DTAG'S JOURNEY TO THE 4 PILLARS OF DIGITALIZATION

Heiko Burdack, Senior Vice President Digital Division, T-Systems International GmbH
München, 23.11.2016

LIFE IS FOR SHARING.

DIGITALIZATION 2016

POTENTIAL

VS

REALITY

1.7 TN€
economic value added by digitization by 2020

38.5 BN
devices connected to the internet 2020

367.2 EB
mobile data traffic in 2020 (CAGR 53%)

43 BN€
European IoT market revenues by 2020

42 BN€
IT Expenditures for Industry 4.0 in 2019 (CAGR 18%)

0.65 BN€
Invest in Industry 4.0 in Germany (2015)

<10%
of collected data is analyzed

30%
of all Shop Floors are using Cloud Computing

59%
of german companies are having concerns regarding data security

66%
of German companies are oblivious to IoT

4 PILLARS TO ENABLE DIGITALIZATION

DTAG'S CUSTOMERS	CUSTOMER PROBLEMS	4 PILLARS

KONE

Rieber

DB SCHENKER

SEUSTER

...AMONG MANY OTHERS

"Too many specialized providers on the market, **CAN I BUY EVERYTHING FROM YOU?**"

"I do not know what I need, can you help me with my **DIGITIZATION STRATEGY?**"

"I want to **VISIBLY SEE** what and how my machines are doing, so I can **PROACTIVELY** act."

"I want my data to be **SECURELY LOCKED**. Can I make sure that I always control and own my data?"

"I want my **MACHINES TO SPEAK WITH ME**."

1 EASY TO USE

2 REDUCED COMPLEXITY

3 AFFORDABLE

4 FUTURE-PROVEN

SECURE

EASY TO USE

DATA POOLING
COLLECTING & TRANSMITTING
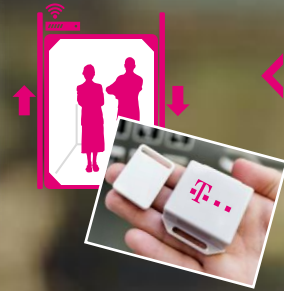
PARAMETER ANALYZIS
ANALYZIS OF COLLECTED DATA

PATTERN RECOGNITION
AND ACTION TRIGGERING

PREDICTIVE MAINTENANCE

IOT LAB APPROACH

MODERN DESIGN LAB

- One focus week with results and a working prototype

- Design Thinking with customers and partners

- Rapid Prototyping & Hackathons

DIFFERENTIATOR

- We offer and combine the best of breed

- We work with modules and offer E2E

- Micro-Factory Booster

KEEP SOLUTIONS EASY TO USE AND TRY IT OUT

REDUCED COMPLEXITY

CUSTOMER

IOT PLATFORM SERVICES	Microsoft **IOT STACK**	CISCO **IOT STACK**	HUAWEI **IOT STACK**
	▪ Best Analytic, ML and & AI capability with a German data trustee ▪ Best IoT services maturity on a partner platform so far	▪ Stack for Devices & Gateway Management ▪ Gateway as a Service Model ▪ Sensor Networks	▪ Stack for Devices & Gateway Management ▪ Sensor Networks

PAAS/ IAAS	**DT DATA CENTER**		
	Microsoft Azure	CISCO	OPEN TELEKOM CLOUD

MISP
ONE-STOP IOT SHOP

- ✓ The Multi IoT Service Platform is a best of breed composition
- ✓ Integration with T-Connectivity
- ✓ Fast & accelerating Product Development Times (2-3 Months)

- ✓ For product-leverage and acceleration
- ✓ DTAG-proven security
- ✓ Operated by DTAG

ONE-STOP IOT SHOP

best of breed ecosystem in a leading edge design out of one hand

LIFE IS FOR SHARING.

