The Technology to Deliver Millions of Connected Homes

Parks Associates Webcast

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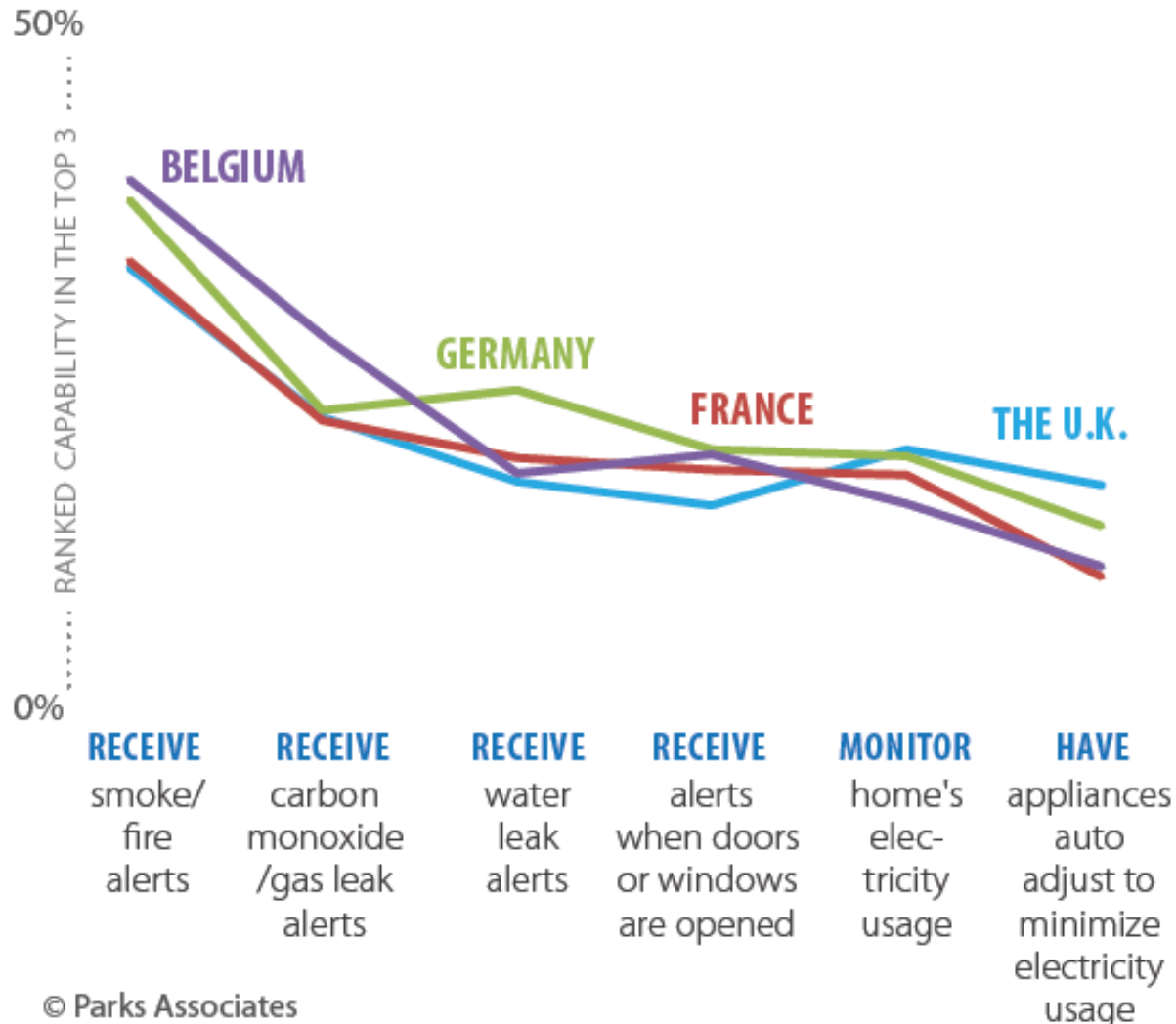# Audio Recording

- **To replay the webcast, click here:**
  https://attendee.gotowebinar.com/recording/5846533595271726594

