

SAP Innovations for the Mining Industry

Ruediger Schroedter, IBU Mill Products & Mining
October 8, 2014

Public



Agenda

Innovations for the Connected Mining Enterprise

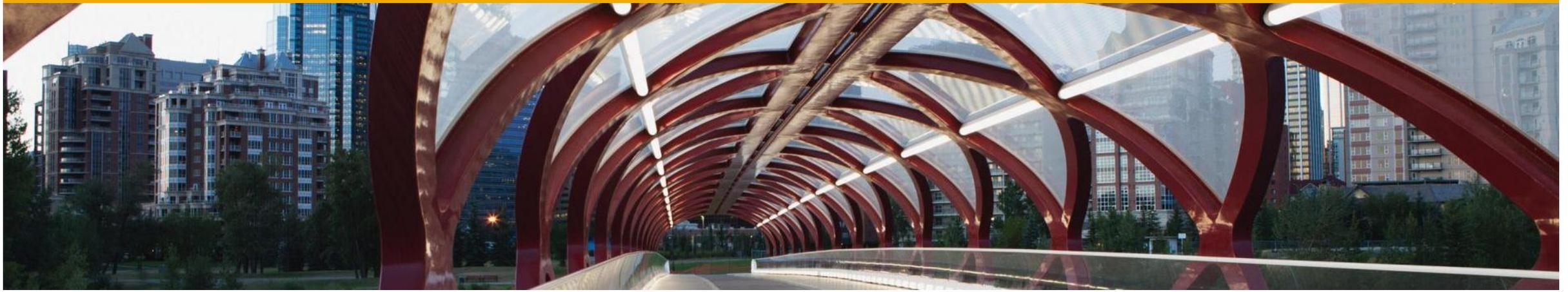
Innovations for Supply Chain Management

Innovations for Operational Risk Management

Value Map Mining 2014 – Focus of Today’s Presentation



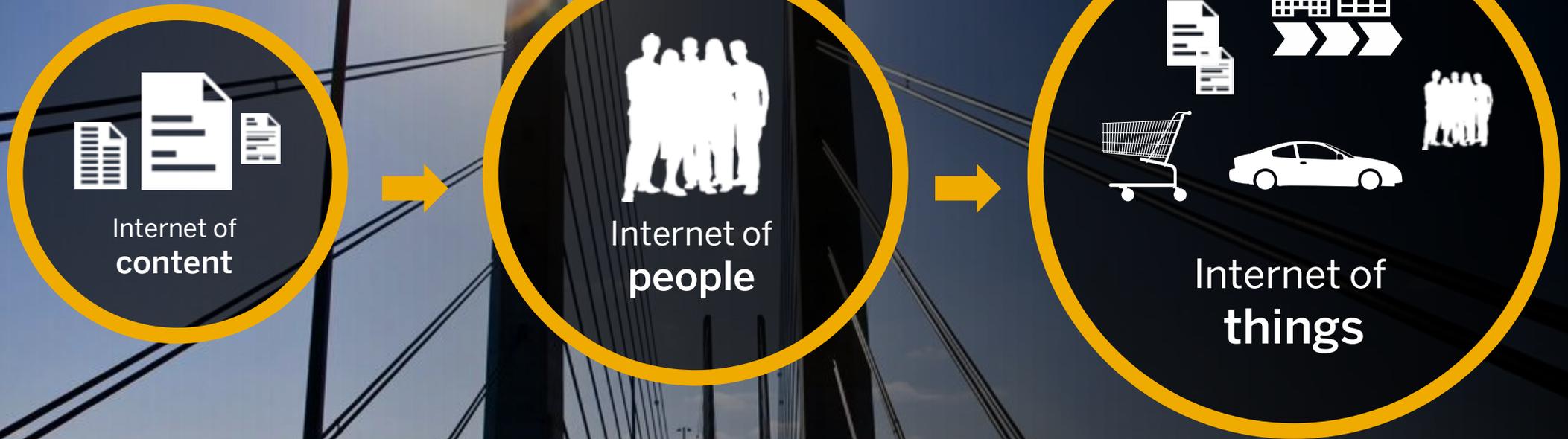
Human Resources	Core Human Resources and Payroll	Talent Management	Time and Attendance Management	Workforce Planning and Analytics			
Finance	Financial Planning and Analysis	Accounting and Financial Close	Treasury and Financial Risk Management	Collaborative Finance Operations	Enterprise Risk and Compliance Management		
Procurement	Strategic Sourcing and Supplier Management	Procure to Pay with Business Network Collaboration	Business Network Extensions for Procure to Pay				
Information Technology	Application Lifecycle Management	IT Infrastructure Management	IT Portfolio and Project Management	IT Service Management	IT Strategy and Governance		
Technology and Platform	Big Data	Real-Time Enterprise	Real-Time Analytics	Enterprise Mobility	Enterprise Information Management	Cloud Solutions	Application Integration



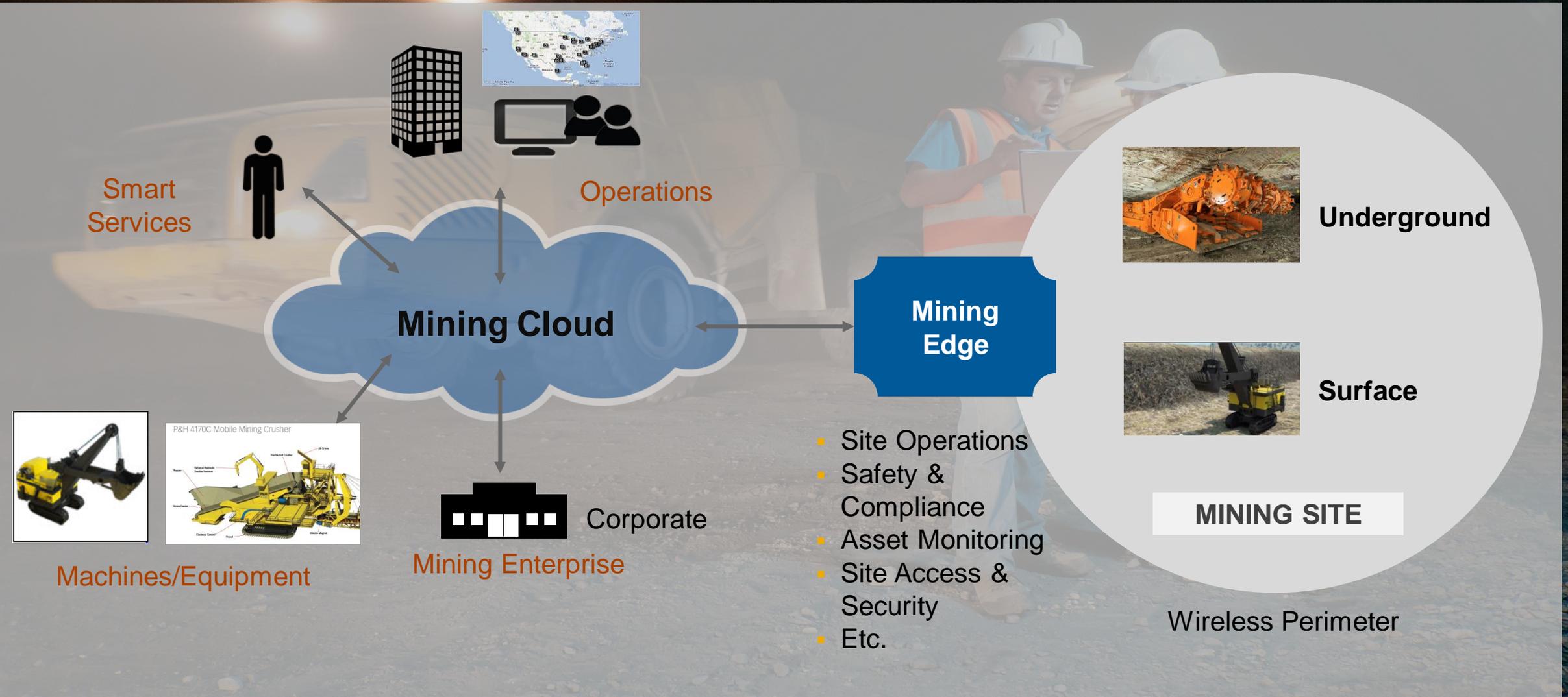
Innovations for the Connected Mining Enterprise

Optimize Mining Operations

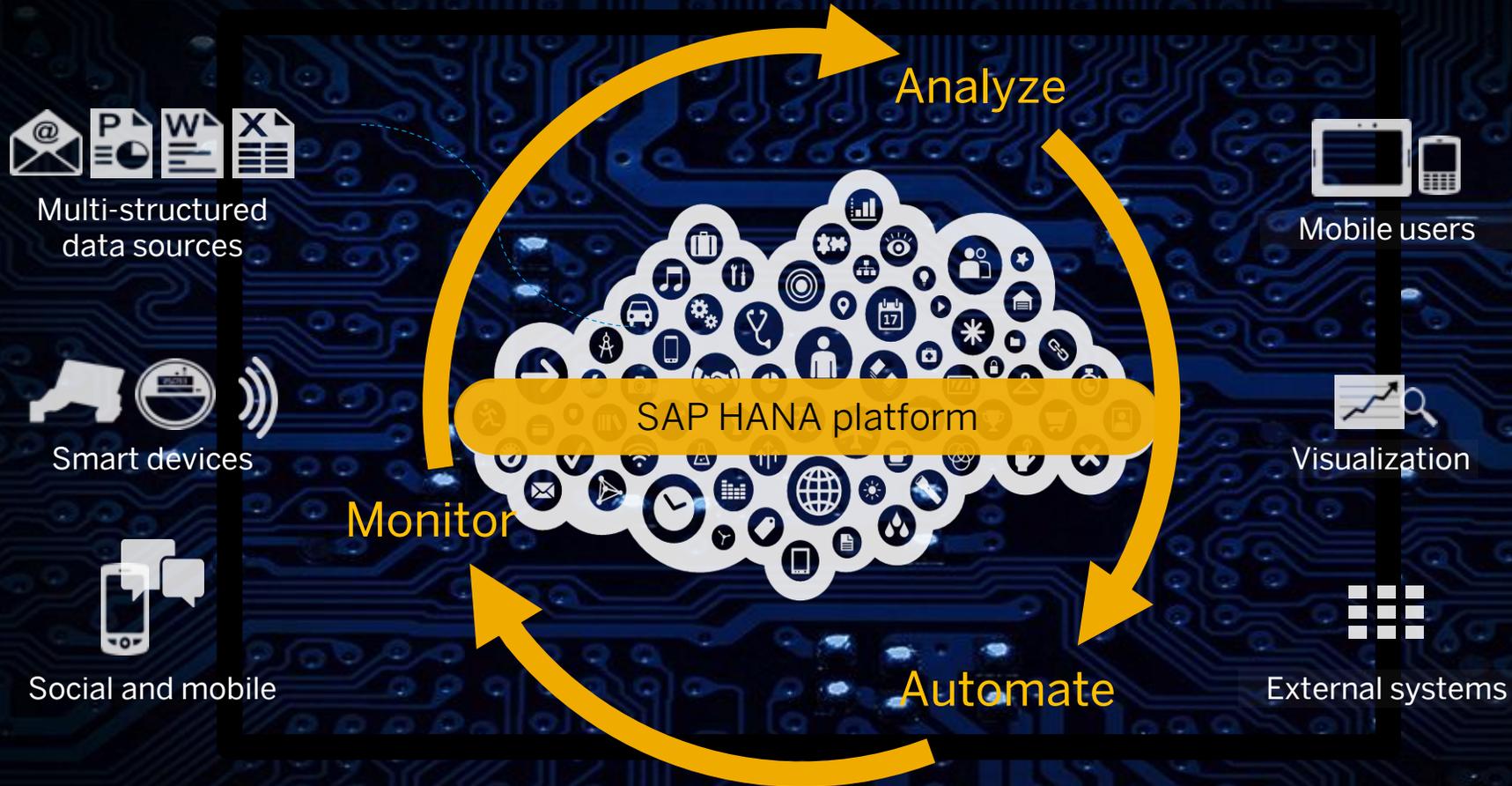
Connecting information, people, and things ...



