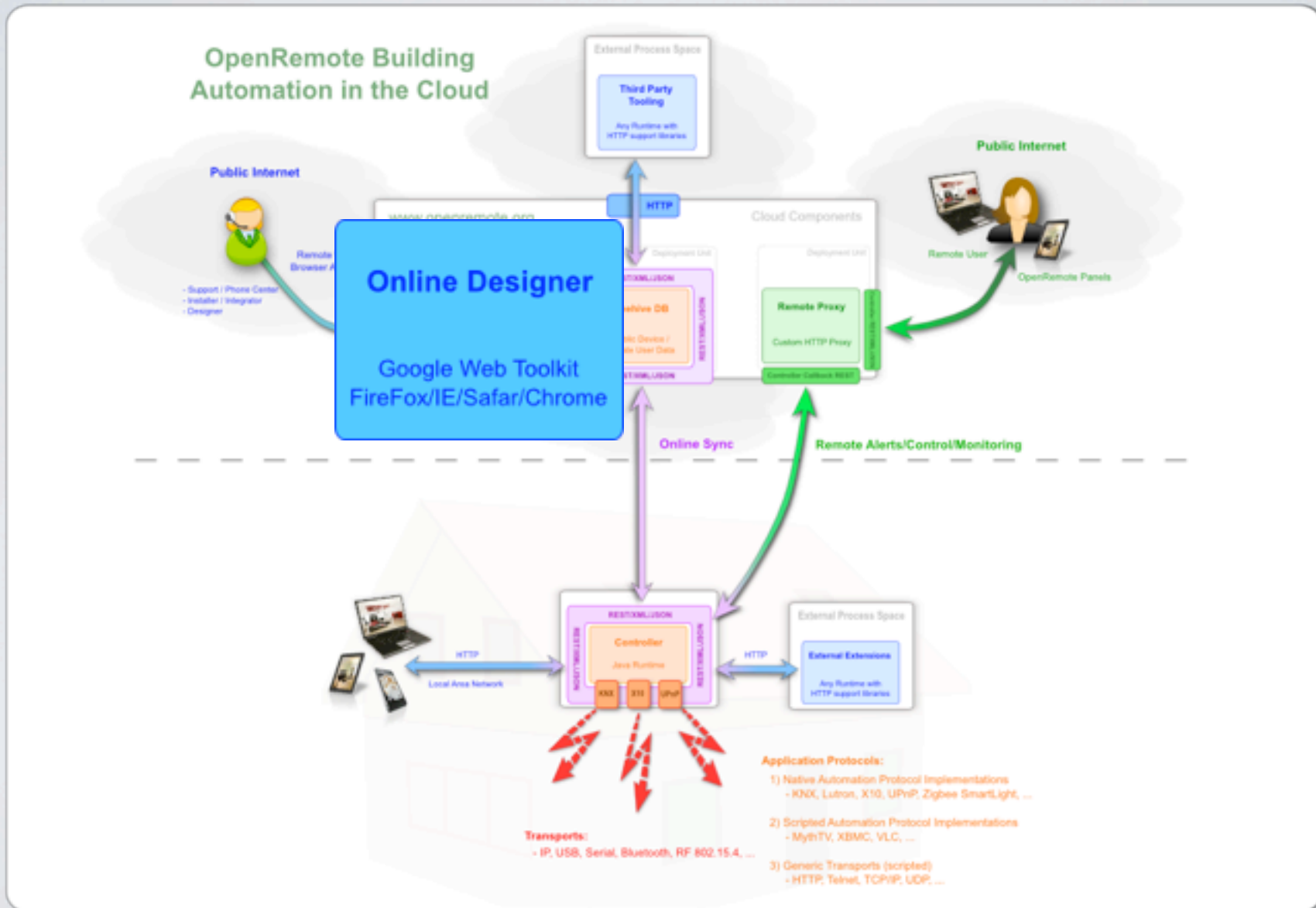
The ecosystem



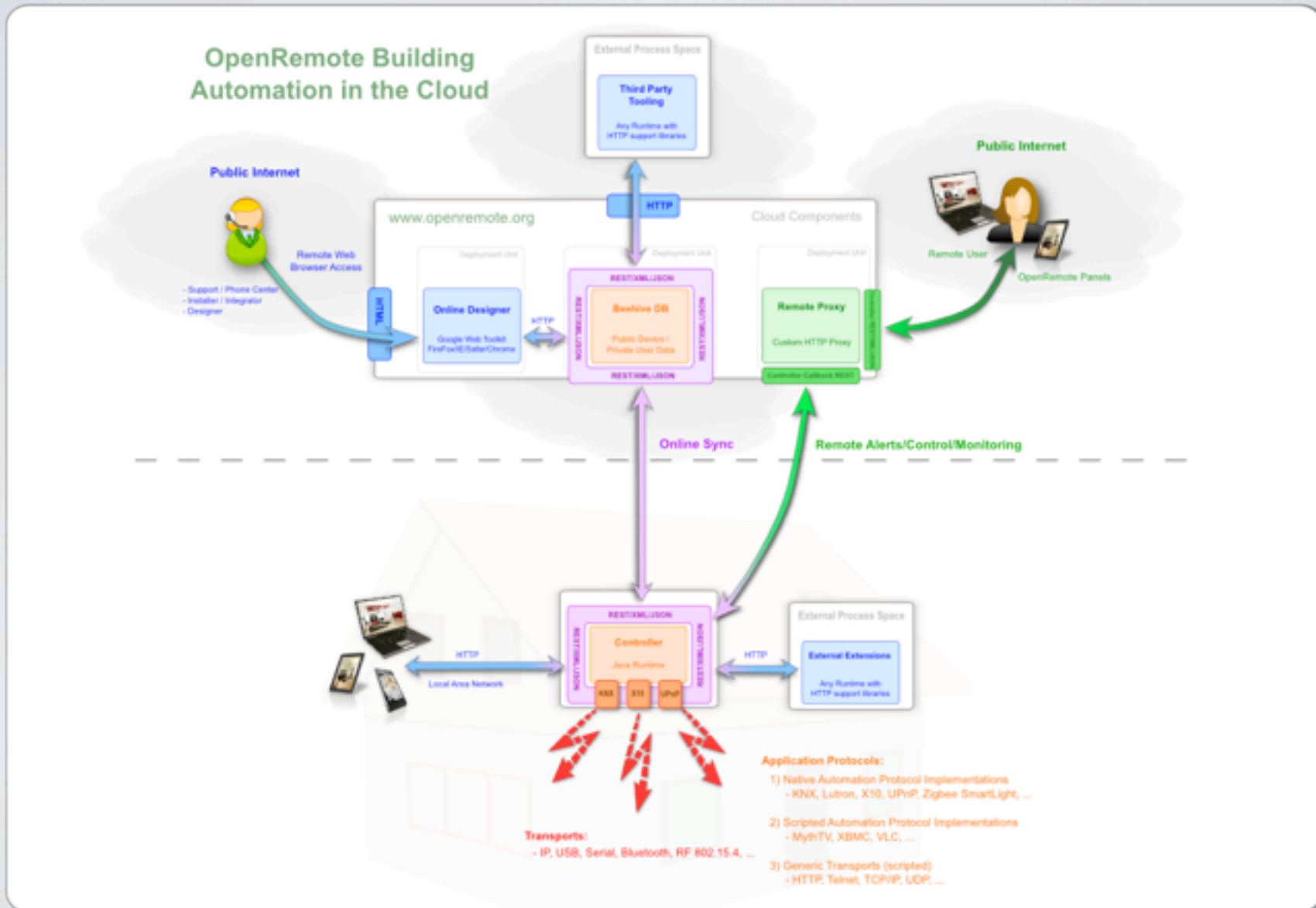
The ecosystem



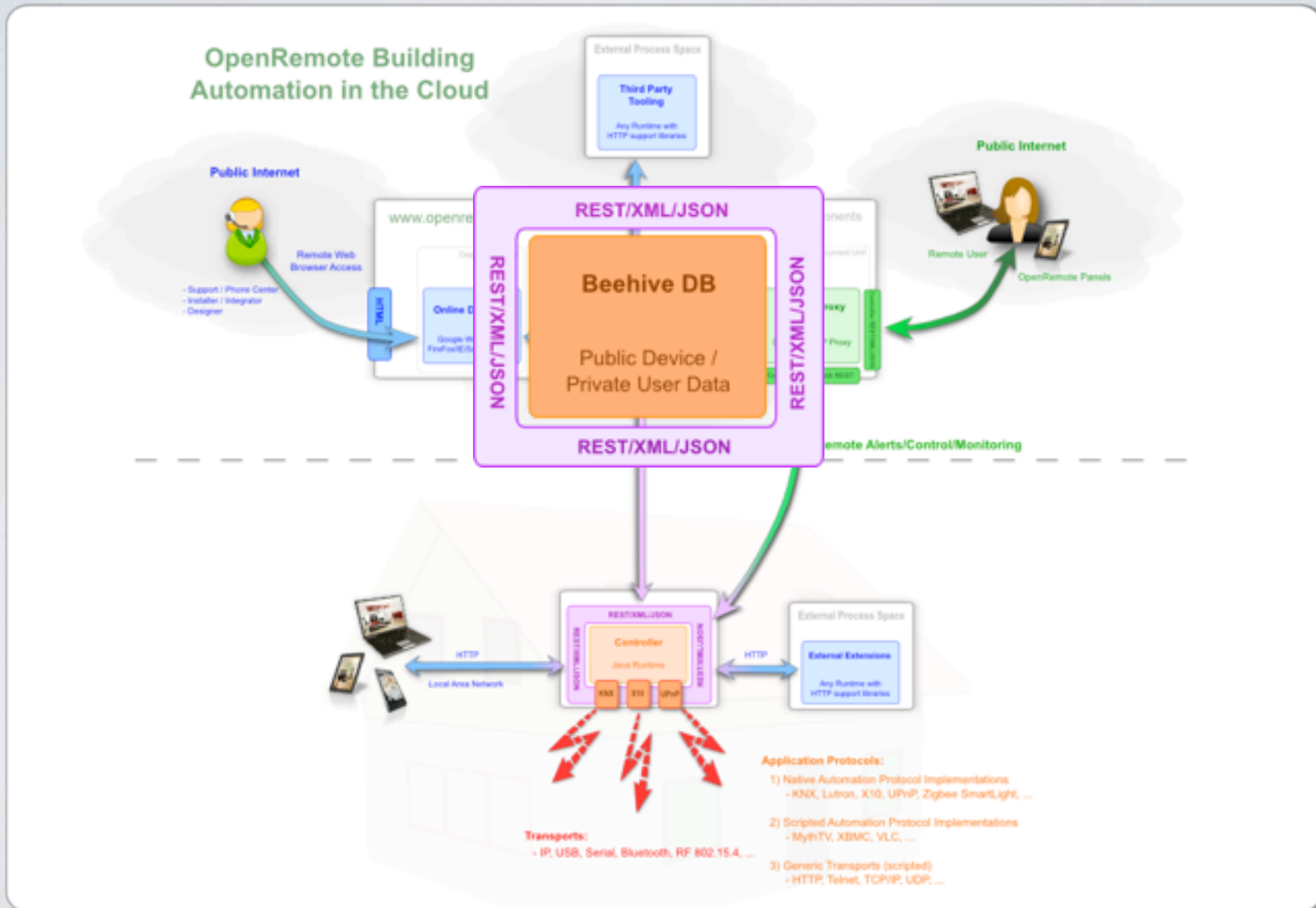
The ecosystem



