

The Internet of Things as Enabler for Next Generation Enterprise Applications

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The “Internet of Things”: A Point Of View

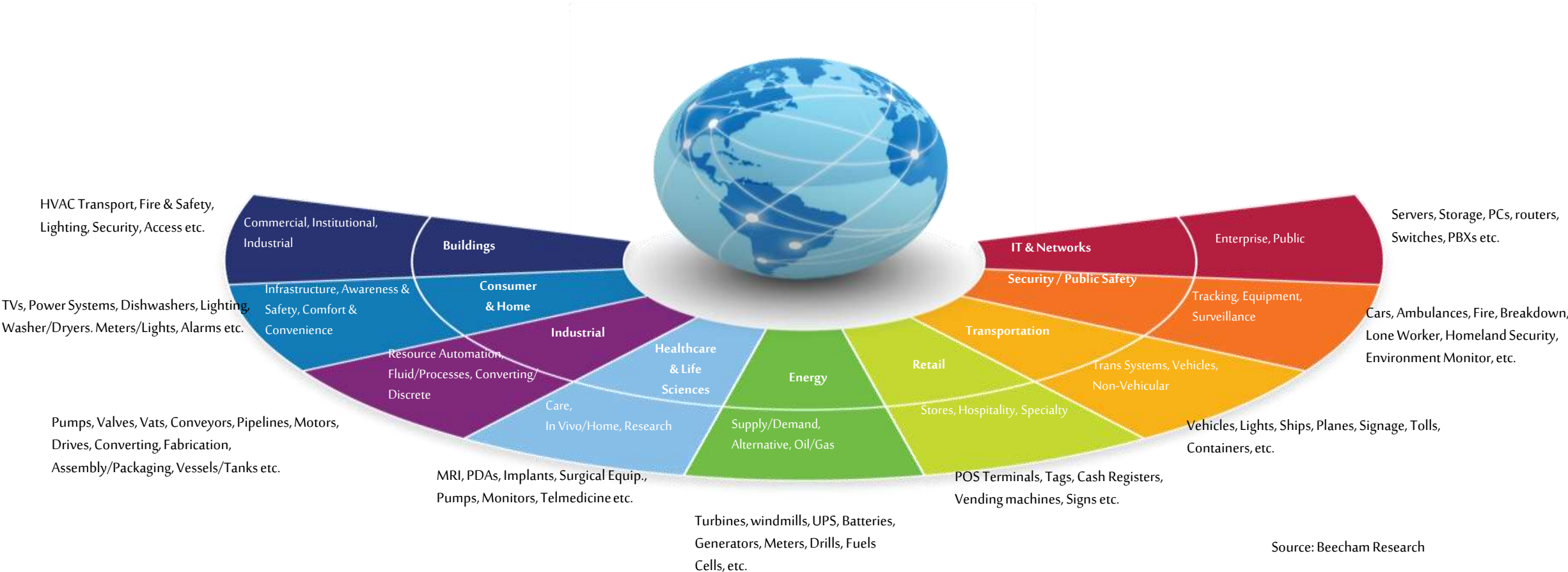
The Emerging Internet of Things Picture By the Numbers

2020



Source: Mario Morales, IDC, Smart Technology World 2013

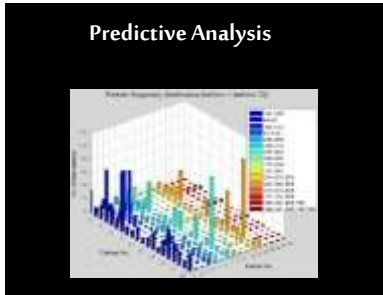
The Potential to Connect Things in Different Industries



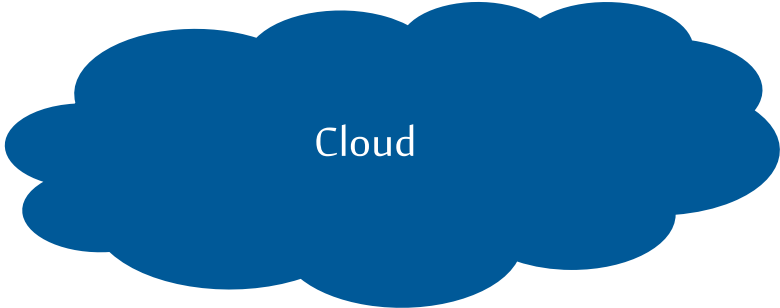
Source: Beecham Research



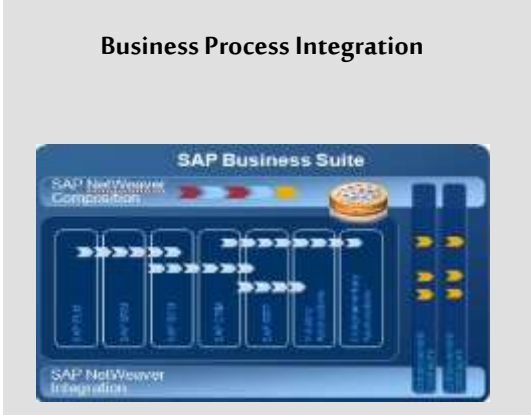
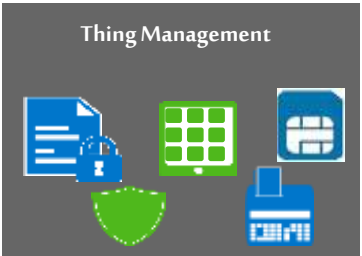
The Digital Edge – Trends in the Internet of Things



