Reatha

[*gaelic*: current, up-to date]

Idea,

Features,

Use-Cases,

Specification Draft,

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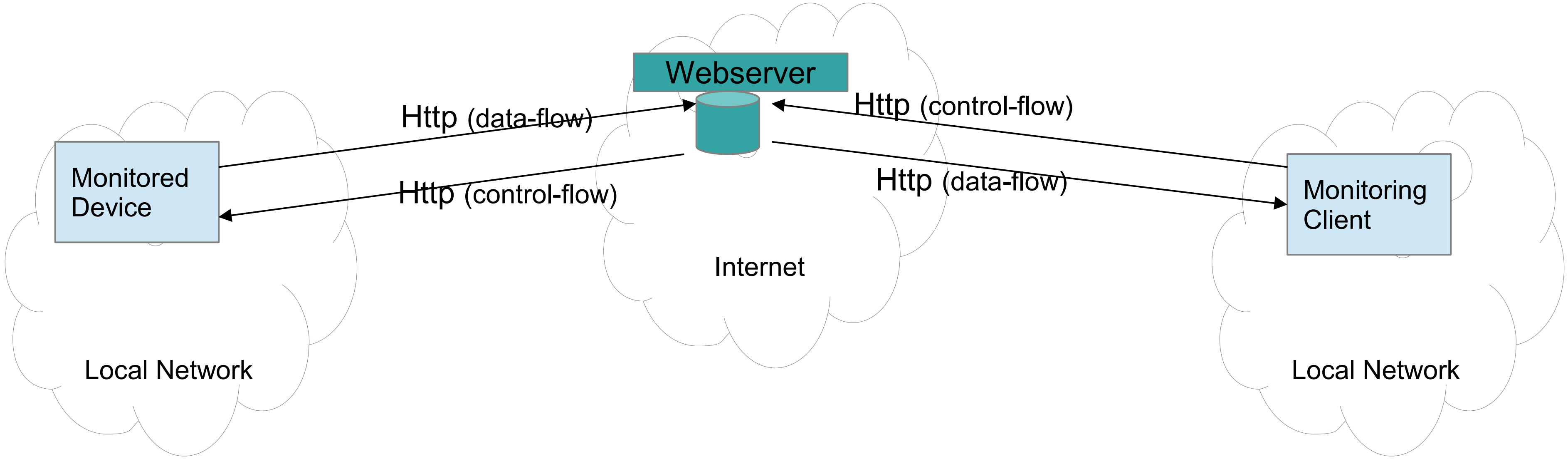
Idea

Basic idea: Remote monitoring of any device, e.g. refrigirators, production lines, alarmin systems, home automation systems, labor equipment, servers, etc.

Webserver is used as a proxy between the monitored device and monitoring client.



Architecture

Basic abstractions:

Domain – Similar to subdomain of a website. Logical separation of one company/project/device having it's own users, devices, look&feel

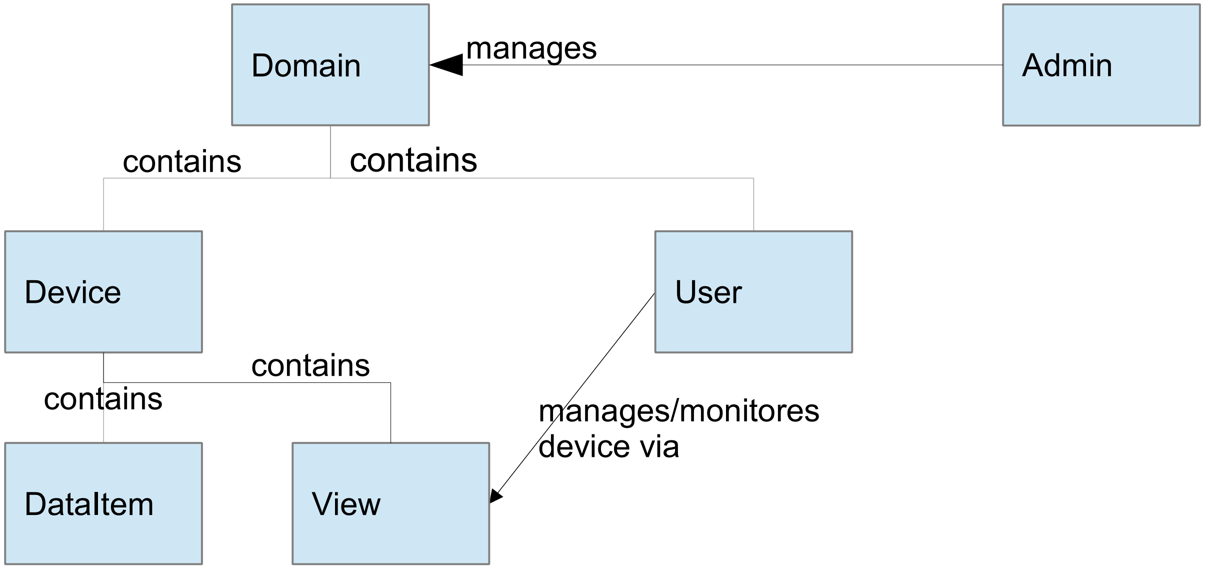
Admin – user with privilegs for managing domains,

