OCTOBER 2017

HOW DEUTSCHE TELEKOM DELIVERS A MASS MARKET PRODUCT BASED ON ECLIPSE SMARTHOME

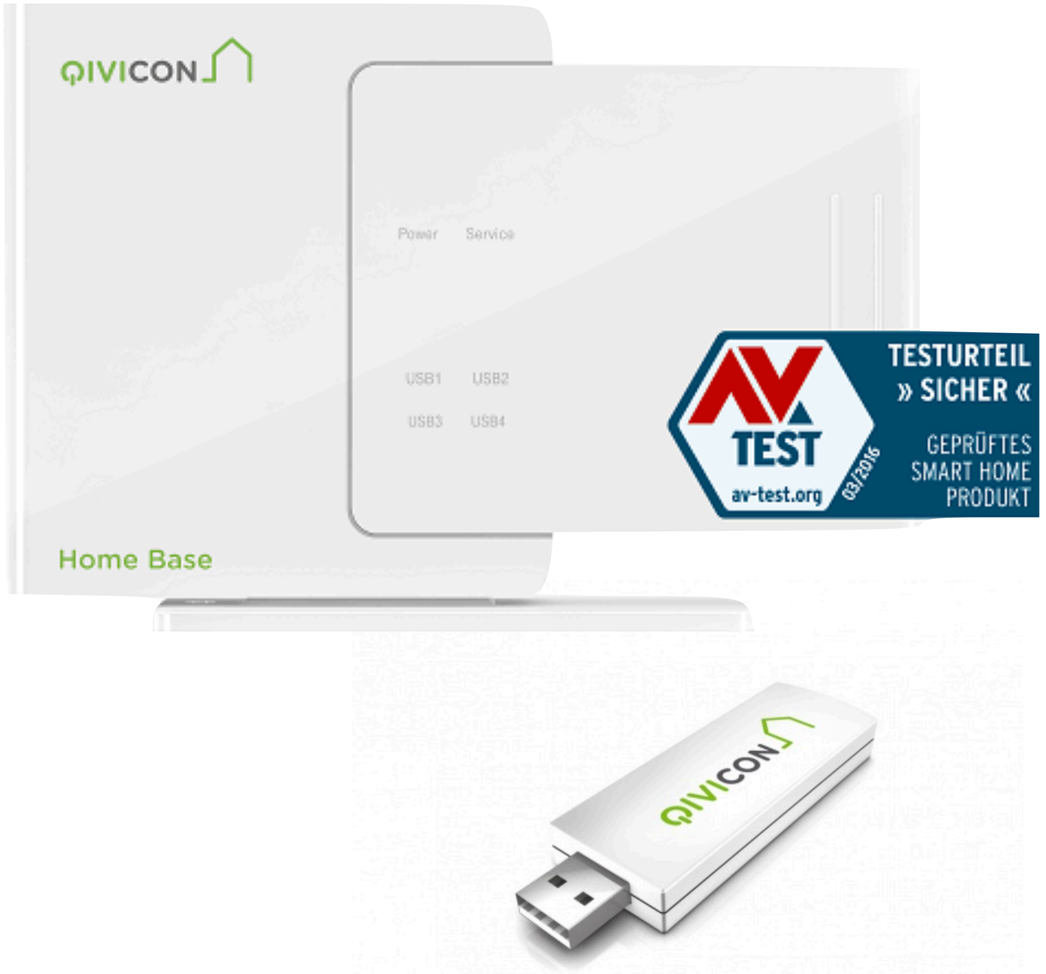
SMART HOME DAY
OCTOBER 22, 2017
LUDWIGSBURG, GERMANY

Jochen Hiller, Deutsche Telekom AG
Product Owner, Developer Evangelist

WHERE WE STARTED . . .

