SOFTWARE AG AND THE INTERNET OF THINGS

USING IOT TO DRIVE BUSINESS ADVANTAGE

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SIX WAVES OF COMPUTING
McKinsey estimates that by 2025, the impact of the IoT will be worth up to $11 Trillion

That’s an additional 10% of the world economy!
What are your firm’s plans to adopt M2M/IoT solutions or applications?

<table>
<thead>
<tr>
<th>Industry</th>
<th>Using</th>
<th>Planning</th>
<th>Interested</th>
<th>Total</th>
</tr>
</thead>
<tbody>
<tr>
<td>Utilities + telecom</td>
<td>27%</td>
<td>30%</td>
<td>30%</td>
<td>88%</td>
</tr>
<tr>
<td>Chemicals + oil and gas</td>
<td>29%</td>
<td>26%</td>
<td>29%</td>
<td>85%</td>
</tr>
<tr>
<td>Transportation</td>
<td>24%</td>
<td>31%</td>
<td>25%</td>
<td>81%</td>
</tr>
<tr>
<td>High-tech production + industrial production</td>
<td>21%</td>
<td>33%</td>
<td>26%</td>
<td>82%</td>
</tr>
<tr>
<td>Primary manufacturing</td>
<td>22%</td>
<td>26%</td>
<td>31%</td>
<td>81%</td>
</tr>
<tr>
<td>Retail + wholesale</td>
<td>20%</td>
<td>30%</td>
<td>31%</td>
<td>81%</td>
</tr>
<tr>
<td>CPG + pharma</td>
<td>18%</td>
<td>31%</td>
<td>34%</td>
<td>83%</td>
</tr>
<tr>
<td>Financial services + insurance</td>
<td>19%</td>
<td>27%</td>
<td>28%</td>
<td>74%</td>
</tr>
<tr>
<td>Media, entertainment, and leisure</td>
<td>16%</td>
<td>21%</td>
<td>33%</td>
<td>70%</td>
</tr>
<tr>
<td>Healthcare</td>
<td>9%</td>
<td>23%</td>
<td>28%</td>
<td>61%</td>
</tr>
<tr>
<td>Government + education and social services</td>
<td>8%</td>
<td>14%</td>
<td>39%</td>
<td>62%</td>
</tr>
</tbody>
</table>

Base: 99-423 global telecommunications decision-makers working in the specified industries (20+ employees) (percentages have been rounded)

THE VALUE OF IOT
WHAT IS IOT?

The interconnection of all types of devices

“IoT allows devices to share information and react in an intelligent way to events happening. At the point they happen”
WHEN WE THINK ABOUT IOT
WE OFTEN THINK OF THE FOLLOWING

You realize there is a film you are going to miss on holiday. You tell your set-top box to record it from your mobile phone.

You forget to turn the heating down while rushing to catch your flight, and change the temperature setting from the departure lounge.

There is an accident on the road to the airport, your route guidance picks this up from the cars already in the traffic and re-routes you.
INTERNET OF THINGS ALSO MEANS IMPROVING BUSINESS PERFORMANCE

Predictive Maintenance
Diagnosing a failing pump before it stops working and shuts down production

Business Efficiency
Detecting water flow discrepancies in pipes that show a leak

Customer Experience
Changing engine oil at the point it needs changing, not 2000 miles later
THE IOT WILL LEAD TO GREATER “SERVITIZATION”

Rolls Royce and GE don’t sell jet engines
They sell power

“Adhesion as a service”

“Lifting as a service”

“Printing as a service”
THE SOFTWARE AG
DIGITAL BUSINESS PLATFORM
FOR IOT
IN A BIG, FAST DATA WORLD THE VALUE OF DATA FALLS RAPIDLY

Forrester Research calls this “perishable data”
5 BASIC FUNCTIONS
OF AN IOT PLATFORM

Ingest

Gateway

MQTT

Collect

Software
Hardware
Physical component

Thing

Product Cloud

Visual Analytics
Integration
Device Management
In-Memory Data

Data storage

Integrate

Enterprise Service Bus

Sales
Marketing
...

Enterprise

Cooperate B2B

Customer / Partner

Monitor, Control, Optimize, Autonomy
THE SOFTWARE AG PLATFORM
FOR IOT
THE SOFTWARE AG IOT PLATFORM
MORE DETAIL

Enterprise IoT Solutions & Applications

- Predictive Maintenance
- Smart Metering & Manufacturing
- Connected Customer
- Smart Logistics

Application Deployment | Portals & APIs | Data Visualizations

IoT Services

- Agile Business Process Management
- Predictive Analytics & Machine Learning
- Complex Event Processing
- In-Memory Data Management
- Ad-hoc Historical Analytics
- Enterprise Integration & Enrichment
- Visual Analytics

Data Collection

- Lightweight Messaging
- Embedded Agents/Adapters
- Device Integration
- Edge Analytics

Partner Networks & Eco-Systems

Business Systems

IoT Data Sources
IOT Architecture

1. Capture device data & behaviors
2. Continuously correlate, aggregate & detect anomalies
3. Store Assets, behaviors & patterns in memory for rapid access on-demand
4. Enrich data with external Data Sources
5. Publish real time interactive dashboards
USE CASES
THE IOT: KEY CUSTOMER USE CASES
PREDICTIVE MAINTENANCE

Business Value

- Continuous monitoring of all aspects of the production line
- Breakdowns can be predicted before a part fails, meaning repairs can be scheduled
- Which saves costs by minimizing downtime
THE IOT: KEY CUSTOMER USE CASES
CONNECTED CUSTOMER

Business Value

• Analyse customer behaviour and their monitor location in real-time to engage with them better
• Make relevant offers at the right time through context-aware, multi-channel, personalized offerings
• Improves customer satisfaction while increasing loyalty and share of wallet
THE IOT: KEY CUSTOMER USE CASES
SMART LOGISTICS

Business Value

• Track assets in real-time in order to improve decision making and maximize utilization rate
• Optimize the supply chain by monitoring for issues and resolving them before the customer is affected
• Increases customer satisfaction by providing accurate, up-to-the-minute information at all times
THE IOT: KEY CUSTOMER USE CASES
SMART METERING & MANUFACTURING

Business Value

• Live sensor data analysis for real-time insights in production environments
• Save costs by improving product quality and minimizing waste
• Increases revenue by providing higher quality assurance and better service to customers