DEUTSCHE TELEKOM AND IBM – BETTER LIFE. SUSTAINABLE GROWTH. MAKE CITIES SMARTER.

Dr. Oliver Kliegl
Head of Business Development Machine-2-Machine
IBM BusinessConnect 2013
Mannheim, October 15th, 2013
DEUTSCHE TELEKOM – PROFILE

Customers & markets
- > 141 m mobile
- > 32 m fixed-line
- > 17 m broadband
- > 5 m (IP) TV

Markets
- Presence in 50 countries
- Germany, Europe, USA: with own infrastructure
- T-Systems: global presence & alliances via partners

Facts & figures
Telekom in figures 2012
- Revenue EUR 58.2 bn
- Adjusted Ebitda EUR 18.0 bn
- Free cash flow EUR 6.2 bn
- Among the top 100 companies worldwide

Employees & responsibility
- Employees worldwide: 232,000
- 9,500 trainees and cooperative degree students in Germany
- Pioneer of social issues (promotion of women, data privacy, climate protection, etc.)
DEUTSCHE TELEKOM’S VISION AND STRATEGY

My First Choice for Connected Life and Work

- Seamless connectivity for the Gigabit Society
- More innovation by cooperation
- Secure cloud solutions
- Best-in-class customer experience

M2M as overall enabler for Connected Life & Work

Connected life
Connected work
over 8 billion
connected M2M devices in 2018

€ 190 billion
total market volume in 2018

26% CAGR
2013 - 2018
EVOLUTION OF M2M BUSINESS ALONG THE VALUE CHAIN
ONGOING UPWARDS SHIFT IN REVENUE CONTRIBUTION

M2M Value Chain

<table>
<thead>
<tr>
<th>M2M Value Chain Stages (simplified)</th>
<th>Hardware (Box + Modem)</th>
<th>Transport &amp; Access</th>
<th>E2E Solution</th>
</tr>
</thead>
<tbody>
<tr>
<td>Today</td>
<td></td>
<td></td>
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<tr>
<td>Share of total M2M Revenues (Trend)</td>
<td>↓</td>
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E2E solutions & Big Data Analytics expected to become the main revenue driver in M2M business
DEUTSCHE TELEKOM – SINGLE POINT OF CONTACT FOR M2M SOLUTIONS
ENABLING THE FULL M2M ECOSYSTEM

- expertise from IT and communication networks through Deutsche Telekom, T-Systems and T-Mobile
- strong industry-leading partner network
- E2E solution set-up and design, roll-out process as well as operations support & management
- broad international solution portfolio and industry specific knowledge
- secure and stable M2M connectivity around the world
ENABLING THE M2M ECOSYSTEM
TOOLS FOR ALL MAJOR PLAYERS IN THE MARKET

M2M Service Portal
- Manage M2M connectivity

M2M Developer Platform
- All around M2M application development

M2M Marketplace
- Almost 600 products available

M2M Partner Portal
- Approx. 500 registered companies

Deutsche Telekom’s open landscape
M2M/IoT – BIG DATA - CLOUD ECOSYSTEM

M2M & INTERNET OF THINGS

PLATFORM BUSINESSES

CLOUD

BIG DATA ANALYTICS
BEST-IN-CLASS PARTNER NETWORK

GLOBAL STRATEGIC PARTNERSHIPS
DRIVE THE GLOBAL M2M ECOSYSTEM

VERTICAL M2M PARTNER NETWORK
DEVELOP TAILOR-MADE SOLUTIONS
WHY DEUTSCHE TELEKOM AND IBM?
COMMON INTEREST AND COMPLEMENTARY CAPABILITIES

Deutsche Telekom
- Leading Telco Network Operator and Service Provider with global reach
- M2M is a DT corporate priority
- Strong commitment to solutions
- Intelligent Networks ”initiative“ in 3 verticals
- Multiple cross vertical industry partnerships for M2M
- Well-established customer relationships to ”cities“

IBM
- Leading solutions in Smarter Cities from over 2,000 projects
- Access to IBM’s developer community ‘developerWorks’
- IBM’s large ecosystem & proven M2M Service Platform solutions
- IBM’s vertical industry know-how
- Strong capabilities in application development, system integration and service management/operation

End-to-end M2M Solution Provision & Operation

M2M Hardware
M2M Transport & Access Enabler
M2M Services & Solution Enabler
M2M Applications

Joint Objectives
- Boost the development of the global M2M market opportunity
- Create a joint go-to-market approach to accelerate the Time-to-Market (TTM) aspect in dedicated verticals (Smarter Cities).
- Define and perform a mutual “Lighthouse” Project Reference in 2013
THE SMART CITY INTEGRATING VARIOUS APPLICATIONS & USE CASES INTO ONE SCENARIO