PLATFORM LAUNCH IN OCTOBER 2013

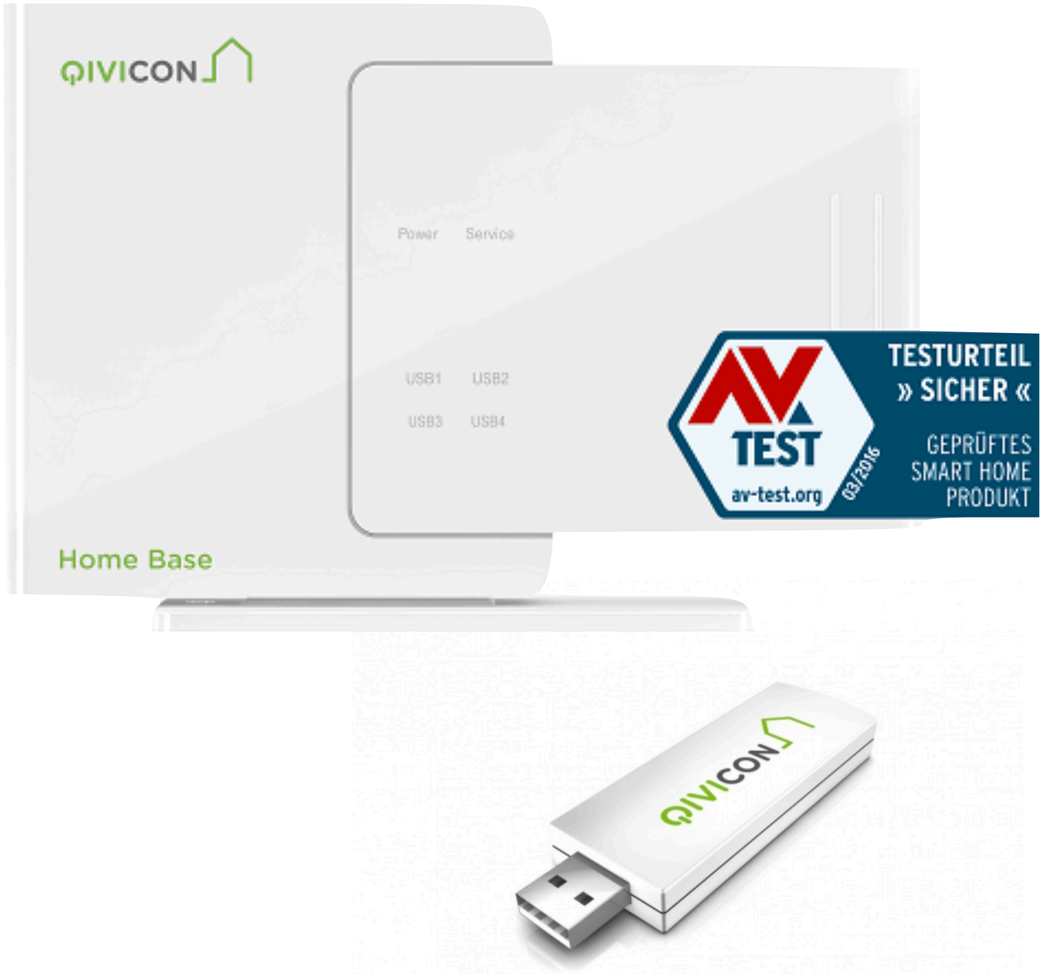
QIVICON powered by T



- Home Gateway
- Based on commercial Java/ OSGi products
- CVM (Java 1.4), OSGi R4.2
- *Launch JavaSE Embedded 7 !*
- HomeMatic (builtin)
- ZigBee HA 1.2 (stick)

PARTNER PRODUCTS LAUNCHED IN OCTOBER 2013

QIVICON powered by



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WHAT WE LEARNED . . .

QIVICON powered by T

- APIs provided are too complex
- Developing “drivers” for SmartHome devices is painful
- Developing for embedded gateways needs special considerations (performance, footprint)
- Update process is complex, needs careful OSGi bundle implementations

INTRODUCING ECLIPSE SMARTHOME – A TIMELINE

QIVICON powered by T

2013-08-21 ESH proposal (based on openHAB 1)