... to become a Connected Mining Enterprise



Powering the transformation



Enabling the Internet of Things with SAP solutions

Remote
maintenance and
service



SAP
Manufacturing
Integration and
Intelligence



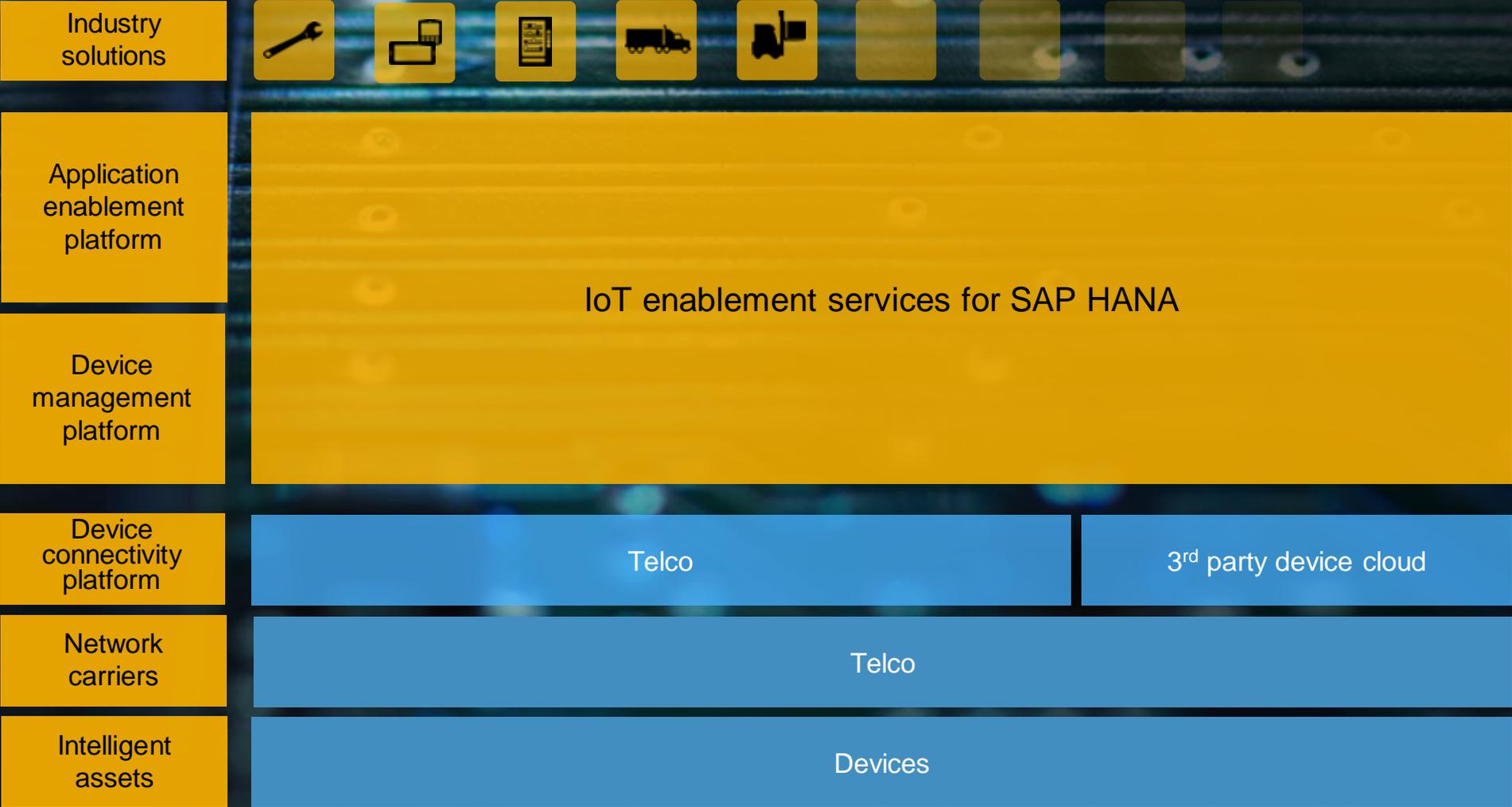
Connected
logistics



SAP Work
Manager



Enabling the Internet of Things with innovative technologies



Data and process integration with SAP Business Suite, cloud solutions from SAP, and non-SAP systems

Solution Stack HANA IoT Edition



Remote Maintenance & Service

SAP HANA IoT Edition

Device Modelling



Device Communication



Device Alert Management



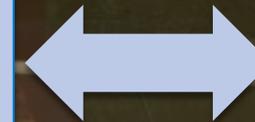
Device Management



Device Data Processing



Tools



Connectivity Platforms (by Telco)

3rd Party Device Cloud

Communication Networks (by Telcos)

IoT Connector

Devices

Top 3 IoT Scenarios

Connected Asset Management



Supply chain optimization and after market sales and service opportunities based on next gen sensor arrays

Operational Monitoring



Established and emerging connected devices leveraging new and old connectivity paradigms

Business Process Transformation



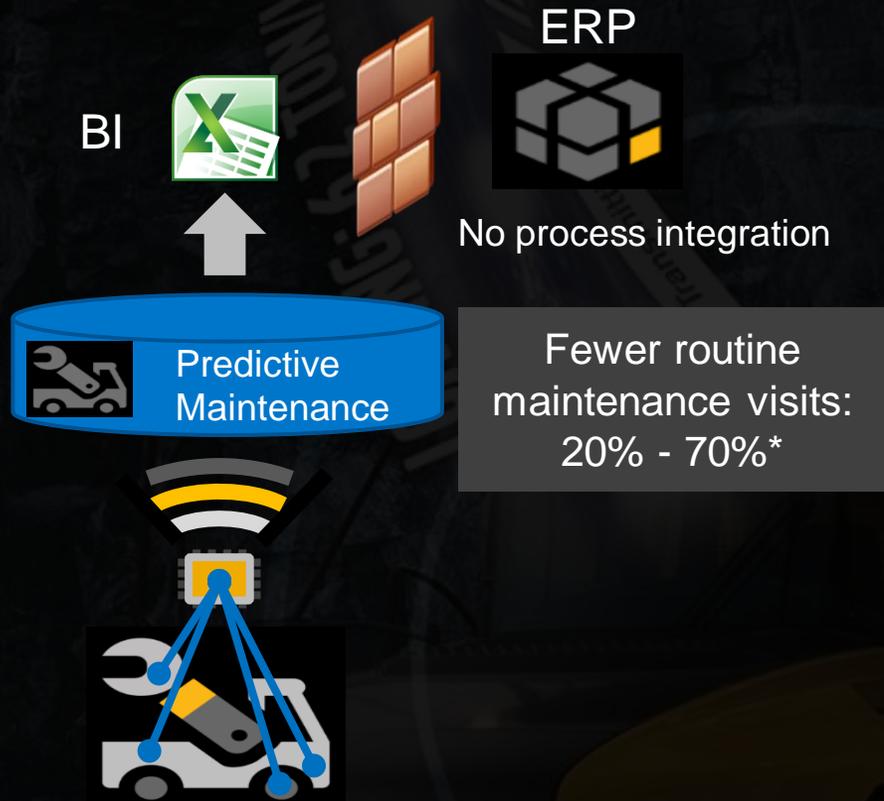
End-to-end visibility of existing and emerging IoT based business models needs a standardized high performance infrastructure for decision support

Powered by **SAP HANA**

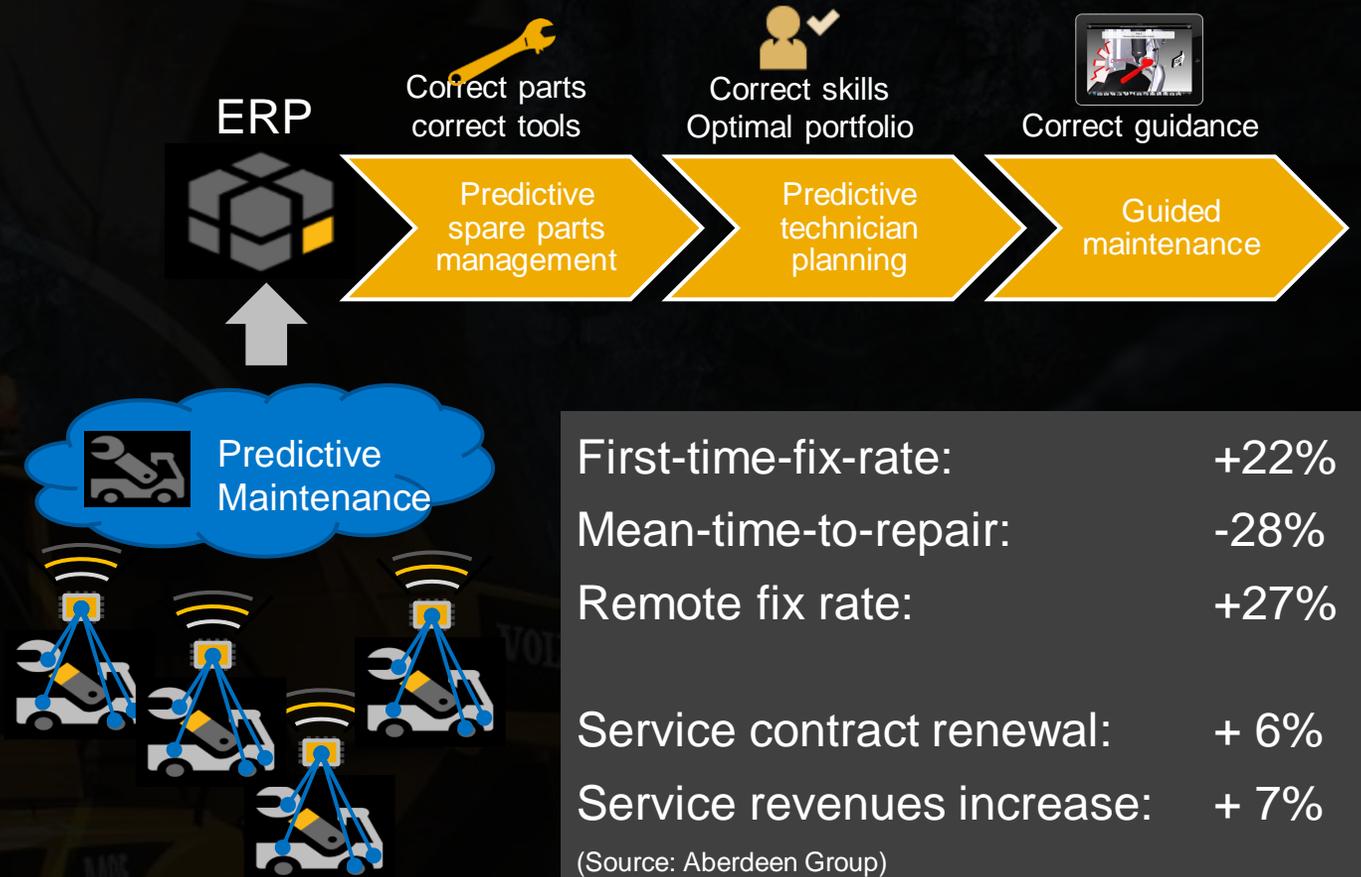
A completely re-imagined, modern platform for real-time connected business

What Is the concrete benefit of IoT for Remote Maintenance and Service

M2M started 15 years ago
Island solutions
for few, expensive assets



Predictive Maintenance with SAP:
Integration into Service Processes

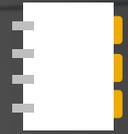


*) <http://www.plantservices.com/articles/2008/177/>

Service ...



Operator
Technician



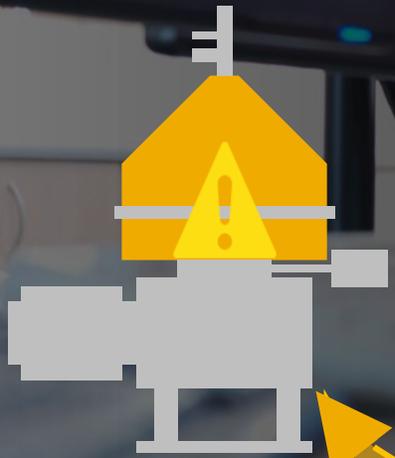
OEM
Support



OEM
Technician



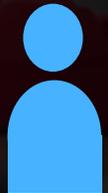
Spare parts
& tools



Real-time condition monitoring



Remote Service
Engineer



End-to-End Process for Maintenance & Service

Remote Maintenance and Service

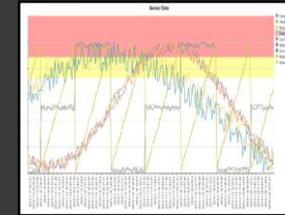
Increase effectiveness



IT/OT Connectivity



Condition Monitoring Remote Service



Fault Pattern Recognition



Machine Health Prediction

SAP CS / CRM / EAM

Increase efficiency

Create Maintenance or Service Order



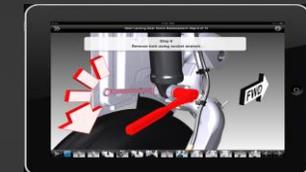
Schedule Order



Execute Order on mobile device



Visual Support



Watch: <https://www.youtube.com/watch?v=UlpGDrSmq38>

SAP Cloud for Remote Maintenance and Service Features

Alert Monitor

Severity	Alert	Country	Customer	Machine Subtype	Measuring Point	Status	Processor	Triggered
Emergency stop	Emergency stop	IN	Heritage Foods Limited	MSI 350-01-772	Feed Flow	🚫	Karl Weiss	May 14, 2014, 4:03:07 PM
Alarm motor	Alarm motor	IN	Heritage Foods Limited	MSI 350-01-772	Bowl Motor Amperage	🚫	Ilona Blau	May 14, 2014, 4:03:07 PM
Emergency stop	Emergency stop	IN	Heritage Foods Limited	MSI 350-01-772	Feed Flow	🚫	Karl Weiss	May 14, 2014, 4:03:03 PM
Alarm motor	Alarm motor	IN	Heritage Foods Limited	MSI 350-01-772	Bowl Motor Amperage	🚫	Ilona Blau	May 14, 2014, 4:03:02 PM
Failure bowl speed drop SAL	Failure bowl speed drop SAL	IN	Heritage Foods Limited	MSI 350-01-772	Bowl Speed NT	🔒		May 14, 2014, 3:07:07 PM
Failure bowl speed drop SAL	Failure bowl speed drop SAL	IN	Heritage Foods Limited	MSI 350-01-772	Bowl Speed NT	🔒		May 14, 2014, 3:07:02 PM
Failure inlet bowl speed	Failure inlet bowl speed	IN	Heritage Foods Limited	MSI 350-01-772	Bowl Speed Close Solids Slide	🔒		May 14, 2014, 11:03:07 AM

Machine List

Machine Type: CLARIFYING DECANTER --- Machine Subtype: UCD 536-00-34 --- Customer: Klaerenanlage Klagenfurt

Real-time Machine Facts Sheet

Category	Measuring Point	Current Value	Upper Limit for Warning	Upper Limit for Error
Operation	Bearing temperature solids side	43.67 °C	24.92 °C	34.89 °C
Vibration	Torque	469.9824947 %	251.78 %	352.5 %
Operation	Feed Temperature	25993 °C	23569 °C	33024.6 °C
Operation	Gear Input Speed	93.16 RPM	91.79 RPM	128.51 RPM
Operation	Bearing temperature liquid side	23468 °C	23604.5 °C	33046.3 °C



