Taming the Nashorn to Rule the Smart Home

Kai Kreuzer, Deutsche Telekom AG
Developer Evangelist Connected Home

The Ancient Home

https://www.flickr.com/photos/spcbrass/4744175365

The Classical Home

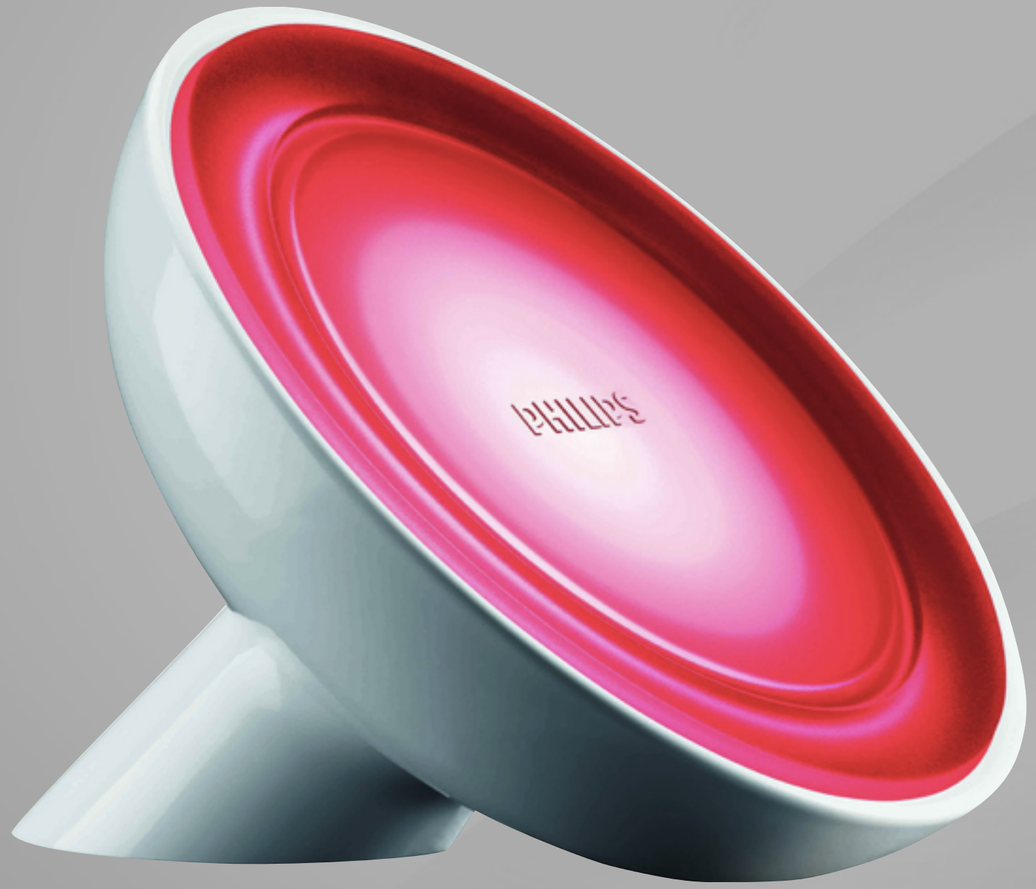
https://www.flickr.com/photos/brunkfordbraun/330793963

