Trends & Innovations shaping the future of Mining & Metals Industry

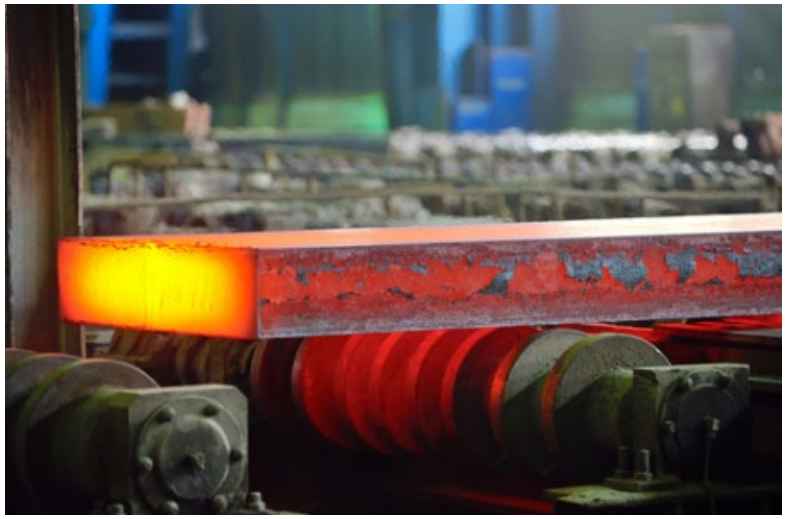
Vimal Gaba
Global Head Mining & Metals,
IBU Mill Products & Mining, SAP

Madrid, September 28th, 2022

THE BEST RUN SAP

Agenda

- Industry Trends & Priorities
- SAP Strategy for the Intelligent Enterprise
- Solutions & Innovation Examples



IBU Mill Products & Mining – Value chain view of industry coverage

Forest & Paper value chain

Forest Products

- Forestry
- Logging
- Solid Wood
- Sawmills

Pulp & Paper

- Packaging paper
- Graphical paper
- Hygiene paper
- Pulp

Packaging

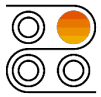
- Paper Packaging
- Flexibles Packaging
- Aluminum Packaging
- Glass Packaging, Plastic Films

Mining & Metals Value Chain

Mining & Beneficiation

- Ferrous minerals
- Base, non-ferrous,
- Battery & energy transition mineral
- Coal Metallurgical & Thermal
- Precious & Industrial minerals
- Mining Services

Metal Smelting & Refining



- Iron & Steel
- Zinc, Aluminum
- Li, Ni, Copper, Cobalt, Rare Earth
- Coal, lignite, CBM
- Precious metals Gold, Diamon
- Metal scrap & recycling

Downstream Manufacturing

- Flats & Longs
- Rolled & Galvanized products
- Pipes & Tubes
- Cable & Wires
- Fabricated Metals
- Service Centers

Building Materials

Building Products

- Flooring, roofing, windows
- Ceramics, glass, stone
- Wood, metal, plastic products
- Furniture

Cement & Concrete

- Cement
- Ready Mix
- Concrete Products

Textiles

Textiles

- Yarn
- Fabric
- Carpet & Rugs

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Mining & Metals today

Industry with strongly growing eminence for a low carbon future

Global Supply Chains

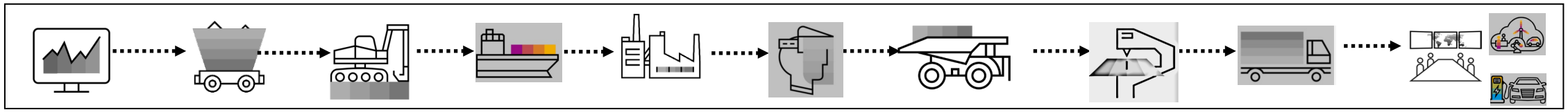
Demand growth with variability,
Supply Centers & (re)sources
Geopolitics

Sustainability & Environment

Social value, License, Risk
Green products & emissions
Regulations & disclosures

Shortages & Disruptions

Energy & Resources,
Supply Chain & shipping
Inflation & economic outlook



Energy & Mobility Transition

Megatrends drive major uplift
Investor focus, shifting portfolios, capex
Variable speeds of transitions

Innovation & Growth

Substitutes, alternates & new materials
Recycling & Circular networks
Build Consumer Trust

Technology & Data Innovations

Cloud, Digital, Cyber attacks
Blockchain, AR, VR, wearable.
Digital twins & data

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Mining & Metals today

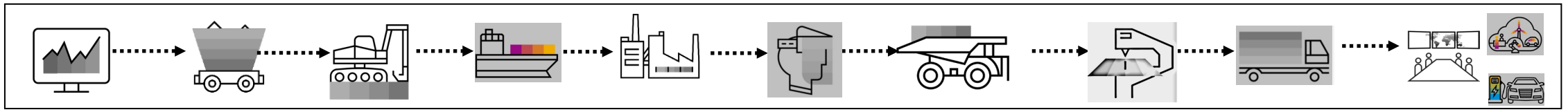
Industry with Shifting Business Priorities

Build Supply Chain Resilience

- Synchronize planning across levels
- Tracking, tracing & visibility
- Build intelligence in processes

Innovate in Assets & Operations

- Build Reliability & predictability in asset performance
- Data driven insights & innovation
- Digital twins & remote operations



Race up towards Sustainability

- Emissions, ESG , Regulations
- Safety & health
- Circularity

Drive Customer Centricity

- Customer channels & models (B2B, B2C, B2B2..marketplace)
- Experience & convenience
- Downstream trust

Collaboration & Networks

- Supply chain & ethical sourcing
- Value chain transparency & data exchange
- Networked process eg Assets