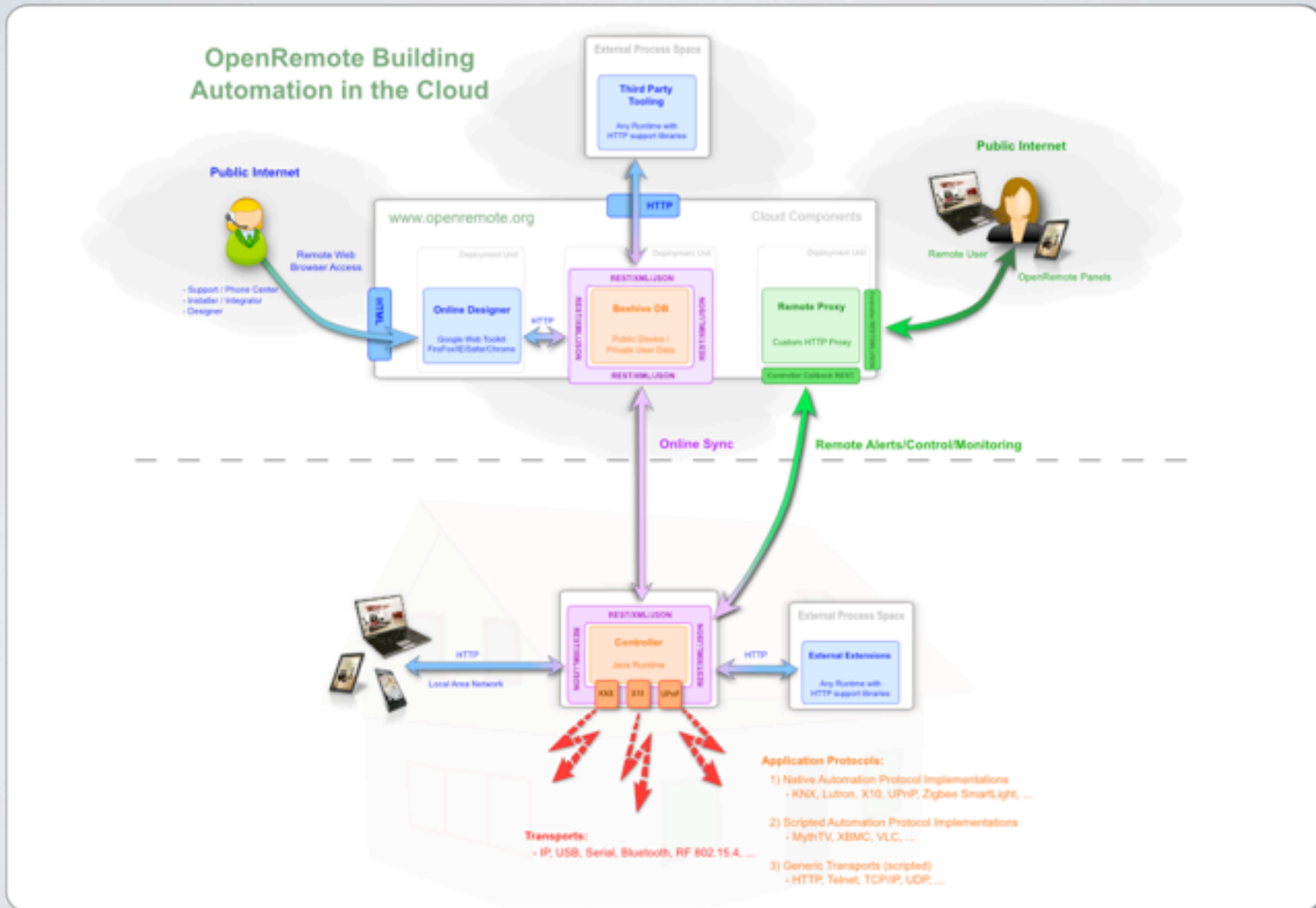
The ecosystem



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

WOL Exchange WS
X10 Infra Red
KNX
Telnet TCP HTTP
UDP Denon AVR
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

The image shows a software interface for configuring KNX devices. On the left is a tree view of the KNX system, and on the right is an 'Edit command' dialog box.