Agenda

- Challenges to Creating a Smart Home

- Smart Home Platform Principles

- Platform Architecture Overview
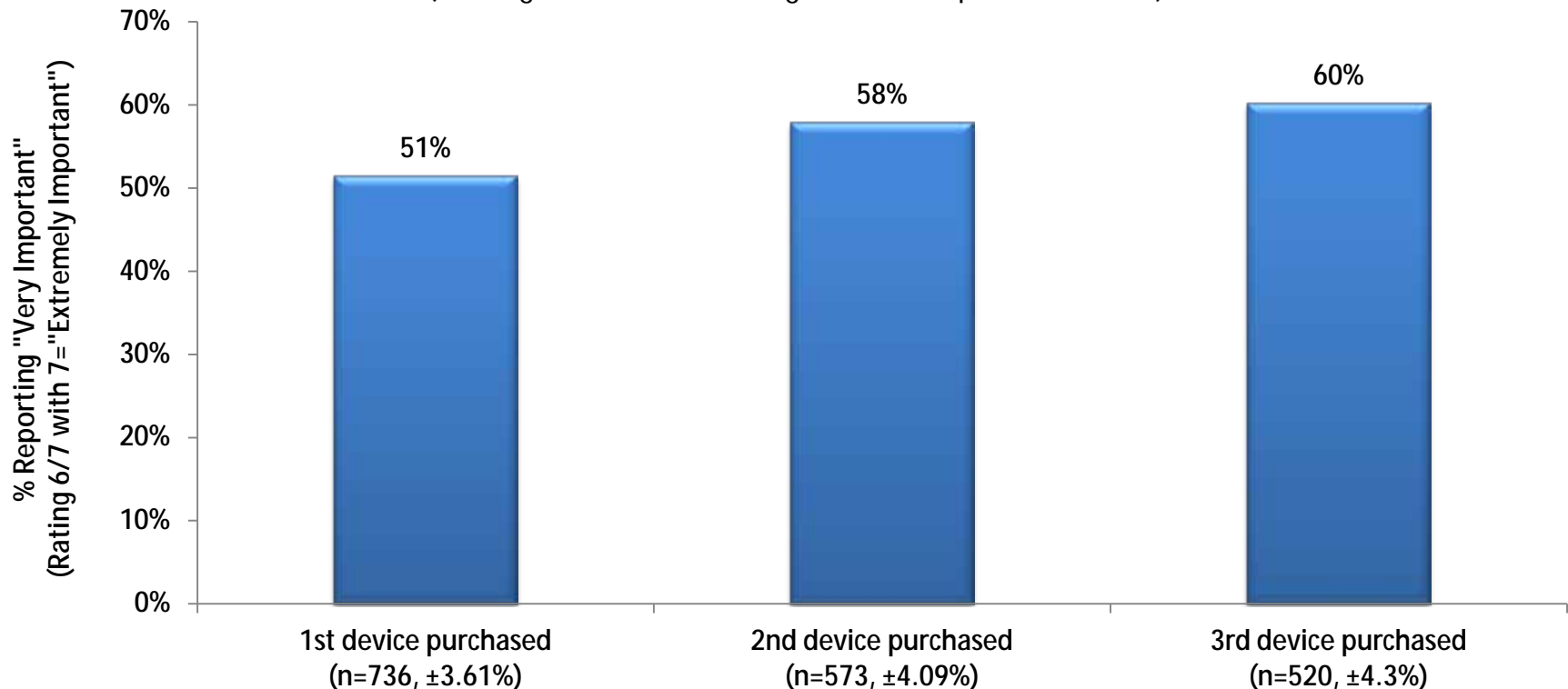
- Adding Intelligence to the Smart Home

- Q&A

© Parks Associates

Challenge: Interoperability

Importance of Interoperability (Q2/14)

"S2710. When you purchased the following device(s), how important was it for the device(s) to work together with other devices as part of a system?"
(Among BB HHs Purchasing Device in Specified Order)