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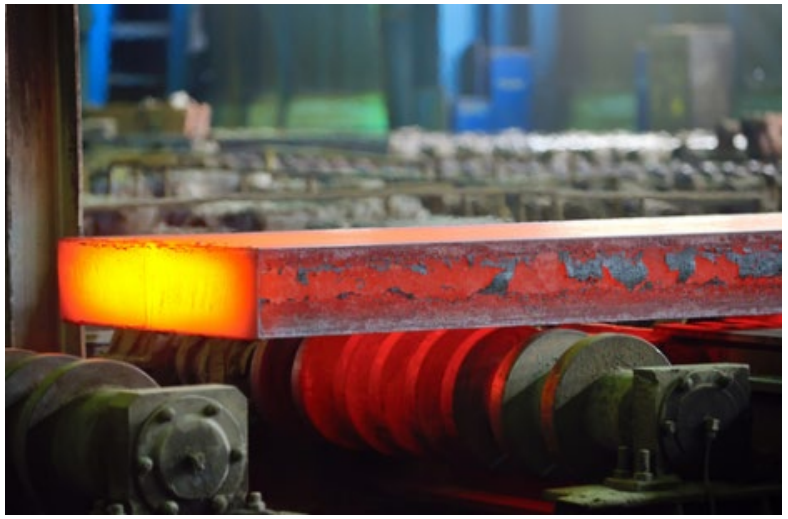
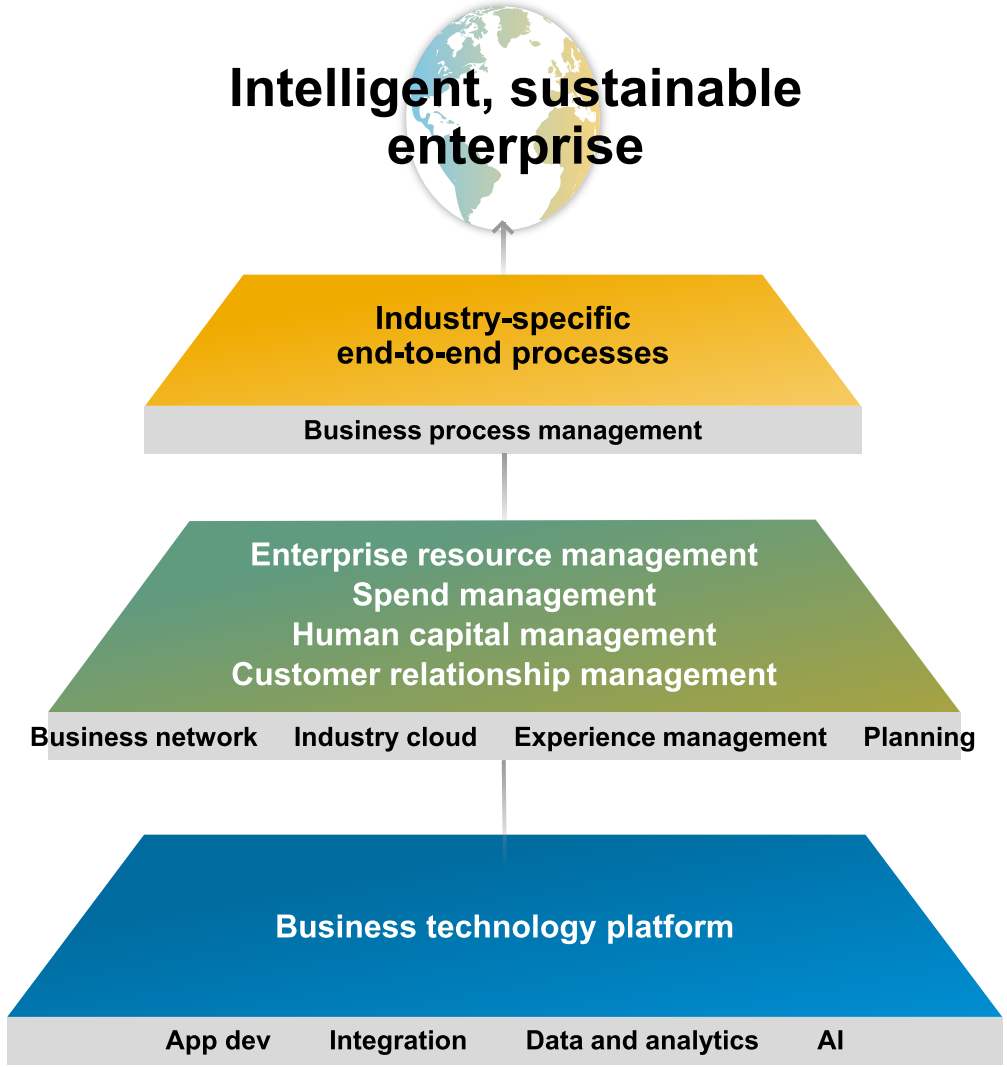


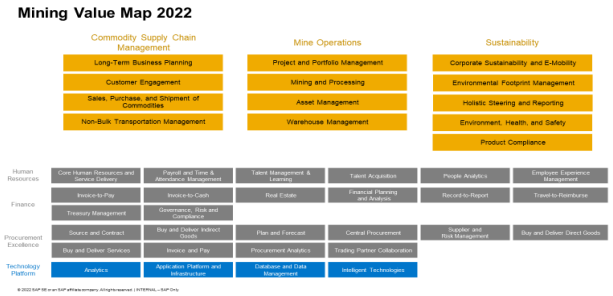
SAP Vision for an Intelligent Enterprise

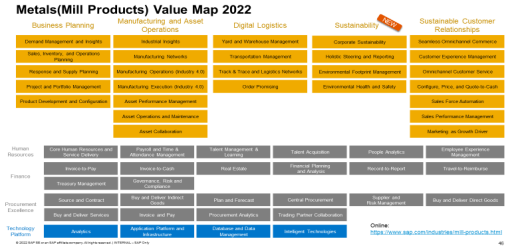
Enable & Support the Mining & Metals Industry



Expand business innovations with RISE

Cloud ERP	Business process intelligence	Business platform and analytics	Business networks	Outcome-driven services and tools
SAP S/4HANA Cloud	Business process intelligence starter pack	SAP Business Technology Platform (CPEA credits)	SAP Business Network Starter Pack	From partners





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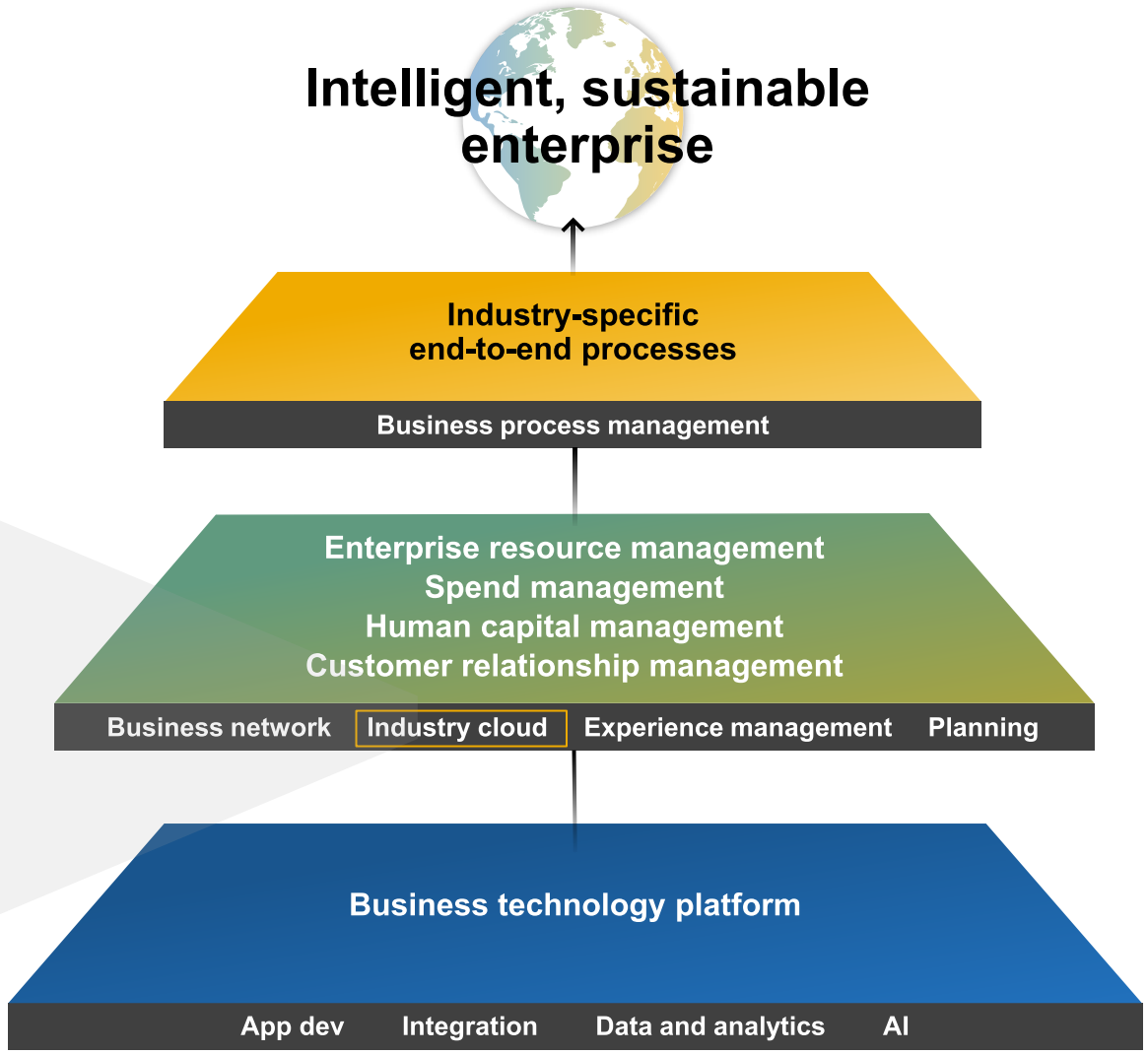
SAP's Industry Cloud Solutions

