THE END OF THE HYPE: THE INTERNET OF THINGS IS GETTING MAINSTREAM

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What is it, this Internet of Things?

The so called Internet of Things is one of the trends on CeBIT 2016. But how do things go online?
The hype around the Internet of Things

20.5 billion connected devices by 2020

More than 450 IoT platforms compete for users

Developers are the new kingmakers!

McKinsey study predicts 23 billion € IoT revenues only for Germany by 2020

IoT business models – there is not just ONE, there are many many many many many many
How it all started

Early ProSyst days
Products

Early 200x
WHY WILL THERE BE MUCH MOVEMENT IN INTERNET OF THINGS IN 2018?
Gartner prediction in July 2017
IoT platforms are getting mainstream between 2019-2023
The most important technology trends for IoT projects in 2018

IDC study focused on Germany

- IoT platforms are already in place: 20%
- Plans to introduce IoT platform(s): 51%
- Plans to start first IoT project: 72%
My learning based on many closed, proprietary systems
... is the lack of a horizontal platform
FACT CHECK – WHERE DO WE STAND TODAY?
By analyzing data and providing solutions for machine learning, we support consumer products from today to enter the IoT world of tomorrow.
From pilots to scaling

“OSRAM Ticketmanager“ connects 80 different machines

Pilot in Berlin-based OSRAM plant for automotive Xenon lights

App provides associates machine status

Rollout to further plants currently in progress
1 million Smart Homes

158 supported device types
only in one customer project
No one can do I(o)T alone

German smart home platform QIVICON

Brings together wide range of smart home devices from different brands under one technical roof

Alliance of leading industrial enterprises to make smart homes a possibility for everyone
“Internet of Oysters”: The Yield, an Australian AgTech business, helps oyster farmers reduce the risk of unnecessary harvest closures caused by weather.
Conventional oyster harvesting

If harvested at the wrong time, oysters can be dangerous to eat
Regulators conservatively control harvesting via coarse rainfall data

BETTER DECISIONS  BETTER HARVESTING  BETTER YIELD

The Yield & Bosch innovation project

Measure Water Salinity  Bosch IoT Suite  Harvesting Regulator & Growers

BENEFITS
• Improve scheduling of harvesting operations by predicting closures
• Extended harvest periods so more oysters make it to the market
Spearheading transformation
Labs are pacemakers for digitization and R&D
Existing solutions support and amend portfolio, oriented at the core of the company
“Old Industry“ is moving!
Customer case: Mann+Hummel
Managing 3G-enabled M2M devices

Bosch IoT Gateway Software
Gateway Agent

2G/3G

AWS IoT

Device and Software Management

Bosch IoT Remote Manager

Software Repository

Gateway
w/Gemalto M2M Module

IoT thing filters
sensors

Amazon EC2
Amazon RDS

Telemetry

App

App

App
Reliably connecting vehicles
Already more than 4 million connected cars on the road
There are no role models for digital transformation. In order to prepare for a connected future, companies have to simultaneously reinvent themselves while staying true to their DNA and collective experience.
The Bosch IoT Suite
Technology for the connected world

- **Connected products**: 8.5 million
- **Connected cars**: 4 million, +0.2 million per month
- **Number of supported protocols**: 26
- **Intelligent cloud**: Bosch projects currently use the Bosch IoT Cloud
- **Multi-cloud strategy**: Cloud providers x regions already supported. 2 more in the pipeline.
WHAT DOES BOSCH DO IN THE INTERNET OF THINGS?
Bosch’s way into the Internet of Things
Many players are on their way
Results of IoT Enablement @ Bosch

IP-enabled product classes at Bosch

- 2017: 60%
- 2016: 50%

IoT solutions powered by Bosch IoT Cloud

- 2017: 170
- 2016: 70

IP-enabled products sold

- 2017: 38 m
- 2016: 27 m
Own IoT platform, hybrid cloud strategy

Services

+ Software

+ Sensors

Custom IoT solutions

Middleware

Connected IoT devices

Hybrid cloud approach
The Bosch IoT Suite
Platform as a Service (PaaS)

SaaS

PaaS

IaaS

Bosch IoT Cloud Base Services

Foundation of IoT-domain specific ecosystems for
- Energy
- Automotive
- Industry
- White Goods, etc.

