Internet der Dinge – Potenziale für die Optimierung der Produktion

Dr. Uwe Kubach

Vice President HCP Internet of Things, P&I Technology, SAP SE

Public



Internet of Things (IoT)

Trends



12 – 50 bn

Devices connected by 2020*

40 – 50 %

CAGR for M2M market until 2020**

1/5

Price of communication module today vs. four years ago

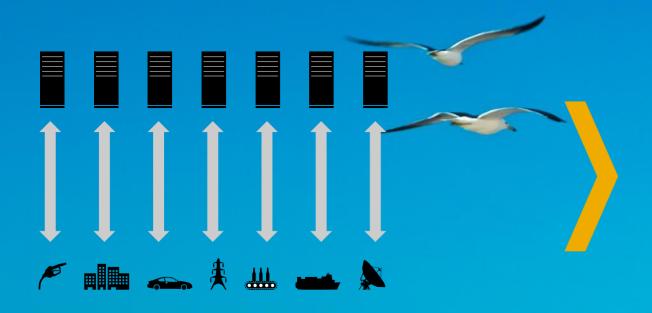


Maturity and reliability of technology

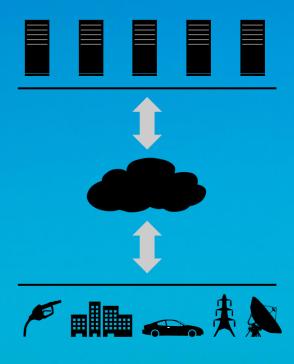
^{*}Source: EIU "The rise of the machines"

^{**}Source: Cisco

Towards the Internet of Things



M₂M



loT Device Cloud

Internet of Things Transformation



Device Cloud

Integration

Real-time Transparency

- Component Re-Use
- Uniform Data Access
- Pace-layered Architecture
- Fog Computing

- Horizontal: Cross-enterprise,
 Networked Economy, Social
- Vertical: Sensor-to-Action, IT-OT, Cyber-physical

- Business Processes
- Business Models
- From Product to Service

* http://www.gartner.com/newsroom/id/1923014

IDC Top Ten Predictions 2015

IoT and the Cloud

Within the next five years, more than 90% of all IoT data will be hosted on service provider platforms as cloud computing reduces the complexity of supporting IoT "Data Blending".

IoT at the Edge

By 2018, 40% of IoT-created data will be stored, processed, analyzed, and acted upon close to, or at the edge, of the network.

Source: http://www.machinetomachinemagazine.com/2014/12/04/idc-report-worldwide-iot-predictions-for-2015/

Industry 4.0 Definition



The integration of Cyber Physical Systems in production and logistics as well as the application of the Internet of Things and Services in industrial processes – including the resulting consequences for value creation, business models, services and organization of labor.*

*Source: acatech

IOT 14.0

14.0-Plattform

Leitung BM Gabriel, BM'in Wanka

Vertreter Wirtschaft, Gewerkschaft, Wissenschaft Politische Flankierung

Technisch-praktische Kompetenz, Entscheidung

Lenkungskreis (Unternehmen)

- Leitung durch Unternehmer unter Beteiligung BMWi, BMBF
- AG-Leitungen und weitere Gäste/ Promotoren

Industrielle Strategieentwicklung, technische Koordinierung Entscheidung und Umsetzung

Arbeitsgruppen

- Referenzarchitektur, Standardisierung und Normung
- Forschung und Innovation
- Sicherheit vernetzter Systeme
- Rechtliche Rahmenbedingungen
- Arbeit, Aus-/Weiterbildung
- · Weitere nach Bedarf

Arbeitseinheiten mit technisch-praktischer Kompetenz; Beteiligte Ressorts BMWi, BMBF, BMI, BMJ, BMAS Politische Steuerung, Gesellschaft, Multiplikatoren

Strategiekreis (Politik, Verbände, Gewerkschaft, Wissenschaft)

- Leitung StS Machnig, StS Schütte
- Vertreter Lenkungskreis
- · Vertreter Bundeskanzleramt, BMI
- Vertreter Anbeitskreis Bundesländer.
- Vertreter Verbände (VDMA, ZVEI, BITKOM, BDI, VDA, BDEW)
- Vertreter Gewerkschaft (IG Metall)
- · Vertreter Wissenschaft (FhG)