Deliver differentiation with innovations

For all areas of the business, in every industry

- Built by SAP and by its Partners
- Interoperable and cloud native
- Business applications, not just technologies
- Extend SAP's intelligent suite
- Optimize, extend and transform core business processes



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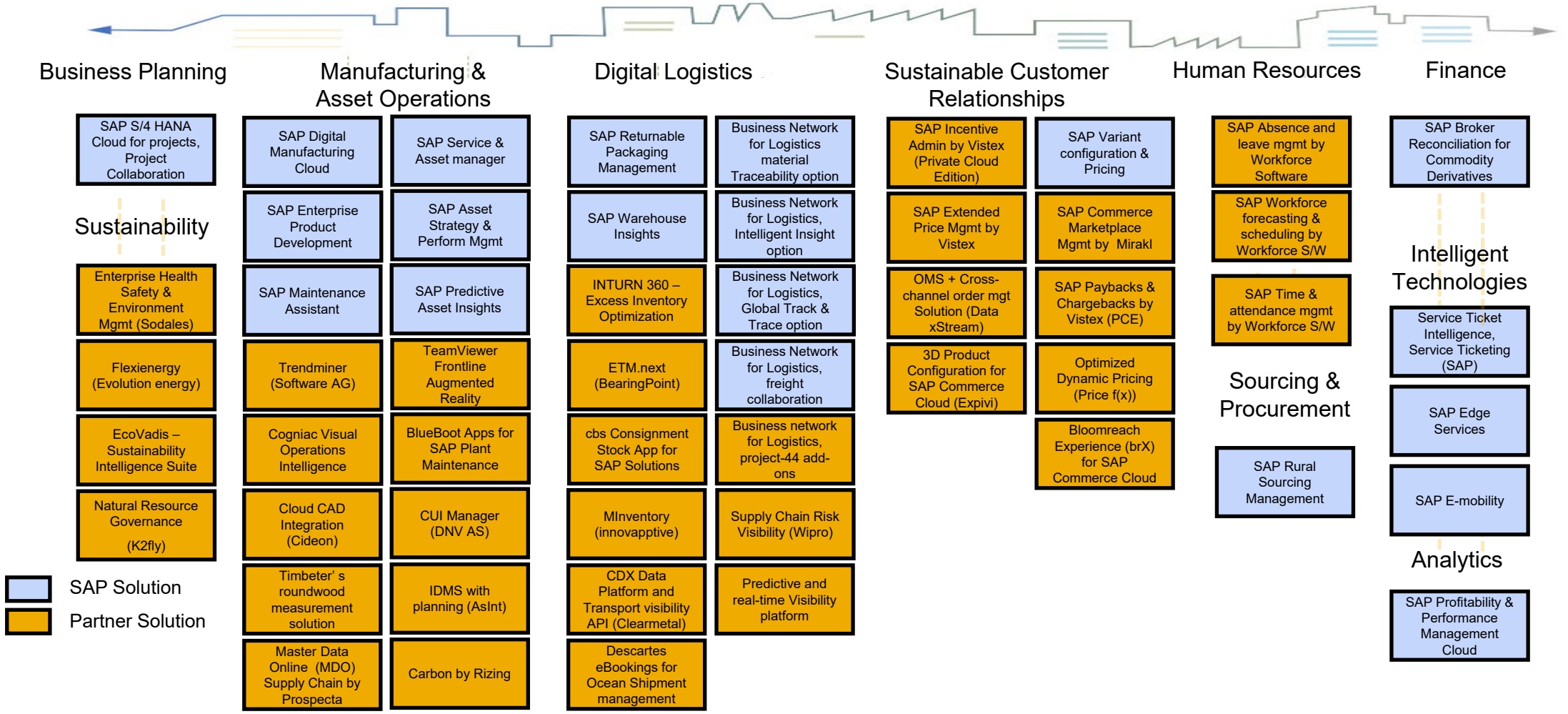
SAP Industry Cloud

For Mining & Metals



https://www.sap.com/industries/industry-cloud.html

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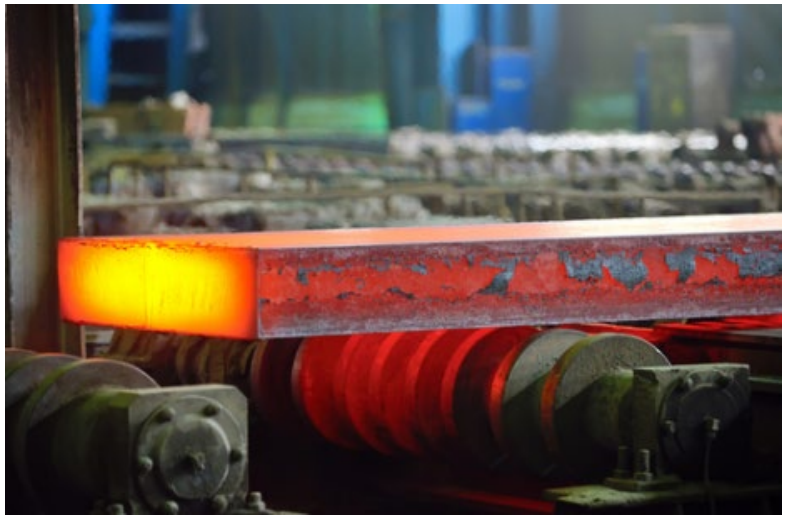

Mining & Metals today

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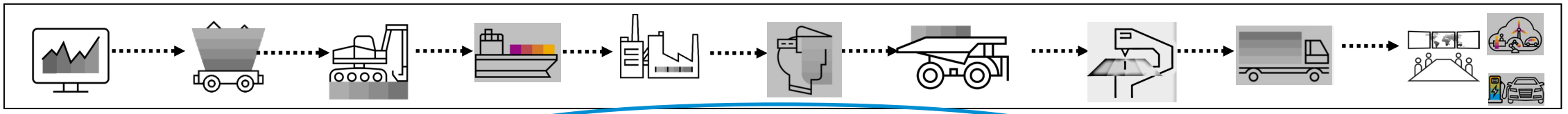

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- Networked process eg Assets