2013-11-15 ESH project setup

2014-Q1 Decision to integrate ESH in QIVICON

2014-06-23 Contribution of Things/Channels

2015-Q1 First rollout in QIVICON, incl. Hue binding

CHALLENGES DURING INTEGRATION

QIVICON powered by T

- Simplify binding development
- Add APIs for device integration/configuration (Thing/Channel concept)
- Configuration UI missing
- APIs instead of DSLs, avoid xText in runtime
- Target for smaller embedded gateways (RaspPi1 class)
- Running with Security Manager

eclipse smarthome

ARCHITECTURE

REST API

ONEM2M

3RD PARTY EMULATION

MODULES

TEMPLATES

RULE ENGINE

TEXT-TO-SPEECH

SPEECH-TO-TEXT

HUMAN LANGUAGE

VOICE ENABLING

MEMORY

LOCAL

CLOUD

PERSISTENCE

WIDGETS

ICON SETS

CHART ENGINE

GUI

ECLIPSE SMARTHOME
CORE

THINGS / BINDING API

UPNP

MDNS

MQTT

SERIAL

PROTOCOL SUPPORT

DISCOVERY SERVICE

PROTOCOL BINDING

PRODUCT BINDING

CLOUD BINDING

SUB-SYSTEM BINDING

Extension Points

eclipse smarthome

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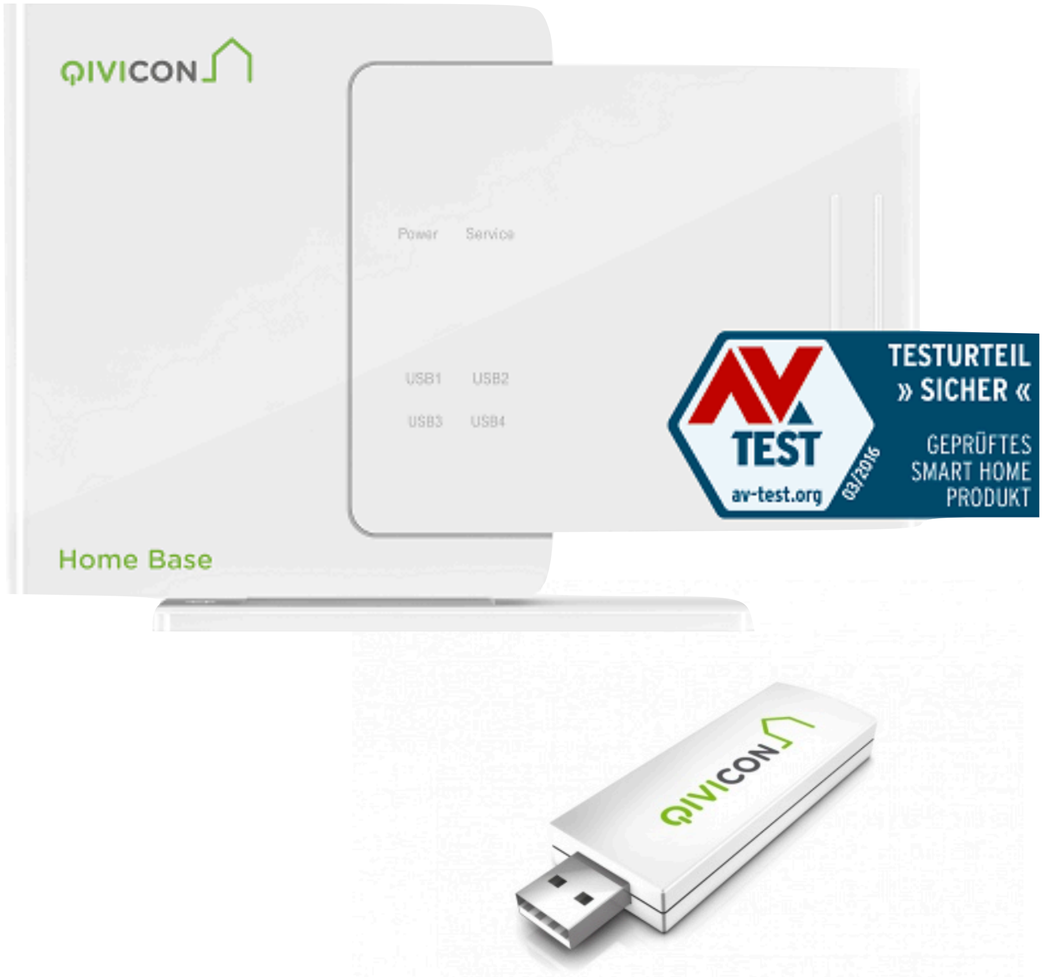
EXTENDING HOME GATEWAYS – WE STARTED WITH