User – User able monitor devices, configure notifications, etc. within one domain

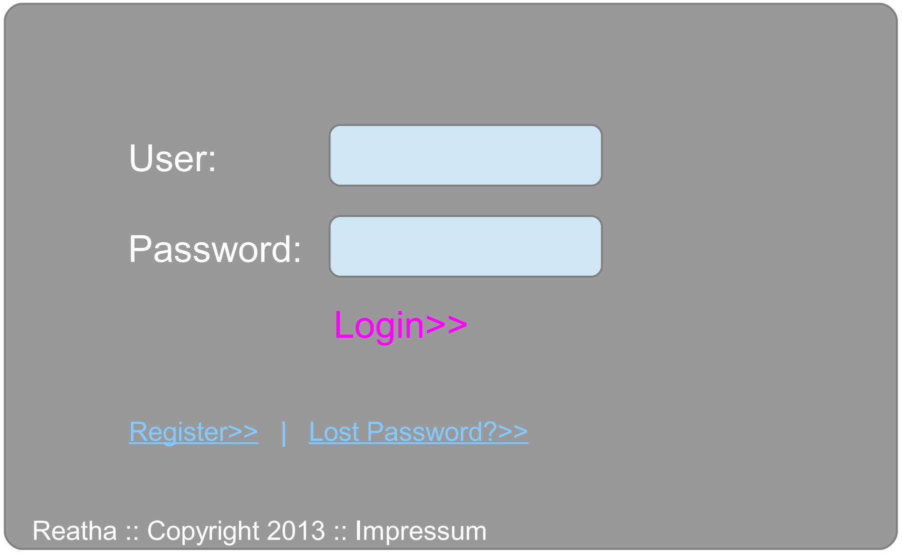
Device – Logical configuration- and data area for one real device located anywhere in the world.

DataItem – Data structure for one process-variable (Current value, Timestamp, Min/Max, etc.)