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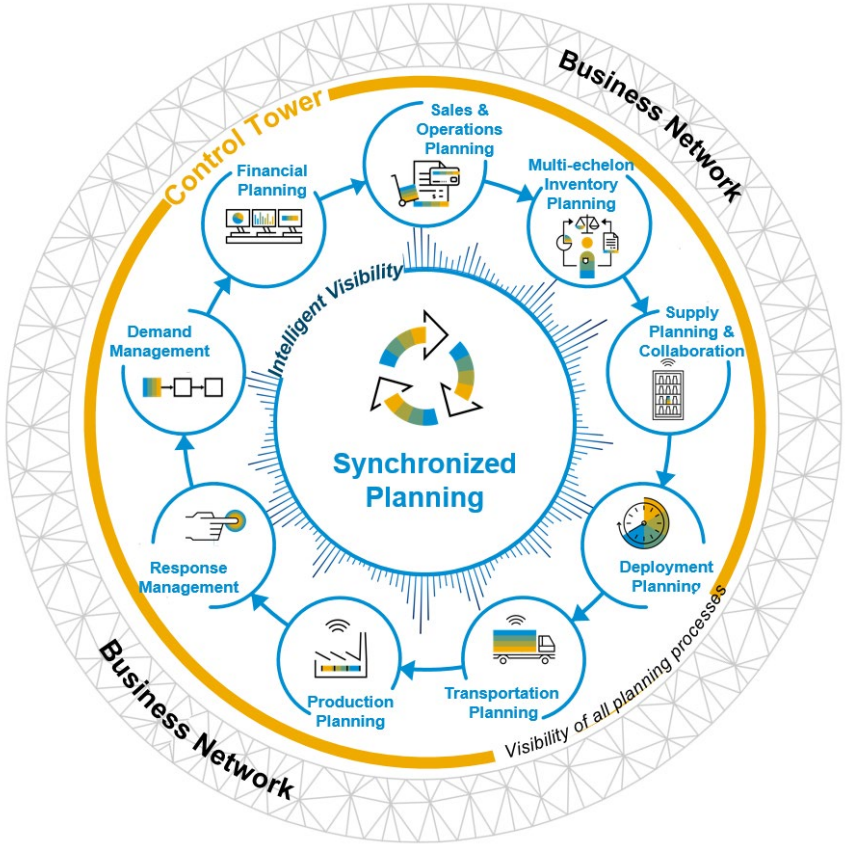
Synchronized Planning with SAP Integrated Business Planning

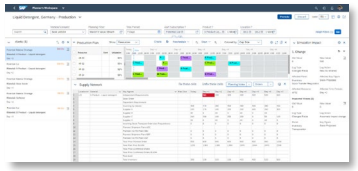
Resilient supply chain

- Synchronized Planning for Production
- Synchronized Planning for Maintenance
- Extended Planning & Analysis with Financial Planning
- Synchronized Logistics Operations
- Network Aware Planning

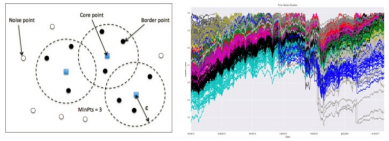


Focused Innovations

Intelligent Visibility



Planner's Workspace



Automation with ML/AI

Interactive Planning
Real time Integration
Extensibility with BTP
Digital SC Twin
Collaborative Enterprise

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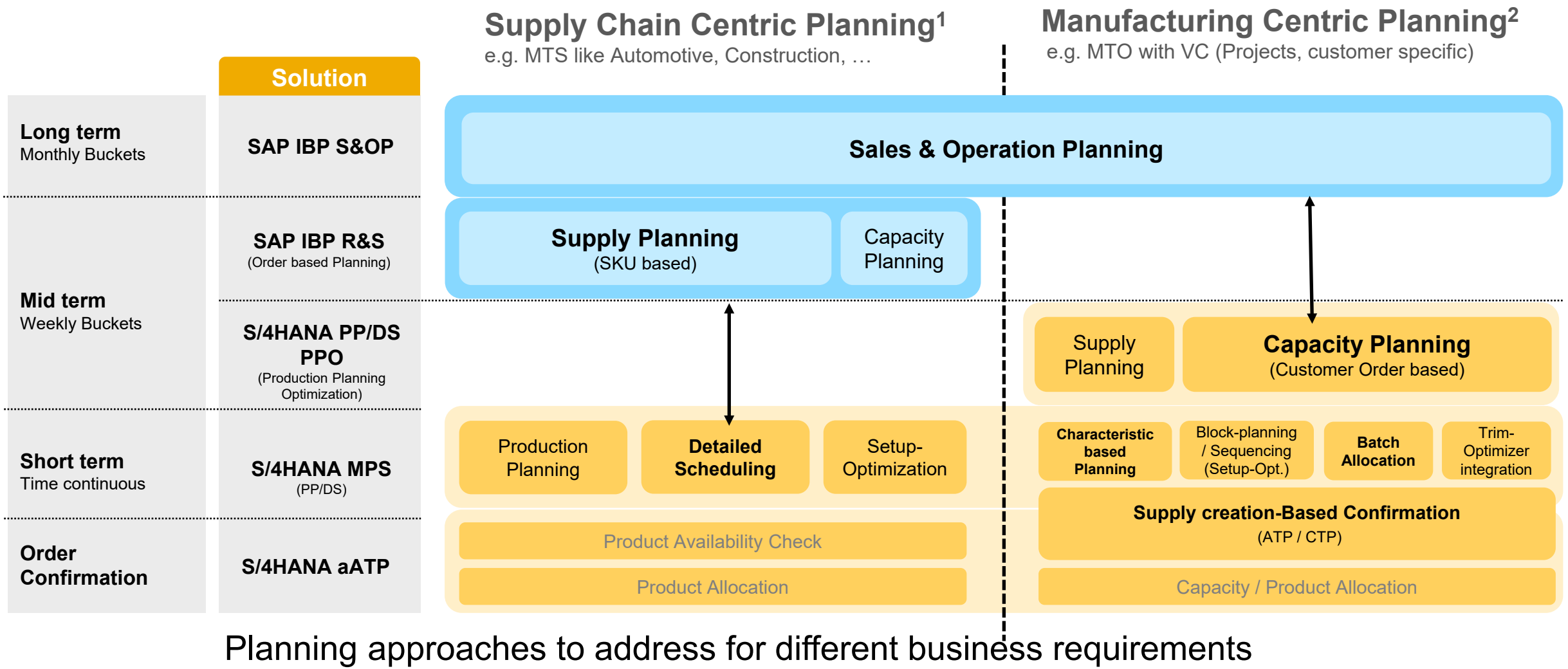
Synchronized Planning for Metals(Mill) Industry

Resilient supply chain



Planning approaches to address for different business requirements

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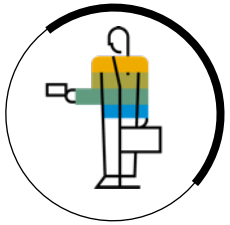
IBP R&S = SAP IBP for Response & Supply

"PP/DS" is used as abbreviation for "SAP S4/HANA Manufacturing for planning and scheduling".
This is the current state of planning and may be changed by SAP at any time without notice.