Highly focused, flexible, and scalable

Future-proof

Open platform for the Internet of Things (IoT)

to enable E2E value proposition „device ← → cloud“
We connect everyThing
Bosch IoT Suite in practice

Device management for connected filters
Smart heating: intelligent networking of heating systems
IoT Gateway: easy connection to Industry 4.0 environments
‘Plantect’: monitoring and disease-prediction for greenhouse farming

TrackMyTools: a smart inventory management system
Indego Connect: intelligent device management
Connected asset intelligence system for rail freight
Firmware and software updates over the air
Bosch’s way into the Internet of Things
Elements of an IoT ecosystem

- **Connected things**: Physical, "smart" things as base for new services
- **Developers**: Third party developers deliver innovative apps
- **Users**: Use services and may contribute to enhancements via crowd-generated data
- **Partners**: Participate and contribute to value-add of the entire ecosystem

**Partners**
Participate and contribute to value-add of the entire ecosystem.

**Users**
Use services and may contribute to enhancements via crowd-generated data.

**Developers**
Third party developers deliver innovative apps.

**Connected things**
Physical, "smart" things as base for new services.

**Service**

**Users**

**Partners**

**Developers**

**Connected things**
Bosch‘s way into the Internet of Things

Step 1
Enablement

Step 2
Digitize existing ecosystems

Step 3
New cross-domain ecosystems
Collaboration Bosch & Munich RE

- Comprehensive solutions for the Internet of Things, starting with Industry 4.0
- Technological and economic optimization of production
- Munich RE's finance know-how complements connected offering
25 years: Software eating the world

As seen in https://twitter.com/jblefevre60/status/993889228072341504
MY LEARNINGS
WHAT MY HEART BEATS FOR

❤️
My software and IoT journey since 1984

**Technology**

OSGi and Embedded systems

**Leadership**

Industry development

**Openness external**

**IT**

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DNA valuable for Bosch’s transformation

Bosch Software Innovations

Incubation, enablement, change, agility

Internet of Things, services, software

“The extra mile”
Teaching old dogs new tricks
Bosch’s way into Open Source
2004 to date

Start with tooling and not immediately with products

Embrace all disciplines

Win hearts first – this does not work with PowerPoint
Bosch Software Innovations
Actively engaged in the Eclipse IoT Working Group

Eclipse Ditto
... where IoT devices and their digital twins get together

Eclipse Leshan
A Java library for implementing Lightweight M2M servers and clients

Eclipse hawkBit
A domain-independent, back-end solution for managing software rollouts in IoT

Eclipse Vorto
A smart, open approach to the interoperability of IoT products

Eclipse hono
Enabling device-related communication between connected devices and IoT applications in the cloud
The Bosch IoT Suite

Fully-based on Open Source and Open Standards
open source is good for me. i will fully embrace it.
20 YEARS IN THE INTERNET OF THINGS
OPENNESS
NOT secrecy

Open Content  Open Data  Open Research
Open Cloud  Open Knowledge  Open Education
Open Business  Open Access  Open Standards  Open Hardware
Open Government  Open Source  Open Space
BUSINESS PLATFORMS

NOT individual products
Co-Creation
NOT silos
NOT hierarchies
PARTNERSHIPS
NOT suppliers
NOT competitors
Bosch IoT Gateway Software & Remote Manager

OSGi-compliant implementation fully developed in Sofia

- Worldwide accepted open standard
- Enables the modular assembly of software built with Java technology
- Modularity reduces software complexity
- Software framework targeting all device classes
- Bosch IoT Gateway Software and Bosch IoT Remote Manager are built on OSGi technology
- Founding member of OSGi Alliance (1999)
Among the criteria that ranked significantly above average for Bosch Software Innovations, the report names:

- Strategic focus on IoT platforms & strategic activities over the last 12 months
- Strategic cooperation with other top IoT providers
- IoT device management capabilities
- IoT ecosystem of developers & systems integrators in Europe
- Go-to-market via third-party IoT platforms and developer communities
- Client references and market perception in Europe
- Financial strength
Sofia Office
“Space is the body language of an organization”
Get started into IoT
Hackathon @ Bosch SI Office in Sofia

What can you achieve with a hackathon?

- Understand where Bosch’s IoT platform might help you with future use cases.
- Gain hands-on experience and learn how to implement an IoT case.
- Last but not least – have lots of fun on the way.
The Bosch IoT Suite cloud services

Availability

Self-service subscription via www.bosch-iot-suite.com

In China: HUAWEI

On demand: Microsoft Azure, SAP Leonardo

Bosch IoT Remote Manager running on other clouds

Self-service subscription via https://aws.amazon.com/marketplace
We connect everyThing.

Get an overview: www.bosch-si.com/iot-platform
and explore our services: www.bosch-iot-suite.com
What we can expect after years?

Internet of Everything
THANK YOU QUESTIONS?

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