View – UI for monitoring/managing Device by user



Login


User:
Password:
Login>>
Register>> | Lost Password?>>
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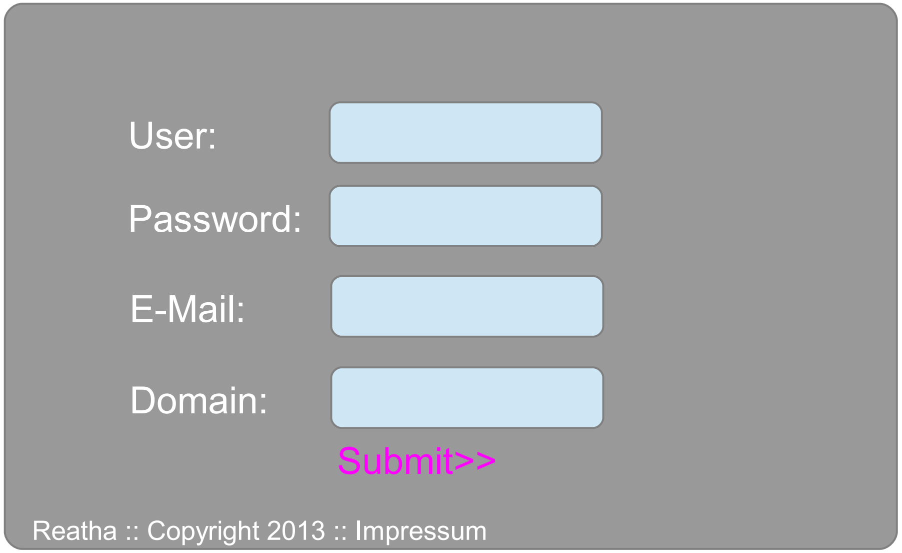
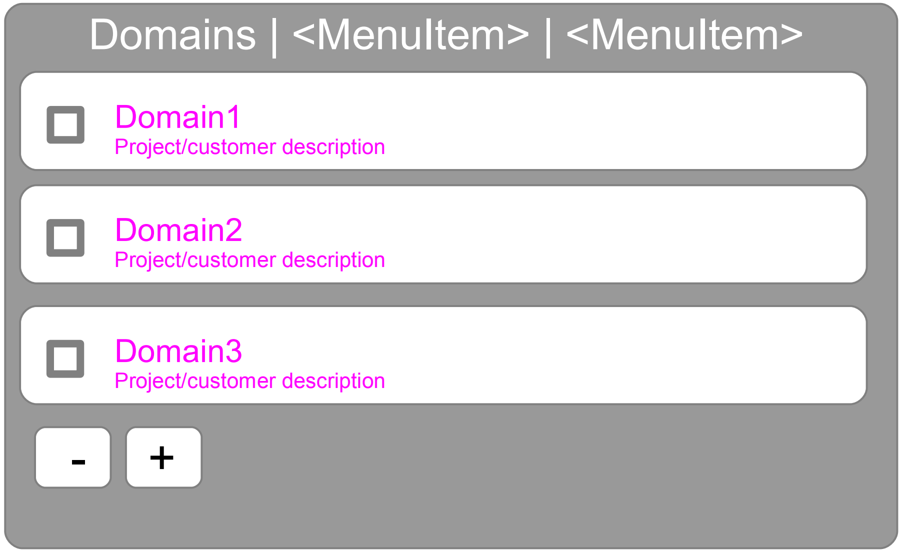
Login UI is the same for all domains. After logging in, the user should see only domain-views for which she has privilegs.

Registering



Users applying for registration should know the domain, they are assigned to and provide it to the registration form.

Admin Login



□ Domain1
Project/customer description

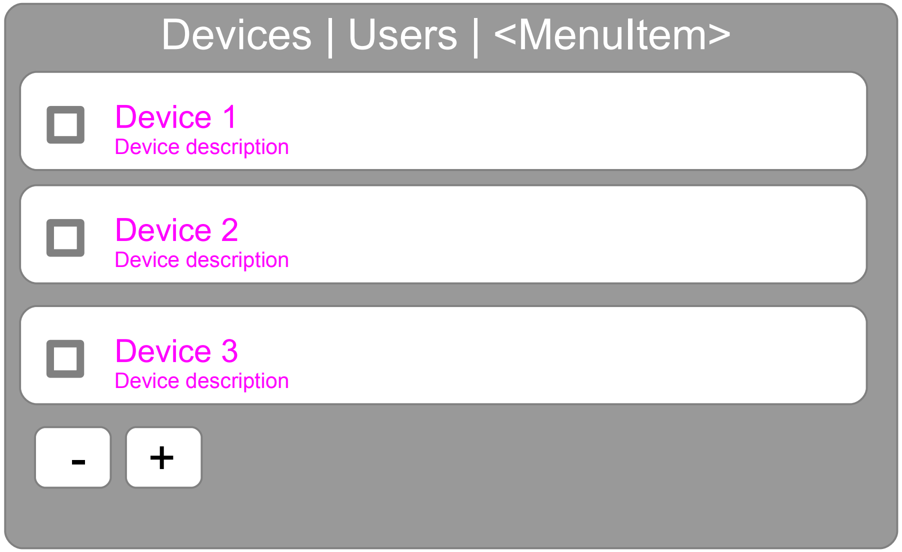
□ Domain2
Project/customer description

□ Domain3
Project/customer description

Admin manages domains and domain-admins. Admin has no privilegs for managing devices or domain-users