1. Synchronized planning: enable additional integration scenarios in PPDS and IBP including in-house production
2. Synchronized planning for production: integration of time-series-based supply planning with MP&S

The Intelligent Order Promising – S/4HANA advanced ATP

Resilient supply chain



Business Needs

- Customer Service Manager needs to confirm the delivery dates and quantities for online-received sales orders for make-to-order items based on the component and available capacity
- After Checking existing stock, Customer Service Manager wishes to schedule a production run and provide confirmation date to customer

Business Benefits

- Manage shortage situations by leveraging production capacity
- Immediate confirmation results for make-to-order products
- Leverage finished goods inventory, production capacity, and component availability to achieve maximum Service levels

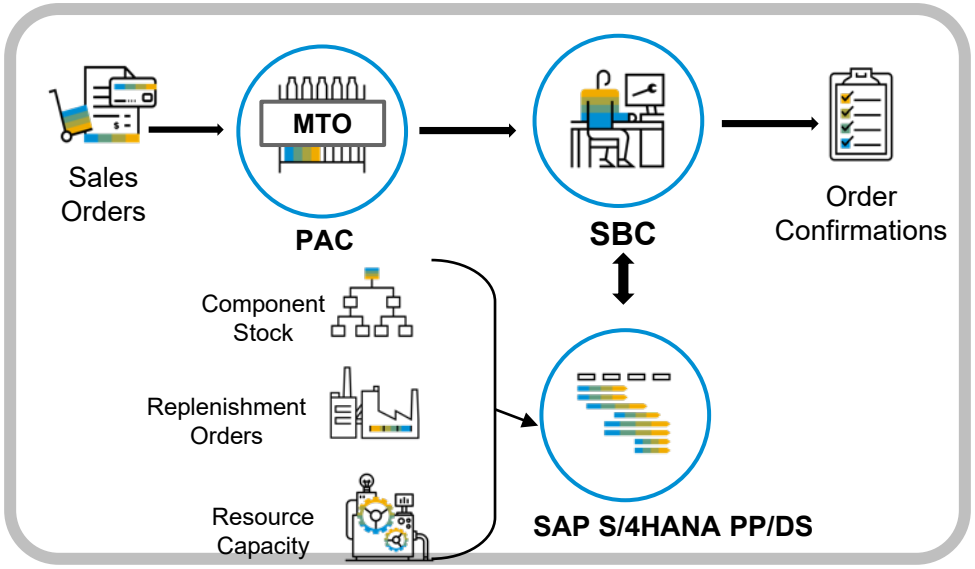
Confirm MTO/ATO orders considering manufacturing constraints

SAP S/4HANA

Supply-creation Based Confirmation (SBC)

Solution Highlights

- Immediate interaction between Sales and Production
- Considers Resource capacity and component availability simultaneously
- During the aATP check, PP/DS is called at finished product level for multilevel demand and supply matching, supply planning, detailed scheduling and supply element creation*
- APO-MATP-like functionality with product availability check (PAC) only at component level **
- During sales order entry or change, an advanced Available-To-Promise (aATP) check can call a source for a Bill of Material (BOM) and routing explosion **



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* Planned 2022 S/4 HANA Release
** Planned 2023 S/4 HANA Release

Roadmap Functionality

Solution & Innovation Examples with Industry Cloud

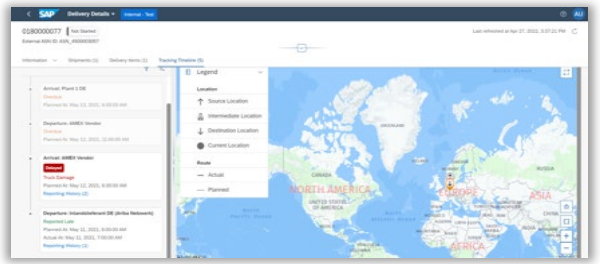
Resilient supply chain

SAP Business Network for Logistics,

global track and trace option

Capture, process & store tracking information

Industry Cloud- SAP Solution



- ✓ Track Shipments
- ✓ Monitor Inbound ASN
- ✓ Track Sales Order fulfillment
- ✓ Track Purchase Order fulfillment

- ✓ Users served with updated information: transportation planners, receiving specialists, internal sales representatives, and purchasers
- ✓ Supported modes of transport for visibility data integration: global ocean FCL, global air and FTL and LTL in NA and Europe

Descartes E-booking for Ocean shipment management

Enable end-to-end ocean shipment management and visibility for your supply chain

Industry Cloud- Partner Solution

- ✓ Expand ocean shipment capabilities, uniting multiple parties & processes together from contract to booking, through tracking & financial settlement lifecycle.
- ✓ Integrated ocean shipment management to unify & analyze supply chain data for ocean carriers.
- ✓ Integrated with the SAP Logistics Business Network

More Information
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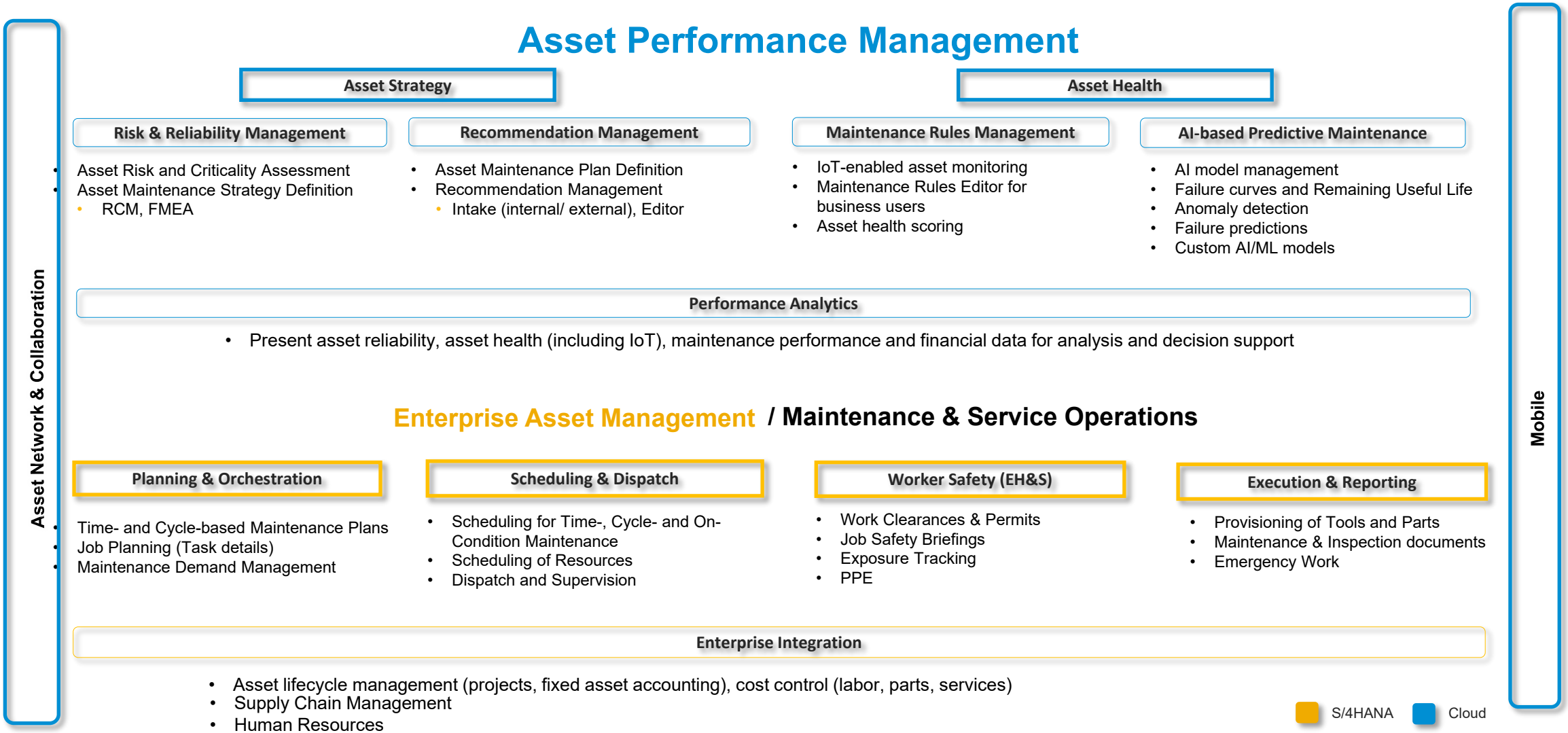
Building reliability in Asset performance