AFFORDABLE

LOW DATA RATES	LOW POWER CONSUMPTION	LOW COST	DEEP INDOOR PENETRATION, EXTENDED COVERAGE	BI-DIRECTIONAL COMMUNICATION
600 BIT/S UP TO FEW 100 KBIT/S*	LONG BATTERY LIFETIME (10 YEARS, 2 AA BATTERIES)	TARGET FOR MODEMS (<€4**)	+ 20DB LINK BUDGET COMPARED TO GSM	UPLINK AND DOWNLINK (SOFTWARE UPDATES)

STANDARDIZED	LTE BASED SECURITY	HIGH NUMBER OF DEVICES	PUBLIC NETWORK	EASE OF USE
3GPP RELEASE 13	SIM BASED, AUTHENTICATION, INTEGRITY, CIPHERING	~100.000 CONNECTED PER CELL	IN OPERATOR MANAGED LICENSED SPECTRUM	DIRECT USE – NO COUPLING TO HUB (E.G. ROUTER, SMARTPHONE)

*depends on cell load and radio condition **Industry target and requirement in 3GPP. Has to be approved by module suppliers.
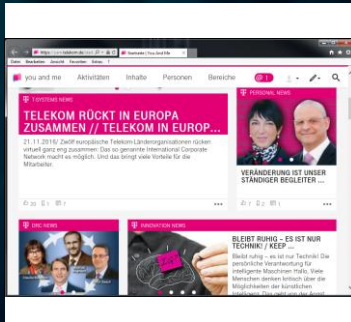
NB-IOT: THE GAME CHANGER
Low Cost, Low Bandwidth, High Speed, Massive Digitalization