SAP Predictive Maintenance and Services

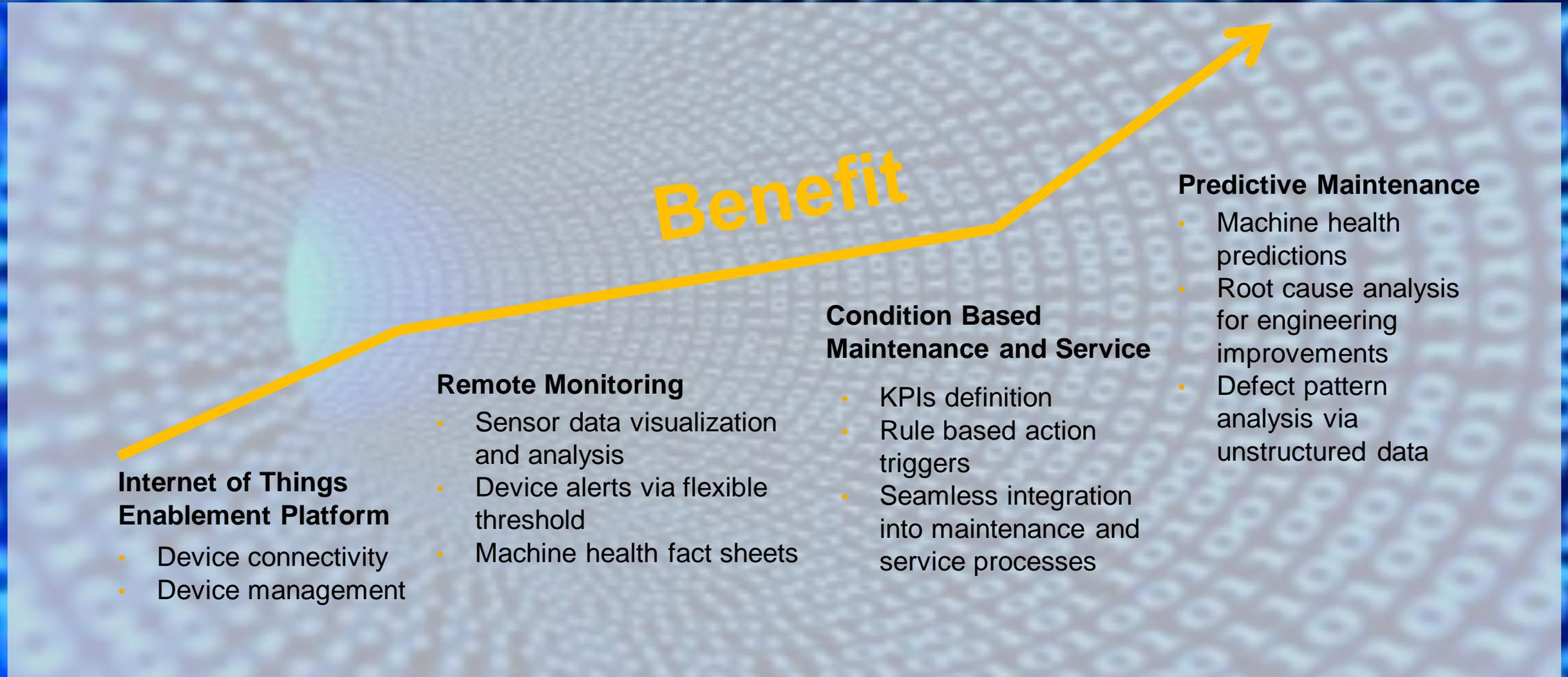
2 Critical Alerts | 1 Predicted Alerts | 13 Planned Services | 737 Downtime Hours | 99.94% Operational Availability

Alert Severity: 53

Machine Summary: Truck 456-1024, Active: 2612 hours, Operational Availability: 96%

Device Status: Offline, Last Updated: 2014/01/16 16:46:50

Remote Maintenance and Service Road Map





Innovations for Supply Chain Management

Integrated Business Planning



SAP Integrated Business Planning

World class solution for supply chain monitoring, sales and operations planning, demand management, inventory planning, supply planning, and response management

Supply Chain Monitoring

Supply Chain Control Tower

Integrated Business Planning (IBP)

User Experience

IBP for sales & operations

IBP for demand

IBP for supply

IBP for inventory

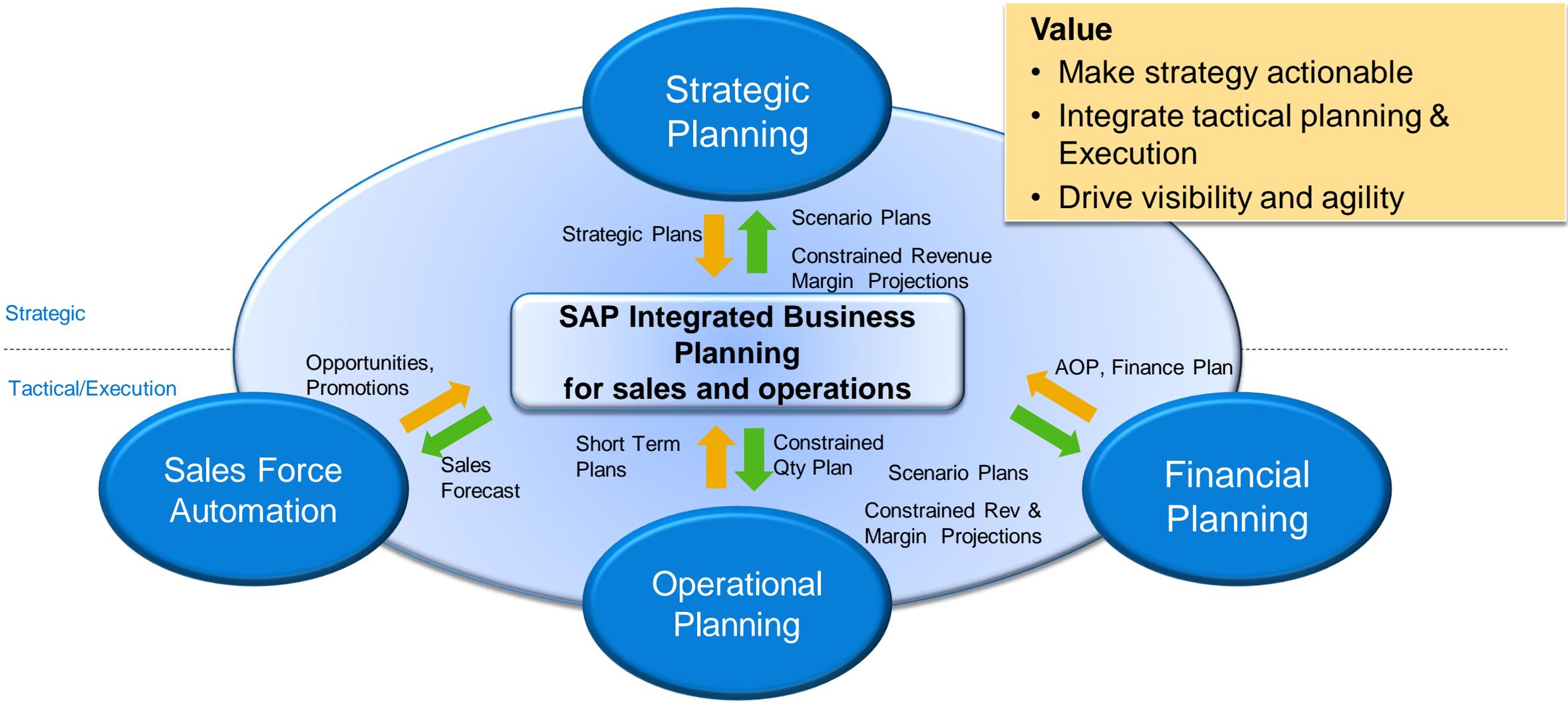
IBP for response

SAP HANA Platform



SAP Business Network

Where SAP Integrated Business Planning for sales and operations fits across enterprise planning



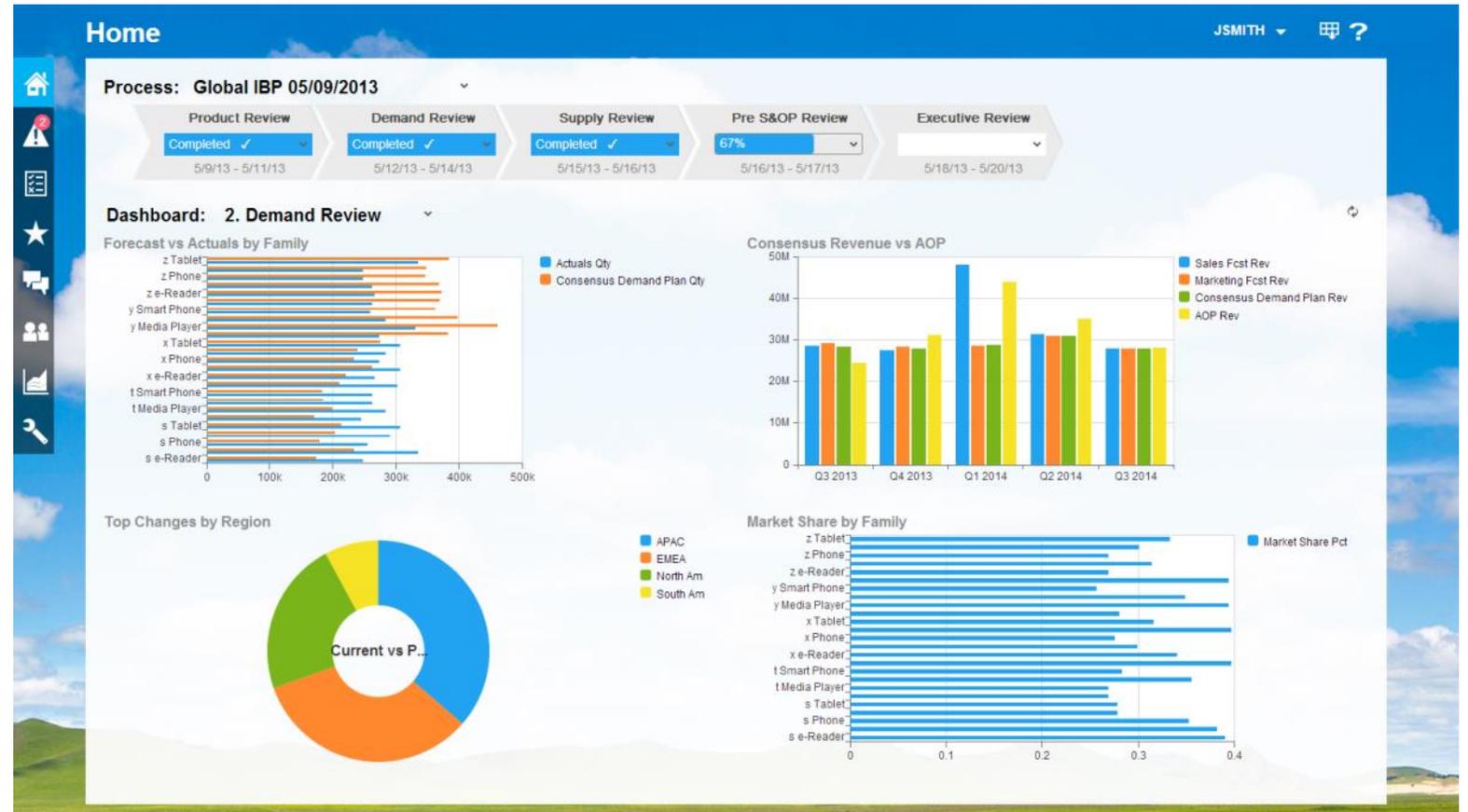
Unified Planning Environment

SAP Integrated Business Planning for sales and operations



Unified Planning Environment

- Single unified data model across Demand, Finance, Supply Chain to support both tactical and operational planning at any level of granularity & dimension
- Flexible process modeling
- Planning, Analytics & Collaboration driven off of this single model