Domain-Admin Login

Device list



□ Device 1
Device description

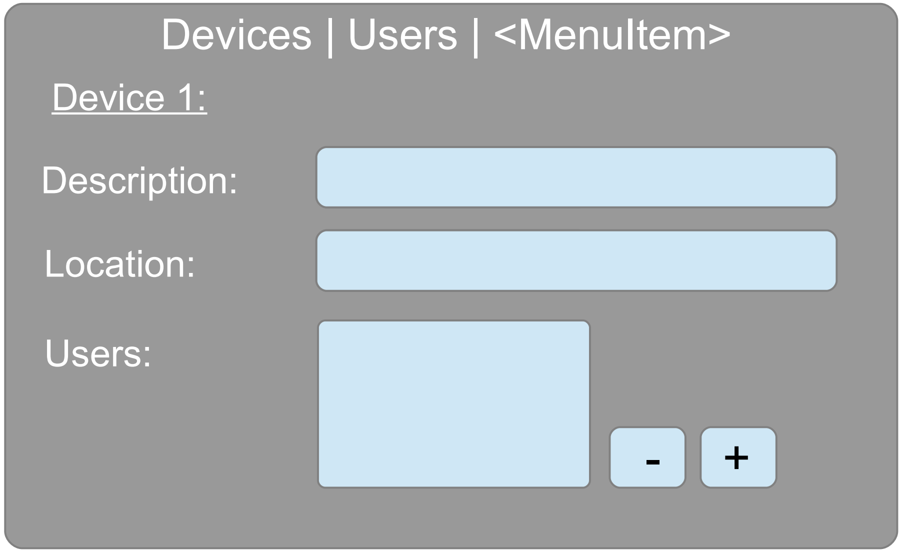
□ Device 2
Device description

□ Device 3
Device description

Domain-Admin manages devices and assigns users to devices

Domain-Admin Login

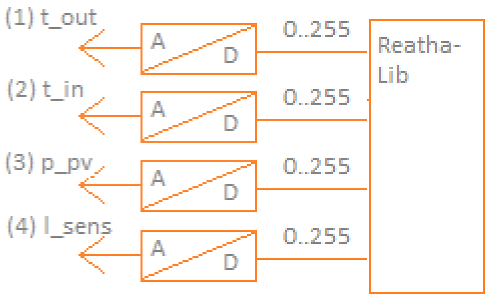
Device Configuration

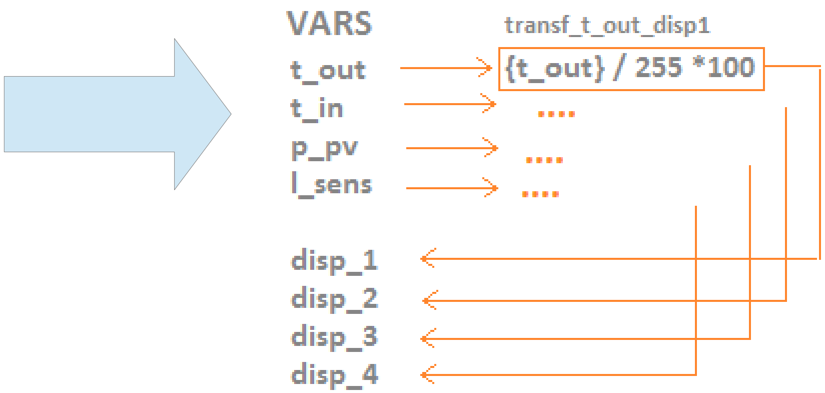


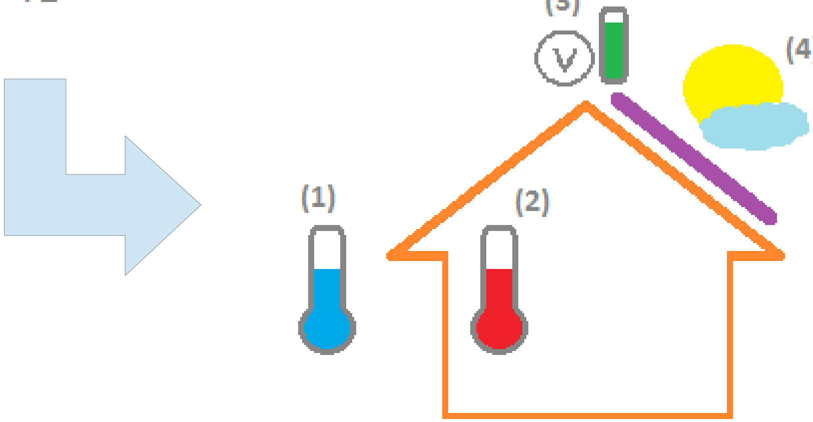
Domain-Admin manages devices and assigns users to devices