The Cowardly Automated Home

https://commons.wikimedia.org/wiki/File:Toggleswitch.PNG

https://www.flickr.com/photos/greenenergyfutures/8577731134

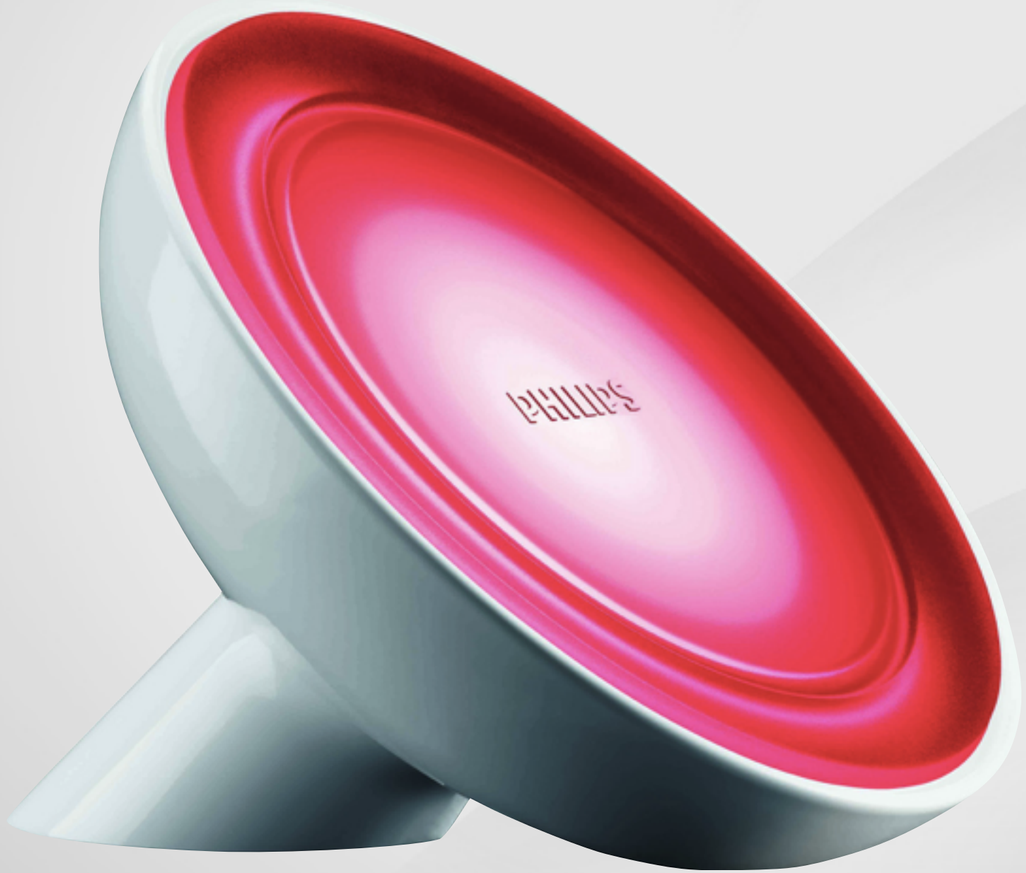
The Smart Marketed Home



https://www.flickr.com/photos/philips_newscenter/9659169599

https://commons.wikimedia.org/wiki/File:Iphone_4G-3_grey_screen.png