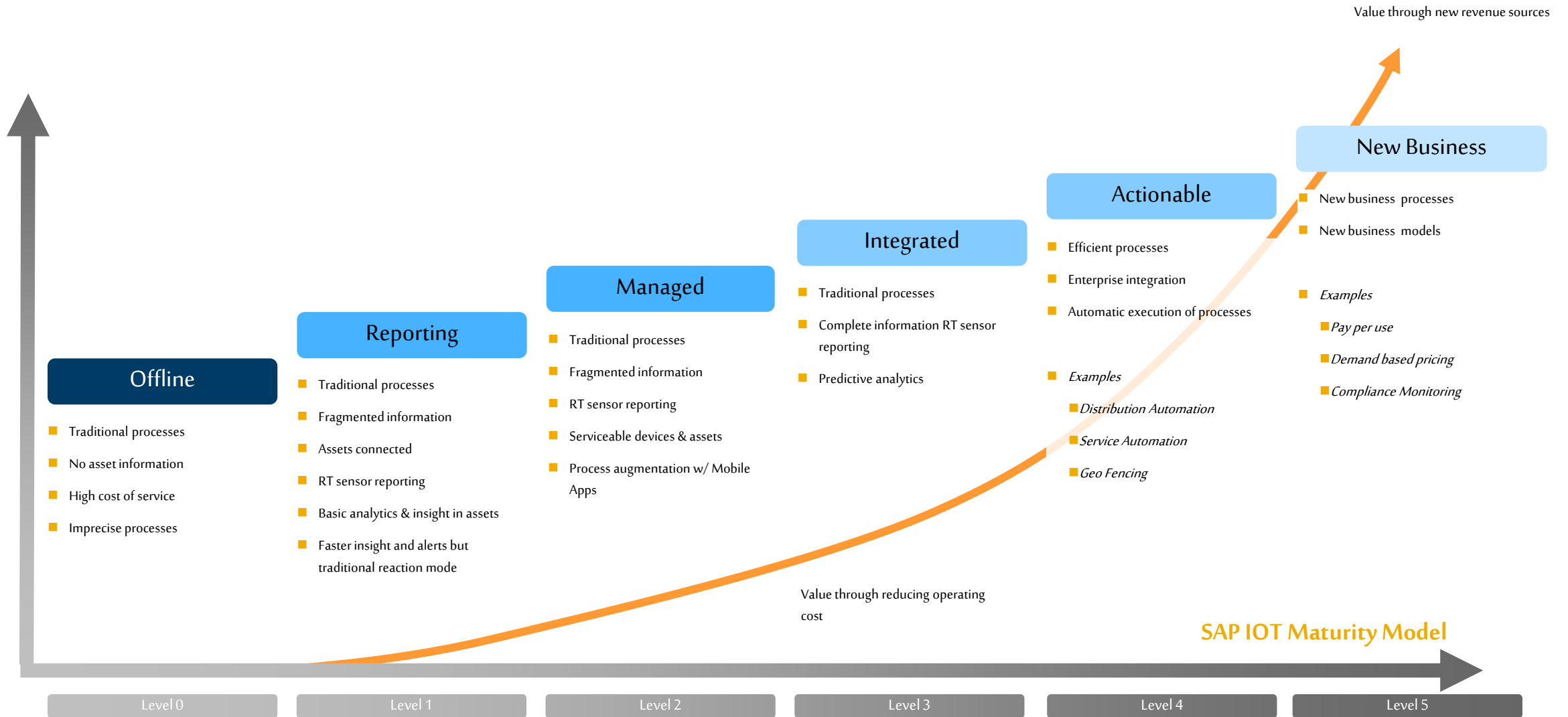
Connected Things



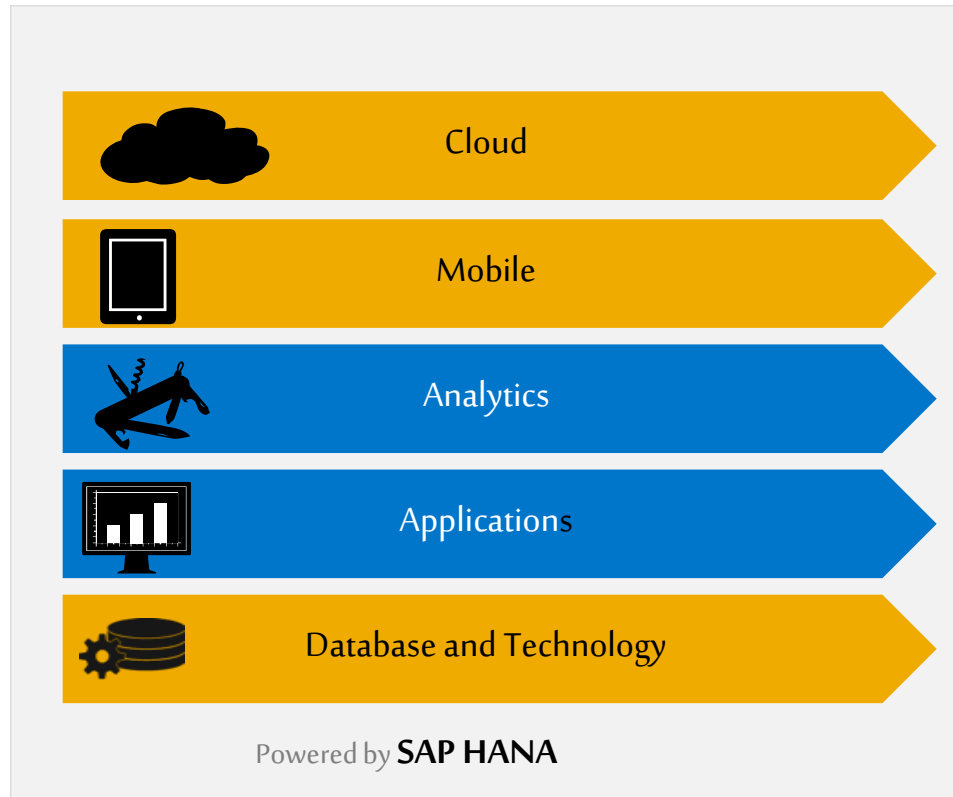
Business Backbone



IOT Enables New Business Models



SAP is the industry leader in enterprise software

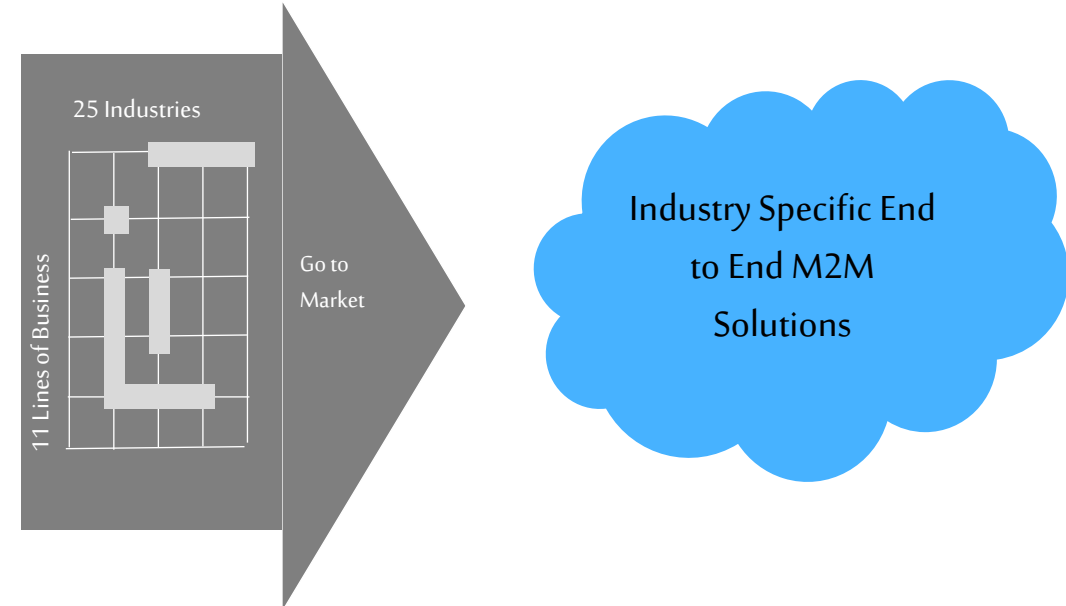


PRODUCT

SOLUTION

VALUE

Nearly 200K enterprise customers in 120 countries



Some facts:

- 63% of the world's transactions touch an SAP system
- SAP's customer base includes nearly 80% of the Global 500 and 85% of the world's most valuable brands

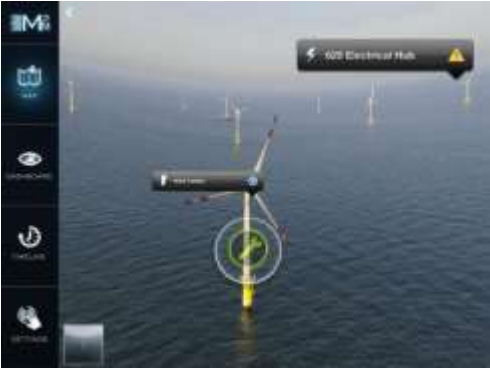


Some Key Use Case Examples

Predictive Asset & Service Management



Various Remote Assets (A Sample)