KNX Tree View:

- KNX
 - Light 1 on
 - Light 1 off
 - Light 2 off
 - Light 2 on
 - Light 2 read
 - Light 1 read
 - Light1
 - Light 1 read (KNX)
 - Light 2
 - Light 1 switch
 - Light 2 switch

Edit command Dialog:

Name: Light 1 on

Protocol: KNX

KNX attributes:

- Group Address:** 0/0/1
- KNX Command:** ON
- KNX DataPoint Type (DPT):** 1.001

Buttons: Submit, Reset

Online Designer



Online Designer Tech

Java Enterprise application

XML system description for run-time

Uses Beehive as the backend

Beehive

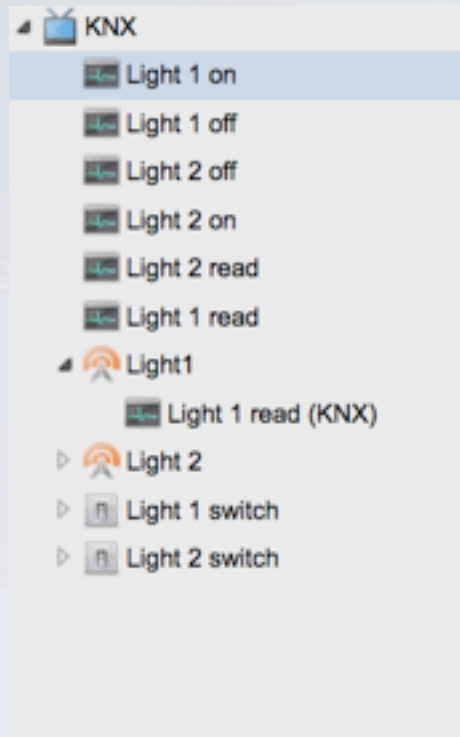
Service and storage repository

Cloud based

Access via designer

and a REST API

Control command



A screenshot of the 'Edit command' dialog box. It contains the following fields and values:

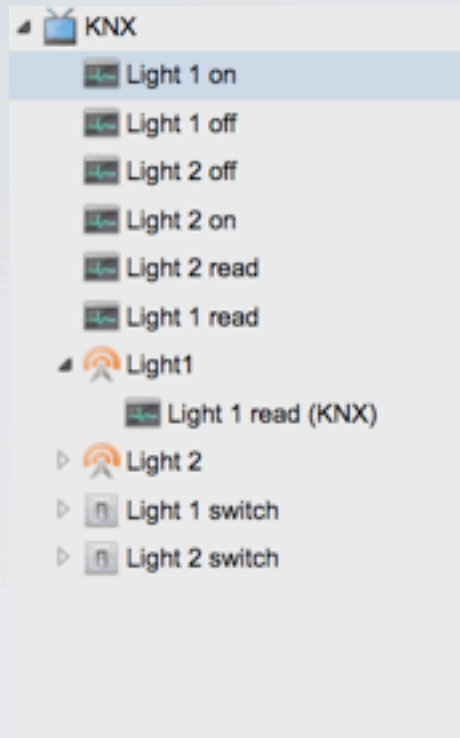
- Name: Light 1 on
- Protocol: KNX
- KNX attributes section:
 - Group Address: 0/0/1
 - KNX Command: ON
 - KNX DataPoint Type (DPT): 1.001

At the bottom of the dialog are 'Submit' and 'Reset' buttons.

controller.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

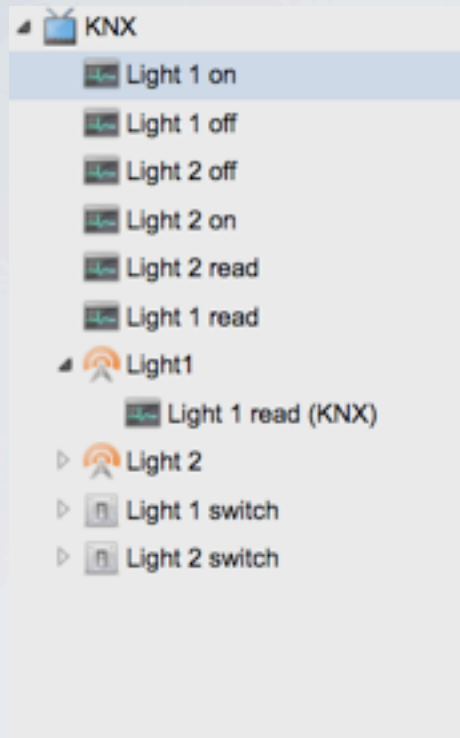


A screenshot of the 'Edit command' dialog box. The 'Name' field contains 'Light 1 on'. The 'Protocol' dropdown menu is set to 'KNX' and is circled in blue. Below it, the 'KNX attributes' section contains: 'Group Address' set to '0/0/1', 'KNX Command' set to 'ON', and 'KNX DataPoint Type (DPT)' set to '1.001'. At the bottom are 'Submit' and 'Reset' buttons.

controller.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" />
  </command>
</commands>
```

Control command

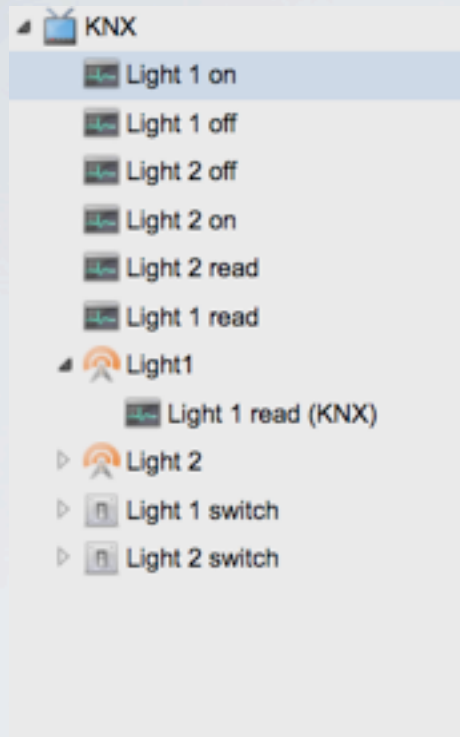


A screenshot of the 'Edit command' dialog box. The dialog has a title bar with a close button. It contains the following fields: Name (Light 1 on), Protocol (KNX), and a section titled 'KNX attributes' which includes Group Address (0/0/1), KNX Command (ON), and KNX DataPoint Type (DPT) (1.001). There are 'Submit' and 'Reset' buttons at the bottom. A blue rounded rectangle highlights the 'KNX attributes' section.

controller.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" />
  </command>
</commands>
```