Assets & Operations



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Rethinking spare parts planning in Mining

Assets & Operations

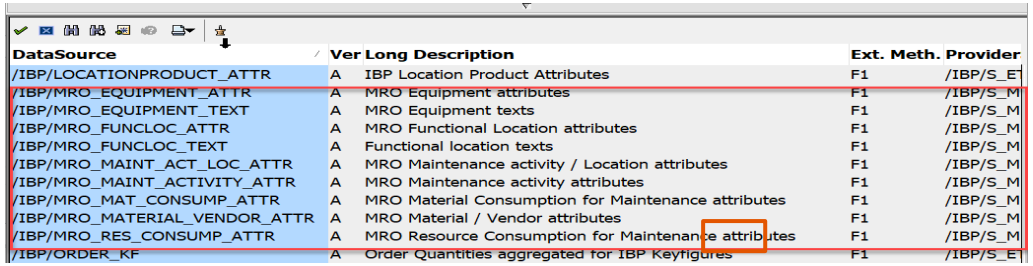
Integration Content for Maintenance Plans

- Integration of Maintenance Plans and Asset Master Data from ECC & S/4 HANA EAM
- Integration content for **Master Data types and Key Figures** from Plant Maintenance (11 New MRO extractors and re-use of 12 Standard extractors with Filters.)

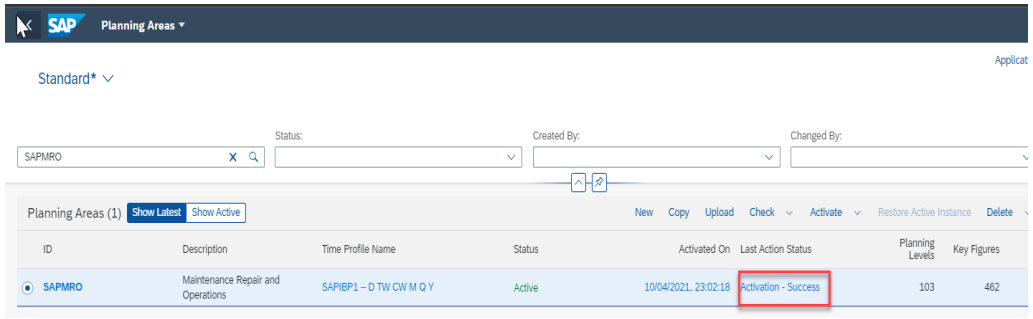
New MRO Planning Area

- Model Asset Intelligence data structures to IBP models. (Equipment's, Func. Locations, Assets, Maint. Activities..)
- Planning Operators and Key Figures for MRO Demand and Supply Planning Processes
- Financial Key Figures for Total Maintenance Costs

SAP IBP for MRO
(Maintenance, Repair and Operations)



DataSource	Ver	Long Description	Ext. Meth.	Provider
/IBP/LOCATIONPRODUCT_ATTR	A	IBP Location Product Attributes	F1	/IBP/S_E
/IBP/MRO_EQUIPMENT_ATTR	A	MRO Equipment attributes	F1	/IBP/S_M
/IBP/MRO_EQUIPMENT_TEXT	A	MRO Equipment texts	F1	/IBP/S_M
/IBP/MRO_FUNCLOC_ATTR	A	MRO Functional Location attributes	F1	/IBP/S_M
/IBP/MRO_FUNCLOC_TEXT	A	Functional location texts	F1	/IBP/S_M
/IBP/MRO_MAINT_ACT_LOC_ATTR	A	MRO Maintenance activity / Location attributes	F1	/IBP/S_M
/IBP/MRO_MAINT_ACTIVITY_ATTR	A	MRO Maintenance activity attributes	F1	/IBP/S_M
/IBP/MRO_MAT_CONSUMP_ATTR	A	MRO Material Consumption for Maintenance attributes	F1	/IBP/S_M
/IBP/MRO_MATERIAL_VENDOR_ATTR	A	MRO Material / Vendor attributes	F1	/IBP/S_M
/IBP/MRO_RES_CONSUMP_ATTR	A	MRO Resource Consumption for Maintenance attributes	F1	/IBP/S_M
/IBP/ORDER_KF	A	Order Quantities aggregated for IBP Keyfigures	F1	/IBP/S_E



MRO Demand and Supply Planning Processes

- Forecasting Corrective and Preventive Maintenance
- Rough Cut Workforce Capacity Plan and Spares Usage of Maintenance Plans

Co-innovation topic

IBP 2202R & 2205R

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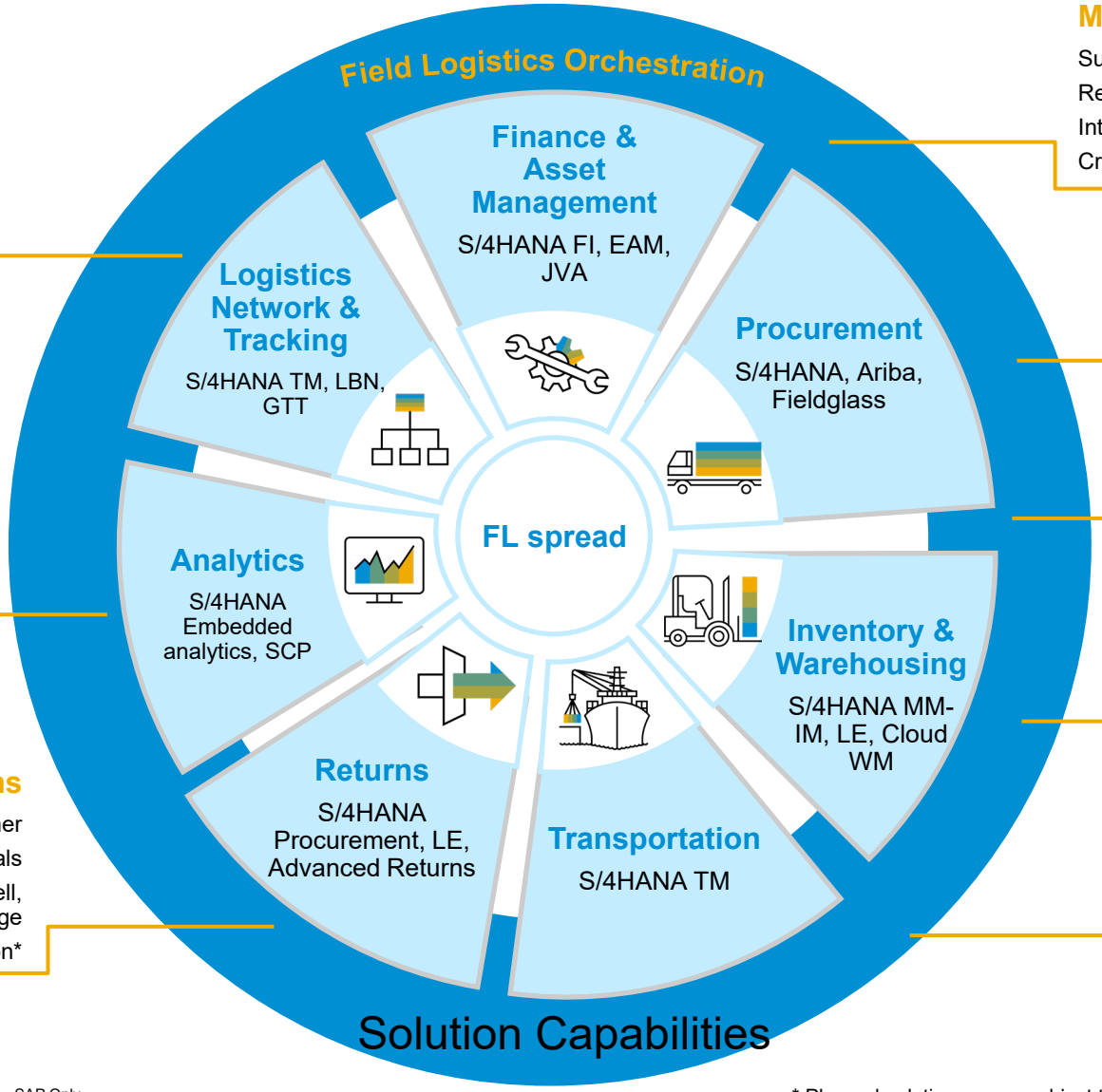
Field Logistics with SAP S/4HANA (scenario for Mining)