Wind Turbines



Drilling Rigs



Compressors



Pumps



Tractors



Agricultural Machinery



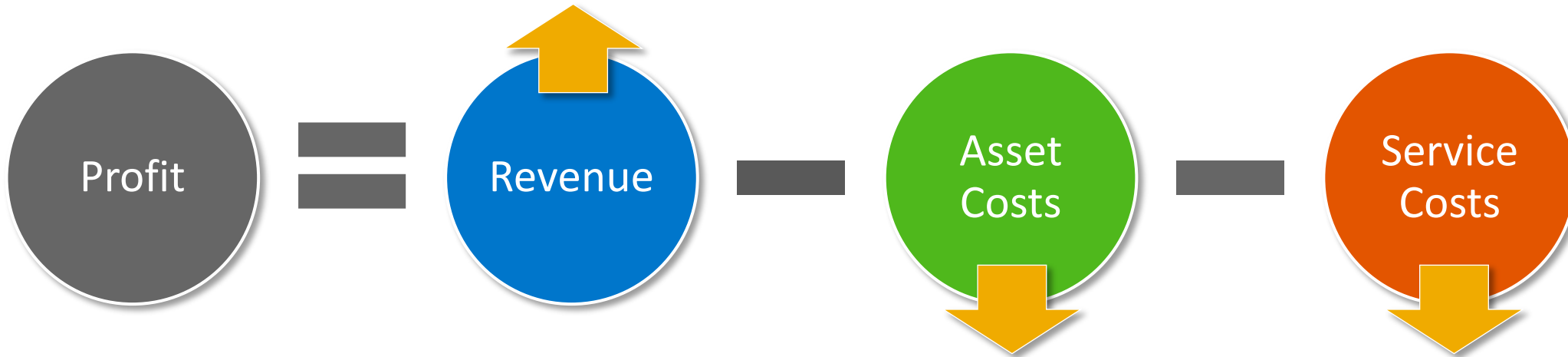
Oil & Gas Equipment



Industrial Scrubbers

Objective: Grow & Enable New Business Opportunities!

- **Brand/Loyalty** “World Leader; Trendsetter”
- Multi-year Contracts, Better SLA
- More New Products & Smart Services
- New Business Models (Usage-based billing, Service on Demand, etc.)

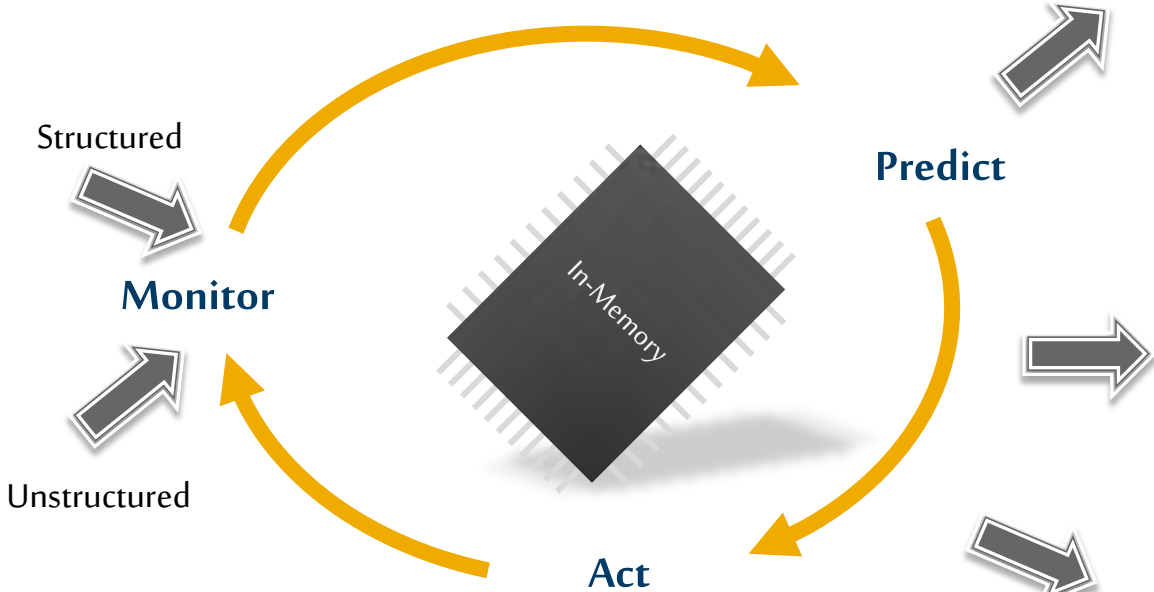


- High Asset Utilization
- Location Awareness
- Remote Asset Management
- Proactive parts and consumables management
- Better ROA

- Remote Diagnostics
- Predictive maintenance

Our Vision – Predictive Maintenance and Services

- Telematics
- Warranty and Claims
- Contract Data
- Field Service Data
- Call Center Data
- Engineering BOM
- R&D Knowledge Base
- Weather & other 3rd Party Data



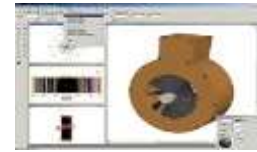
Early Warnings & Recalls



Spare Parts Optimization



Warranty Cost Management



Design Improvement



Customer/Dealers Portals



Wind Turbine App



Home + WM Locations



Details of a Turbine



Work Order Details



Predictive Analytics



Camera Views



Alert Details (from temperature sensor)



3D View of Overheated Part



Smart Port Logistics



“Hamburg Steers A Course For the Port Of The Future”



“Smart Port Logistics,” Joint Pilot Project by Hamburg Port Authority, Deutsche Telekom and SAP, Offers IT-Assisted Traffic Management System to Provide Real-Time Information About Freight Orders and Traffic Situation;

Optimized Flow of Goods Minimizes Traffic Jams and Waiting Times for Truck Drivers

WALLDORF, Germany - September 27, 2012 - The Hamburg Port Authority (HPA), Deutsche Telekom and SAP AG (NYSE: SAP) are jointly creating a logistics IT solution designed to connect port-based companies, partners and customers more closely. The "Smart Port Logistics" pilot project has resulted in a comprehensive IT platform that incorporates mobile apps and makes it possible for traffic information and port-related services to be accessed from mobile devices such as tablets and smartphones. The objective of the project is to optimize both traffic and logistics operations in order to allow larger quantities of goods to be trans-shipped in the port area. Road capacity within the port of Hamburg is restricted and the options for modifying the roads to take more vehicles are limited. Therefore Europe's second-largest container port urgently requires an efficient traffic management system to continue growing.