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Home Networks

Peer-to-Peer

Cloud
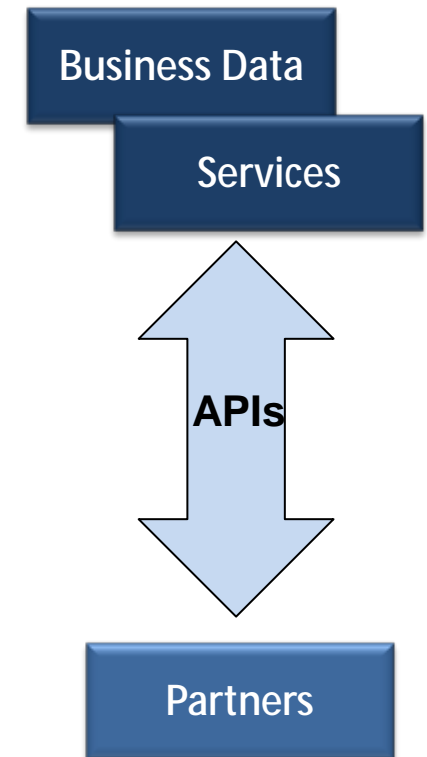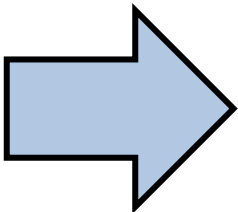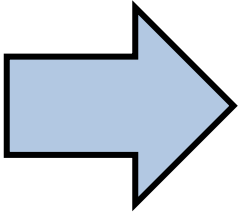
Smart Door Lock

Value-Added Services

Locking Mechanism → Digital Key Codes

Smartphone Interface → Smartphone Key Card

Digital Key Codes, Smartphone Key Card → Access Control System

Network Camera, 2-Way Audio → Live Streaming

Live Streaming → Facial Recognition

Live Streaming → Voice Recognition

Accelerometer → Knock Detection

Accelerometer → Break-in Detection

Break-in Detection → Security Notification

Access Control System, Facial Recognition, Voice Recognition → Biometric Access

Recipe

if this then that

Trigger   Action

If 30 minutes after sunset, then turn on outside lights

If 10pm, then turn off outside lights

If returning home after dark, then turn on outside lights

Two Paths to Market

Products

tado° nest

B/S/H/

KlikAanKlikUit®
www.klikaanklikuit.nl

climote™

CHAMBERLAIN®

Systems

e·on British Gas

HOME by SFR

Telefonica

iris verisure ALARMS WITH IQ

CRESTRON

Challenge: Business Objectives Not Aligned

	Manufacturer	**Retailer**	**Service Provider**
Product	Differentiate Products	Sell More Products	Commoditize Products
Platform	Add Value to Product	Add Value through Integration	Centralize Value Creation in Platform
Data	Control Data and Extend Customer Relationship	Control Data and Maintain Customer Relationship	Control Data and Customer Relationship

Opportunity: Complementary Strengths

Manufacturer Strengths

- Market, product knowledge

- Product business model

- Differentiated features

- Extend use cases

Service Provider Strengths

- Coordination between devices

- Understanding state of the home

- Customer relationships

- Common user interface

Smart Home Challenges

Integration Complexity

- Scaling to Keep Pace with Breadth of Products

- Connecting Devices Using Different Technologies

- Integrating Combination Products

- Integrating Value Added Services

Maintaining Simplicity

- Adding Devices and Capabilities without Complexity

- Adding Intelligence and Automation

Developing and Ecosystem

- Overcoming Misaligned Business Objectives

The Technology to Deliver Millions of Connected Homes

Mary Turner

CEO

AlertMe.com Ltd.

Pilgrim Beart

Founder, Director

AlertMe.com Ltd.

Steve Hirst

CTO

AlertMe.com Ltd.

Simon Gunter

Director of Strategy

AlertMe.com Ltd.

AlertMe – Introducing OMNIA™
The technology to deliver millions of connected homes