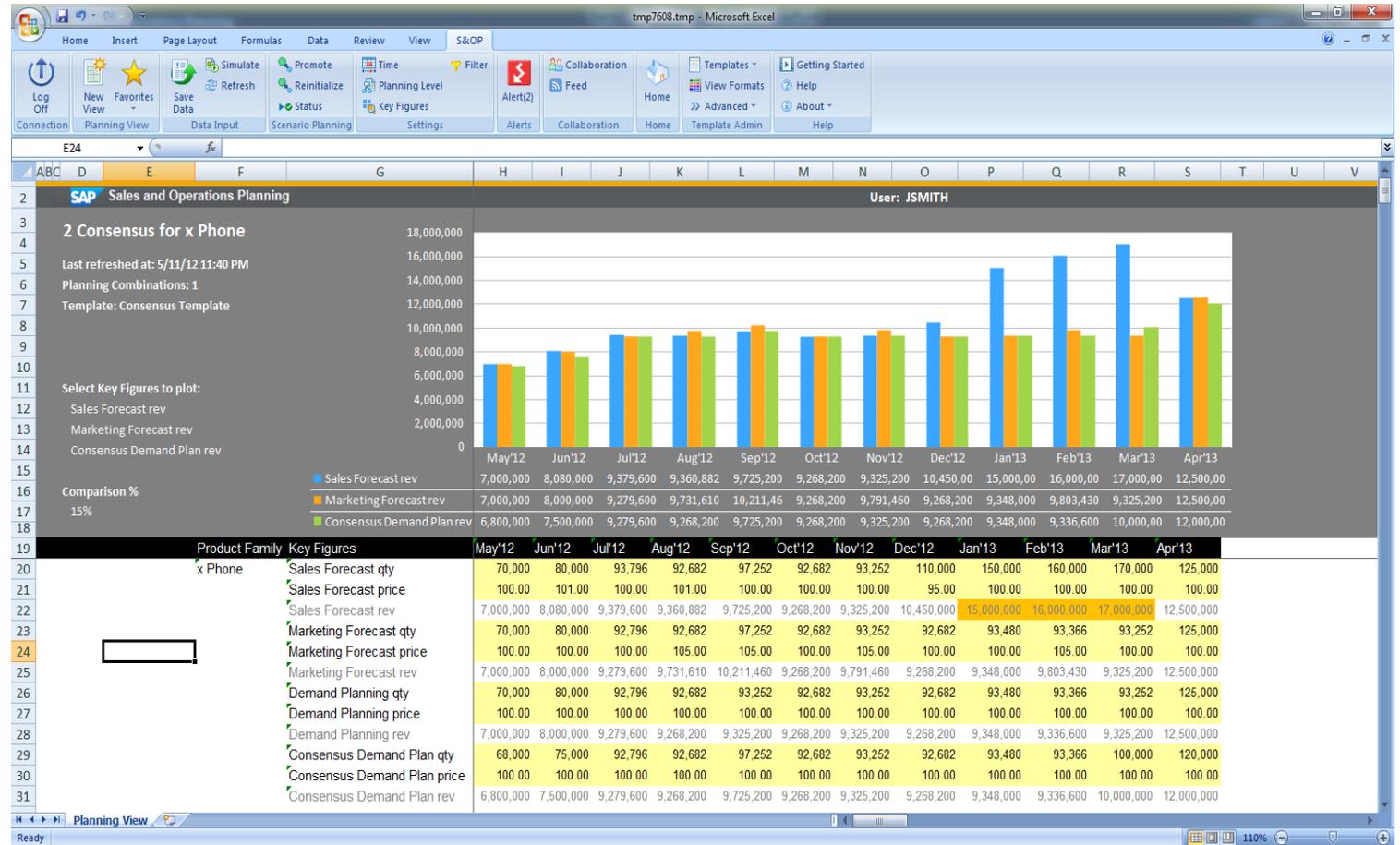
Real-Time Planning & Simulation Tools

SAP Integrated Business Planning for sales and operations



Real-Time Planning & Simulation Tools

- Consensus demand planning, Rough-cut capacity planning, Volume & revenue modeling,
- Alternative what-if scenarios for rapid decision-making across multiple key figures, dimensions
- Constraints at both detailed and aggregate level, R/T aggregation & disaggregation



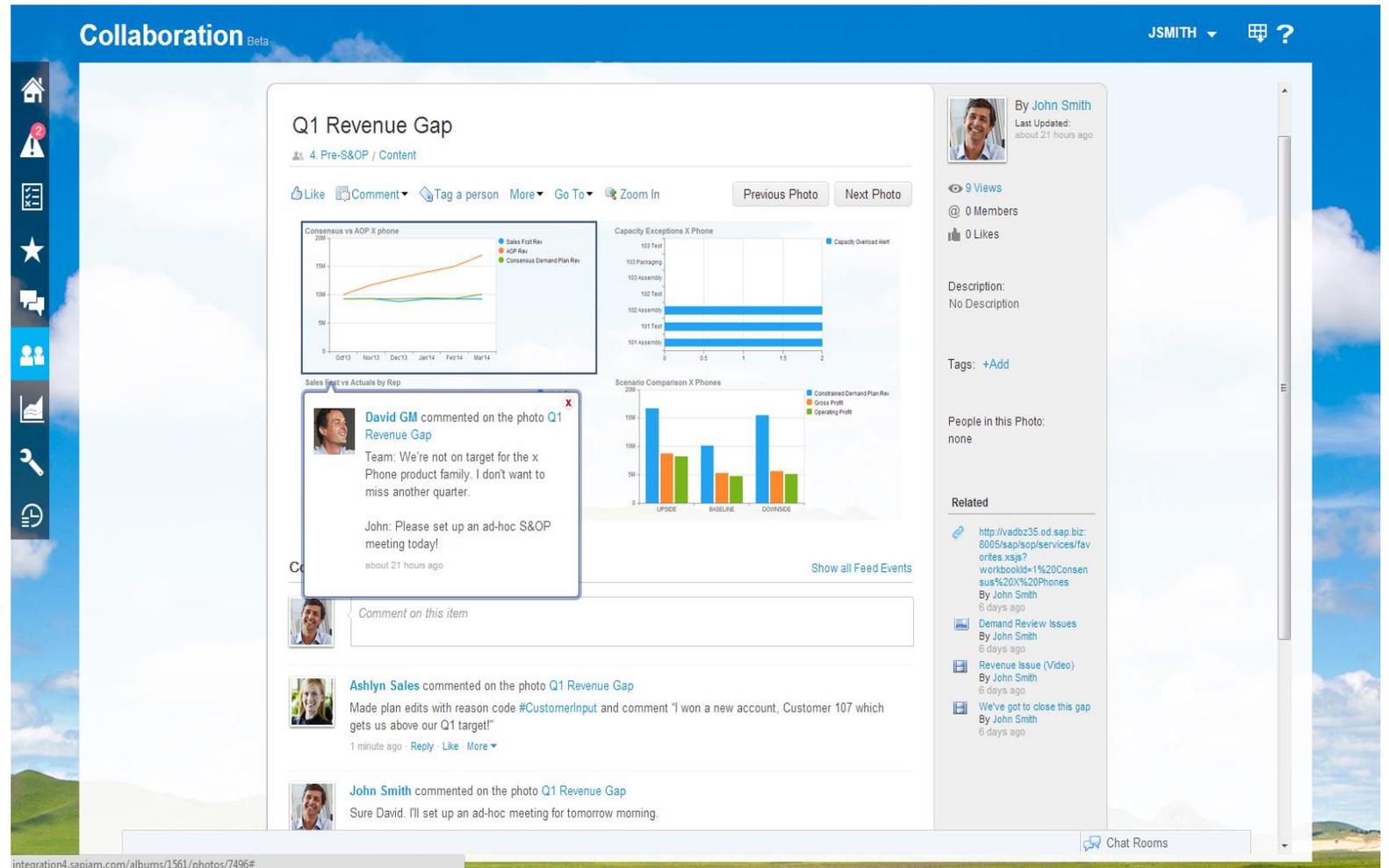
Contextual Process Orchestration

SAP Integrated Business Planning for sales and operations



Contextual Process Orchestration

- Contextually organize People, Documents, S&OP Process Steps, S&OP Data, Action items, Decisions, Alerts, etc. around the S&OP Process
- Enable People to stay on top of relevant, contextual updates



The screenshot displays the SAP Collaboration Beta interface. The main content area shows a photo album titled "Q1 Revenue Gap" with 4 items. The album contains several charts: "Consensus vs AOP X phone" (line chart), "Capacity Exceptions X Phone" (bar chart), "Sales Target vs Actuals by Rep" (bar chart), and "Scenario Comparison X Phones" (bar chart). A comment from David GM is highlighted, stating: "Team: We're not on target for the x Phone product family. I don't want to miss another quarter." Other comments from Ashlyn Sales and John Smith are also visible. The right sidebar shows the user profile for John Smith, with 9 views, 0 members, and 0 likes. The interface includes a navigation sidebar on the left and a top navigation bar with the user name JSMITH and a help icon.

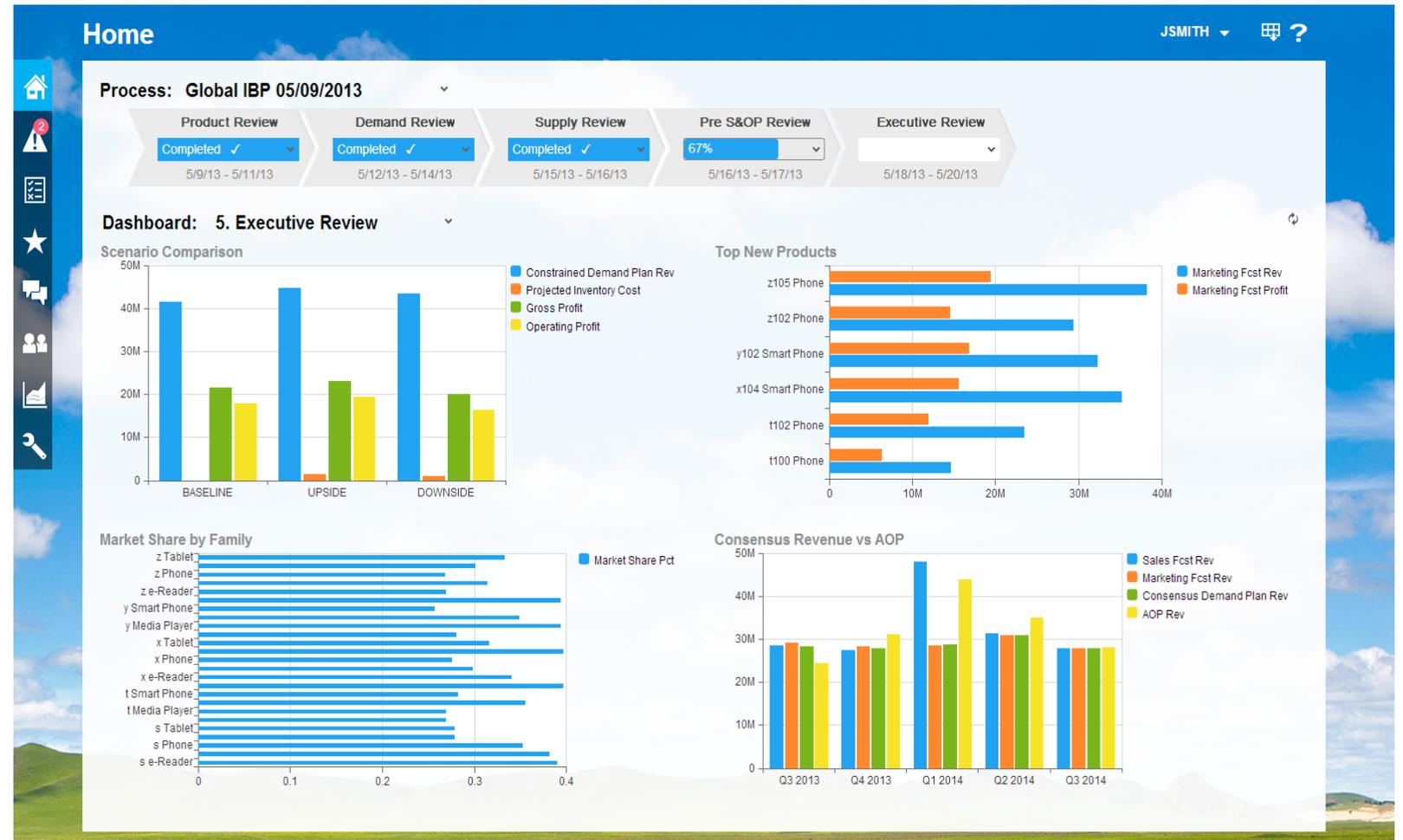
Advanced Analytics

SAP Integrated Business Planning for sales and operations



Advanced Analytics

- Evaluation of multiple levers to shape profitable demand
- Faster identification of problems through better visualization
- Compare scenarios, track KPIs, monitor trends across multiple dimensions, granularities in R/T
- End user personalization and sharing



Wrap up - SAP Integrated Business Planning for sales and operations



Deliver a cross departmental sales and operations plan balancing the impact on inventory, service levels and profitability

Business Benefits

- Create the optimal business plan to drive revenue growth and increase market share
- Effectively balance demand and supply and attain financial targets
- Increase speed and agility of planning and drive most profitable responses
- Improve forecast accuracy and on-time delivery

SAP Integrated Business Planning for supply

Overview

Goal

- Generate a mid to long-term supply plan based on forecasts, orders, and inventory or safety stock targets.
- Utilize a multi level sourcing determination model for both distribution and Bills of Material
- Creation of either a constrained or unconstrained production, distribution, and procurement plan, using heuristics or optimization based algorithms.
- Development of rough cut capacity supply plan, with the ability to create and use simulation capabilities for scenario planning

Result

- **Supply simulation as an extension of the sales and operations planning process**
- Times series bucketed supply plan that can be used as constrained demand and an input for further processing



SAP Integrated Business Planning for supply



Real-Time Planning & Simulation Tools

- Utilize either heuristic or optimization algorithms to develop a constrained or unconstrained supply plan
- Meet optimized inventory targets set by IBP for inventory
- Gain visibility for projected stock or shortages at relevant levels of aggregation
- Use the embedded alerting capabilities to pinpoint where potential issues have been detected

1 Consensus X Phones.xlsx - Microsoft Excel

File Home Insert Page Layout Formulas Data Review View S&OP PDF-XChange 2012

Log Off New View Favorites Save Data Simulate Refresh Time Planning Level Key Figures Layout Currency Dashboard (4) Add Master Data Scenario Advanced Collaboration Home Template Admin Help Add-In

L29 165000

Alert Dashboard

Exceptions	Alert	Planning View	Scenario
15	Inventory vs Target Cost	f Constrained Demand and Inv	Baseline
220	Sales vs Consensus Rev	1 Consensus X Phones	Baseline
76	Current vs Prior Consensus	1 Consensus X Phones	Baseline
9	Capacity Overload Alert	2 Capacity X Phones	Baseline