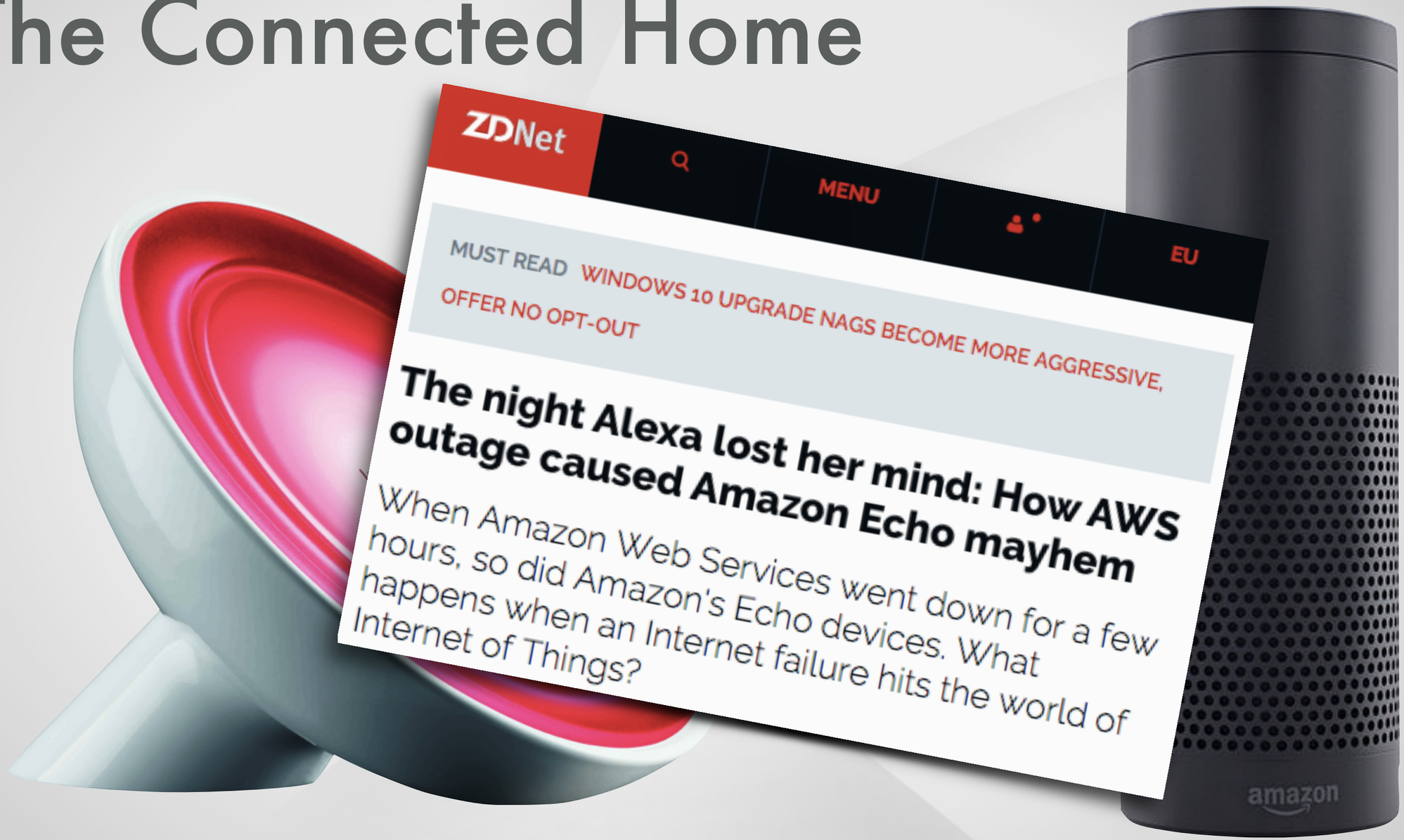
The Connected Home



https://www.flickr.com/photos/philips_newscenter/9659169599

https://en.wikipedia.org/wiki/File:Amazon_Echo.jpg

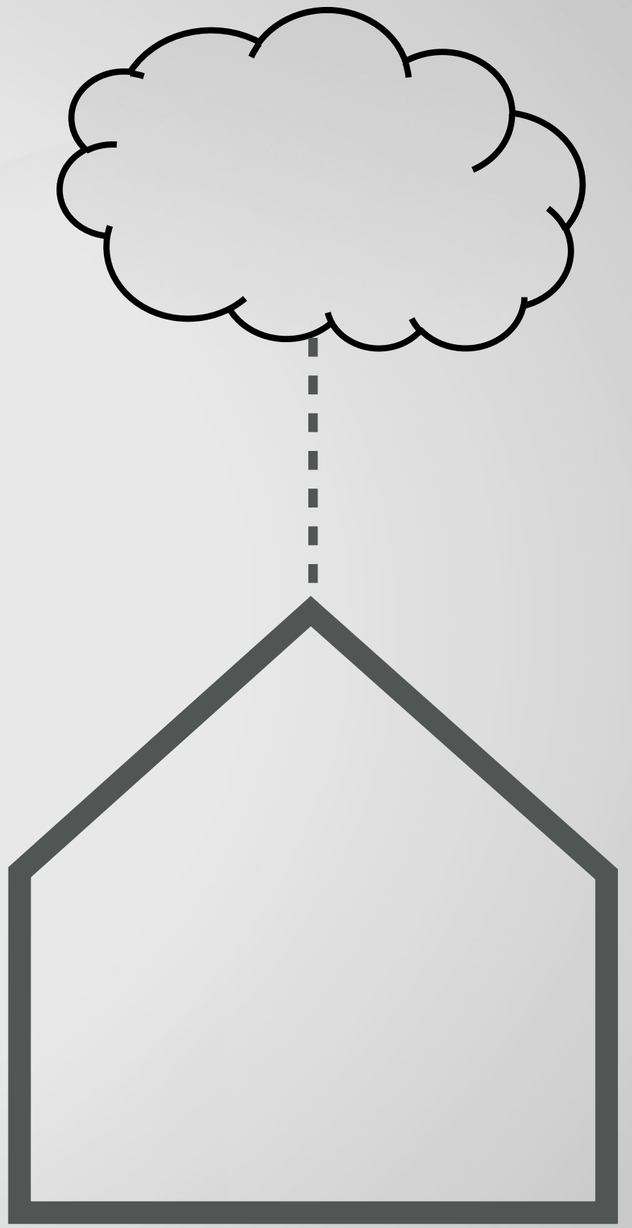
The Connected Home



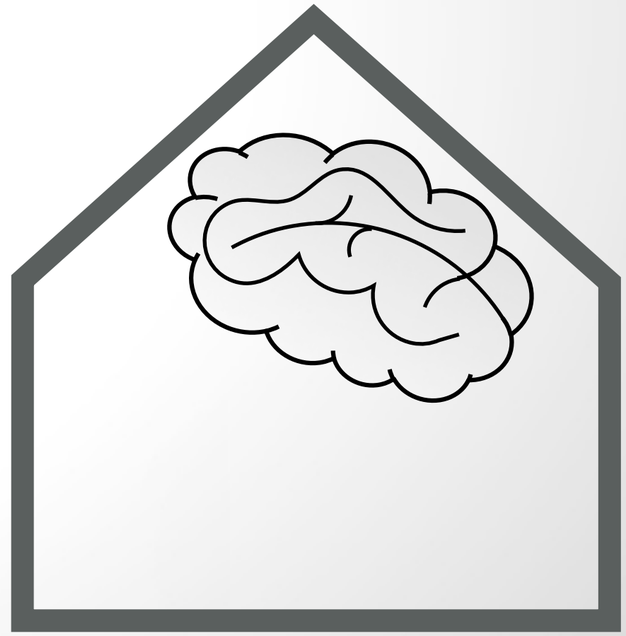
https://www.flickr.com/photos/philips_newscenter/9659169599