FUTURE-PROVEN

YESTERDAY
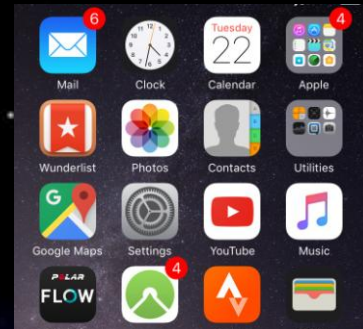**BROWSER-BASED**

TODAY
APP-BASED

TOMORROW
REALITY-BASED

LATENCY   > 30MS   20-30MS   > 1MS

5G ENABLED USE CASES

DENSITY — Ultra Mobile Broadband — BANDWIDTH

COST-POWER — Massive Internet of Things

LATENCY — Ultra reliable Coms

OF DEVICES   RELIABILITY
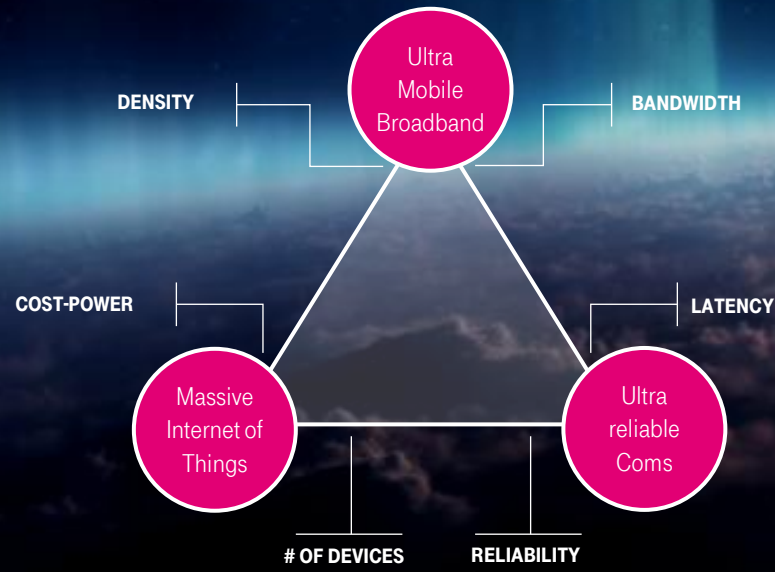
5G ENABLED BUSINESS MODELS

NETWORK
Network Slices

5G

CONNECTIVITY
Differentiated

PLATFORM
IaaS & PaaS
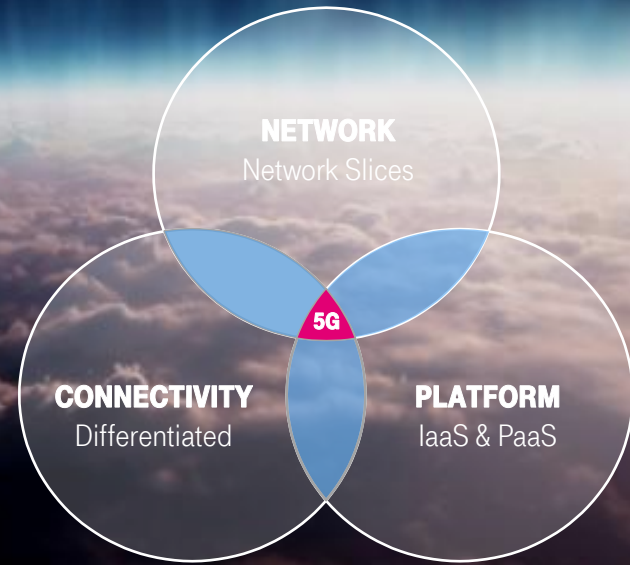
5G WILL SUPPORT MOBILE BROADBAND GROWTH, EXPAND INTO NEW USE CASES AND ENABLE NEW BUSINESS MODELS

COLLABORATION IS KEY

THANK YOU

LIFE IS FOR SHARING.

BACKUP

SECURE

78% are **CRIME** or **ESPIONAGE** related
June 2016 – www.hackmageddon.com
CYBER ATTACKS

60% provide user interfaces that were **VULNERABLE**
2015 HPE IoT Research Study
DEVICES

VENDORS **MEDICAL DEVICES**
40 **300+** have hard-coded passwords
2013 - C ICS-ALERT-13-164-01
HEALTH CARE

OVER **70%** of organizations report having been **COMPROMISED** in 2015
2015 Cyberthreat Defense Report
INCIDENTS & BREACHES

24% of cyber attacks manufacturing, transportation, utilities
June 2016 – www.hackmageddon.com
INDUSTRIAL IOT

YEAR **2016** machines close and search for security hazards automatically
2016 – DARPA Cyber Grand Challenge
AUTONOMOUS HACKING

STATE-OF-THE-ART SECURITY IN GERMAN CLOUD
incl. Data Trustee concept secures customer data

SECURE

SECURE HOSTING IN BIERE

DT NETWORKS

DTAG

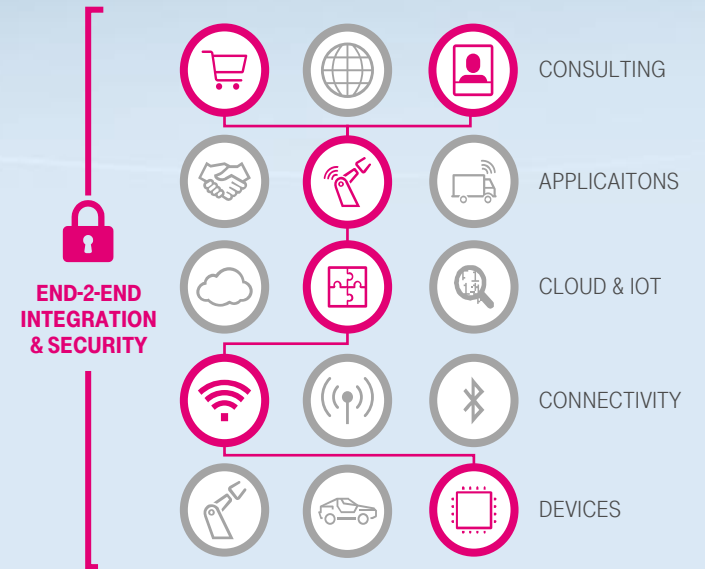## SECURE CONNECTIVITY AND ENCRYPTED DATA TRANSFER PROVIDED BY DT NETWORKS

IT VS. OT

Connecting both worlds increases the risk of security gaps.