Control command



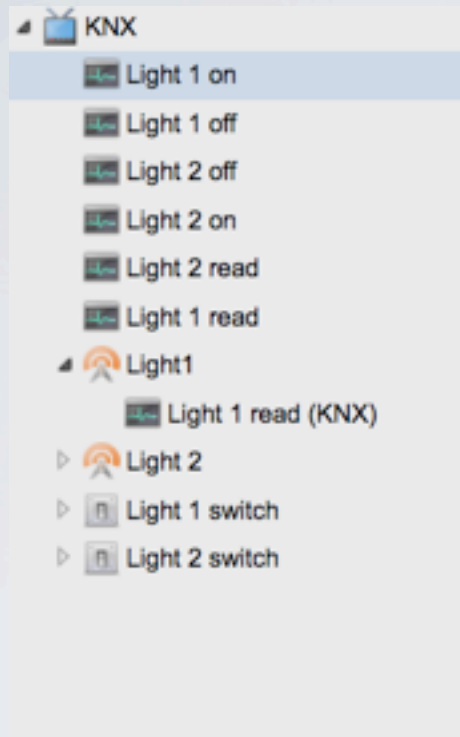
A screenshot of the 'Edit command' dialog box. The dialog has a title bar with a close button. It contains the following fields and controls:

- Name: Light 1 on
- Protocol: KNX (dropdown menu)
- KNX attributes section (bordered box):
 - Group Address: 0/0/1
 - KNX Command: ON
 - KNX DataPoint Type (DPT): 1.001
- Submit button
- Reset button

controller.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" />
  </command>
</commands>
```

Control command

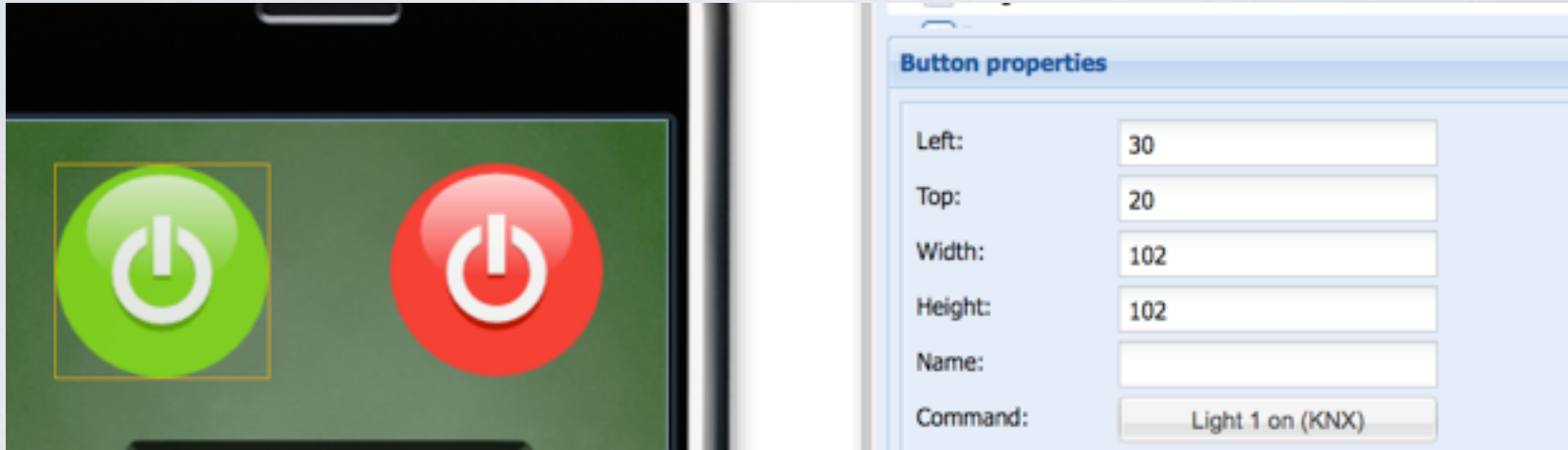


A screenshot of the 'Edit command' dialog box. The dialog has a title bar with a close button. It contains the following fields: Name (Light 1 on), Protocol (KNX), a section titled 'KNX attributes' containing Group Address (0/0/1), KNX Command (ON), and KNX DataPoint Type (DPT) (1.001). At the bottom are 'Submit' and 'Reset' buttons.

controller.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" />
  </command>
</commands>
```