- Smart water management
- Climate control
- Smart security
- Emergency services
- Traffic Management
- Public Space Advertising
- Public Transport
- Environment and Public Safety
SMARTER STADIUM FOCUS FOR THE JOINT LIGHTHOUSE PROJECT

- Physical Security
- Fan Experience
- Emergency Management
- Traffic and Crowd Flow
- Revenue Mgt

Specific uses cases for sports stadiums
# SMARTER STADIUM END-2-END SOLUTION DELIVERY

## End-2-End solution – Who does what?

<table>
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<tr>
<th>Service</th>
<th>Provider</th>
<th>Coverage</th>
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<tr>
<td>Camera &amp; Video Mgt Software</td>
<td>sourced from 3rd Party</td>
<td>Camera roll-out case by case</td>
</tr>
<tr>
<td>M2M Access &amp; IaaS</td>
<td>sourced from DT</td>
<td>Completely covered by DT</td>
</tr>
<tr>
<td>IVA/IOC Software</td>
<td>sourced from IBM</td>
<td>Completely covered by IBM</td>
</tr>
<tr>
<td>Service &amp; Maintenance</td>
<td>sourced from DT</td>
<td>Covered by DT</td>
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</table>

- Hardware & Software Solution
- GSM Connectivity + Cloud Services
- Video Analytics Software
- Customer care and support

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‘End-2-End Solution customer contract’ will be offered by DT (General Contractorship)
THANK YOU!

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BACK UP
The segment: Agricultural automation.
The industrial sector: Stock breeding.
The requirements: Precise fertilization and calving.
The solution: Transmission of vital signs and body temperature via text message.
The benefit: Remote monitoring provides the farmer with more serenity and avoids emergencies while increasing profitability.
The partners: Medria and Deutsche Telekom.
M2M SOLUTIONS – ENERGY
SMART METERING SOLUTIONS

Combined efforts of two large and experienced companies to create more options for customers will result in tremendous opportunities for utilities.

Joint business development approaches and technological alignment brings flexibility to the complexity of smart metering solutions to customers.

Deutsche Telekom solution

- innovative smart meter solutions combined with M2M capabilities, Information and Communication Technology solutions and Intelligent Networks Energy solution
- integration of Deutsche Telekom SIM cards into GPRS meters
- complete M2M based solution from hardware to managed connectivity, integration, roll-out and operations services
M2M SOLUTIONS – TRANSPORT & LOGISTICS
REAL TIME CARGO MONITORING SOLUTION

Solution provides flexible hardware usage and rental of tracking system per shipment.

Customers benefit from optimized supply chains, real time monitoring, theft protection, reduction of inventory and insurance costs.

arviem & Deutsche Telekom solution

- Global real time cargo monitoring solution with web-based 24/7 tracking service
- Automated (rule based) alarming and reporting functionality
- Customer care and support for complete E2E solution
- Deutsche Telekom partnering with arviem AG
- Best-in-class connectivity and CapEx-free roll-out with Deutsche Telekom
M2M MARKET VIEW
BROAD VARIETY OF MARKET SEGMENTS PROVIDING HORIZONTAL AS WELL AS VERTICAL BUSINESS OPPORTUNITIES

M2M Ecosystem

1. Transport & logistics
2. Vehicle telematics
3. Smart metering/Smart grid
4. Connected consumer electronics
5. Security
6. Retail & commerce
7. Industrial automation, monitoring & control
8. Health care
9. Public sector & infrastructure
M2M – LAYERED VALUE APPROACH
FROM CONNECTED MACHINES TO NEW BUSINESS MODELS

INNOVATE & GROW
New Business

ANALYSE & OPTIMIZE
Data Analytics & Business Enhancement

CONNECT & VISUALIZE
Connectivity & Business Transparency
SMARter STADIUM ARCHITECTURE - EXAMPLE

Cisco Cameras and Network Access Points

Site 1

VPN via Data Network Processing

Site n

Cisco VSOM Surveillance Operations Manager

IBM IOC Intelligent Operations Center

n Sites

Intranet

Command & Control

IBM IVA Intelligent Video Analytics

IPv6 & IPv4
SMARTER STADIUMS UNIQUE SELLING POINTS

HIGHLY SCALABLE: Able to analyze in real time 100s of millions of events on a monthly basis. Able to search for relevant events based on specific person or object attributes in seconds.

EVENT CAPTURE: Stores and consolidates in real time information across cameras covering the field of view.

CROWD ANALYSIS: Operates selectively with very crowded scenes typical of urban environments.

COMPLEX ALERTS: Real-time alerts from multiple cameras and sensors can be used to define alerts allowing for reductions in false positives which optimizes security officers workload.

PROTECTION OF INVESTMENTS: Can be deployed with existing camera and sensor infrastructure.

URBAN OPTIMIZATION: Real hands-on experience in a global environment, has allowed IBM to greatly optimize its solution for use in cities and mass transportation environments.