https://en.wikipedia.org/wiki/File:Amazon_Echo.jpg

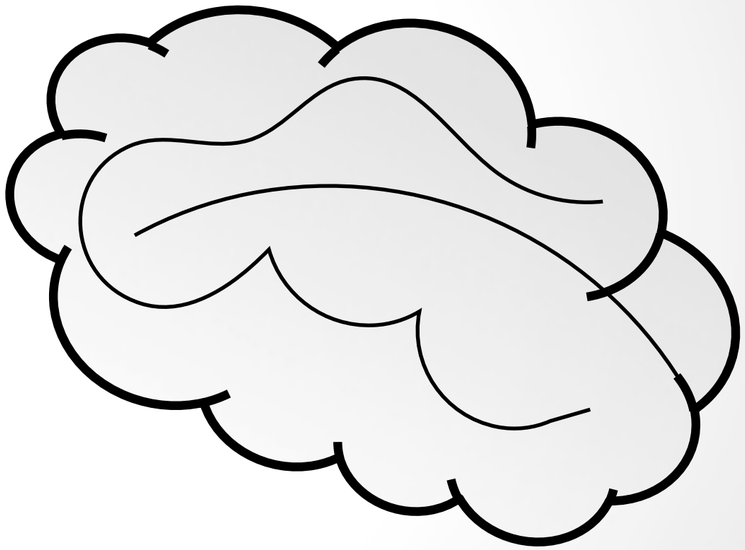
CONNECTED HOME



SMART HOME



The Smart Home



https://www.flickr.com/photos/philips_newscenter/9659169599

The Smart Home

https://www.flickr.com/photos/philips_newscenter/9659169599

The Smart Bedroom

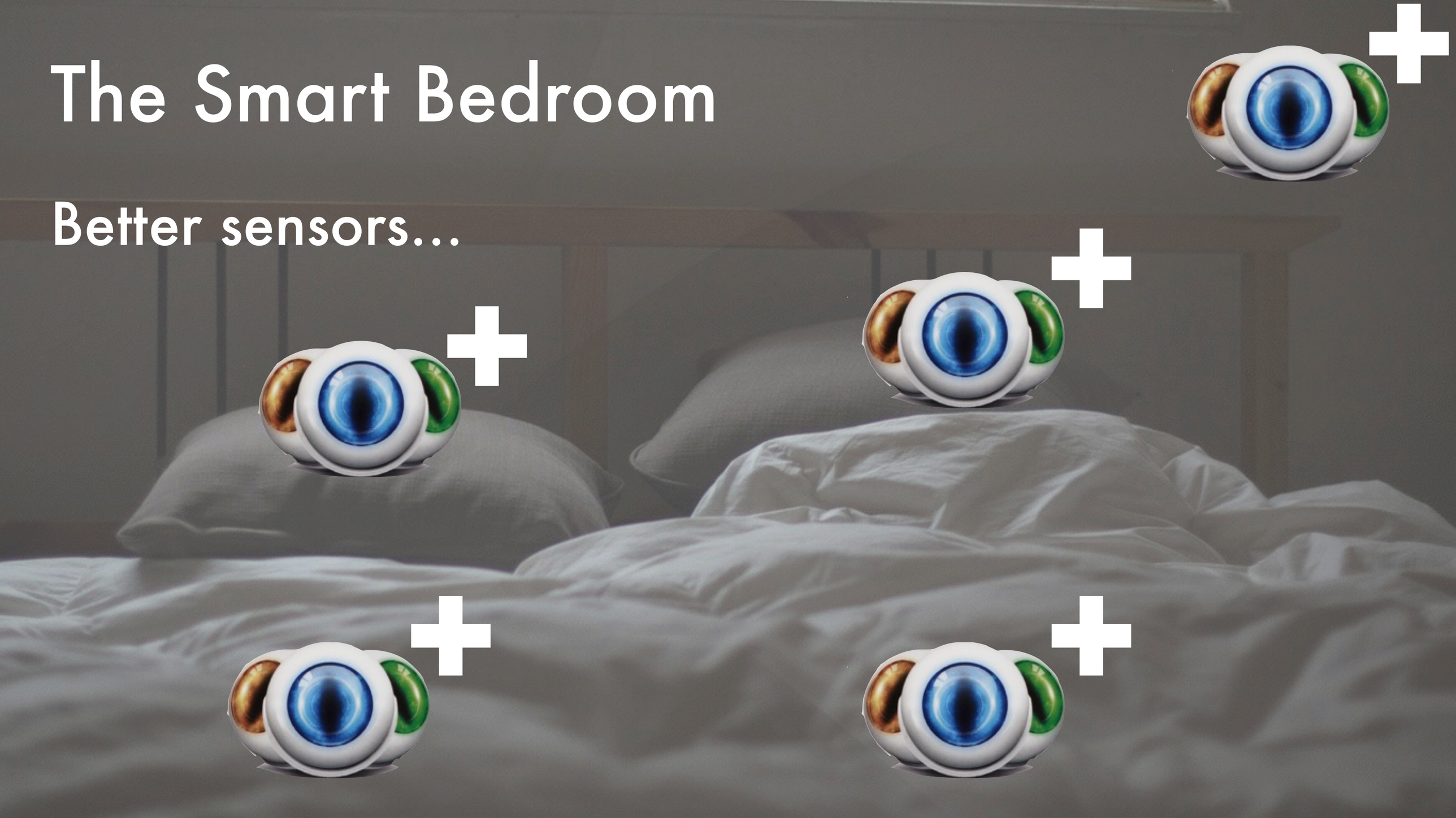
The Smart Bedroom

The Smart Bedroom

More sensors…

The Smart Bedroom

Better sensors...



The Smart Bedroom

Mind reading…

Scott Jenson, Google

EASY PROBLEM

HARD PROBLEM

Moravec's paradox

„It is comparatively easy to make computers exhibit adult level performance on intelligence tests or playing checkers, and difficult or impossible to give them the skills of a one-year-old when it comes to perception“

The Smart Thermostat

https://www.flickr.com/photos/nest/6265389742

nest

The Smart Thermostat

Most helpful critical review

See all 253 critical reviews ›

1,608 of 1,780 people found this helpful

Another frustrating gadget I wish I did not buy

By Amazn Shopper on Ma 28, 2012

I was very excited about t
frequently travel in winter
temperature remotely via
Most stats that can do t
can do without.
Like others mentioned
all top notch and puts oth
At least for me. Before you

The auto-programming is ineffective. Over many months of using my Nest, it started getting less and less smart.

Eventually, I disabled the learning and just program it manually because it is much faster and more predictable and gives me no surprises

Learning from a Learning Thermostat: Lessons for Intelligent Systems for the Home

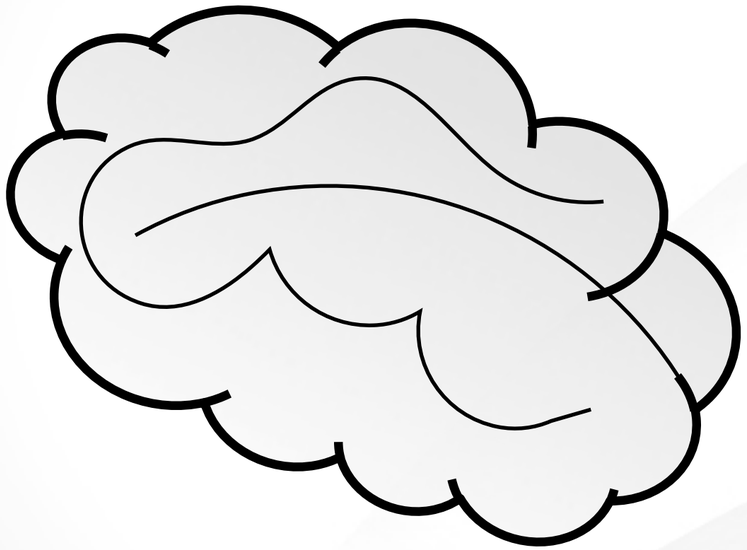
Rayoung Yang and Mark W. Newman
School of Information
University of Michigan
Ann Arbor, MI 48109 USA
{rayang, mwnewman}@umich.edu