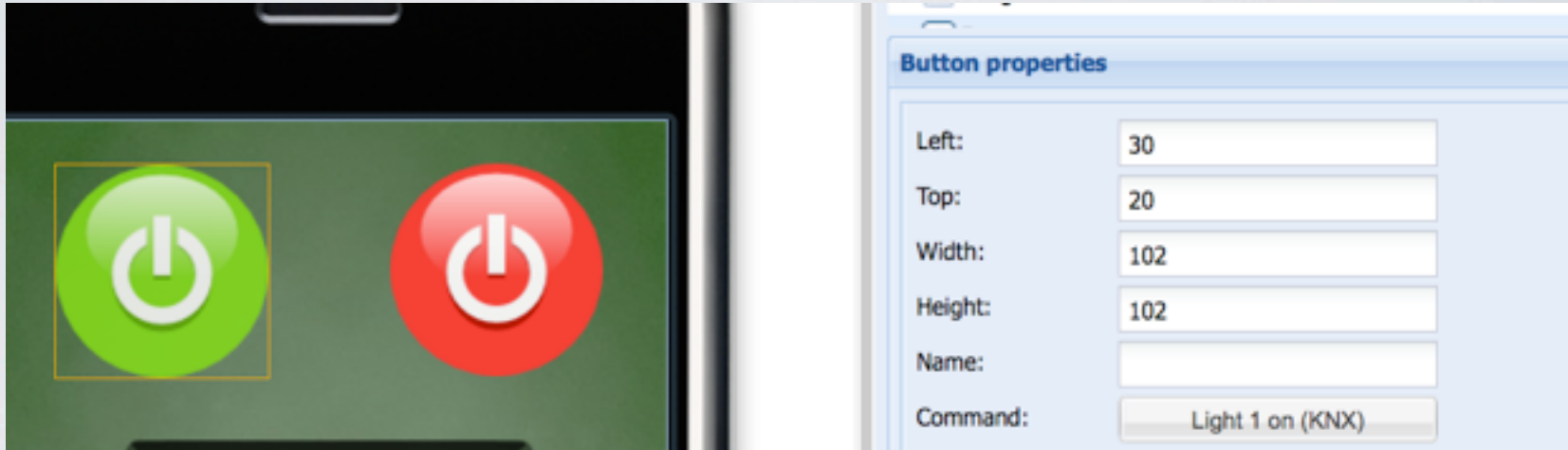
Control command



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" />
    </default>
  </button>
</absolute>
```

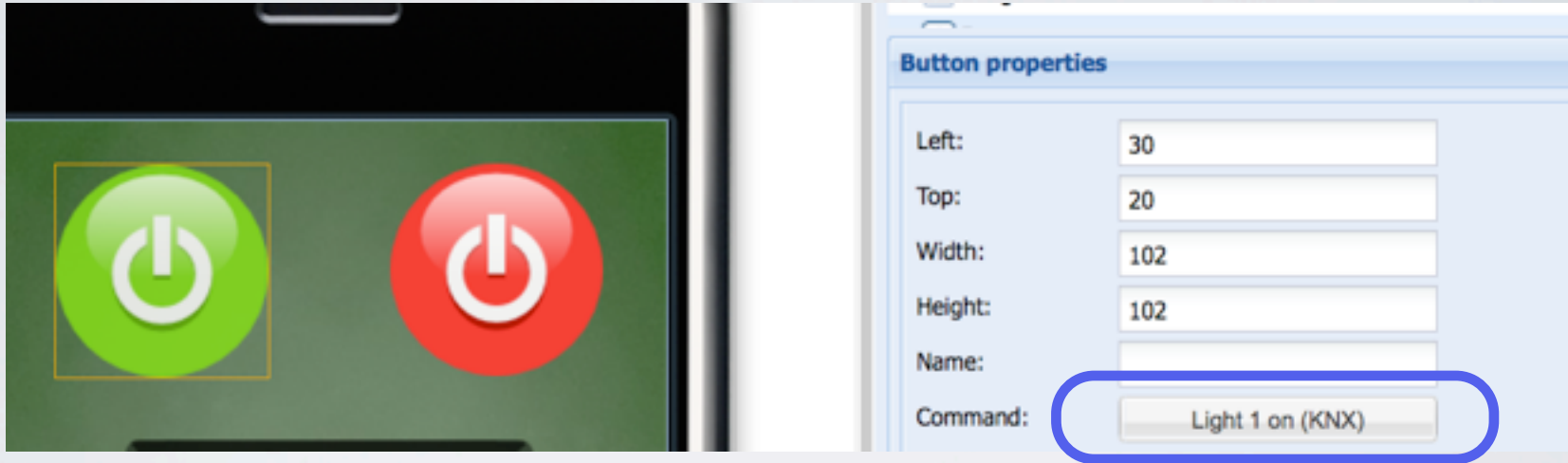
Control command



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" />
    </default>
  </button>
</absolute>
```

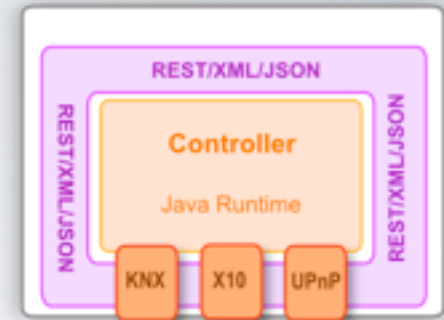

Control command



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>
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  <button id="42" name="" hasControlCommand="true">
    <default>
      <image src="PowerOff1320939062377.png" />
    </default>
  </button>
</absolute>
```

Control API



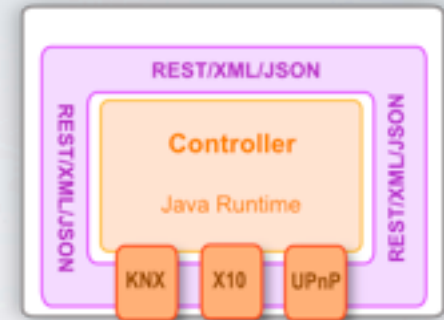
controller.xml