23 September 2014

1. INTRODUCTION – MARY TURNER (CEO)

2. MARKET/TECHNOLOGY TRENDS – PILGRIM BEART (FOUNDER DIRECTOR)

3. INTRODUCING OMNIA™ – STEVE HIRST (CTO), DR SIMON GUNTER (STRATEGY)

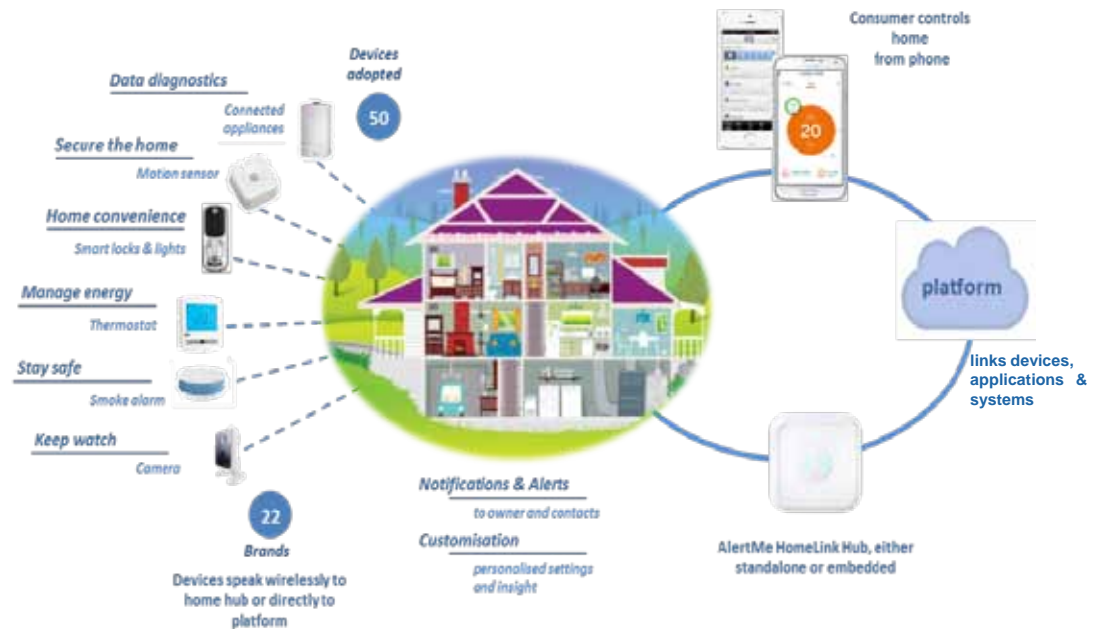# AlertMe : leading connected home technology company

AlertMe provides a unifying, intelligent and open ecosystem for monitoring , control and automation

Connects an ecosystem of devices	Agnostic, 'talks to everyone and everything' through API integration.
Intelligence	Data analytics beyond physical graphing to provide intelligence through unique IP and patents
Deployed at scale	500k homes 350k devices 7.5bn data points/month
Evolved	Next generation Omnia™ platform built on 5 years experience of mass market deployment Intelligence, Scale and Openness

Data diagnostics
Connected appliances
Devices adopted 50

Secure the home
Motion sensor

Home convenience
Smart locks & lights

Manage energy
Thermostat

Stay safe
Smoke alarm

Keep watch
Camera

22 Brands
Devices speak wirelessly to home hub or directly to platform

Notifications & Alerts
to owner and contacts

Customisation
personalised settings and insight

Consumer controls home from phone

platform
links devices, applications & systems

AlertMe HomeLink Hub, either standalone or embedded

Platform to deliver millions of 'smart' homes

The connected home is about 'things' and collections of software that need to interoperate and work together harmoniously – at huge scale. We provide relevant and intelligent services, and manage the complexity and fragmentation of smart technologies to make it invisible to the end user – it needs to 'just work' seamlessly.

We manage the complexity to preserve user experience

For the IoT,
"talk therapy won't scale"
Support.com

1. **Curating a coherent and intelligent mass consumer application**

   - *Avoids 'clashing', extends beyond simple controls to intelligent automation*

2. **Creating a scalable and resilient service – 'brain in the home and cloud'**

   - *Portable Logic - hub software can run locally (hub or CPE) and in the cloud for hubless devices*

3. **Openness to realise the network effects of new devices, applications and innovation**

   - *Open APIs to partner UI development, 3rd party devices & developer*

Secure Home
Stay Safe
Control Heating
Home Control
Manage Energy
Keep Watch
Data Insight

Products currently deployed

Modular services that are extendible, avoiding applications in siloes – delivering across a wide range of devices, communication protocols and sectors

Energy Controls
'Hive'

Control your heating/hot water remotely, predict schedule based cost and link occupancy for intelligent scheduling

Home Automation
'Iris'

A modular set of home automation services, user configurable rules and messaging options e.g. alarm/sensor notification , event triggered recording

Energy Analytics
'Smart Energy Report'

Data analytics for energy consumption trends by category, normative comparisons and tips/ advice to save money extending to occupancy based scheduling

500k	7.5bn	350k	17
Homes	Sensor reads per month	Devices connected	Patents granted

Market and customer statistics

AlertMe customers

AlertMe Energy
70% customer 'very useful'
20% use monthly to manage spend

AlertMe Home
60% use app daily
30% log in online twice weekly
8 connected devices average home