(More at <http://www.sap.com/corporate-en/press.epx?PressID=19642>)

The Port of Hamburg



THE PORT OF HAMBURG

- One of world's leading ports; Germany's "Gateway to the World"
- Handles about 9 million containers per year, approx. 13,000 vessel arrivals
- Located on the River Elbe, it forms an ideal port complex with warehousing, transshipment and extensive freeport (source: Wikipedia)
- Operated by the Hamburg Port Authority (HPA)
- Port ecosystem involves sea traffic (vessels), road traffic (trucks), container logistics (freight forwarders) and terminal operations
- The road traffic to the port in particular involves about 40,000 vehicles a day



Some Key Challenges tackled by the joint initiative:

- *"The traffic challenges are huge – the existing information islands prevent efficient intermodal harbor logistics"* – Director, Traffic Management
- *"The inefficiency in transportation operations is very high – only 30% of the time spend in the harbor area is real driving time"* – CEO, Freight Forwarding Company, Northern Germany
- *"I need better real-time information to do my job, especially traffic and infrastructure information regarding the situation in the port. Currently, I only have some WebCams..."* – Dispatcher @ Freight Forwarder
- *"The current communication possibilities between the partners are simply not satisfactory! The current traffic information is useless – neither the radio information nor the dynamic signs are suited for our needs"* – Truck Driver Thomas
- *"The truck drivers have no visibility of the current situation in the parking spaces – they come, see that everything is full and have to leave"* – Truck Station Owner Markus

Smart Port Logistics Vision

Smooth Shipping

Efficient Terminal Operations



Real Time and Efficient Freight Forwarding

ETA of Trucks

Geo-fencing

Efficient Container Operations

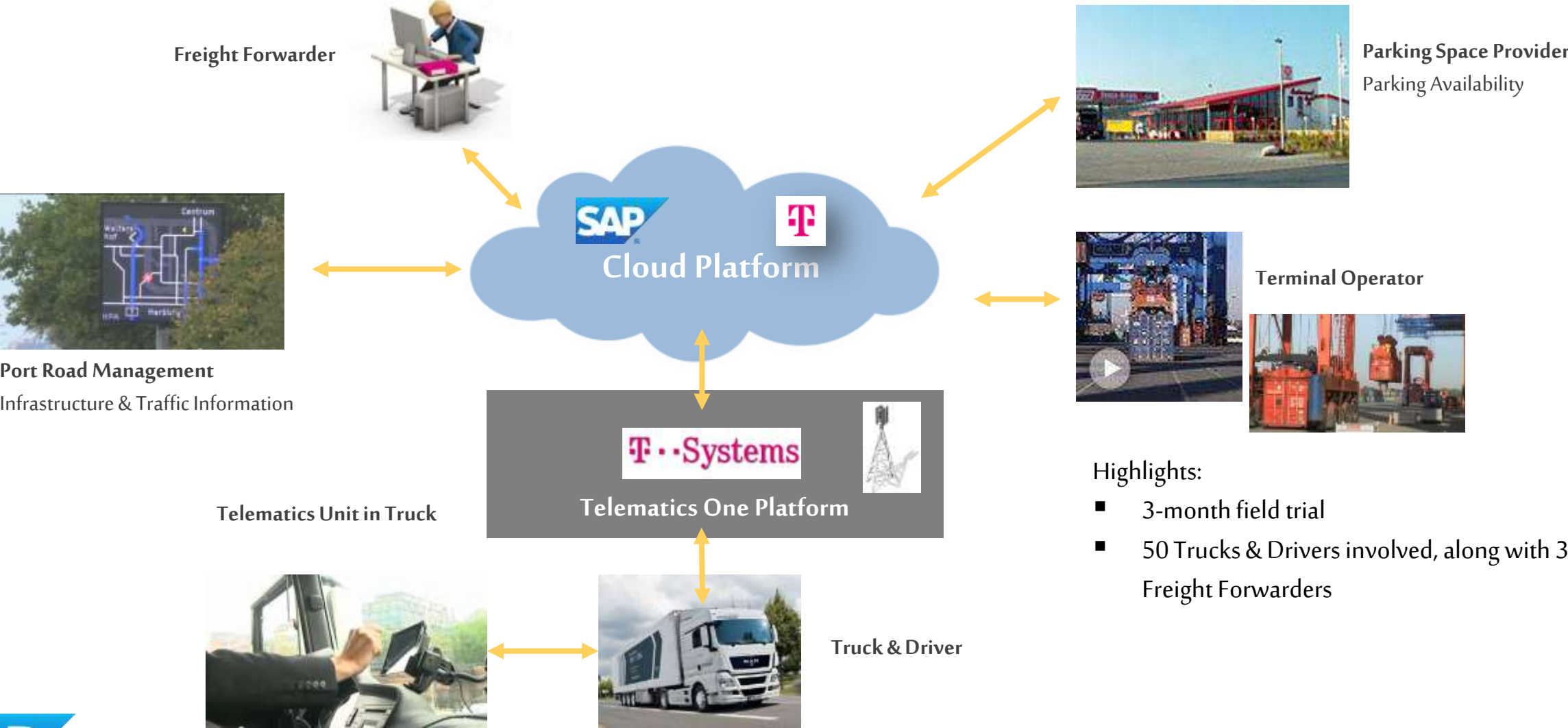
Efficient parking

Real Time Traffic Mgmt

Reduced wait times for container pickup

Smooth Traffic Flow

The Pilot Picture: Smart Port Logistics as a Service



Highlights:

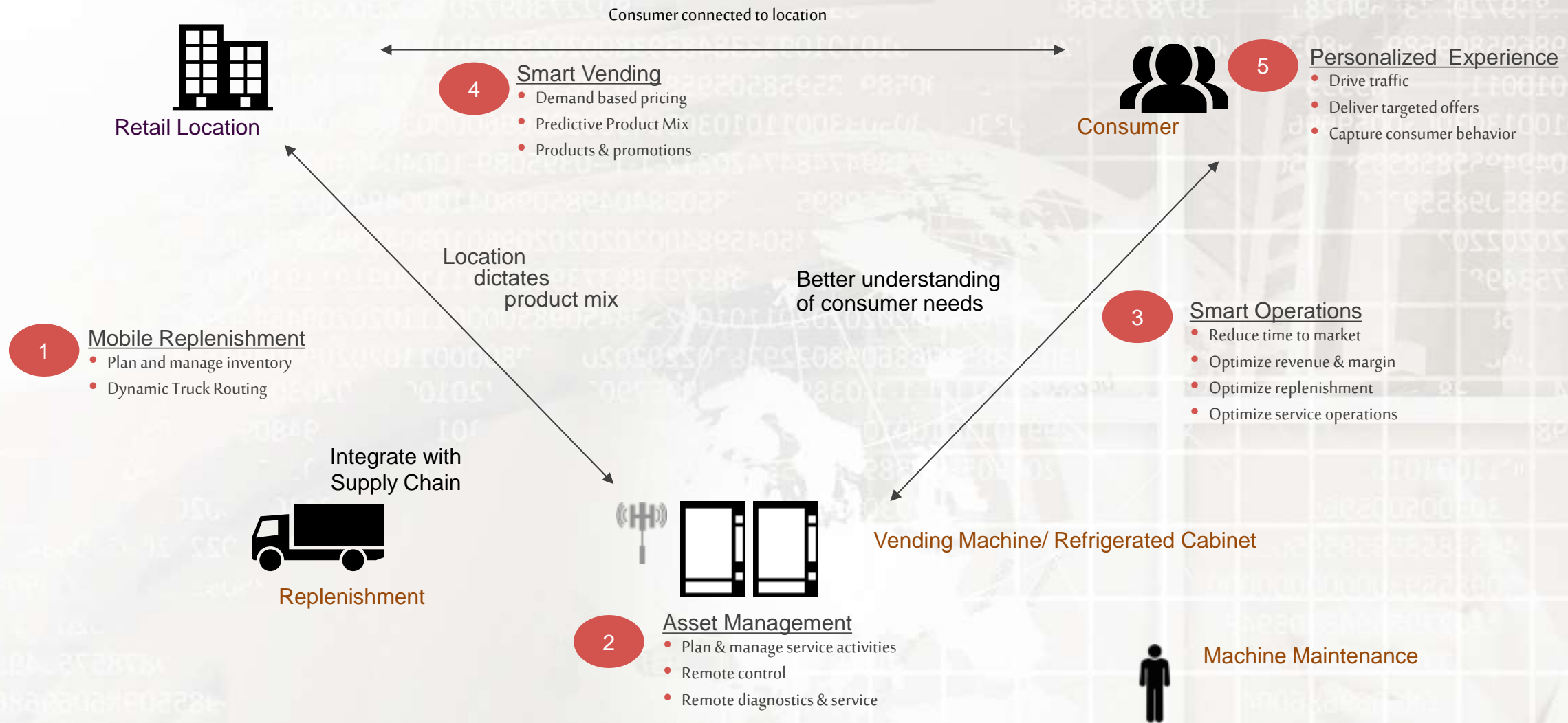
- 3-month field trial
- 50 Trucks & Drivers involved, along with 3 Freight Forwarders