```
</button>
</button>
<button id="8" />
<button id="40">
  <include type="command" ref="46" />
</button>
<button id="12">
  <include type="command" ref="46" />
</button>
</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" />
</command>
```

Control API



/rest/control/40/click



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

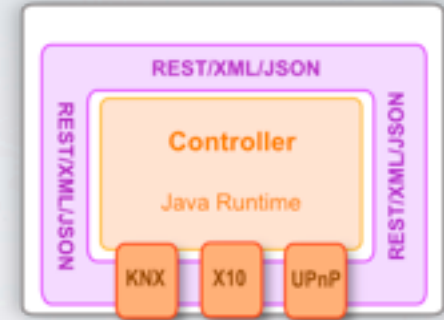
controller.xml

```
<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

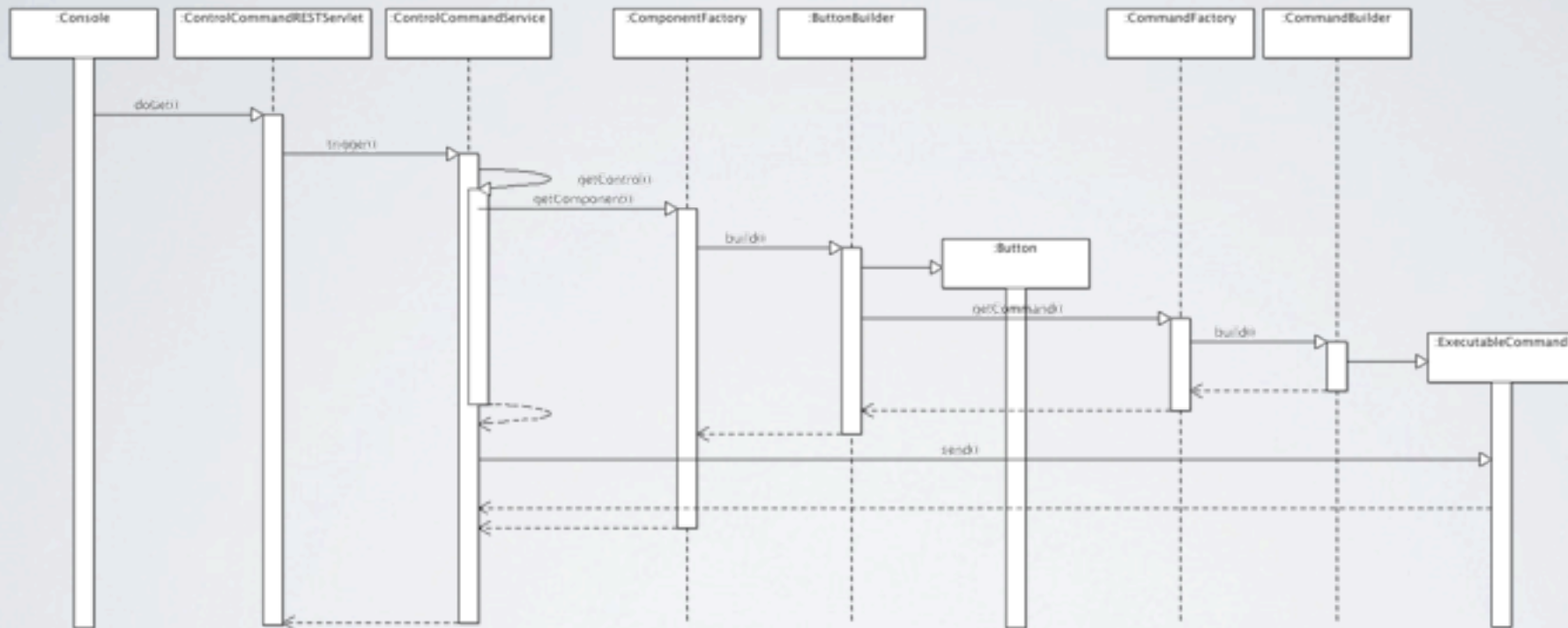


```
</button>  
<button id="40" />  
<button id="40">  
  <include type="command" ref="46" />  
</button>  
<button id="12">  
  <include type="command" ref="46" />
```