Select Key Figure

- Sales Fcst Rev
- Marketing Fcst Rev
- Consensus Demand

Comparison %

15%

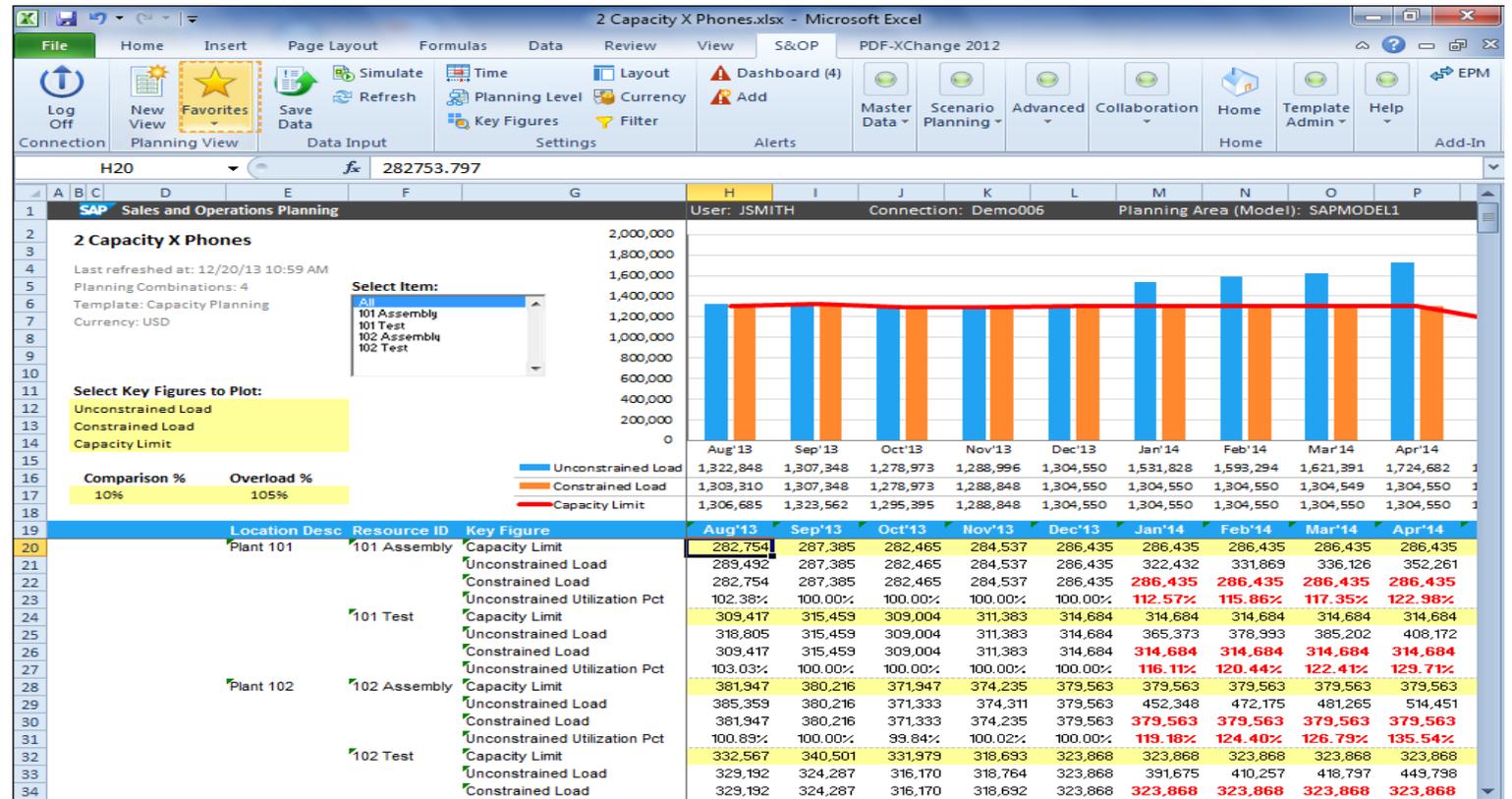
x Phone	Sales Fcst Qty	Sales Fcst Price	Marketing Fcst Qty	Marketing Fcst Price	Demand Planning Qty	Demand Planning Price	Consensus Demand Plan Qty	Consensus Demand Plan Price	Consensus Demand Plan Rev
	92,682	100.00	92,682	100.00	92,682	100.00	92,682	100.00	9,268,200
	93,252	100.00	93,252	105.00	93,252	100.00	93,252	100.00	9,325,200
	92,682	100.00	92,682	100.00	92,682	100.00	92,682	100.00	9,268,200
	93,252	100.00	93,252	105.00	93,252	100.00	93,252	100.00	9,325,200
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	93,252	100.00	93,252	105.00	93,252	100.00	93,252	100.00	9,325,200

SAP Integrated Business Planning for supply



Supply Planning Environment

- Develop the Rough Cut Capacity Plan based upon various resources
- Plan based upon financial aspects that ensure the most profitable solution.
- Constraints at both material and capacity level can be modeled and used to constrain the plan.
- Use collaboration capabilities both internally and externally to make manual adjustments



Wrap up – SAP Integrated Business Planning for supply



Business Benefits

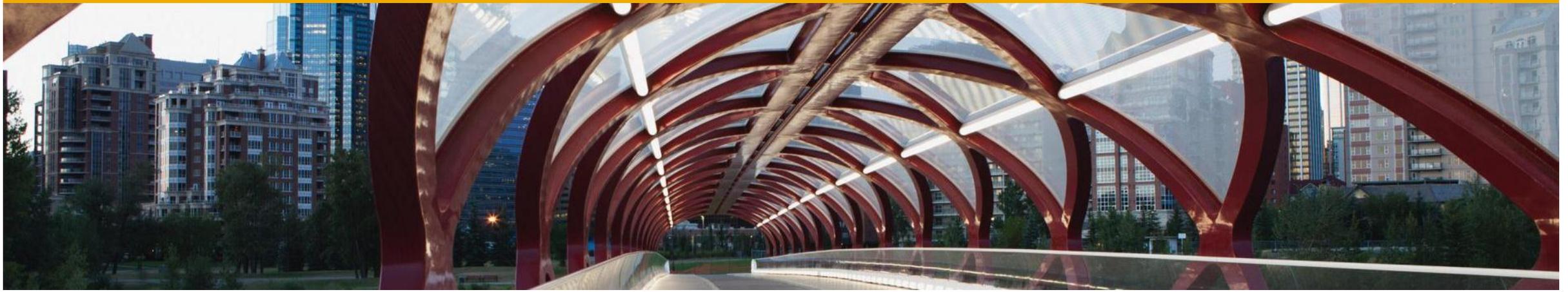
- Optimize sourcing and capacity utilization
- Maximize profit by determining most profitable way to satisfy demand requirements via supply alternatives
- Plan to inventory targets
- Improve customer service

Quickly adapt to changes in demand, considering the full supply chain model.

Plan production, distribution, and procurement to meet customer needs in a constrained or unconstrained mode.

Generate What-If analysis to provide visibility into potential scenarios.

Determine supply plan, to become constrained demand for further processing



Innovations for Transportation Management

SAP is rethinking Supply Chain Management

Supply Chain Management solution requirements



Provide an end-to-end **MONITORING** solution with real-time what-if decision support



Provide intuitive and predictive **PLANNING** and response management solutions



Provide a flexible & reliable business **NETWORK** to collaborate with partners



Provide industry specific and best in class **LOGISTICS** capabilities

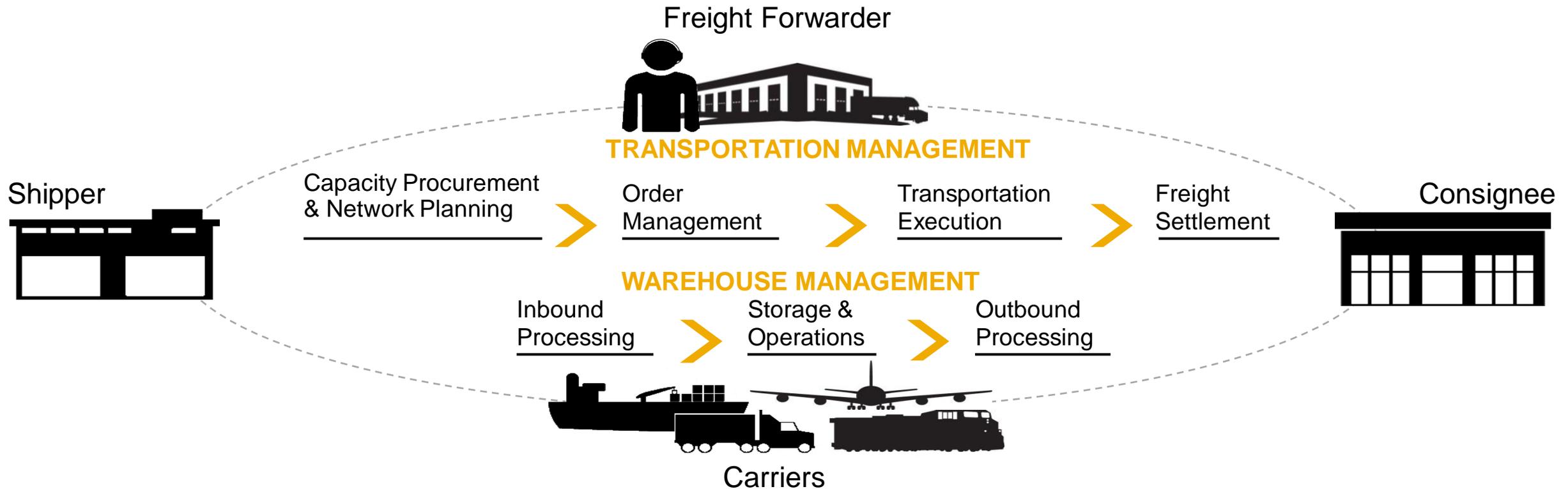
[SAP Supply Chain Management powered by SAP HANA]



Supply Chain Execution

Processes, players and collaboration

Planning, orchestration, and execution of the physical movement of goods



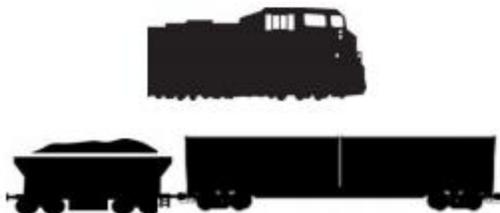
SAP Transportation Management 9.1

SAP TM 9.1



Rail Transportation

- Order-to-Cash for rail carriers
- Quote-to-Pay for rail shippers



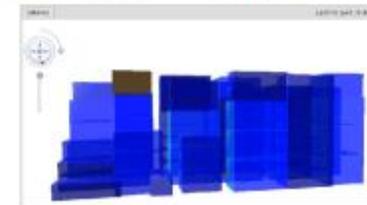
Strategic Freight Mgmt.

- Strategic Freight Procurement (buying)
- Quote-to-Contract (selling)



Further Innovations...

- Transportation Mgmt. Collaboration Portal
- Parcel management
- Load optimization
- Backhaul Planning
- Direct TM-EWM & TM-CRM Integration
- *And much more...*



TM 9.1: Rail Transportation

Rail Requirements



Processes



Rail Carriers

Order-to-Cash



Rail Shippers

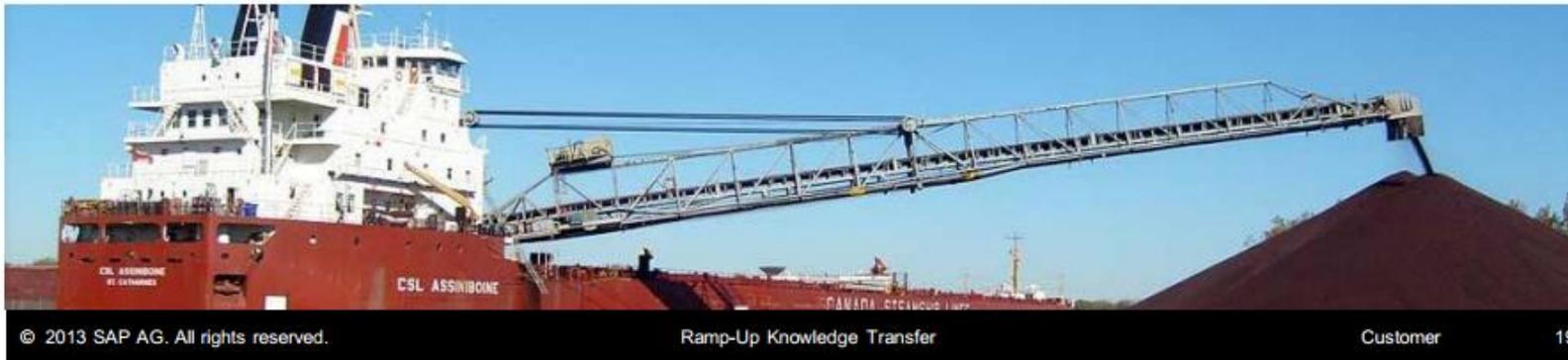
Quote-to-Pay

TM 9.1 Focus Topics

- Rail master data
 - Rail industry standards: stations, junctions, routings, rail cars...
 - Rail service products & standard operating procedures
- Rail quotation & contract mgmt.
 - Versioning, extensions and renewals
- Railcar management & analytics
 - Empty railcar dispatch/receipt, loading, monitoring
 - TM-PM integration (railcar maintenance)
- Rail order management
 - Rail-specific UI, fields, checks & workflow
 - Integration to rail operations systems
 - Rail-specific track + trace
 - Output management & connectivity preparation
- Rail charge management & invoicing
 - Rail rating, pricing, rate exception handling
 - Accessorial invoicing & dispute mgmt.

