VON DER VISION ZUR WIRKLICHKEIT – PLATTFORMEN UND LÖSUNGEN FÜR DAS INTERNET DER DINGE

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Bosch Group: Technology to enhance quality of life

Four business sectors

- Mobility Solutions
- Industrial Technology
- Energy and Building Technology
- Consumer Goods

Key facts (2016)

- 276 manufacturing sites
- 390,000 associates incl. 59,000 in R&D
- €73.1 billion in sales

Bosch Software Innovations – IoT software and systems house

> 750 IoT experts in 9 international locations
THE INTERNET OF THINGS: FUNDAMENTAL CHANGES IN OUR BUSINESS
The Internet of Things
We are living in a highly connected world ...

- **1995**
  - World population: 5.7 billion people...
  - People with internet access: 7.3 billion people...
  - 0.7% are online...
  - 15% are online...

- **2005**
  - World population: 6.5 billion people...
  - People with internet access: 0.75 billion people...
  - 1% are online...
  - 15% are online...

- **2015**
  - World population: 7.3 billion people...
  - People with internet access: > 6.6 billion people...
  - 75% are online...

**Web 1.0 “Classic Web”**
- connecting enterprises/ organisations with people, rather static
  - Homepages
  - E-Commerce  
  - ≈1990

**Web 2.0 “Social Web”**
- interconnecting also people, dynamic interaction between common users
  - Blogs, Social Communities
  - Platforms like Facebook, Twitter, YouTube...
  - ≈ 2005

**Web 3.0/4.0 “Internet of Things”**
- interconnecting also objects of everyday use to create
  - Industry 4.0
  - Connected Mobility
  - Smart Home ...
The Internet of Things
Enabler: miniaturized, low power sensors

▶ “Moore’s Law” in MEMS*:

*MEMS: Micro electro-mechanical systems
Source: Bosch Sensortech, www.bosch-sensortec.com

Continuously
▪ shrinking size / footprint
▪ reducing power consumption

Bosch – world’s leading manufacturer
▶ Producing sensors on industrial scale since 1995
▶ Six billion MEMS sensors produced
▶ 100% in-house from MEMS design to manufacturing
Our vision for the Internet of Things: The Connected World

Industry | Mobility | Energy | Smart Home | Smart City
The Internet of Things

Bridges between different worlds required

Not only a technical task: different business models, cultures and paradigms must be brought together.
The Internet of Things

Fundamental changes in our business

1. Complement and strengthen traditional hardware product business
   - Higher margins and differentiation through product-related services

2. Grow with potentially disruptive business models
   - Will everything become a service?

Margin

Service

Product

Time

Prof. Elgar Fleisch, 2010

Prof. Elgar Fleisch, 2010
The Internet of Things
From Physical Products to Digital Services: Mobility

Example: EV Charging

Hybrid Product Scheme: Prof. Elgar Fleisch, 2016
HOW DO WE PREPARE AT BOSCH?
Bosch is active on 3 layers of the IoT
Bosch IoT Suite connecting all industries

Services & applications
Middleware platform
Smart things
Bosch IoT Suite
Toolbox in the cloud for IoT developers

Software services available on developer marketplace

Successfully commercialize prototype applications

- Bosch IoT Analytics
- Bosch IoT Hub
- Bosch IoT Permissions
- Bosch IoT Remote Manager
- Bosch IoT Rollouts
- Bosch IoT Things
Bosch in the Internet of Things
Innovative cloud-based solutions across all domains
The Internet of Things
From Physical Products to Digital Services: Mobility

Example: Community based parking

Physical product
Car with park pilot system

Digital product
“Smart Parking” app

Digital service
Community Based Parking Cloud Platform

Physical product
Car with park pilot system

Physical service
Finding a parking space

Hybrid Product Scheme: Prof. Elgar Fleisch, 2016
The Internet of Things
From Physical Products to Digital Services: Smart Heating

Example: Junkers Gas Boiler

Physical product
Gas Boiler (100 years ago)

Digital product
“HomeCom” app

Digital service
Web-based control

Physical product
Smart Gas Boiler

Physical service
Hot Water & Warm Air

Hybrid Product Scheme: Prof. Elgar Fleisch, 2016
The Internet of Things
From Physical Products to Digital Services: Powertools

Example: “Track my Tools”

Hybrid Product Scheme: Prof. Elgar Fleisch, 2016

- **Digital product**
  - “Track my tools” app

- **Physical product**
  - Electric Drill + module

- **Digital service**
  - Inventory Management

- **Physical service**
  - “Drilling a hole”
The Internet of Things
Success factors in a networked economy

Open IoT ecosystems are key to success:

- Connected world requires cross-domain integration
  - open standards
- Technology
  - Multi-layer protocol interoperability
  - Standardized interfaces and APIs
  - Open source
- Marketplaces, clouds, platforms
- Strategic alliances
Bosch Software Innovations

Agile Leadership & People are Key for Success

- Learn from mistakes
- Empowered teams
- Self organization
- Leadership
- Responsibility
- Interaction
- Collaboration
- Courage
- Speed
- Adapt to change
- Trust

Collaboration, empowered leadership, organization, trust, interaction, self-change to learn from mistakes, courage, speed, adapt to change.
THANK YOU

Find more on:
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www.iot-lab.ch

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