Assets & Operations

Labs Preview*



Physical Tracking*

Tracking of returns for repair*

Inbound tracking scenarios*

GTT, LBN integration *

FL Analytics

Overview page for receipts and returns

Extended Analytics and Machine learning scenarios, SCP*

Cross-plant visibility*

Returns

Processing returns from remote to base & further

Return of stock, non-stock, rentals

Return to vendor, for repair/recertification, scrap/sell, request inspection, temporary storage

Advanced Returns integration*

Maintenance and Procurement Integration

Supply process derivation and process control

Rentals processing

Integration with Fieldglass for Rentals

Cross-plant visibility for maintenance*

Simplified Receiving

Common browser UI for quick receiving

Stock, non-stock, rentals

Mobility

QR code scanning, Label printing

Warehouse & Yard Operations

Warehouse integration, cross-docking and holding

Kitting*

Multiple bases scenarios*

Outbound Logistics

Container master data

Packing into container

Voyage Management

TM integration*

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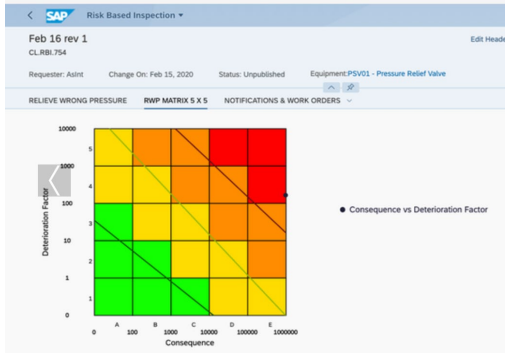
* Planned solution scope, subject to change by SAP SE or its affiliated companies at any time for any reason without notice

Solution & Innovation Examples with Industry Cloud

Assets & Operations

Asint- Risk Based Inspection
(A native App within the SAP IAM suite)

A Risk Based Inspection (RBI) approach allows the operator to prioritize inspection plan based on the prediction of failure versus traditional time-based or condition based inspection plan.



More Information
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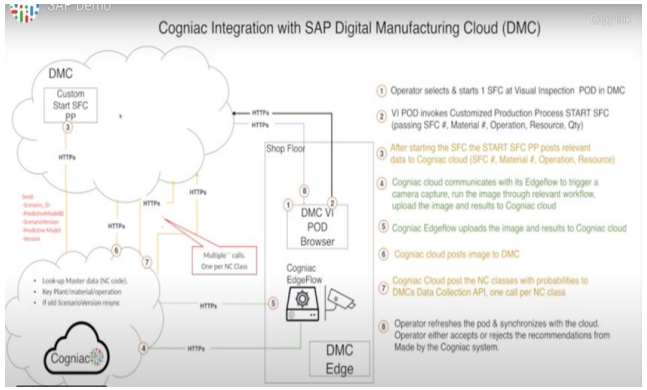
Industry Cloud-Partner Solutions

Cogniac- Visual operational intelligence frontline

Drive massive value from visual assets to realize process performance improvements , integrating with any existing camera infrastructure and workflow in any environment, also integrating with SAP Digital Manufacturing Cloud,



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CPQ with Advanced Variant Configuration & pricing service for Metals

Drive Customer Centricity

CPQ (Configure, Price & Quote)

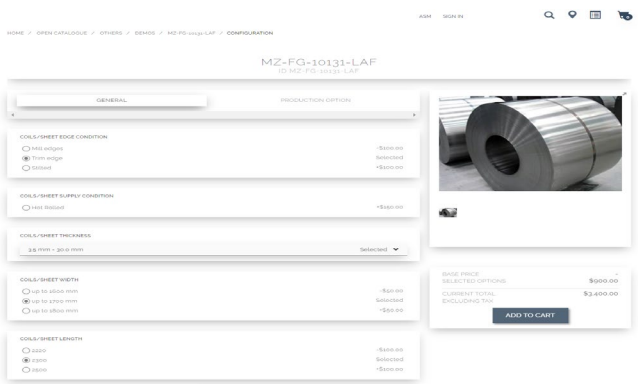
- Connected omni-channel quote-cash
- Single shared source of product, configuration, and pricing data with back office integration- S/4HANA, VC /AVC, CPQ, Commerce Cloud

Configuration & Pricing Service-

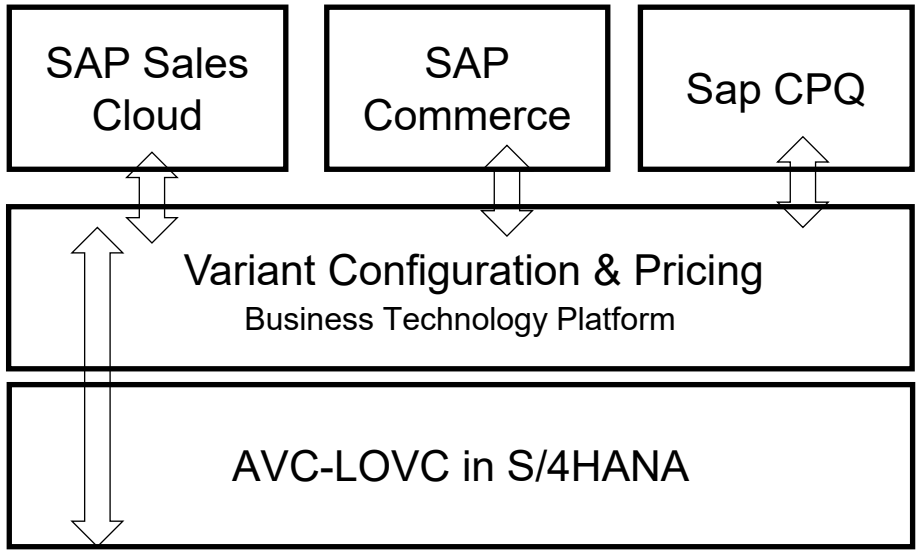
- One Configuration Service on SAP BTP – Consumer does not need to know whether it is a VC or AVC model
- Same dependency processing by Configuration Service and S/4HANA backend for AVC models – no deltas