TM 9.1 Ocean Booking Enhancements

- Support for Multi-Pick/ Multi-Drop Ocean Bookings
- Consolidation of transportation demands with different POL/POD
- Support for ocean bookings without consolidation (P2P)
- Freight unit locations, dates and quantities taken over on freight booking creation
- Adding freight units to existing freight bookings
- Change port sequence on the ocean booking
- Maintenance of laydays on the freight booking



Overview: Innovations Transportation Management 9.2

World-Class & Real-time



Smart business for SAP TM

- Sample KPIs and reports
- Smart business; Fiori Apps

T&L Collaboration Portal

- Event Management (SAP EM) integration
- Invoice Submission
- Dispute Management
- Freight Agreement RFQ (sales side)

Management of empty containers or railcars

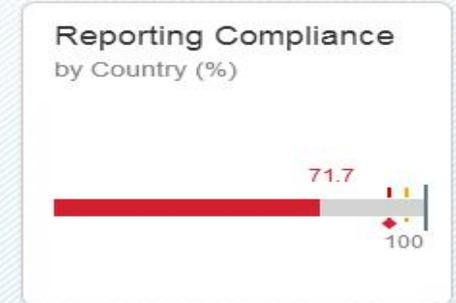
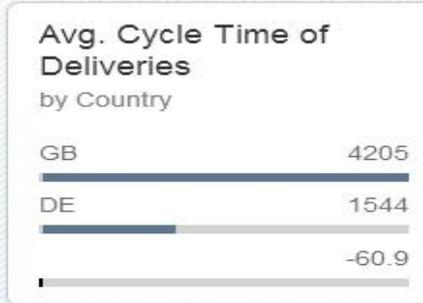
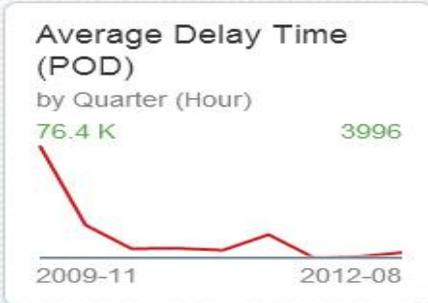
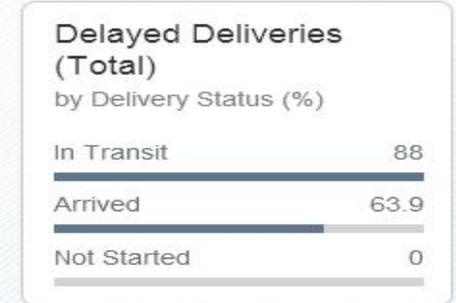
- Empty container or railcars in Forwarding Order Management
- Triangulation (optimized container movements)

ERP – TM Integration

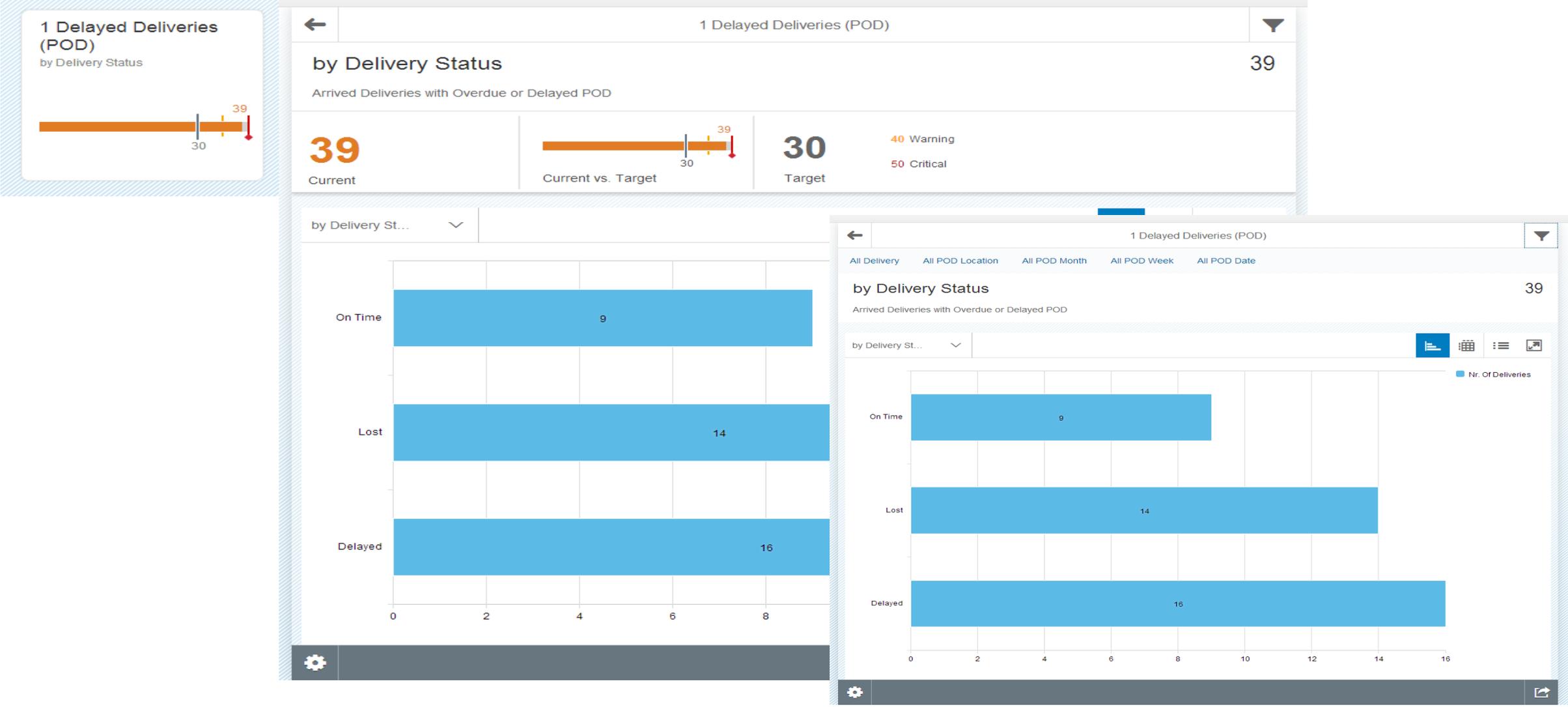
- Scheduling agreement integration (SD/ MM) Delivery proposal with actual quantities
- Goods issue triggered from TM
- Handling Unit for Outbound Shipment Integration

SAP Smart Business for TM / EM

Event Management



Analytical FIORI Apps EM – Delayed Deliveries POD



SAP Smart Business for Event Management

The dashboard is organized into several sections:

- My Home:** Contains eight KPI tiles. The first tile is 'EM_Analysis of Delays test parameter' with 'Event Year = 2012'. The second tile shows 'Avg. Cycle Time Delayed Deliveries' with a value of 971 and a target of 500. The third tile shows 'KPI Nbr of deliveries in transit' with a value of 22 and a target of 15. The fourth tile shows 'Lumira Average Delay story 2' with a table of Average Story values: 0080000133 (1), 0080000143 (1), and 0080000236 (1). The fifth tile shows 'KPI Nbr of deliveries in transit' with a value of 22 and a target of 15. The sixth tile shows 'Avg Cycle Time AF' with a value of 36. The seventh tile shows 'Lumira AverageDelay story Average Story' with a value of 36. The eighth tile shows 'KPI Nbr of deliveries in transit' with a value of 22 and a target of 15.
- Event Management:** Contains six tiles. The first tile shows 'AF Avg cycle time of delayed completed...' with a value of 102. The second tile shows 'EM Average Delay CompletedDeliverie...' with a value of 3818. The third tile shows 'AURIZON1 EVALAURIZON1' with a table of values: 2013-09 (3370), 2013-10 (2355), and 2013-07 (457). The fourth tile shows 'AURIZON1 EVALAURIZON1' with a value of 6790. The fifth tile shows 'AURIZON1 EVALAURIZON1' with a line chart showing values of 457 (2013-07) and 251 (2013-11). The sixth tile shows 'AURIZON1 EVALAURIZON1' with a value of 6790.
- SAP Lumira:** Contains two tiles. The first tile shows 'SAP Lumira' with a search icon. The second tile shows 'All Stories SAP Lumira' with a value of 66.
- KPI Modeler:** Contains eight tiles for various KPI management tasks: 'Create KPI', 'Configure KPI Tiles', 'Create Evaluation', 'Configure KPI Drill-Down', 'Manage KPI Authorizations', 'Manage KPI Associations', 'Migration Tool', and 'KPI Workspace'.
- Accounts Receivable Accountant:** Contains six tiles for account management: 'Process Receivables', 'Display Customer', 'Manage Customer', 'Create Customer', 'Clear Open Incoming', and 'Manage Customer'.

TM Collaboration Portal - Home Page / Landing screen

SAP SAP Transportation Management collaboration portal - Demo

User: Sascha Trucker | Settings |

HOME FREIGHT ORDER MANAGEMENT FREIGHT SETTLEMENT FREIGHT AGREEMENT MANAGEMENT

Freight Order Management

Freight Tending Freight RFQs 3 Open	Freight Tending Freight Quotations 1 Pending	Event Handling Freight Orders for Execution 2 Open
---	--	--

Freight Settlement

Self-Billing Disputes 1 For Approval	Self-Billing Disputes 1 Submitted
--	---

Freight Agreement Management

Freight Agreement RFQs	Freight Agreement RFQs
---------------------------	---------------------------

HELP

Freight Tendering - Detail view

SAP Transportation Management collaboration portal User: Bob Trucker | Settings |

HOME **FREIGHT ORDER MANAGEMENT** FREIGHT SETTLEMENT FREIGHT AGREEMENT MANAGEMENT

Freight Requests for Quotation Freight Quotations Freight Orders for Execution

Accept Quick Filter: **Open** Closed All | View:

Search:

Status	Freight RFQ	Response Time	Source Location	Destination Location	Start Date/Time	Number of Stops
	5100002011	31d 17h 49m	Heidelberg German Heidelberg Baden-Wuerttemberg Germany	Frankfurt German Frankfurt am Mein Hessen Germany	April 26, 2014 12:00:00 PM CET	3

Freight RFQ Details

Freight Order: 6100002469

Freight RFQ Status: Open

Respond By: June 6, 2014
2:39:04 AM CET

Price Limit: 1,000.00 EUR

Contact Person: Mr. Jan Rumig
 06227 7-49539

Latest Freight Quotation

Award Status:

Quotation Response:

Dates and Times

Start Date/Time: April 26, 2014
12:00:00 PM CET

End Date/Time: April 27, 2014
1:00:00 PM CET

Transport Details

Gross Weight: 0.00 KG

Gross Volume: 0.00 M3

Means of Transport: Truck

Dangerous Goods: No

Distance: 501.32 KM

Business Partners

Shipper:

Consignee:

Map

Number of Documents: 441 Last Refresh: May 5, 2014, 8:49:20 AM

« < 1 2 3 4 5 > »

HELP

Event notification and handling – Event reporting

SAP Transportation Management collaboration portal

FREIGHT ORDER DETAILS

 **Freight Order**
19002

FREIGHT ORDER DETAILS

Status: Open
Means of Transport: LTL (MMM)
Dangerous Goods: No
Distance: 1,228.07 MI

BUSINESS PARTNERS

Shipper: TR_CORPPanalpina
World Transport Ltd.
Consignee: P&G TRUCK LINES

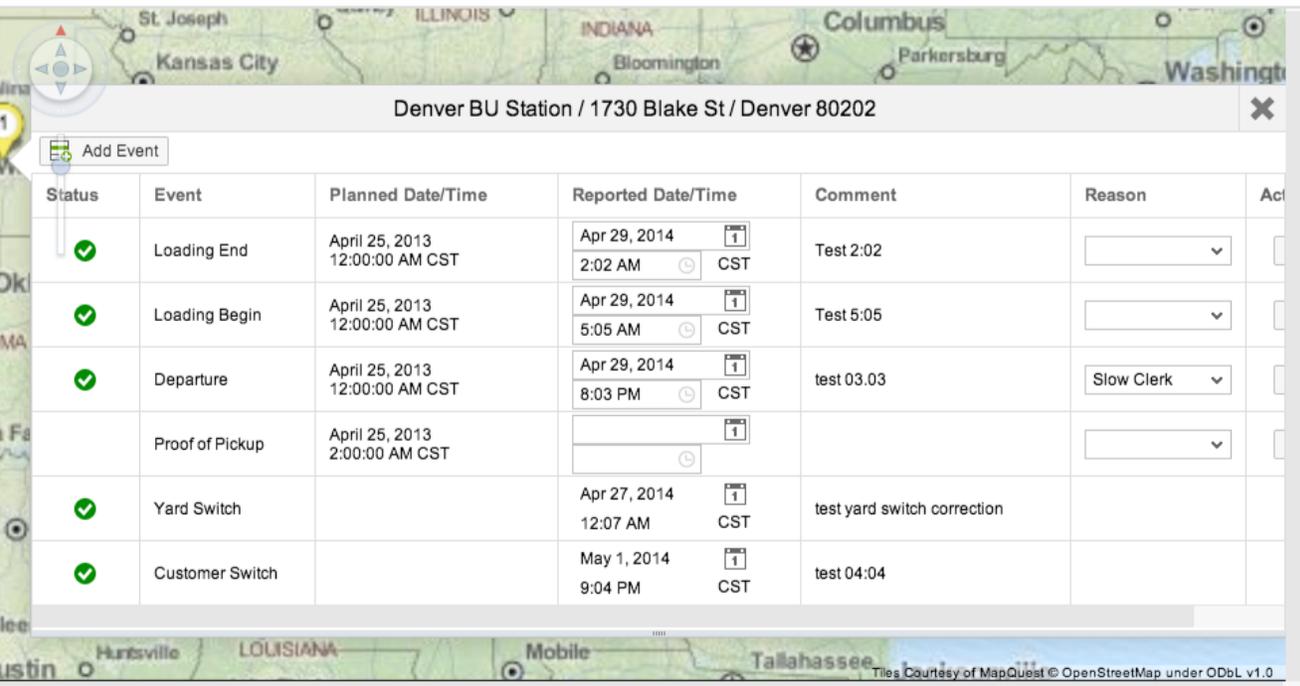
NOTES

ADDITIONAL

ZZCustomerBoolean: Yes
Char20: TEXT 5

Events Cargo

Location Events



Denver BU Station / 1730 Blake St / Denver 80202

Status	Event	Planned Date/Time	Reported Date/Time	Comment	Reason	Act
✓	Loading End	April 25, 2013 12:00:00 AM CST	Apr 29, 2014 2:02 AM CST	Test 2:02	<input type="text"/>	<input type="button" value=""/>
✓	Loading Begin	April 25, 2013 12:00:00 AM CST	Apr 29, 2014 5:05 AM CST	Test 5:05	<input type="text"/>	<input type="button" value=""/>
✓	Departure	April 25, 2013 12:00:00 AM CST	Apr 29, 2014 8:03 PM CST	test 03.03	Slow Clerk	<input type="button" value=""/>
	Proof of Pickup	April 25, 2013 2:00:00 AM CST	<input type="text"/>		<input type="text"/>	<input type="button" value=""/>
✓	Yard Switch		Apr 27, 2014 12:07 AM CST	test yard switch correction		<input type="button" value=""/>
✓	Customer Switch		May 1, 2014 9:04 PM CST	test 04:04		<input type="button" value=""/>

Tour Events

Status	Event	Planned Date/Time	Reported Date/Time	Comment	Reason	Actions
						<input type="button" value="Add Note"/> <input type="button" value="Cancel"/>

SAP Supply Chain Execution (SCE) Platform

SAP ERP

- Order-to-Cash
- Procure-to-Pay
- Dangerous Goods Mgmt.