AlertMe Control
50% interact daily
30% save 10% on bills

Consumer stats

>20,000
new connectable devices at CES 2014

Top 3
Consumer Applications
Turn on lights, Adjust thermostat, Lock doors

1 in 5
US Homes has at least one connected device

11%
has an internet connected thermostat

70%
Want to control things from bed
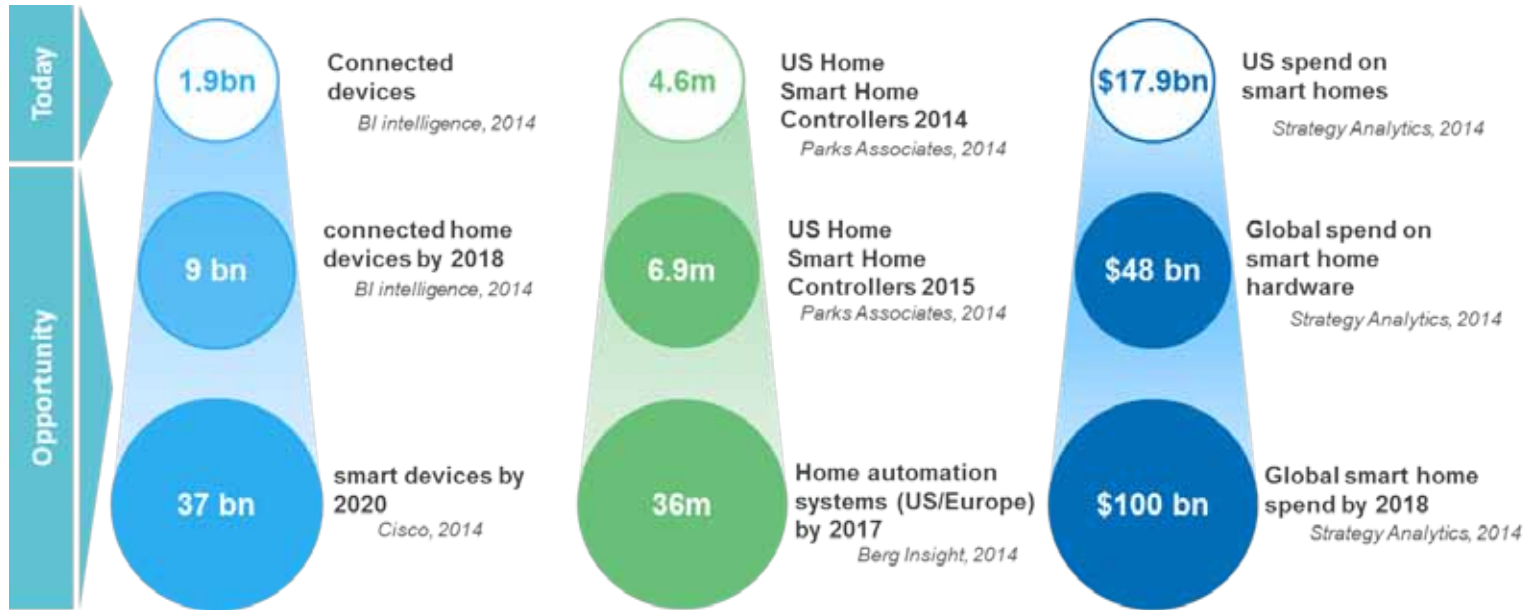
61%
For kids safety

What the consumer will pay
US & EU customers would pay $10 - $13 a month for remote home monitoring and security

Significant Market Potential

The rapid adoption of smartphones and proliferation of affordable connected devices is bringing the market to an inflection point—invoking the next stage of the Internet

Today

Opportunity

1.9bn — Connected devices
BI intelligence, 2014

9 bn — connected home devices by 2018
BI intelligence, 2014

37 bn — smart devices by 2020
Cisco, 2014

4.6m — US Home Smart Home Controllers 2014
Parks Associates, 2014

6.9m — US Home Smart Home Controllers 2015
Parks Associates, 2014

36m — Home automation systems (US/Europe) by 2017
Berg Insight, 2014

$17.9bn — US spend on smart homes
Strategy Analytics, 2014

$48 bn — Global spend on smart home hardware
Strategy Analytics, 2014

$100 bn — Global smart home spend by 2018
Strategy Analytics, 2014

Market Evolution - the technology challenges

Key learnings

The connected home is not new – but is now undergoing significant technology and market development