Agenda-Setting, politische Steuerung, Multiplikatoren Aktivitäten am Markt

Industriekonsortien und Initiativen

Realisierung am Markt: Prüfstände, Anwendungsfälle

Internationale Standardisierung

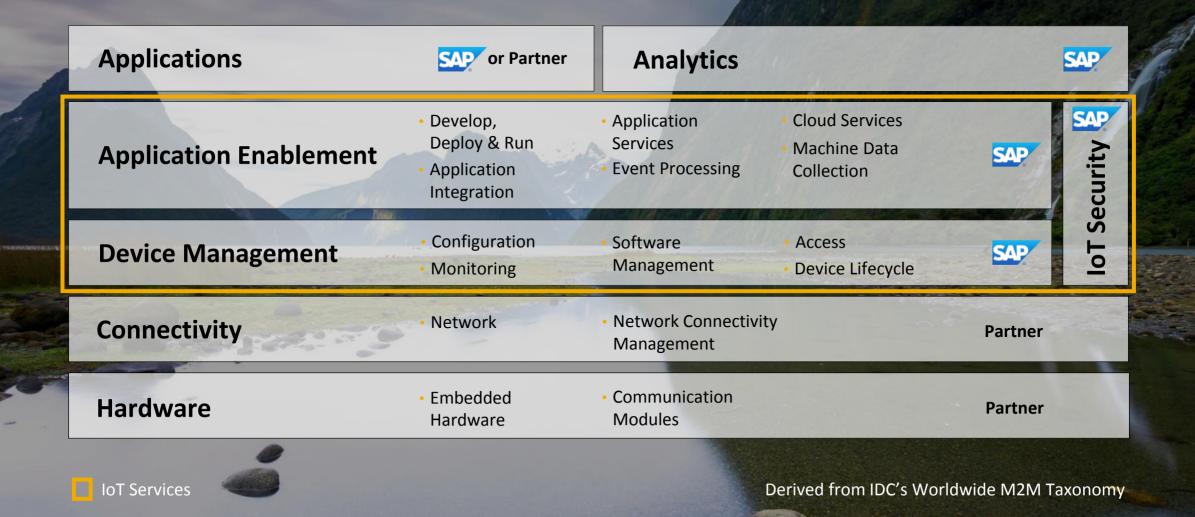
Konsortien, Standardisierungsgremien, DKE u. ä. 2011 Vorarbeiten
2012 Acatech AK,
Handlungsempfehlungen
2013 Handlungsempfehlungen
zur HMI
2014 I4.0-Plattform
(ZVEI, VDMA, BITKOM)
2015 I4.0-Plattform
(BMWi, BMBF)

Wissenschaftlicher Beirat

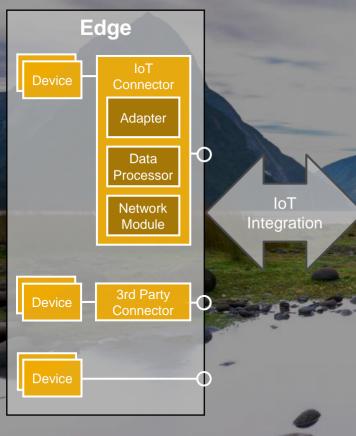
Geschäftsstelle als Dienstleister

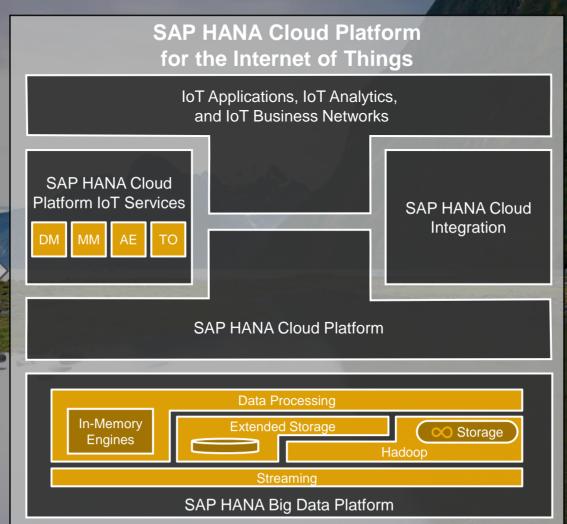
Netzwerkkoordination, Organisation, Projektmanagement, interne und externe Kommunikation

IoT Technology Stack



Architecture





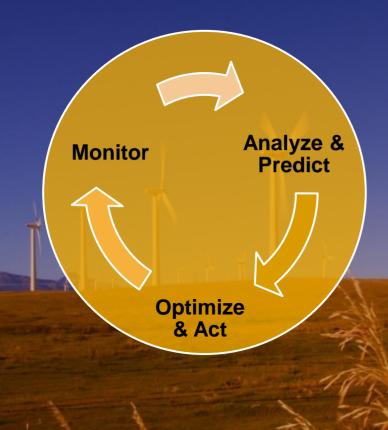
Process & Carlo Business Suite Systems (ERP, CRM, etc.)