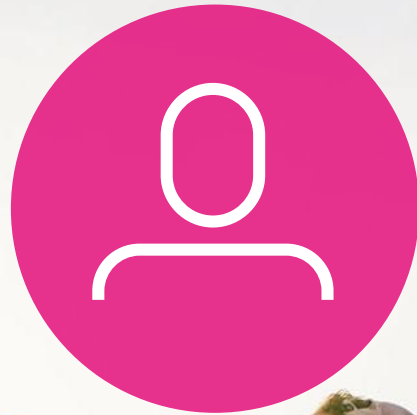For the last 50 years, IT and OT have remained separate and different worlds

DTAG CLOSES THE GAP AS **E2E PROVIDER** WITH HIGH SECURITY DATA CENTER AND **DATA SECURITY „MADE IN GERMANY"**

IT has to think as OT does and vice versa

An Industrial Internet is not possible if IT and OT work in silos

END-2-END INTEGRATION & SECURITY

CONSULTING

APPLICAITONS

CLOUD & IOT

CONNECTIVITY

DEVICES

T··Systems·

12

WIR HABEN BIER „SMART" GEMACHT!

108 LITER / P.A.

×6 LAGERLOGISTIK

53 BIERSORTEN

...MIT SCHLAUEN, DIGITALEN LÖSUNGEN

INTELLIGENTES STAPLERLEITSYSTEM

M2M & LASERTECHNOLOGIE MIT ERP-SYSTEM VERKNÜPFT

DIGITALE LAGERVERWALTUNG

...FÜR DEUTLICHEN KUNDENNUTZEN
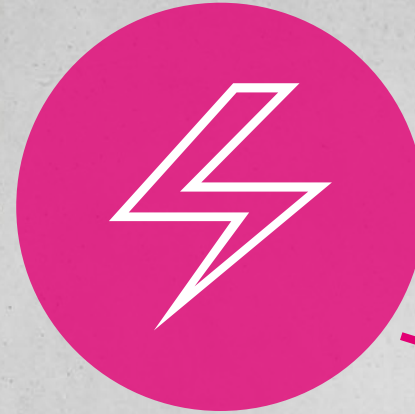
+13% HEKTOLITER

+23% LAGERKAPAZITÄT

-15% CO_2 EMISSION

-20% LEERFAHRTEN

DER AUSFALL EINES FAHRSTUHLS WIRD STATISTISCH ERST NACH MEHREREN STUNDEN BEMERKT

60%

FEHLERHAFTE FAHRSTÜHLE

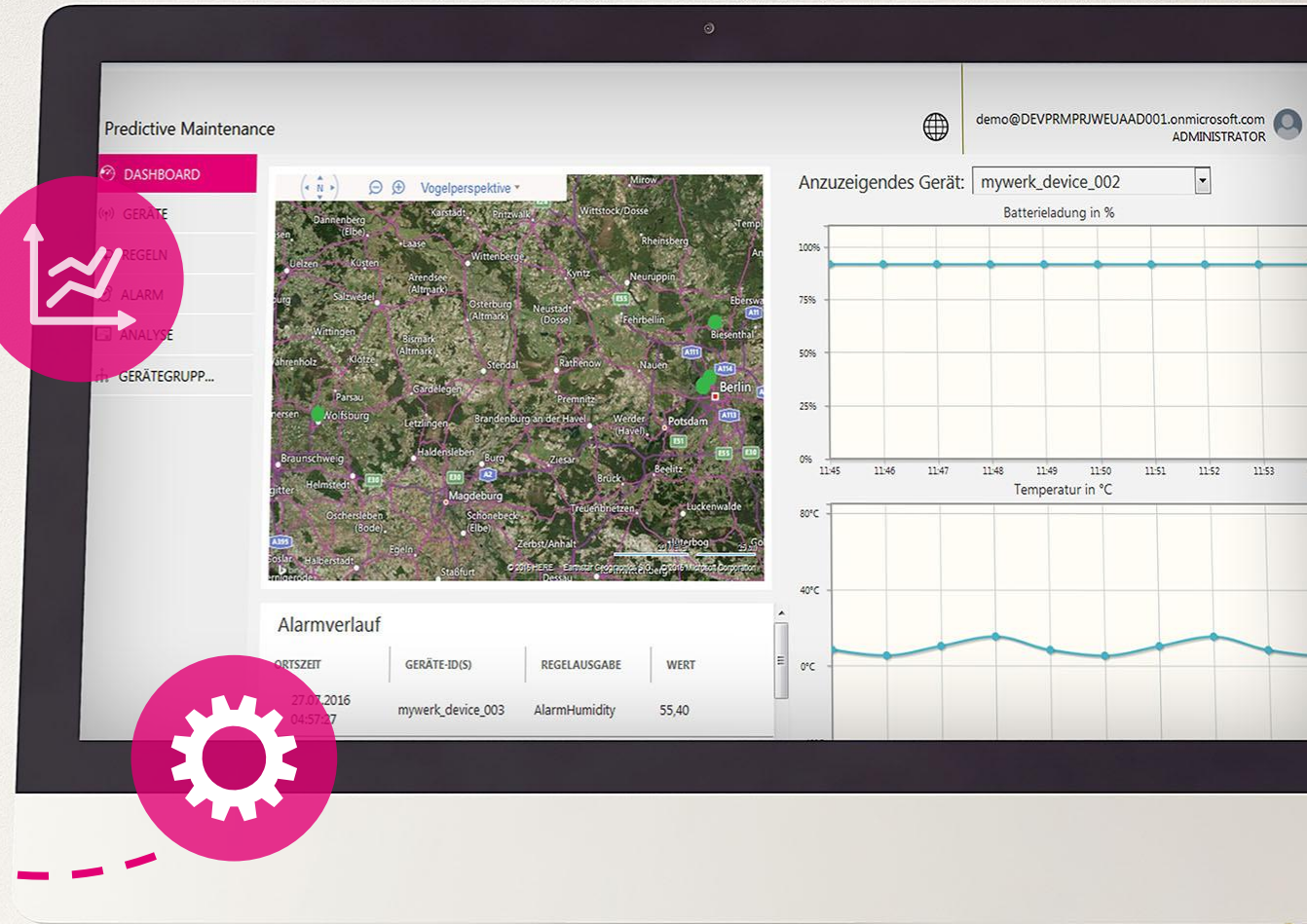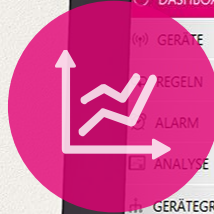**EIN SMARTER AUFZUG MELDET EINEN AUSFALL NICHT NUR IN ECHTZEIT...**