QIVICON powered by T



- Home Base v1
- Single-core ARMv6
- 512 MB Ram, 2 GB Flash
- HomeMatic builtin
- ZigBee HA 1.2 via USB stick

EXTENDING HOME GATEWAYS – UPDATED VERSION IN 2016

QIVICON powered by T

- Home Base v2
- Dual-core ARMv7
- 512 MB Ram, 512 MB Flash
- WiFi, Bluetooth builtin
- DECT ULE, HomeMatic, Homematic IP, ZigBee builtin

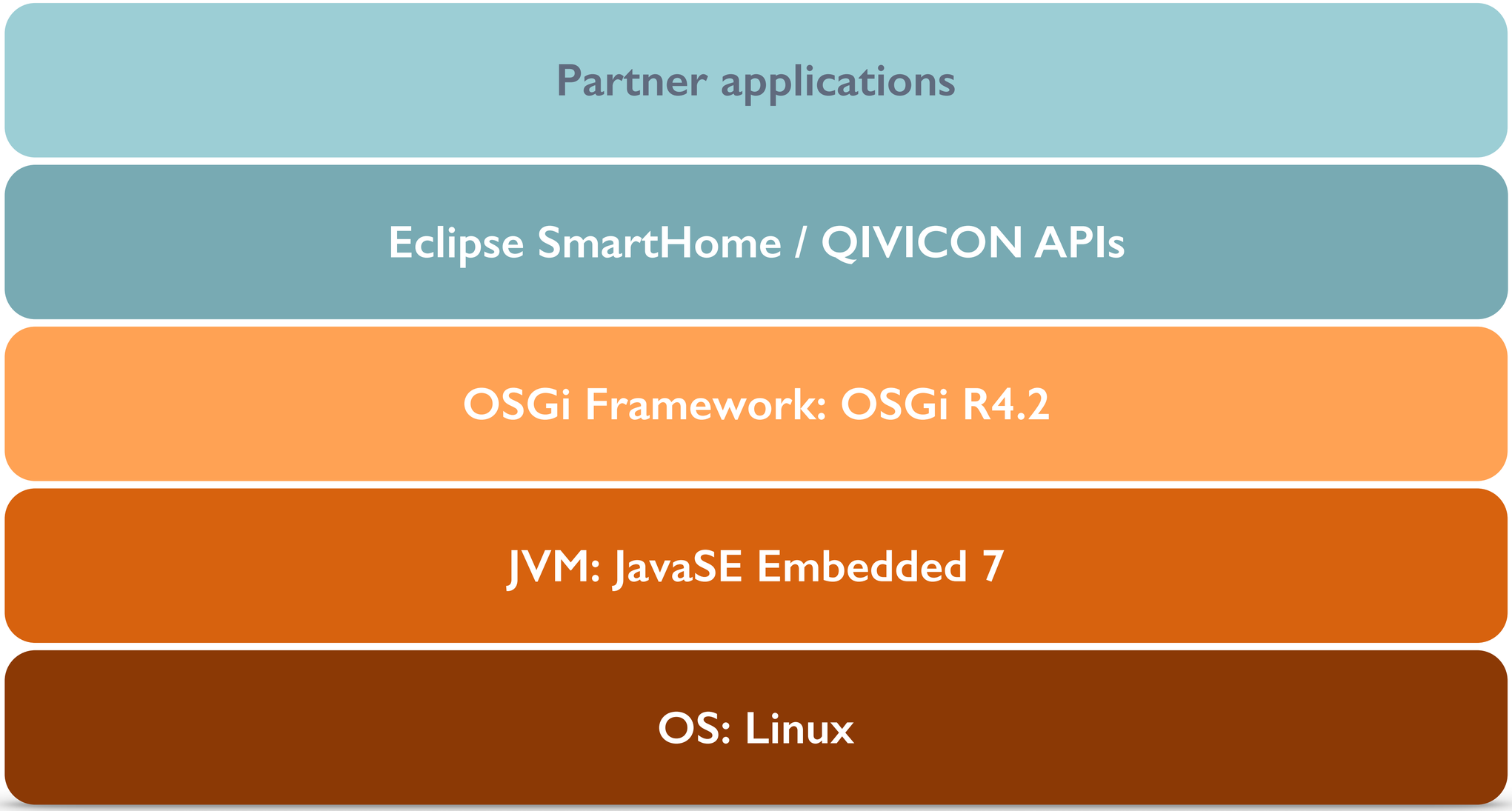
EXTENDING HOME GATEWAYS – FIRST ROUTER INTEGRATION

QIVICON powered by T

- Speedport Smart
- Dual-core ARMv7
- 512 MB Ram, 512 MB Flash
- Resources split between Router/QIVICON (50%)
- WiFi, Bluetooth, DECT builtin
- Homematic IP, ZigBee (stick)