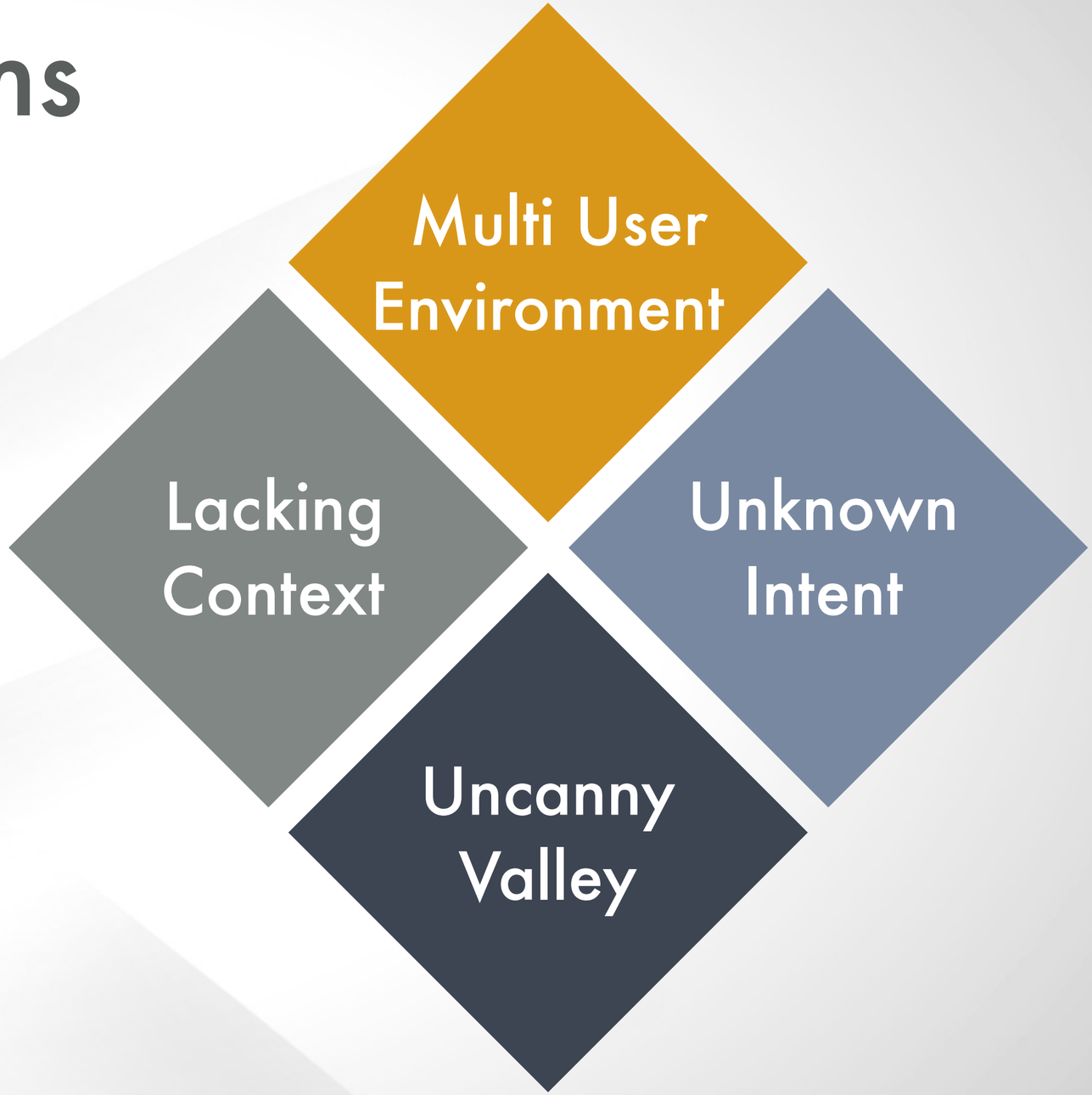
The learning system fails to understand user intent

„ It makes assumptions, and I don't like the assumptions, and I can't train it to make different assumptions. I feel like I've lost control over it.“

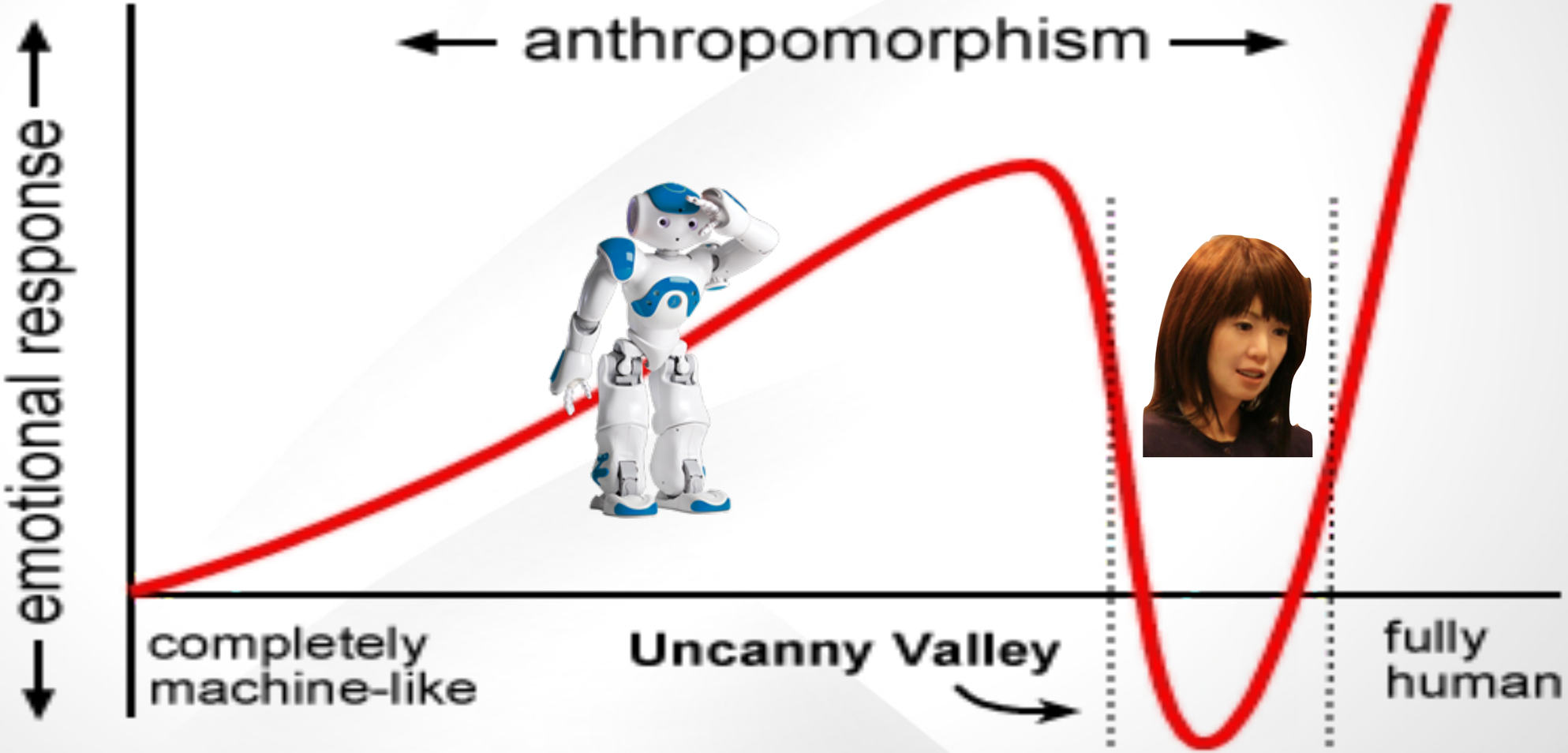
Once several participants realized the Nest's machine learning limitations, they changed the way they interacted with it.