Data and Views

Variables and Transformations







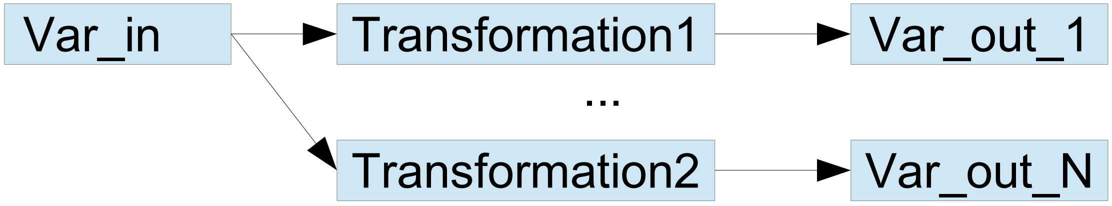
Let's take as example a home automation system. One subset of the variables in such a system could reflect tempeature and power related data tapped from sensors. Unfortunatelly, the client doesn't know, how the data should be displayed. So, „raw“ value from A/D conversion are sent to Reatha server as variables t_out, t_in (for inside/outside temperatures), p_pv (power of photovoltaics), l_sens (light sensor).

A ***transformation*** makes some operation on a given variable and stores the result in another variable. For instance scales the value to max scale of 100(%).

Data and Views

Rules for Transformations

Transformations scale, map or make any other conversion on the device-variables for making them suitable to use in views



Var_in

Transformation1

Var_out_1

...

Transformation2

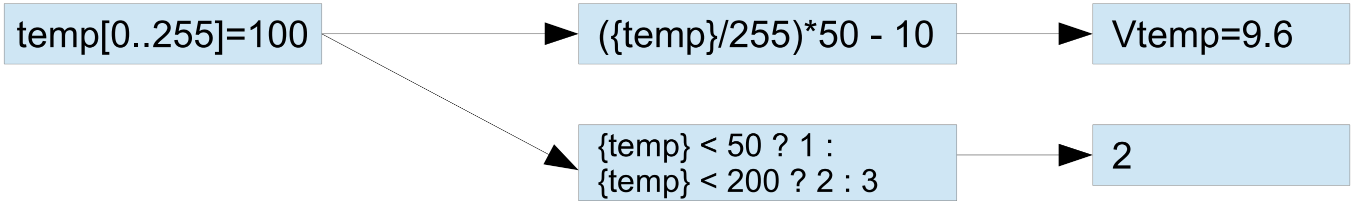
Var_out_N

Transformation may be triggered by any variable delivered from device

One device-variable may trigger many transformations

The result of transformation may be stored in any variable, but this change f out-variable shouldn't
trigger further transformation

Example:



temp[0..255]=100

({temp}/255)*50 - 10

Vtemp=9.6

{temp} < 50 ? 1 :
{temp} < 200 ? 2 : 3

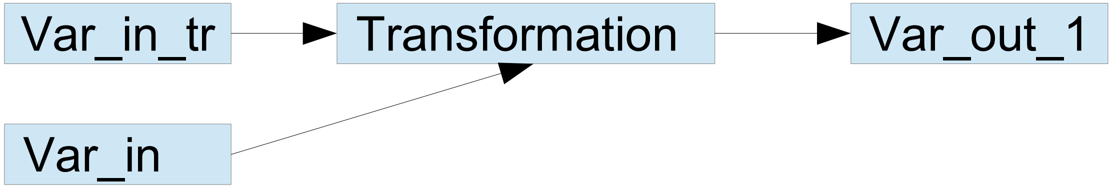
2

Mapping A/D value to scale -10°..40°

Not linear mapping to
1 (below 0°),
2 (0°-30°)
3 (above 30°)
The output value bay be used e.g.
for switching an icon