Smart Vending

Smart Vending End-to-End Scenario



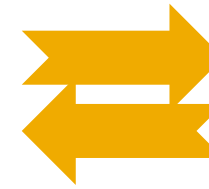
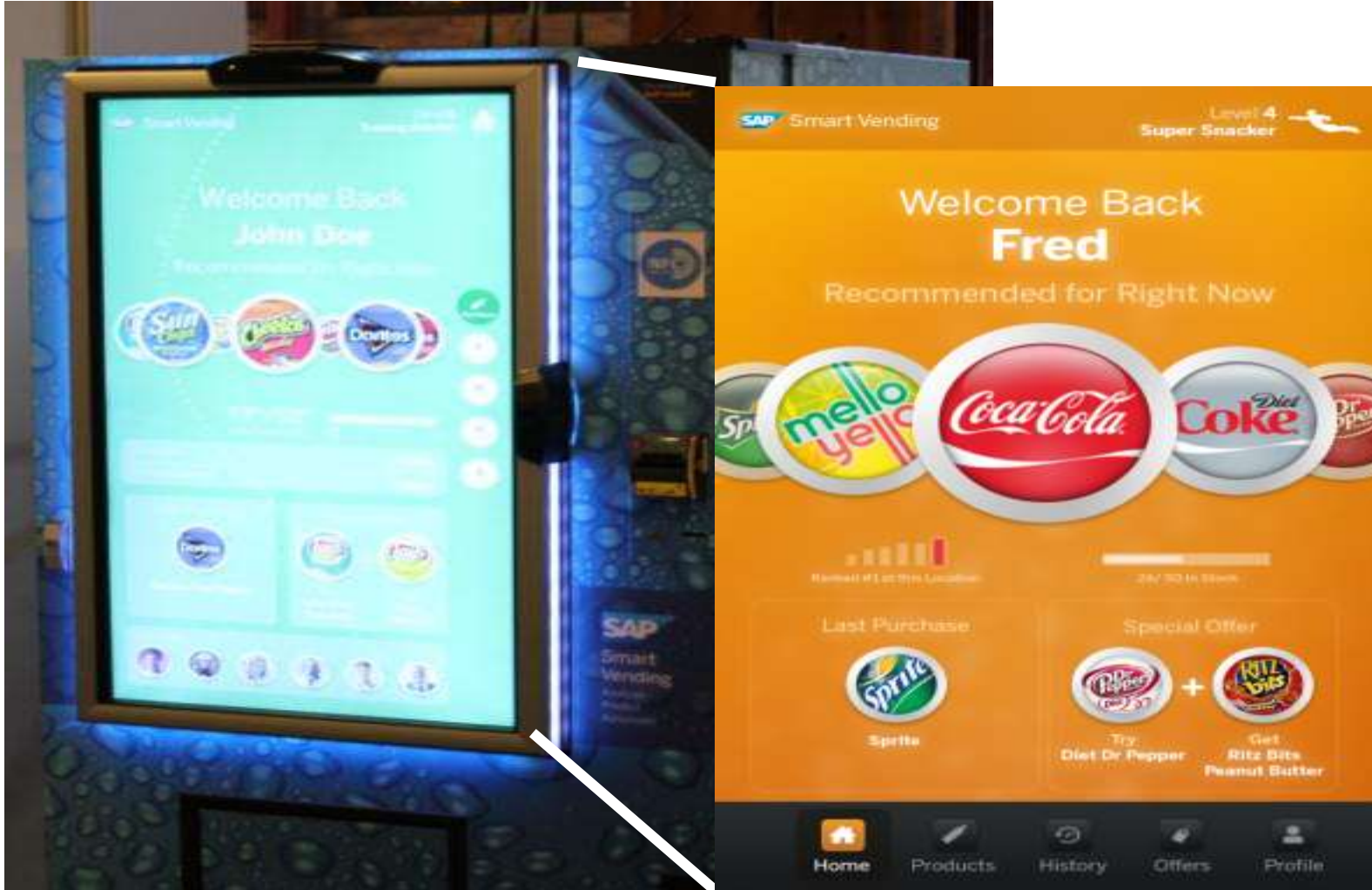
Sample of Next Gen SAP Vending Machine

(Built by our Partner Vendors Exchange)



- ✓ 46" Touchscreen
- ✓ GSM, WIFI M2M
- ✓ Mobile Payments
- ✓ NFC/RFID/QR
- ✓ Camera
- ✓ Snacks & Drinks
- ✓ Advertising

Personalized Consumer Experience on the Kiosk



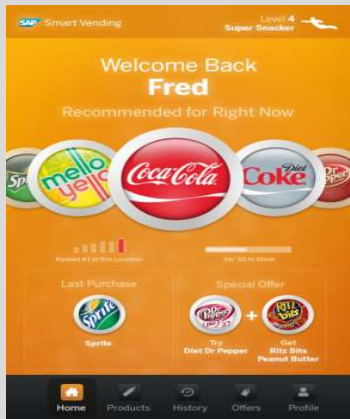
Multi Product Transactions (Soda & Snack) across 2 Kiosks

Payment by Mobile Wallet with NFC on Android Smartphone



Increase effectiveness of promotions, basket size & margins

Receive Special Offers



Consumer opens mobile app or approaches kiosk and receives **personalized** deals

KioskCo personalizes shopping experience and **increases offer conversion**

Discover New Products, Bundles



Consumer is informed about **better options** and selects a **bundle**

KioskCo creates opportunities for upsell to **increase basket size**

Change Profile, New Offers



Consumer changes preferences and receives new **offers in real time**

Based on **real time consumer context**, KioskCo delivers new set of relevant offers