The Smart Problems

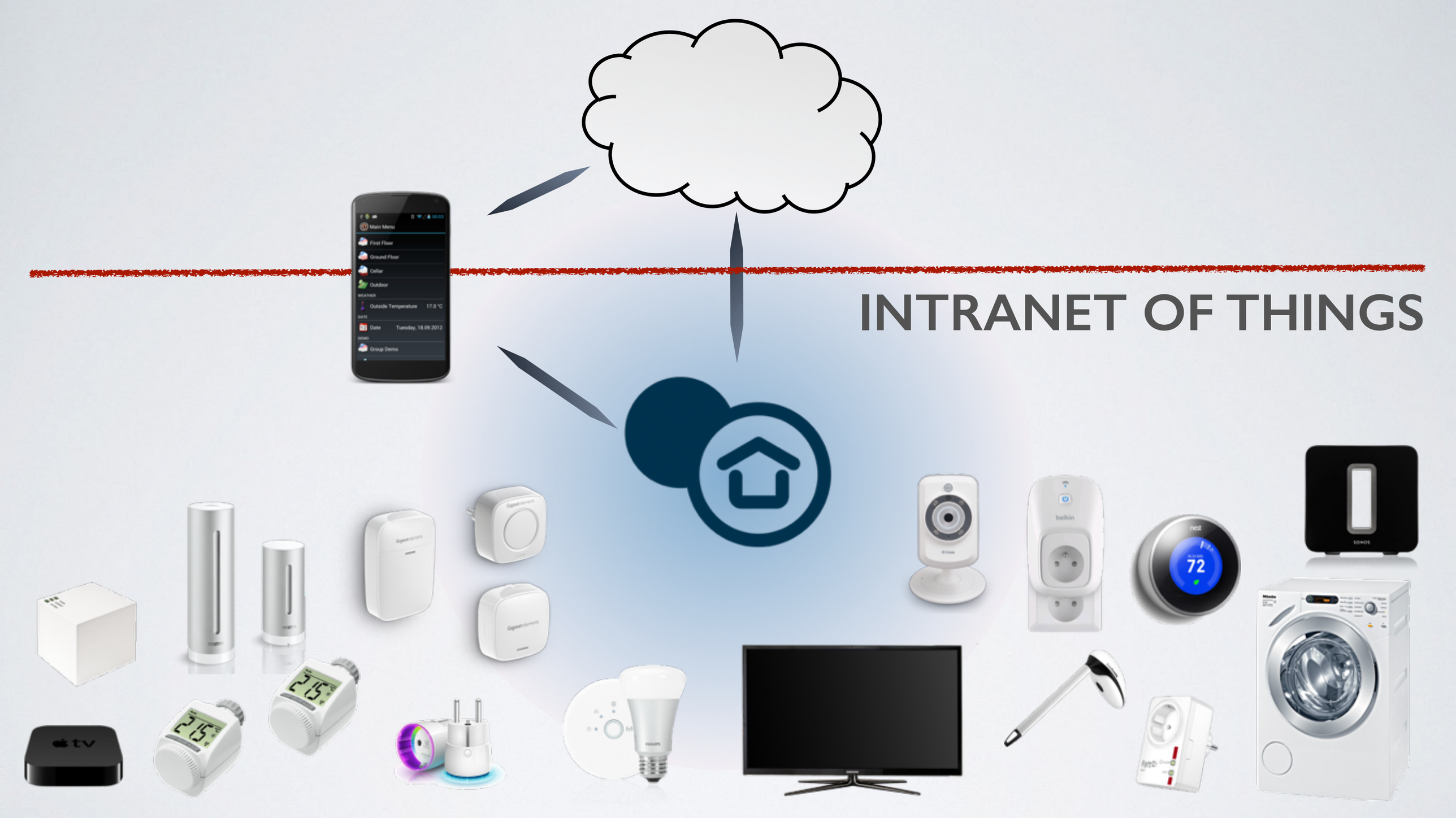




The Uncanny Valley



https://commons.wikimedia.org/wiki/File:Wpdms_fh_uncanny_valley_3.jpg


Main Menu
First Floor
Ground Floor
Cellar
Outdoor
WEATHER
Outside Temperature 17.0 °C
DATE
Date Tuesday, 18.09.2012
DEMO
Group Demo
INTRANET OF THINGS
belkin
nest
72
SONOS
Miele
apple tv