AVC

- Support of multi level scenario for configurable materials
- Engineer to order for configured products
- aATP product allocation with VC Characteristic



Model once configure anywhere



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Solution & Innovation Examples in Metals

Drive Customer Centricity

Transform online sales of materials

Modernization and transformation of the whole company by tackling new approaches on several levels

With the implementation of the omni-channel capabilities, sales can now serve customers in an integrated augmented way

---

- Align with a new transformation strategy: that puts customer orientation front and center
- Improved way of working: Quoting and pricing, customer history, time freed for better consulting of customers
- Modern e-commerce and Omni-channel offering for customer
- Secure & seamless Integration of customer portal & insight sales

SAP Innovation Award

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Building blocks & big picture supporting Mining & Metals

Sustainability

Emissions

ESG

Product footprint

Value chain transparency

Circularity

Safety & health

SAP S/4HANA Environment Mgmt

SAP Sustainability Control Tower

SAP Product Footprint Mgt

SAP Networks-Ariba, Logistics, Green Token

Responsible Design & Production, Waste & recycling

Incident mgmt, Work Clearance

Sustainability Control Tower

Incorporate the 'green line' into strategic decision making

- Manual and automated data collection capabilities, including quality/feasibility checks and approval steps
- Pre-shipped data models to support established reporting frameworks (GRI, SASB, WEF IBC…) alongside customer specific adaptations
- Automated reports supporting both internal & external publishing (statuary and voluntary)

KPI Assessment Service from SAP - Identification of frameworks & initial KPIs for corporate sustainability reporting

Industry Cloud- Partner Solution

SAP® Ariba – Ecovadis Supplier Sustainability Rating

Manage Supplier Sustainability Risk, Performance & Improvement

- Integration with Sustainability Risk & Performance allows to view suppliers' sustainability scores, and access full scorecards - from SAP Ariba Supplier Risk
- Full 360 view of ratings and monitoring.

More Information
Visit: SAP AppStore

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Solution & Innovation Examples

Sustainability

Providing confidence and consistency to manage climate impact

SAP S/4 HANA Environment Management

- Needed a consistent, auditable, and transparent process to capture and report global emissions monthly, from 35 global plants.
- Data collection, for emissions management was a challenging topic – varying greatly across plants, with lots of manual input, no automatic generation & lots of errors & inaccuracies.

Watch Customer Interview

Powering Battery-Operated Mobility and a Cleaner, Greener Planet

ecobat

RISE with SAP, SAP S/4HANA Cloud, SAP Analytics Cloud

- Closed-loop manufacturing that helps ensure toxic materials, such as lead and lithium, are continually reused & don't end up in landfills
- Replacement of legacy IT environment in order to fully connect supply chains and customers

More Information
Visit: here

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Collaborate & orchestrate processes across company boundaries

Business networks

Supply Chain Collaboration

- Visibility across E2E supply chain
- Seamless trading partner collaboration
- Forecast & Inventory collaboration

Procurement Collaboration

- Visibility across procurement process
- Trading partner search and directory
- Regulatory compliance

Logistics Collaboration

- Visibility across logistics supply chain
- Freight collaboration
- Material Traceability

Asset Collaboration

- 360° asset visibility
- Full asset reliability
- Collaborative maintenance & service

Industry Cloud

SAP LBN Material traceability

- Use of Blockchain technology to capture multi-component provenance thus enabling in-depth analysis of product genealogy
- Data sharing across n-tier supplier network to improve end-to-end visibility & alerts

SAP Logistics Business Network, Material Traceability Option

Other network use case & examples

- Collaborative asset maintenance
- MRO supply chains (Inbound)
- Collaborative planning -IBP & Ariba Supplier Risk
- Carbon & sustainability data
- Auto network (Catena X)

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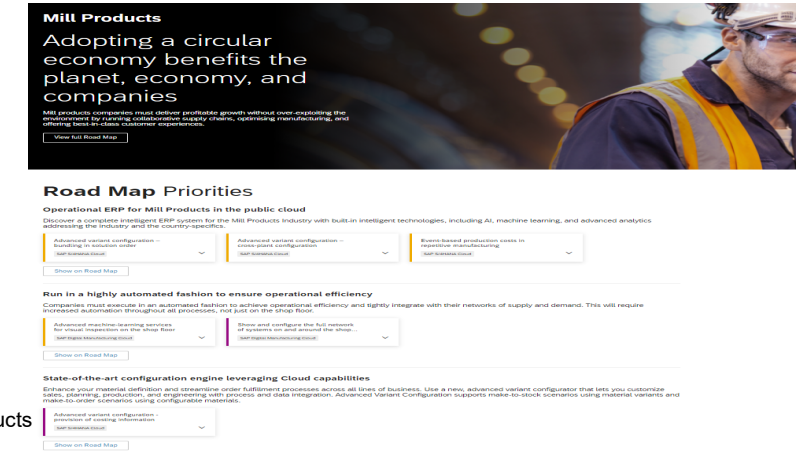
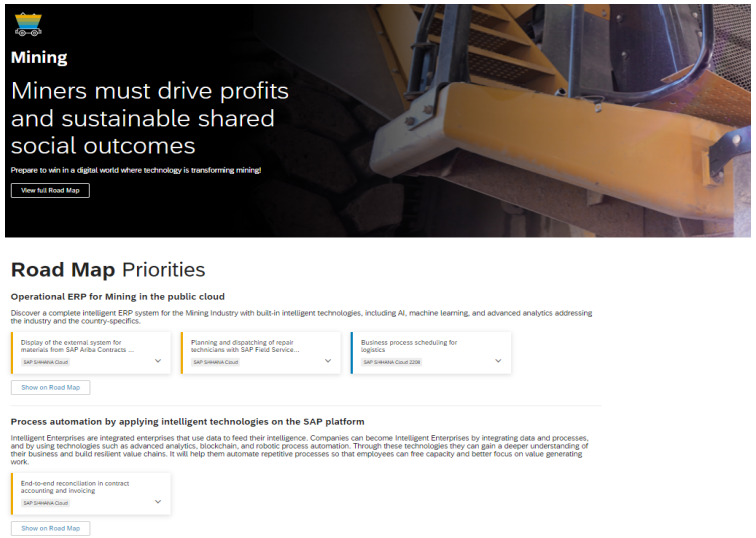
Mining & Metals- Summary

- ✓ Industry focused direction
- ✓ Ongoing investments in SAP solutions
- ✓ Growing Industry cloud portfolio
- ✓ Active engagement with Partners to identify value-adding applications
- ✓ Various influence channels for customers
- ✓ Comprehensive industry roadmap



SAP Roadmap for Mill Products (Metals)

[Roadmap Explorer]



SAP Roadmap for Mining

[Roadmap Explorer]

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THANK YOU

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