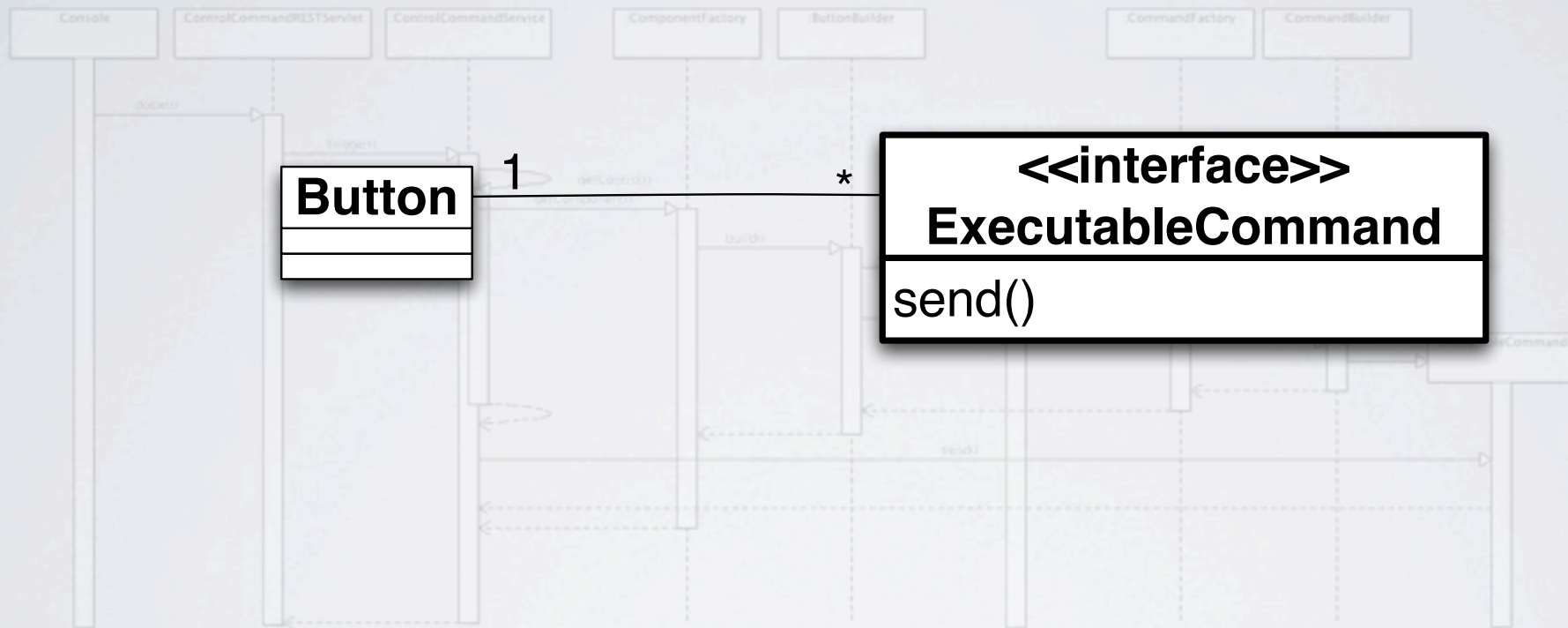
controller.xml

```
<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" />
```

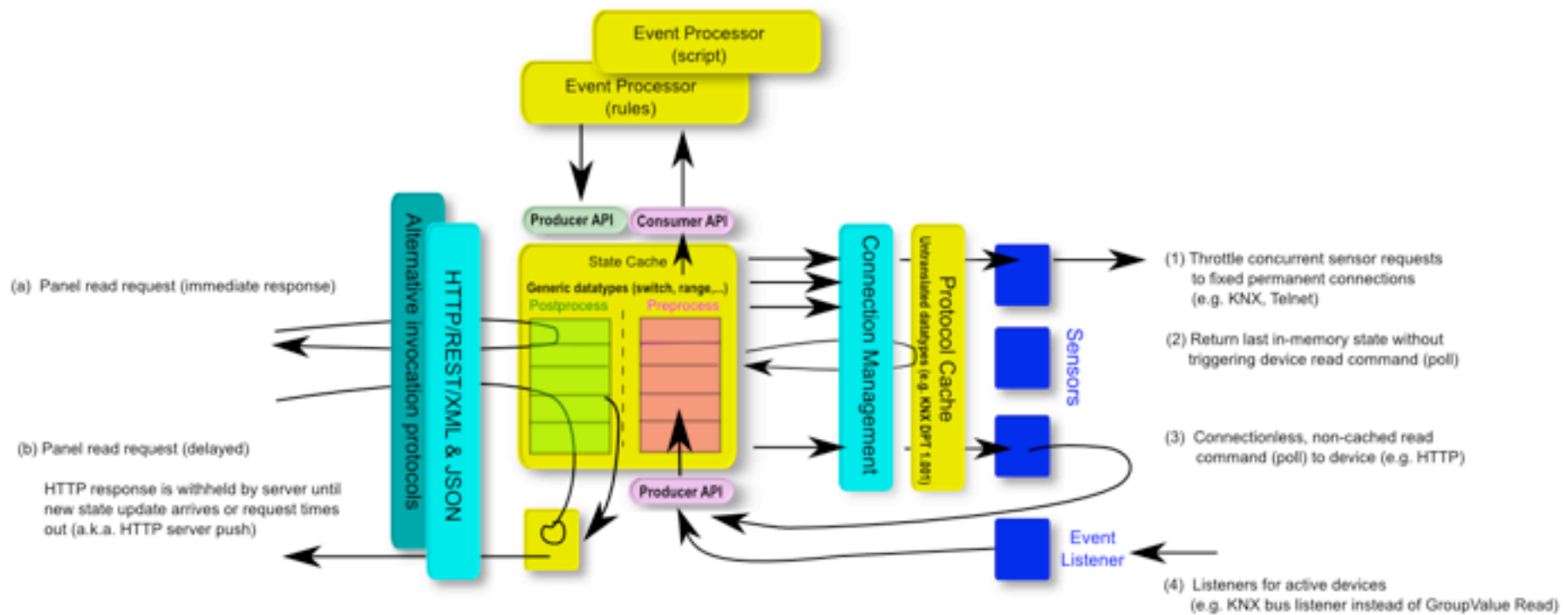
ORB details



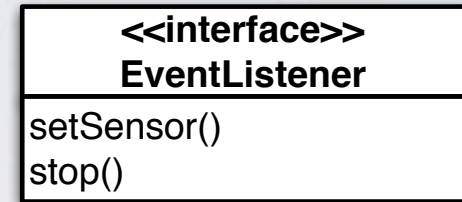
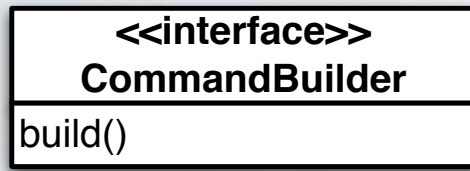
ORB details



Read Command Flow



Protocol implementation



Community

Fantastic platform for hobbyists

Active open source community

Community has many professionals

THANK YOU

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