TÜRSCHLIESS-VORGANG

GEWICHT

TEMPERATUR

WARTUNG

...SONDERN ERKENNT FEHLER BEVOR SIE ZU AUSFALLZEITEN FÜHREN

Predictive Maintenance

demo@DEVPRMPRJWEUAAD001.onmicrosoft.com
ADMINISTRATOR

- DASHBOARD
- GERÄTE
- REGELN
- ALARM
- ANALYSE
- GERÄTEGRUPP...

Vogelperspektive

Anzuzeigendes Gerät: mywerk_device_002

Batterieladung in %

100%
75%
50%
25%
0%

11:45 11:46 11:47 11:48 11:49 11:50 11:51 11:52 11:53

Temperatur in °C

80°C
40°C
0°C

Alarmverlauf

ORTSZEIT	GERÄTE-ID(S)	REGELAUSGABE	WERT
27.07.2016 04:57:27	mywerk_device_003	AlarmHumidity	55,40

SIND MEINE DATEN SICHER?
WAS IST DIE RICHTIGE IOT-STRATEGIE?

76% der Befragten erwarten von ihrem Cloud-Anbieter **DEUTSCHE RECHENZENTREN**

5% der Befragten schöpfen **IOT-POTENZIALE** aus

95% ENTWICKLUNGS-POTENTIAL

73% investieren lieber in **SICHERHEIT**, bevor Sensorik oder Netze angeschafft werden

FLEXIBLES
PRODUKTPORTFOLIO

PREDICTIVE
MAINTENANCE

SICHERHEIT

SCHNELLE
PRODUKTIONSABLÄUFE

DATA
ANALYTICS

SKALIERBARE CLOUD-LÖSUNGEN FÜR OPTIMALE
VORAUSSETZUNGEN IM GLOBALEN WETTBEWERB