Integration

Database, Data Warehouse

Enterprise IT

IoT Applications



Connected Logistics

Container Management
Automatic Guided Vehicles
Supply Chain Visibility

Connected Assets

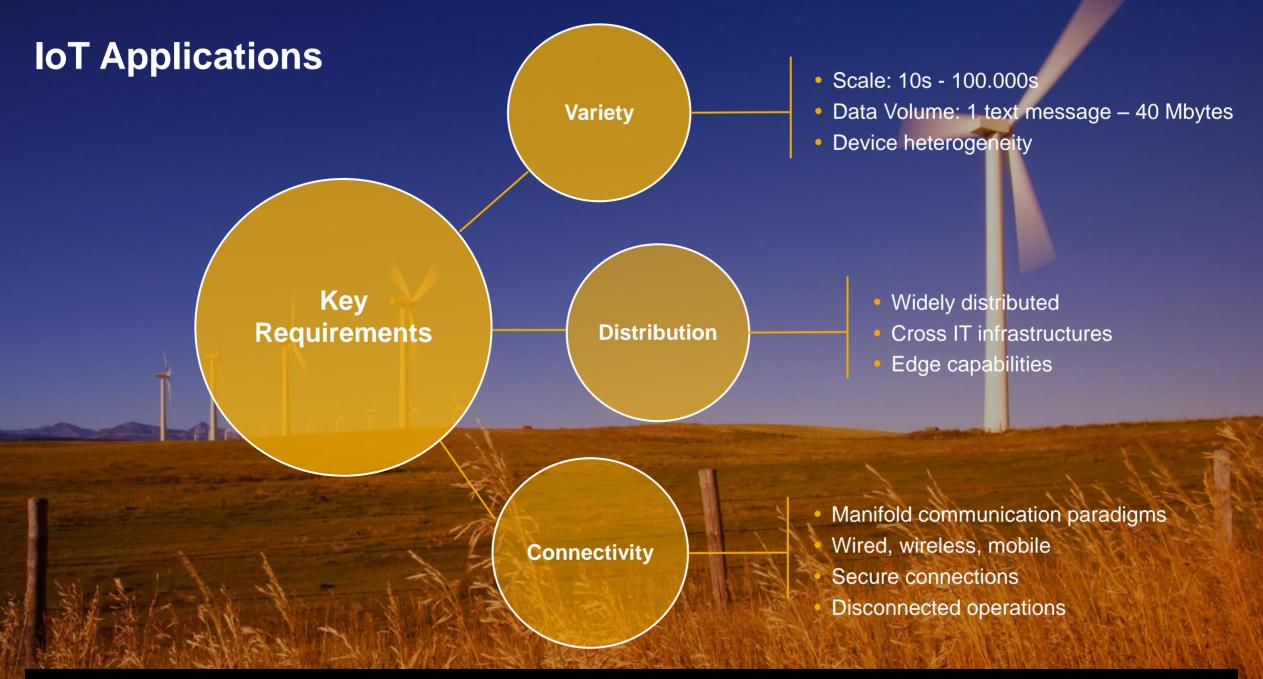
Remote Service Management
Predictive Maintenance
Usage-based Billing

Connected Buildings

Smart Meters
Facility Management
Home Automation

Connected Vehicles

Fleet Management
Electric Vehicle Charging
Smart Parking



Application Examples

GEA – Predictive Maintenance



- < number of service visits
- < mean-time to repair
- > first-time fix rate
- > remote fix rate

Still – Adaptive Logistics



- Connected Still Fork Lifters
- Automated Execution

 Dynamic Adaptation

BMW – Connected Cars



Marketplace
Mobile Couponing
Smart Parking

BP – Safety Management



Hazardous Goods Incompatible Goods Storage Limitations





Thank you

Contact information:

Dr. Uwe Kubach Vice President HCP Internet of Things, P&I Technology, SAP SE uwe.kubach@sap.com

LinkedIn: https://www.linkedin.com/pub/uwe-kubach/3/694/710

SAP IoT: http://go.sap.com/solution/internet-of-things.html

Starter-Kit: https://github.com/SAP/iot-starterkit

Blog: http://scn.sap.com/community/internet-of-things/blog/2015/05/06/sap-hana-cloud-platform-for-the-internet-of-things-announced