Pay with Mobile



Consumer selects products and pays using his **mobile wallet***

KioskCo **processes order** and sends a personalized Thank You

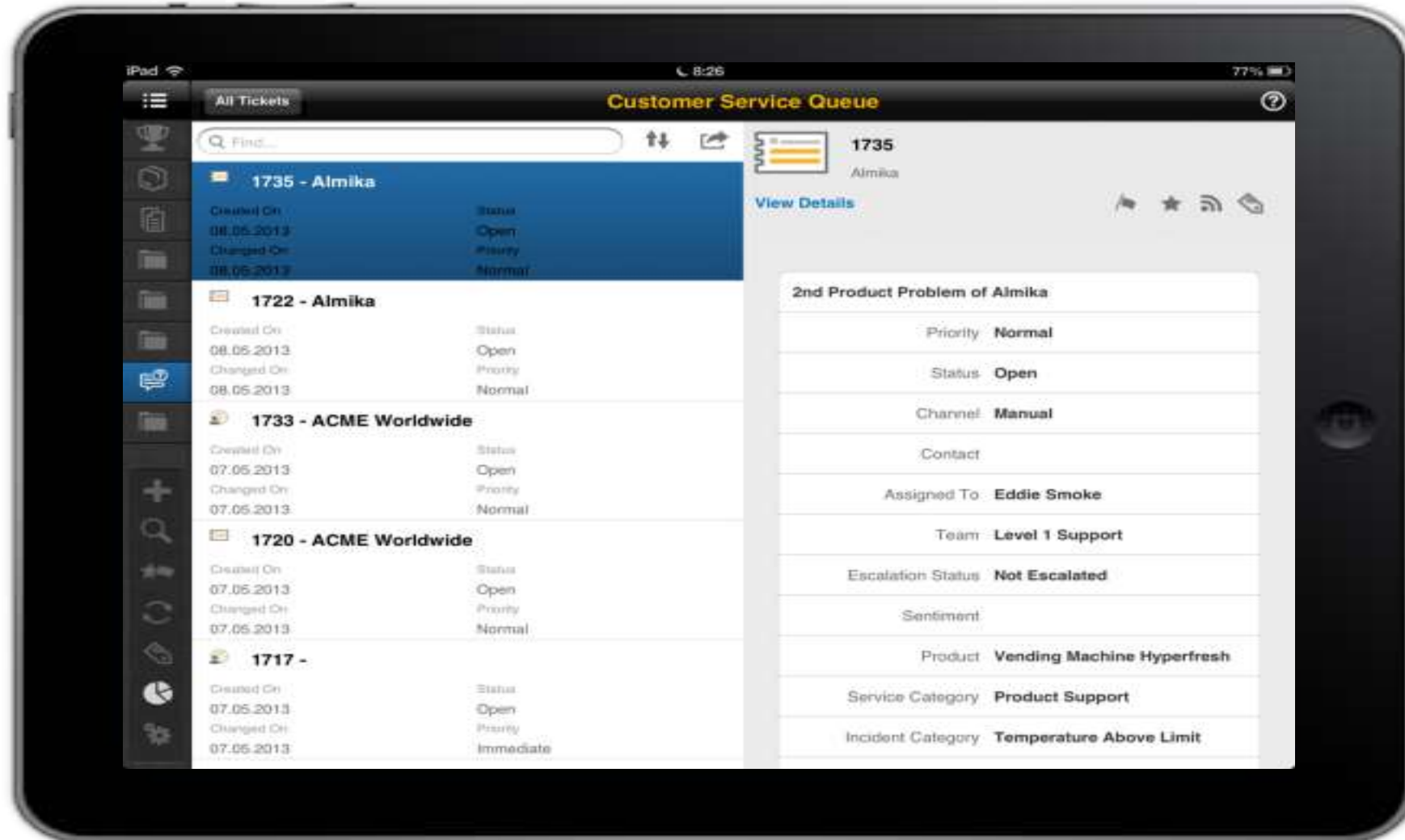
Real-Time Field Service Management

The screenshot displays the SAP Real-Time Field Service Management interface for a registered product. The interface is divided into several sections:

- REGISTERED PRODUCT:** VM678-1 Hyperfresh Food Vending...
- GENERAL INFORMATION:** Serial ID: VM678-1, Registered Product: Vending Machine, Status: Active, Reference Date: 05/09/2013, Product: Hyperfresh Co., Product Category: Appliances, Warranty Threshold: 100,000 h, Product Meter: 97,000 h.
- OVERVIEW:** TICKETS, ATTACHMENTS, CHANGES, INSTALL BASE.
- TICKETS:** A table listing tickets with columns for Priority, Ticket ID, Description, Status, and Created On.
- Asset Locator:** A map showing the location of the asset.

Prior...	Ticket ID	Description	Status	Created On
Low	8002	M2M: Low Inventory	Open	05/10/2013 5:19 PM
Low	8001	M2M: Low Inventory	Open	05/10/2013 5:13 PM
Imm	2050	M2M: Unauthorized Access to Panel	In Process - Waiting for Customer	05/10/2013 4:48 PM
Low	2046	M2M: Low Inventory	In Process - Waiting for Customer	05/10/2013 4:44 PM
Imm	2045	M2M: Unauthorized Access to Panel	In Process - Waiting for Customer	05/10/2013 2:31 PM
Low	2029	M2M: Temperature Limit has Exceeded	In Process - Waiting for Customer	05/10/2013 6:22 AM
Low	2027	M2M: Temperature Limit has Exceeded	In Process - Waiting for Customer	05/10/2013 6:19 AM
Imm	2025	M2M: Unauthorized Access to Panel	In Process - Waiting for Customer	05/10/2013 3:23 AM
Low	2023	M2M: Low Inventory	In Process - Waiting for Customer	05/10/2013 3:17 AM
Imm	2022	M2M: Temperature Limit has Exceeded	Completed	05/10/2013 3:17 AM
Imm	2030	M2M: Unauthorized Access to Panel	In Process - Waiting for Customer	05/10/2013 3:17 AM

Mobile Field Service Management



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