Market moving from single device to multiple applications – from product to platform

- Early market success – single point devices
  - highly user-friendly niche applications
- Today simple platforms for a home ecosystem
  - simple rules based automation
- From remote control, interoperability, extending to intelligence

Openness drives innovation and customer experience is critical

- Solve the complexity and open from a solid base

Communications standards still evolving

- Early systems - single standards : new platforms - multi-protocol
- Multiple/competing standards
- Platforms need to manage standards dynamically

Initiatives that will aid market development and acceleration
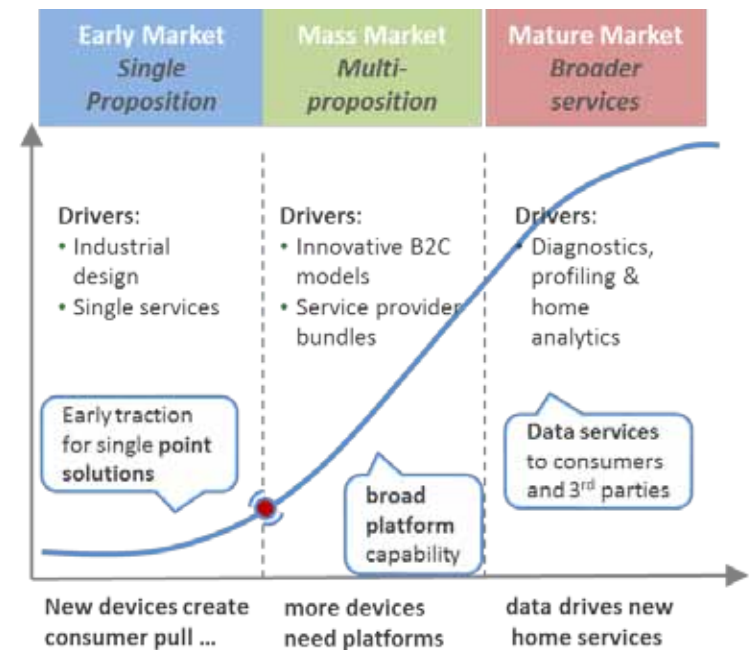
New industry alliances on communication standards

Market movements for standardisation & collaboration

- AllSeen/AllJoyn
- Thread
- OIC
- Hypercat

What Next ?

Managing for the mass market, at huge scale

- Openness should benefit all – and the non-technical customer experience must be assured
- IP to the edge
- Beyond the mechanics of device connectivity and into data driven services

Omnia™ – a platform for millions of connected homes

Introduction to Omnia™

Engineering Best Practice

5 years 'real world' deployment experience informing architectural and operational principles of SCALABILITY, AVAILABILITY, MAINTAINABILITY AND INTEROPERABILITY

- Distributed Service Orientated Architecture, supported by best practice CI/CD test and regression framework and a well formed and versioned API set together with SDK for openness
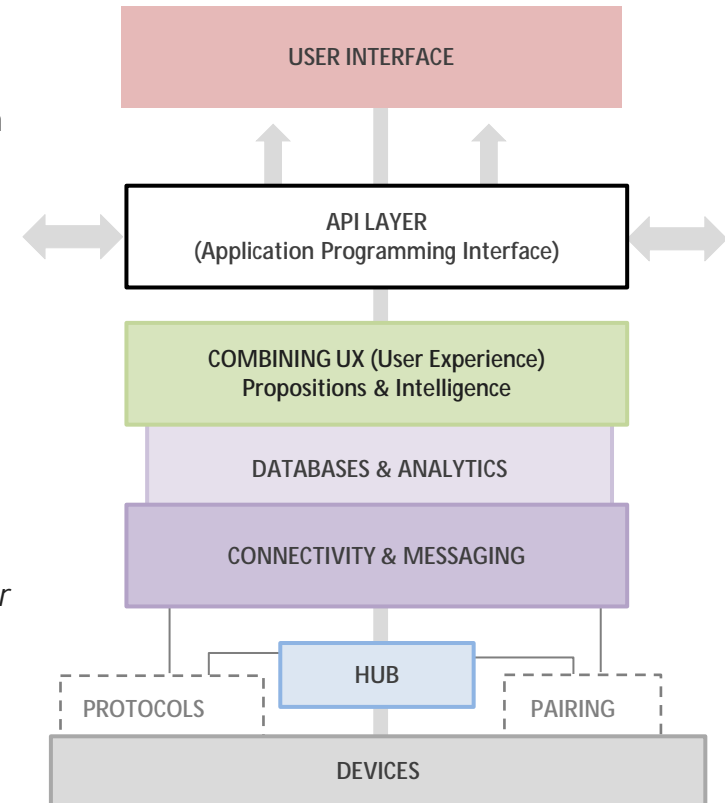
The 'Uniqueness' Factors