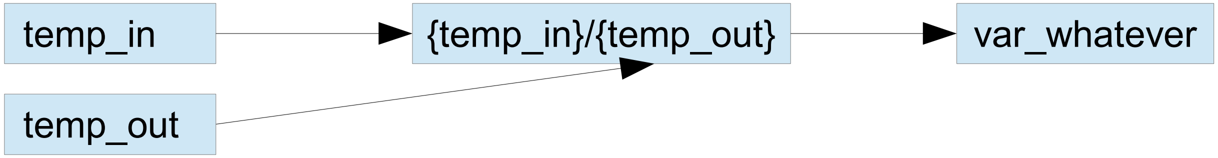
Data and Views

Rules for Transformations (continued)



Transformation is triggered by only one variable but may use any orbitrary variables in term.

Example:



Data and Views

View-Rules

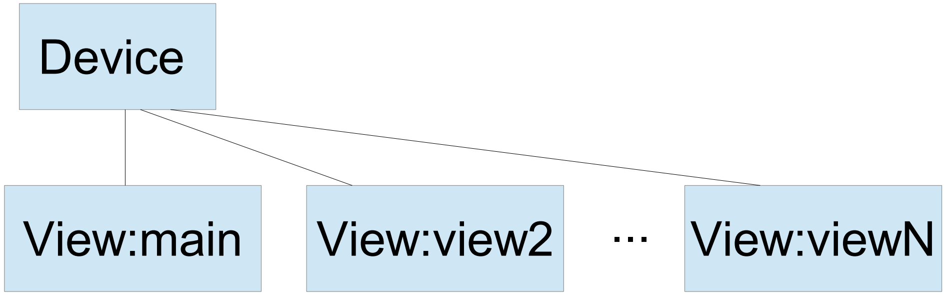
A **view** defines how the device-data or a subset of device-data is displayed to the user.

One device may have many views

The views have names, which may be used current view-placeholders

The views are chunks of html having placeholders. The placeholders are replaced by appropriate values, before the view is rendered in browser.

The user gets “main“ view at the beginning. If no view is defined, the user can't go to device's view from device-list. The device is only displayed as devices-list entry in this case.



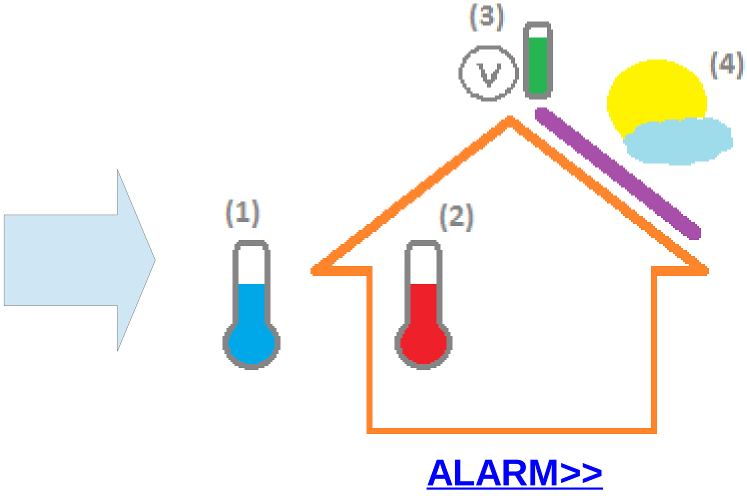
Data and Views

View-Rules - Example

Attention, this example shows pseudo HTML-code, especially concerning positioning.

View:main

```
<div class=“background“ img=“{:domain}/house.png“>
  <div class=“termometer“ x=“0“ y=“200“ value=“{disp1}“ />
  <div class=“termometer“ x=“100“ y=“200“ value=“{disp2}“ />
  <div class=“powerview“ x=“150“ y=“0“ value=“{disp3}“ />
  <div class=“sunicon“ x=“200“ y=“20“ value=“{disp4}“ />
</div>
<a href=“{::alarm}“ />ALARM&gt&gt;</a>
```



The example shows, how a view may be defined.

The names in {} are placeholders, which should be replaced by appropriate values:

{:<name>} - placeholder for domain path. May be used to reference images

{::<name>} - placeholder for views. May be used to change view.

{<name>} - placeholder for variables