SAP GTS

- Customs & compliance mgmt.

Supply Chain Execution Platform

SAP Transportation
Management

SAP Extended
Warehouse Mgmt.

SAP Event Management (Track & Trace)

• Supply Chain Execution Platform

- Synchronized solution delivery
- SCE Suite implementation in 1 instance
- Out-of-the box SCE integration

Technical Integration within TM 9.2

Event Management

Average Delay Time (POD) 105.7

Delayed Deliveries (TTRM) 23.3%

SAP Smart Business

Analysis by POD Country

Analysis of Delays

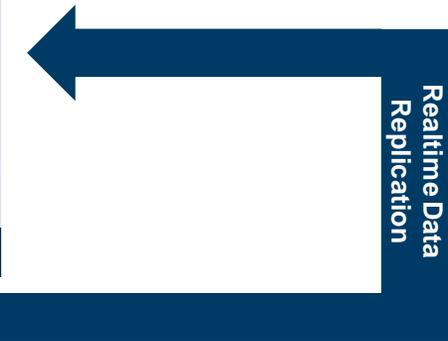
SAP Lumira

SAP Analysis Office

SAP Design Studio

SAP HANA Live

SAP Business Suite (TM, EM, EWM,...)





Innovations for Operational Risk Management

Ongoing investment: EHS environment, health and safety innovations and roadmap – 5 releases in 3.5 years

Component extension	RTC*	Significant New Functionality
1.0	Dec 2010	<ul style="list-style-type: none"> Incident Management
2.0	Oct 2011	<ul style="list-style-type: none"> Risk assessment <ul style="list-style-type: none"> 4 types (safety, health, environment, JHA) - risks, hazards, controls, configurable risk matrix IH amounts and OEL comparison
3.0 3.03	Aug 2012 Apr 2013	<ul style="list-style-type: none"> Similar Exposure Groups, Personal Exposure Profile Risk-based Health Surveillance Proposal with integration to OH or 3rd party
4.0	Jul 2013	<ul style="list-style-type: none"> Risk-based controls inspections Chemical health and safety processes <ul style="list-style-type: none"> SDS approval, Hazcom, HazMat Inventory
5.0 5.0x	May 2014 3Q planned	<ul style="list-style-type: none"> Role-based homepages, Fiori apps, chem h&s (continued) Measurement management
6.0	2015 planned	<ul style="list-style-type: none"> Emissions, calculations, and reports

*RTC is Released to Customer (General Availability is typically 6 months later)

Our solutions for Environment, Health and Safety

Overview

Proactively managing operational risks to run safer and more efficiently

Solution highlights

- Incident management:
 - Manage and learn from incidents and safety observations to build a proactive safety culture
- EHS compliance and risk management:
 - Identify operational risks and hazards; implement effective controls; develop and execute required occupational health, safety and environmental programs
- Emissions and waste management:
 - Manage air, water and waste emissions for voluntary or regulatory disclosure.
- Management of change:
 - Reduce risks caused by operational changes using risk assessment and approval processes
- Maintenance safety and permit to work:
 - Safely manage maintenance work by using safety plans and work permit systems, including LO/TO isolation processes



Solution today

Component Extension 5.0 for SAP EHS Management – Health, Safety and Environment related enhancements

Risk Assessment incl. Managing chemicals for H&S processes:

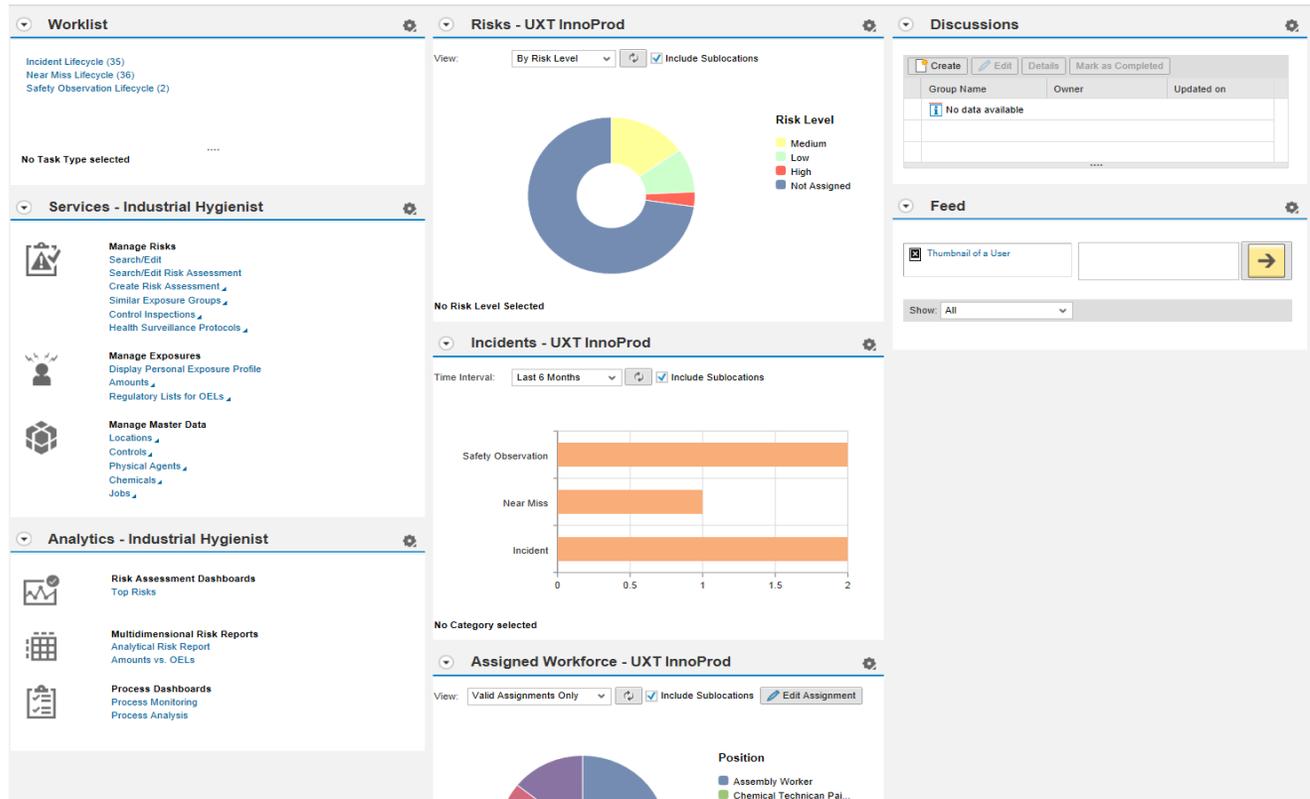
- Homepages – Easy Worklist , Services
- Chemical Advanced Search – Extract Chemical Data
- Risk Assessment – Improved Exposure Analysis
- Chemical Approval – Enhanced Exposure information during approval
- Chemical Dialog – Better Usability to enter values/ranges with units

FIORI Applications (delivered with FIORI Wave 4):

- Inspect Safety Controls
- Retrieve Safety Information

Component Extension 5.0 for SAP EHS Management – e.g. Home Page Industrial Hygienist

Attractive and Informative Entry Screen for each Role using the Application



Navigation Section

- Quick, lightweight access to assigned work items
- Access BI Queries
- Favorite Menu Items

Information Section

- Charts depicting relevant situations for each role
- “Insight To Action” Paradigm → Direct access to corresponding maintenance dialogs

Collaboration Section (via SAP Jam)

- Access to JAM Jam Discussions and Feeds

Component Extension 5.0 for SAP EHS Management – Chemical Dialog – Improved handling of values/ranges

Hazardous Ingredients

Listed Substance	CAS N...	Min...	Min...	Ma...	Ma...	Unit
xylene	1330-20-7	>=	50	<=	100	%
toluene	108-88-3	>=	10	<	15	%
2-methylpropan-1-ol	78-83-1	>=	10	<	15	%
edetic acid	60-00-4	<	10		0	%

.....

Physical and Chemical Data

Appearance

Physical State: Liquid

Form: Liquid

Color: Colorless

Odor: Aromatic

Safety Relevant Data

Flashpoint: 40 °C

Ignition Temperature: 540 °C

Lower Explosion Limit: > 40 %(V)

Upper Explosion Limit: <= 50 %(V)

Water Solubility: 123

Remarks: partly soluble

Vapor Pressure

Pressure	* Unit of Pressu...	Temperat...	* Unit of Tempe...
90	hPa	50	°C
60	hPa	25	°C

Before

Hazardous Ingredients

Listed Substance	CAS Number	Proportion
xylene	1330-20-7	>= 50 - <= 100 %
toluene	108-88-3	>= 10 - < 15 %
2-methylpropan-1-ol	78-83-1	>= 10 - < 15 %
edetic acid	60-00-4	< 10 %

.....

Physical and Chemical Data

Appearance

Physical State: Liquid

Form: Liquid

Color: Colorless

Odor: Aromatic

Safety Relevant Data

Flashpoint: 49 °C

Ignition Temperature: 540 °C

Lower Explosion Limit: > 30 %(V)

Upper Explosion Limit: <= 50 %(V)

Water Solubility: 123 g/l

Water Solubility Remarks: partly soluble

Vapor Pressure

* Pressure	* Temperature
90 hPa	50 °C
60 hPa	25 °C

- Simplified data entry in the form as it appears on the SDS
- Reduced number of entry fields and thus dialog complexity
- Optimal support to cut-and-paste from an SDS
- Data entry is checked and validated in regards correctness to:
 - Allowed operators
 - Validity of number formats
 - Allowed units
 - Consistency of ranges
- Data is still stored in separate fields (operator, value unit) in order to allow calculations or comparisons

Component Extension 5.0 for SAP EHS Management – Risk Assessment – Improved Exposure Analysis

Risk Assessment: UXT Demo Health RA (Frankfurt)

Save | Set Status | Create Follow-Up Assessment | You can also

Risk Assessment ID 1115 | Risk Assessment Type Health | Status In Process | Created

Basic Information | **Risks** | Documents | Tasks

View: [Standard View] | Identify Risks | More

Location	Hazard Category	Hazard	Operational Status	Agent	Method of Use	Risk Type	Risk Level
UXT Assembly Frankfurt	Chemical	Organ Damage	Normal Operation	EASY-Clean	Spraying	Inherent Risk	High
UXT Assembly Frankfurt	Physical	Noise Exposure	Normal Operation	Noise		Inherent Risk	Medium

Assessment Steps

Step	Completion
Review/Edit Basic Information	
Determine Inherent Risk	<input type="radio"/>
Review/Edit Existing Controls	<input type="radio"/>
Determine Initial Risk	<input type="radio"/>
Define New Controls	<input type="radio"/>
Determine Residual Risk	<input type="radio"/>
Review Summary	

Step: Determine Initial Risk

Completion Status: Open In Process Completed

Exposure Analysis | Risk Matrix

Actions	Regulation / Regulator...	Value Type	Amount Category	Latest Amount	Current Limit	Result
cyclohexane (Agent)						
...	Directive 2006/15/EC	TWA	Mass Concentration	406 mg/m3	700 mg/m3	
...	Directive 2006/15/EC	TWA	Concentration	34 ppm	200 ppm	
Toluene (Agent)						
...	Directive 2006/15/EC	STEL	Mass Concentration	280 mg/m3	384 mg/m3	
...	Directive 2006/15/EC	STEL	Concentration	not available	100 ppm	
...	Directive 2006/15/EC	TWA	Mass Concentration	165 mg/m3	192 mg/m3	
...	Directive 2006/15/EC	TWA	Concentration	not available	50 ppm	
Xylene (Agent)						
...	DE. TRGS 900	TWA	Mass Concentration	165 mg/m3	440 mg/m3	
...	DE. TRGS 900	TWA	Concentration	not available	100 ppm	
...	Directive 2000/39/EC	STEL	Mass Concentration	156 mg/m3	442 mg/m3	
...	Directive 2000/39/EC	STEL	Concentration	not available	100 ppm	
...	Directive 2000/39/EC	TWA	Mass Concentration	165 mg/m3	221 mg/m3	
...	Directive 2000/39/EC	TWA	Concentration	not available	50 ppm	

Grouped by the Ingredients of a chemical that have OELs to be observed

By default the newest available measurement is shown

Shows all applicable regulatory lists and the OELs defined there based on country/region of the location
→ **No manual selection required anymore**

Level of exposure (comparison result of measurement and OEL) is visualized with a color coded bar

Action Icons allow to request new measurements or view measurement history

Component Extension 5.0 for SAP EHS Management – Enhancements Approval Process

Checklist Step: Check for Restricted Substances

Check if any hazardous ingredients are controlled by regulations or are on restricted substance lists. The Lists column shows the lists that the hazardous ingredients were found on, if any.