The Pragmatic Automation

Let the user dictate the rules

Don't try to be more clever than your users

Be predictable

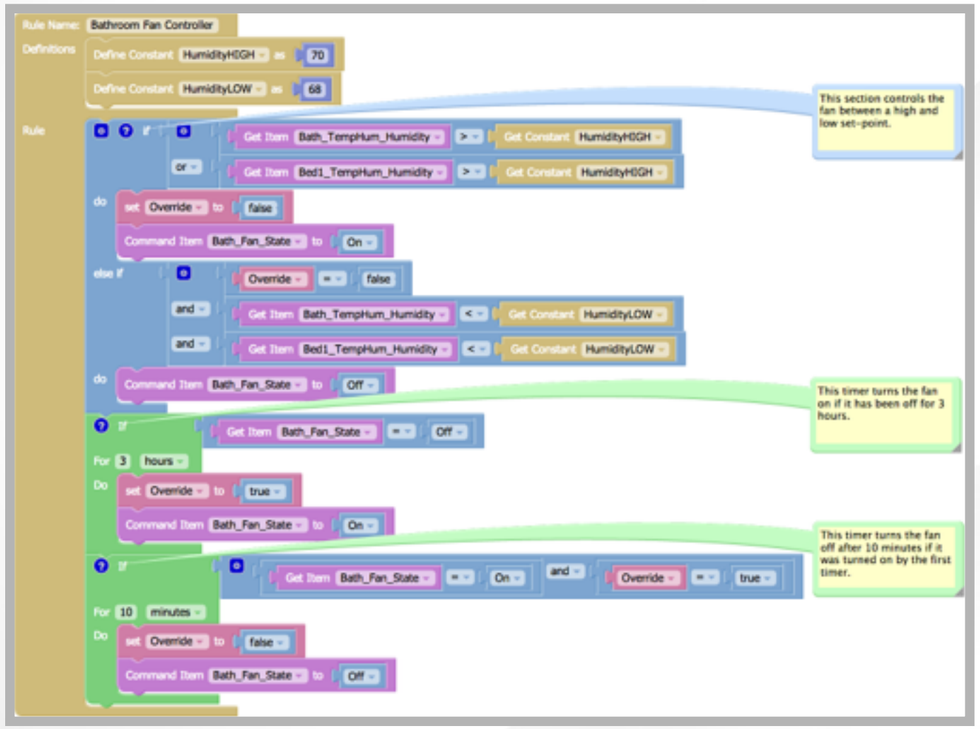
Let the user overrule you

Hide complexity from the user

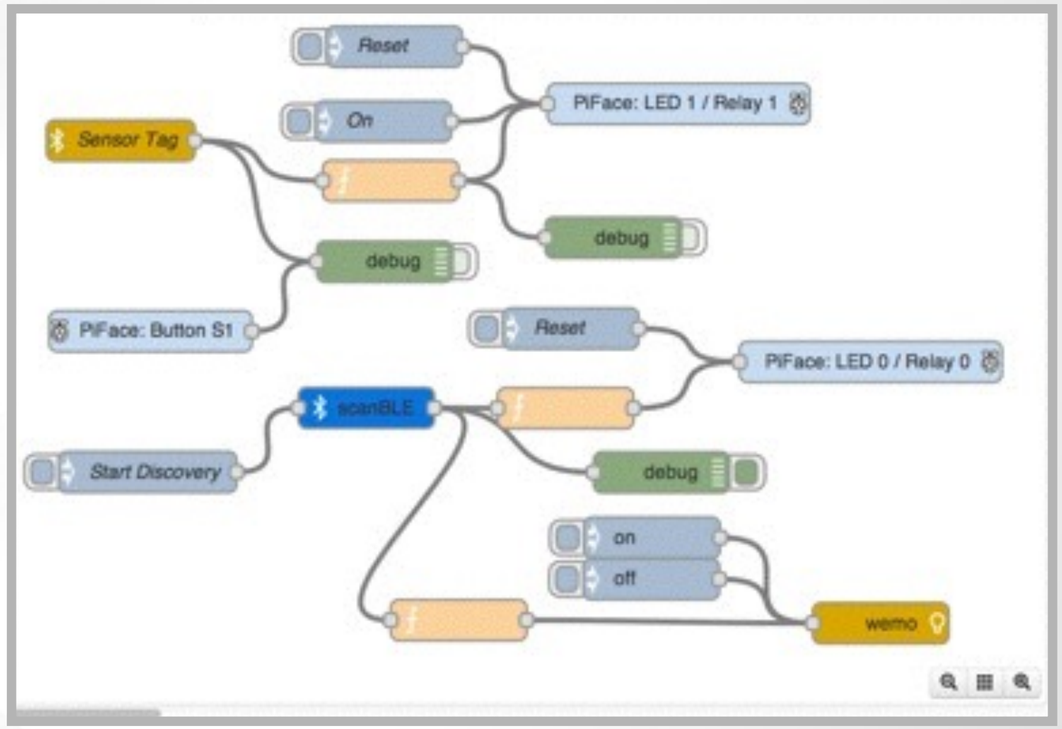
The Pragmatic Automation - Scripting

```
import org.openhab.core.library.types.*
import org.openhab.model.script.actions.*
import java.lang.String

rule "Humidity Monitor"
when Time cron "0 * * * * ?"
then
        var prevHigh = 0
        var highHum = ""

        Humidity?.members.forEach[hum|
                logDebug("humidity.rules", hum.name);
                if(hum.state as DecimalType > prevHigh){
                        prevHigh = hum.state
                        highHum = hum.name + ": " + hum.state
                }
        ]
    logDebug("humidity.rules", highHum);
    postUpdate(Dehumidifier_Needed,highHum);
end
```