- **Portability**: to run software in the cloud, on the hub or in other CPE

- **Device adoption:** standardising device and network protocol adoption

- **Synthetic Devices:** combining hardware devices and disaggregated device data in software

- **Sensor Data Fusion:** using data from multiple sensors and external data for sentient awareness

Omnia™ architecture

Architectural Layers:

- **Devices & Protocols**: managing device adoption
  - **Network and Device Abstraction**: Simplifies characterisation and adoption of devices, standardises communication with device types

- **AlertMe Platform**: common, portable logic between hub and cloud: messaging, applications, intelligence and services
  - **Connectivity:** Maintains connection
  - **Messaging:** captures and routes device messages at huge scale
  - **Synthetic Devices:** Combines devices, schedules and rules
  - **API layer:** supports mobile and web UIs, 3rd party systems and developers

- **Databases & Analytics**: SQL and NoSQL plus patented data analytics
  - *Data & controls for intelligence/improved confidence based on multi-sensor data aggregation*

- **User Interface:** presenting to devices

USER INTERFACE

API LAYER
(Application Programming Interface)

COMBINING UX (User Experience)
Propositions & Intelligence

DATABASES & ANALYTICS

CONNECTIVITY & MESSAGING

HUB

PROTOCOLS

PAIRING

DEVICES

'Brain in the home' and 'brain in the cloud'

Homogeneous java runtime environment across hub and cloud allowing full flexibility of software and intelligence deployment

- Distributed intelligence and co-ordination between both the home and the cloud

- Consistent use of the Java language for hub, cloud service and abstraction of networks and devices

- Consistent treatment for hub-based or hubless devices
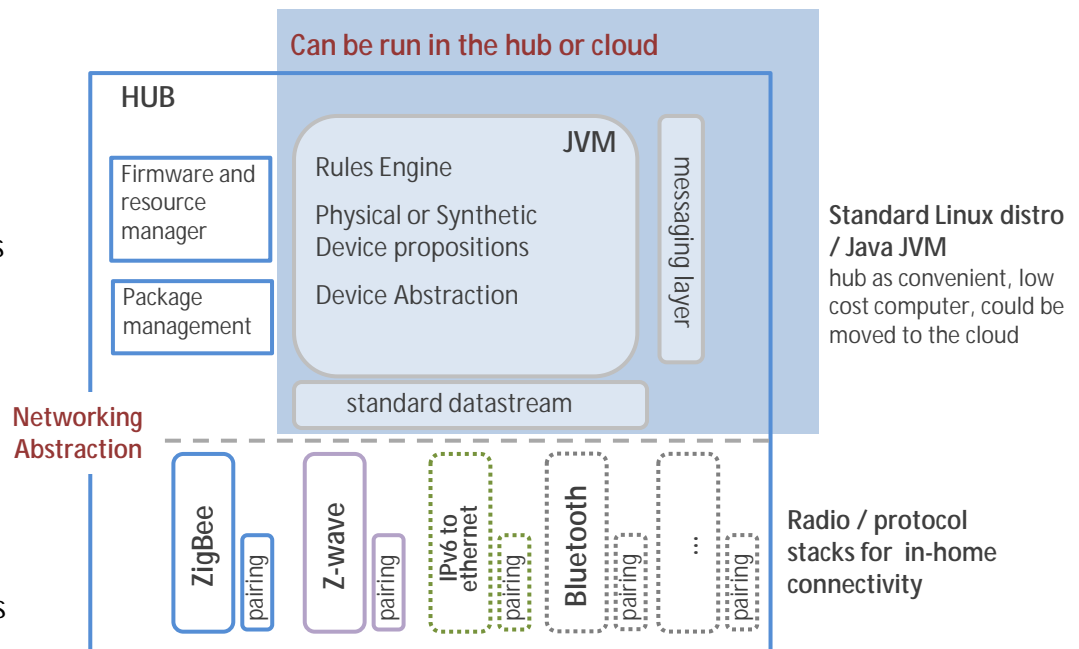
AlertMe's hub software can also **run virtually inside other CPE**, for example on 3rd party routers and set-top-boxes