Step	Remark	Done
Check Completeness and Correctness		✓
Search for Duplicates		✓
Check Substitution		✓
Check for Restricted Substances		
Assign Materials		
Request SDS Data Entry		
Specify Approval Team		

Hazardous Ingredients

Listed Substance	CAS Number	Lists
Bisphenol A	80-05-7	Company XYZ Restricted Substances - 2012
formaldehyde	50-00-0	Not on a List
Ethanol, 2-phenoxy-, formate	58214-97-4	Not on a List

Intuitive visualization of Hazardous Ingredients, that are found on restricted substance lists

Checklist Step: Assign Materials

You can assign one or more materials to the chemical.

Step	Remark	Done
Check Completeness and Correctness		✓
Search for Duplicates		✓
Check Substitution		✓
Check for Restricted Substances		✓
Assign Materials		
Request SDS Data Entry		
Specify Approval Team		

Materials

*Material Number	Material Description
1500-610	10W40 MOTOR OIL GAL
1018	Acsis Demo - Bottles

Possibility to assign Material during approval

Checklist Step: Specify Approval Team

Verify if the system has proposed the correct approval team and add or remove members if necessary. All members of the specified approval team will receive tasks to perform their part of the chemical approval.

Step	Remark	Done
Check Completeness and Correctness		✓
Search for Duplicates		✓
Check Substitution		✓
Check for Restricted Substances		✓
Assign Materials		✓
Request SDS Data Entry		✓
Specify Approval Team		

Approval Team

Acti...	*Person for Approval	Role	Location	Approval Status
	Ingo Sigmund	Hazardous Substance Manager		In Process
	Elke Richter	Environmental Manager	UXT InnoProd Plant Frankfurt	New
	Immanuel Schäfer	Industrial Hygienist	UXT InnoProd Plant Frankfurt	New

Visualization from which location a person responsible was determined from

Component Extension 5.0 for SAP EHS Management – Exposure Information during Approval

During Approval of a new chemical the Industrial Hygienist gets an overview of the already existing exposures at a location where the new chemical is going to be introduced.

Chemical Approval: RS: Test Approval 3124312432, In Process, Industrial Hygienist

Save Approve Reject

Chemical Approval Request

Documents

Checklist

Step: Review Conditions at Locations

Step	Remark	Done
Determine Locations of Chemical		✓
Review Conditions at Locations		

Locations

Location	Location Type	Status	Storage	Method of Use
RS: Richards Site / ID: 7	Site	Active		Dipping
IS ACME Site Frankfurt / ID: 17	Site	Active		Mixing

Controls for Selected Location Exposures for Selected Location

Regulation / Regulatory List	Value Type	Latest Amount	Current Limit	Result
ethanol (Agent)				
... 2000/39/EC	TWA	130 mg/m3	150 mg/m3	
... 2000/39/EC	STEL	requested	123 ppm	
... TRGS 900 OELs	TWA	130 mg/m3	123 mg/m3	
... TRGS 900 OELs	STEL	requested	123 mg/m3	
formaldehyde (Agent)				
... 2000/39/EC	TWA	not available	100 mg/m3	
methanol (Agent)				
... TRGS 900 OELs	STEL	not available	23 mg/m3	
... TRGS 900 OELs	TWA	not available	23 mg/m3	

Lists all existing exposures at the location along with the applicable OELs

→ Allows to decide if the newly introduced chemical might push an exposure over a limit

Component Extension 5.0 for SAP EHS Management – Health, Safety and Environment related enhancements

Risk Assessment incl. Managing chemicals for H&S processes:

- Homepages – Easy Worklist , Services
- Chemical Advanced Search – Extract Chemical Data
- Risk Assessment – Improved Exposure Analysis
- Chemical Approval – Enhanced Exposure information during approval
- Chemical Dialog – Better Usability to enter values/ranges with units

FIORI Applications (delivered with FIORI Wave 4):

- Inspect Safety Controls
- Retrieve Safety Information

Inspect Safety Controls App

←
Inspection

Fire Extinguisher Inspection

Inspection Contact: John Doe
Due: 2013-12-10

This is a description of the Inspection that can be given by the Inspector and maybe some other stuff like who you should get in contact with if you don't get harmed.

5

Controls

5 Controls

4

Open

1

Done

Fire Extinguisher 123	Hall A
Fire Extinguisher 124	Hall A
Fire Extinguisher 125	Hall B
Fire Extinguisher 126	Hall B
Fire Extinguisher 127	Hall B

Location

Hall A

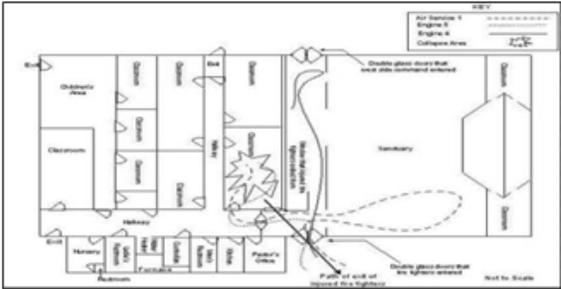
Address

Hauptstraße 16
12345 Musterstadt
Plant 2 > Hall A

Contact

Max Mustermann
0711/32783653
max.mustermann@company.com

Floorplan



Done ✓ >

Open ? >

Open ? >

Open ? >

Open ? >

Submit



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Public 54

Retrieve Safety Information App

The screenshot displays the 'Retrieve Safety Information App' interface. On the left, a list of chemicals is shown, filtered by 'Production Hall B'. The main panel displays detailed information for 'AB Epoxy Primer Part A' (Nr: #D12345667, Epoxy Glue Hardener, High Risk). The detailed view includes a search bar, a list of assembly lines, and a detailed safety section with icons for information, first aid, hazards, and document sharing.

Chemicals (4)

Assembly line 1
AB Epoxy Primer Part A
Nr: #D12345667
Epoxy Glue Hardener **High Risk**

Assembly line 1
AB Epoxy Primer Part B
Nr: #D12345678
Epoxy Glue Hardener **High Risk**

Assembly line 1
AB Epoxy Cleaner
Nr: #D1234435
Epoxy Glue Hardener **Medium Risk**

Paint booth
AB Epoxy Cleaner
Nr: #D1234435
Epoxy Glue Hardener **Medium Risk**

Chemical

Assembly line 1
AB Epoxy Primer Part A
Nr: #D12345667
Epoxy Glue Hardener **High Risk**

Hazards

- Irritant
- Dangerous for the Environment

Behaviour

- Don't smoke
- Don't eat or drink

Protective Equipment

When spraying

- Independent Air breathing apparatus
Material: 123-445-222
- Chemical resistant suit
Material: A-334-e
- Nitrile rubber gloves
Material: XA-45-V

When coating

- Disposable Rubber Gloves
Material: XA-405-A

FIORI: EHS Control Inspection

The image displays three overlapping screenshots of the SAP FIORI EHS Control Inspection interface.

Top-left screenshot: Inspect Safety Controls

- Header: SAP, Search, 1 Open, 0 Overdue Inspections
- Section: Inspections
- Description: Fire Prevention Controls Inspection - Frankfurt
- Progress: 13% Done
- Status: In Process
- Due Date: 11.04.2014

Bottom-left screenshot: Inspection

Item	Location	Status
Fire Protection Doors	UXT Production Frankfurt	? Open >
Fire Walls	UXT Production Frankfurt	? Open >
Fire Alarm in Building	UXT Production Frankfurt	? Open >
Fire Brigade Alert	UXT Production Frankfurt	? Open >
Sprinkler	UXT Production Frankfurt	? Open >
Automated CO2 Fire Suppression	UXT Production Frankfurt	? Open >
Emergency Exit Signs	UXT Production Frankfurt	? Open >
Dry Chemical Fire Extinguishers	UXT InnoProd Plant Frankfurt	✓ Done >

Right screenshot: Dry Chemical Fire Extinguishers

UXT InnoProd Plant Frankfurt

Question	Answer
Is the pressure gauge in the green area ?	Yes N/A No
Is the safety pin in place ?	Yes N/A No
Extinguisher was turned upside down at least three times (shaken)?	Yes N/A No
It is mounted in an easily accessible area, with nothing stacked around it.	Yes N/A No

Answer All

FIORI: Safety Information

SAP Search

Chemicals (3) Chemical

Search

Chemicals at: UXT InnoProd Plant Fra...

UXT Assembly Frankfurt
EASY Clean
 All Purpose Cleaner, Industry Cleaner
 Danger High

UXT Production Frankfurt
Chloramine T
 Machine Cleaner, SuperCleaner
 Danger Medium

UXT Production Frankfurt
ACRIFIX® 1R 0192
 Plexiglaskleber
 Danger Medium

EASY Clean
 All Purpose Cleaner, Industry Cleaner
 Danger High

Hazards Classification

Hazardous to the Ozone Layer, Category 1
 Acute toxicity: Inhalation, Category 4
 Carcinogenicity, Category 1
 Toxic to reproduction, Category 2

Protective Equipment

Neoprene and plastic clothing
 Material:
 Safety Spectacles
 Material:
 Face shields
 Material:
 Leather Clothing
 Material:

SAP Search

Chemicals (3) Chemical

Search

Chemicals at: UXT InnoProd Plant Fra...

UXT Assembly Frankfurt
EASY Clean
 All Purpose Cleaner, Industry Cleaner
 Danger High

UXT Production Frankfurt
Chloramine T
 Machine Cleaner, SuperCleaner
 Danger Medium

UXT Production Frankfurt
ACRIFIX® 1R 0192
 Plexiglaskleber
 Danger Medium

EASY Clean
 All Purpose Cleaner, Industry Cleaner
 Danger High

Local Emergency Contact Details

Frank Rieder
 Automotive Constructions

Contact Details

Mobile: 0188 90 55 55 55
 Phone: 06227 755555
 Email:

Company

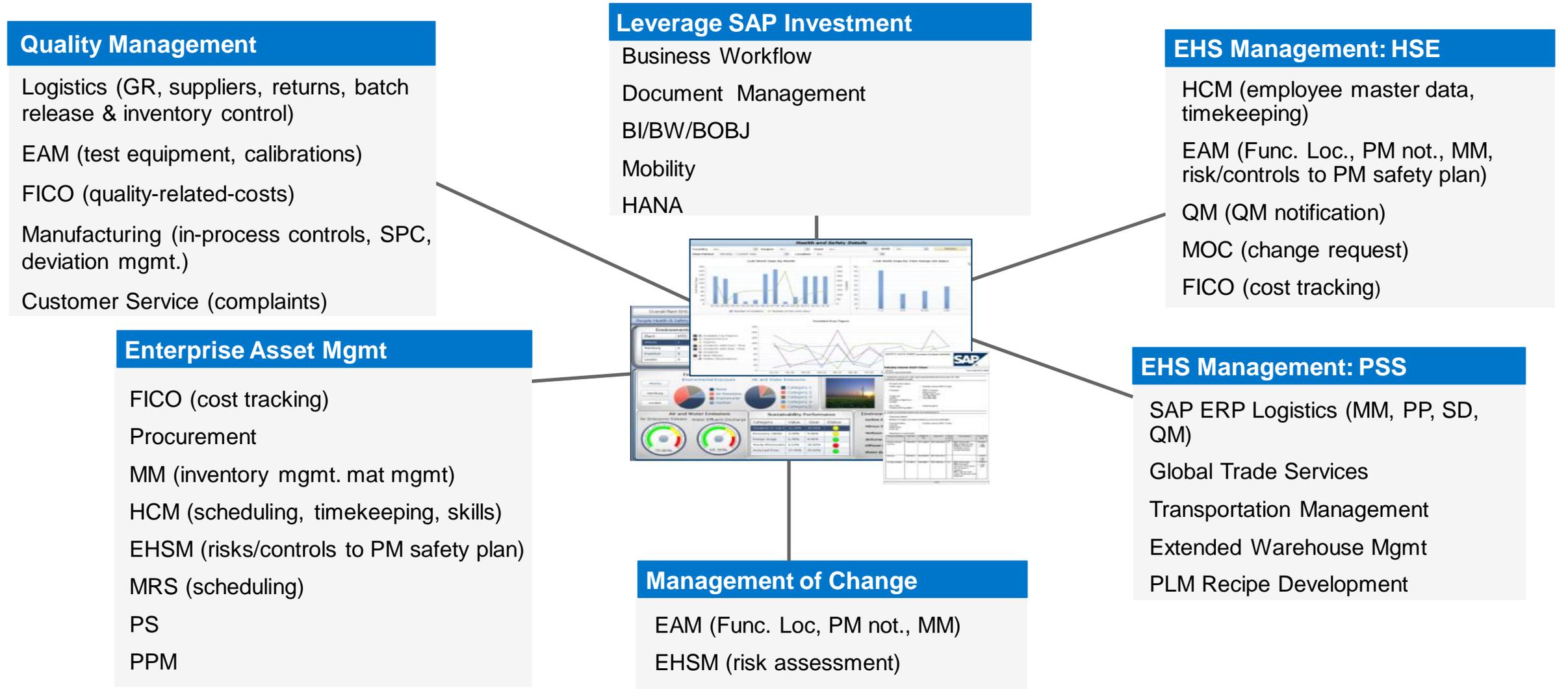
Name: SAP AG
 Address: Neurottstr. 16
 69190 WALLDORF

General Advice

Show this safety information to your physician
 Consult a physician if you experience symptoms of a dangerous area. |

Inhalation

Leverage Your ERP Data with Native Integration





Thank you

Contact information:

Ruediger Schroedter
Global Lead for Mining
ruediger.schroedter@sap.com

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