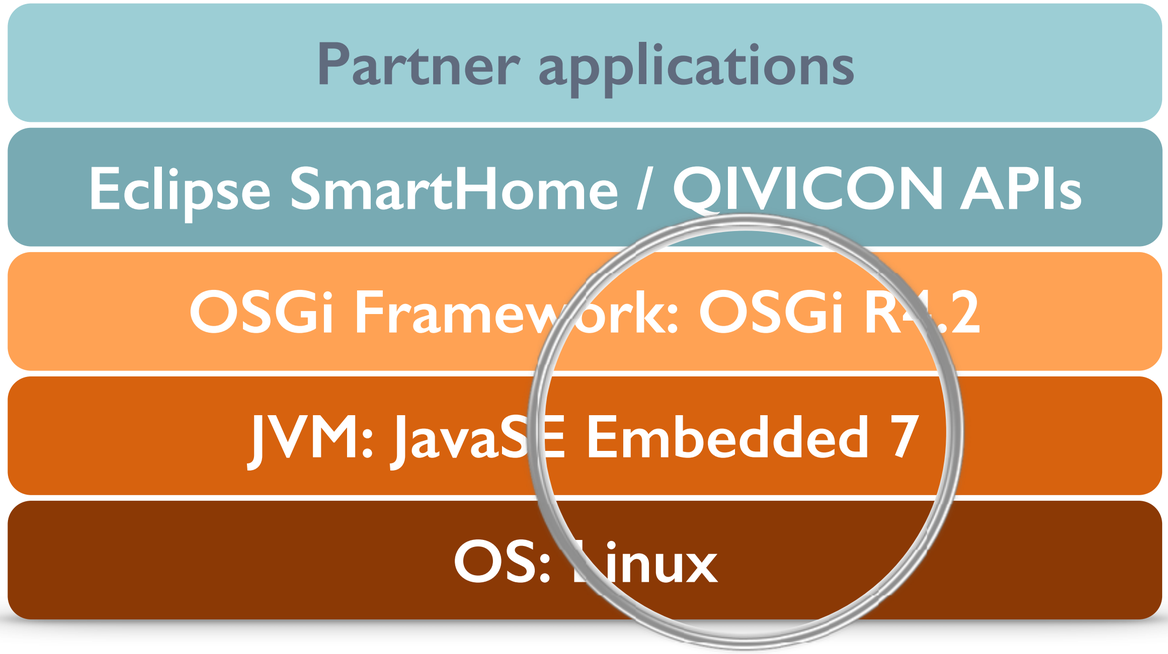
ARCHITECTURE ECLIPSE SMARTHOME AND QIVICON

QIVICON powered by T



JAVA UPDATES

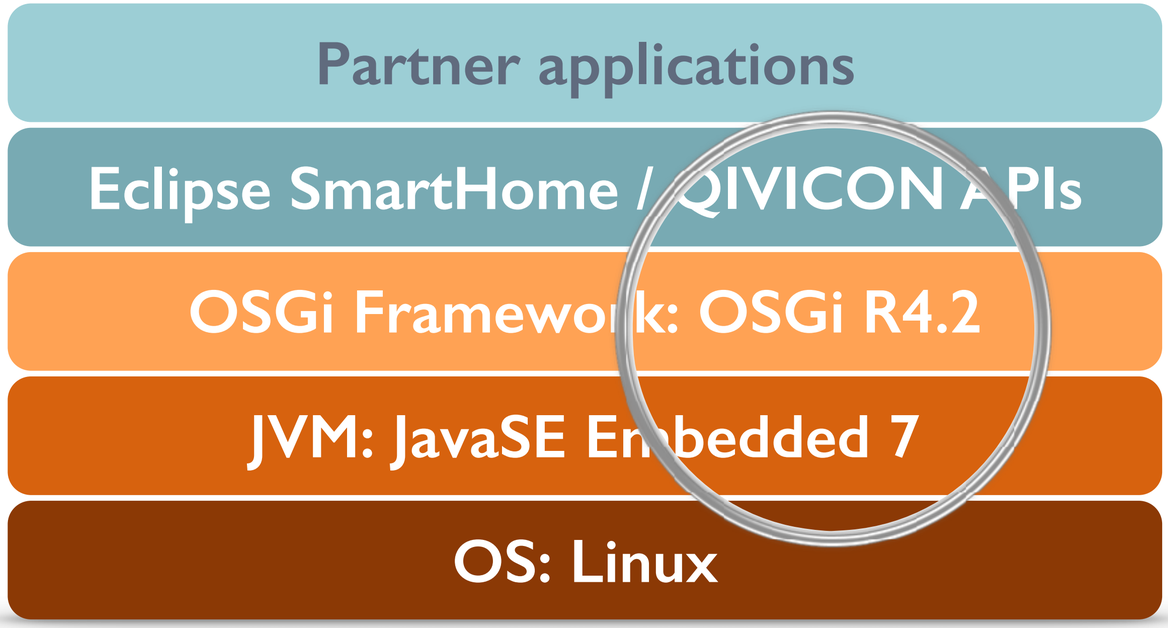
QIVICON powered by T



- CVM until 2013 😩
- JavaSE Emb. 7u21, 45, 71
- JavaSE Emb. 8 (*01/2018*)
  - Versions 8u60, 73, 131
  - Compact profiles 2, 3
  - Extensions (Nashorn, …)
  - glibc, ucLibc
- Java for MIPS planned

OSGI UPDATES – NOT YET

QIVICON powered by T



- OSGi R4.2 commercial framework, incl. compendium bundles
- DS compile time annotations introduced
- OSGi >=R5 needs bigger migration of customer installations

MAJOR CONTRIBUTIONS FROM COMMERCIAL PRODUCT

QIVICON powered by T

- Things concept, Firmware Update, Config Descriptions, Paper UI
- Core Eventing
- Optimizations: Jersey REST, Compact 2 profile
- Enhance I18N capabilities (mutiple languages)
- Bindings: Philips Hue, Weather, Sonos
- Joint work on : jUPnP, jmDNS, OSGi-JAX-RS-Connector

INTEGRATION FROM ECLIPSE SMARTHOME INTO PRODUCT

QIVICON powered by T

- PRs are done mostly direct on OpenSource
- Complex functions are discussed OpenSource and prototyped internally
- ESH Master goes into QIVICON Master all 2 weeks
- No fork of ESH, intermediate changes/compatibility due to API breaking changes
- Additional testing, especially lifecycle (update)

COMMERCIAL EXTENSIONS OF ECLIPSE SMARTHOME (EXCERPT)

QIVICON powered by T

- Easy configuration, discovery/pairing, config UIs
- Secure Remote Access
- Camera support with secure streaming: local, via cloud
- Cloud storage integration for camera streams
- Sound API for speakers
- Run with Security Manager in restricted sandbox
- Push Notifications to SmartPhone apps

THE TEAMS AND CONTRIBUTORS

OIVICON powered by T

OpenSource Team

- Community
- Reviews, PRs
- Core Framework extensions

Runtime Team

- OSGi framework, DS, Lifecycle, Libraries
- REST, jUPnP, jmDNS
- Tools, CI/CD

API Team

- Things
- Configuration
- Firmware Update
- HomeMatic, ZigBee

Binding Team

- OpenSource bindings
- Commercial bindings

THE TEAMS AND CONTRIBUTORS (INTERNAL, EXTERNAL PARTNERS)