The Pragmatic Automation - Visual Scripting



Blockly



Node-RED

Recipe

if this then that

Trigger

Action

if
then hue

eclipse smarthome

Rule

on this if that then do

Trigger

Condition

Action

eclipse smarthome

Rule

on this	if that	then do
or this	and that	and do
or this	and that	and do

eclipse smarthome

Rule

on JS

or Java

or Jython

if Jython

and Java

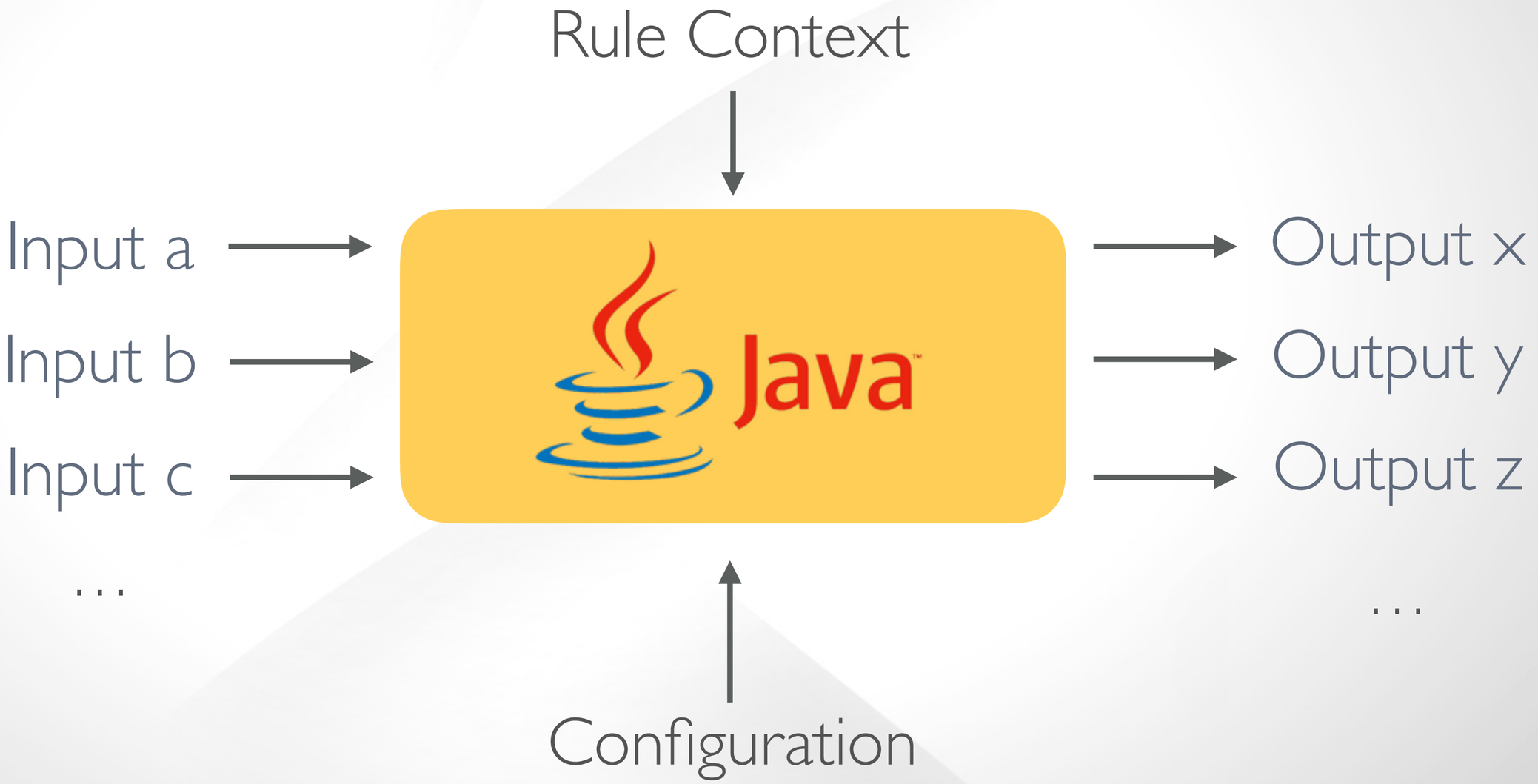
and JS

then Java

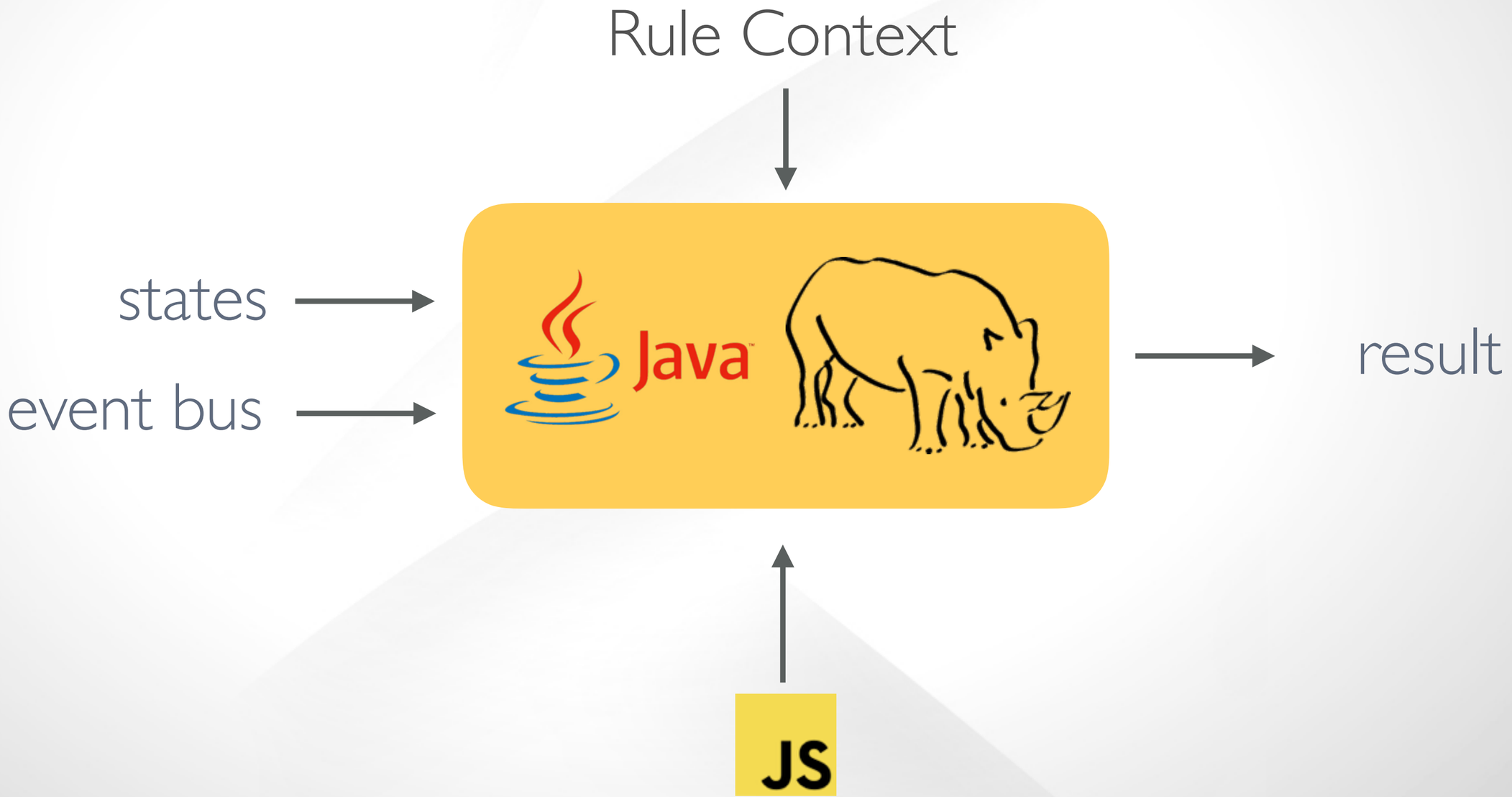
and JS

and Jython

Rule Module


Rule Context
Input a
Input b
Input c
...
Java
Output x
Output y
Output z
...
Configuration

Script Rule Module



Demo Time!

More Features to Come

- Rule Editor
- Module Matching
- Templates
- Access to external Javascript libraries
- Management of timers and jobs

THANK YOU!

Kai Kreuzer
@kaikreuzer

@openHAB

@smarthome

@qivicondev

Product names, logos, brands and other trademarks referred to within this presentation are the property of their respective trademark holders.