Can be run in the hub or cloud

HUB

Firmware and resource manager

Package management

JVM

Rules Engine

Physical or Synthetic Device propositions

Device Abstraction

messaging layer

standard datastream

Networking Abstraction

ZigBee | pairing

Z-wave | pairing

IPv6 to ethernet | pairing

Bluetooth | pairing

... | pairing

Standard Linux distro / Java JVM
hub as convenient, low cost computer, could be moved to the cloud

Radio / protocol stacks for in-home connectivity

Uniqueness – Device Adoption

Device & Network Abstraction makes device adoption extremely scalable

- Allows deployment of device types independent of brand or communications protocol
- Highly user friendly SDKs
- Flexibility for today's multi-protocol environment and future standards

Device Abstraction

- Simplifies device adoption and communication with the platform
- Standardises device description into 'Canonical Forms'
- Simplifies combining devices into compelling propositions

Network Abstraction

- Abstracts variations caused by network access technologies and their integrated protocol definitions
- Simplifies management of combinations of devices and the adoption of a new device or network protocol

Device Abstraction

Creates standard devices
- consistent behaviours

Network Abstraction

Protocol specifics & pairing

Realising the full benefit of device abstraction to create 'a complex device in software'

A synthetic device

- A device in software that is made up of other devices (either synthetic or physical) and the functional decomposition of complex hardware into its' respective components
- Treated as any other device – rapidly expands new propositions without adding new devices

The synthetic device is made up of:

- **Producer Devices :** devices that produce the event for the synthetic device
- **Consumer Devices:** devices that consume the events to perform a particular action
- **Event Logic:** the method/rule which says what should be done when a particular event occurs on the producer devices
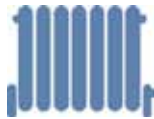
presence + *intelligence* + *'heat'* +))(((=   *climate control automated comfort*

Energy analytics deployed at scale

- Proprietary algorithms use explicit and implicit profiling to create personalised near real-time energy reports

Beyond the physical graph: to intelligent automation

- Learning algorithms for energy controls and automation

- Home occupancy detection model using patented Bayesian method, used for e.g. intelligent heating

Relevant applications for the enterprise market:

- home insurance analytics
- appliance interaction analytics
- appliance remote diagnostics

Intelligent Personal Assistant for the Home
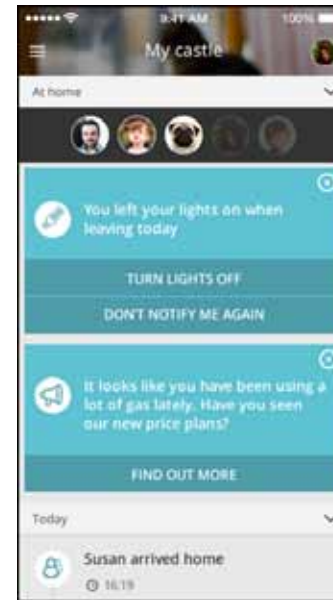
Manages the home automatically – learns how you live.

Keep's you posted on the important stuff – context, confidence, relevance & priority aware.

Tracks the 'noise' – should you need it and for dynamic profile building.

	Cell phone location	Occupancy driven heating control	Auto-off	Data disaggregation
Selected Patents	*"Utilizing cell phone location for occupancy determination and home energy control"*	*"Electronic control units for central heating systems"* thermostat scheduling	*"Monitoring and automatically switching off electrical appliances when no one is present"*	*"Method of identifying the operation of a power consuming device from an aggregate power series"*

Summary

THE ALERTME DIFFERENCE

EXPERTISE IN MASS DEPLOYMENT

BREADTH WAY BEYOND SINGLE POINT SOLUTIONS

SCALABLE, INTELLIGENT, OPEN PLATFORM & IP

Questions?

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Upcoming Smart Home Event!

CONNECTIONS EUROPE
Monetizing Strategies for the Connected Home

18-19 NOV 2014 Amsterdam

Thank You.

Thank You.

Tom Kerber
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