QIVICON powered by T

OpenSource Team

kaikreuzer

sjka

triller-telekom

htreu

API Team

tomhoefer

dstivanov

afuechsel

YordanDZhelev

aounhaider1

hsudbrock

Runtime Team

JochenHiller

BenediktNiehues

sbussweiler

chriskn

kolkoo

Mixajlo

ViToni

amitjoy

Alumni...

dnobel

AlexTugarev

Binding Team

AlexanderKostadinov28

ivivanov-bg

phxql

chrisschauer

BIG THANKS TO ALL CONTRIBUTORS & COMMITTERS

Magenta SmartHome

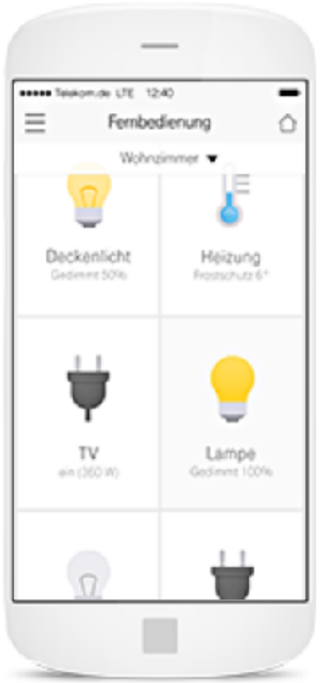
Alarm System

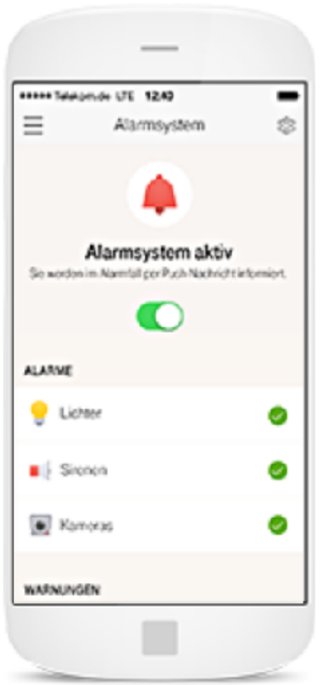
Notifications

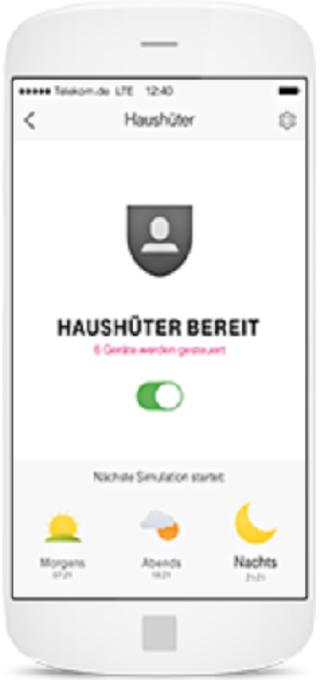
Remote Control

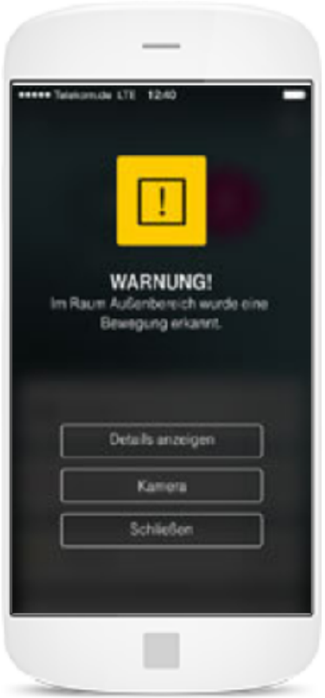
House sitter

Situations, Rules









Source: https://www.smarthome.de/

THANK YOU!

QIVICON

@qivicon

Jochen Hiller, Deutsche Telekom AG