



SMS group – Integrated Lifecycle Partnership

Integrated solutions boosting plant performance

SMS  **group**

World of metals becomes increasingly challenging

Current challenges to the metals industry

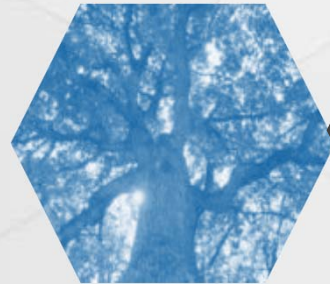
MARKET & PERFORMANCE

- › Production flexibility
- › Production efficiency and yield
- › Predictability and increase of product quality
- › Delivery performance



EFFICIENCY & SUSTAINABILITY

- › Reduction of carbon footprint
- › Apply energy certification
- › Increase of health and safety



PLANT & PROCESS

- › Improvement of plant availability
- › Increase process stability
- › Reduction of maintenance costs
- › Optimization of staffing



NEW TECHNOLOGIES
Technological enablers open new possibilities to tackle those challenges

SMS group Services setup

With a global setup always close to our customers



Over **5000** highly experienced employees



Over **60+ Locations** with **35 service centers** in **17 countries**



Technology leader with vast number of references



In-house manufacturing of key components and spare parts



Integrated solutions for SMS group Product Portfolio



SERVICE & MAINTENANCE EXPERTISE

Maintaining client assets covering 113mt liquid crude steel



PROCESS AND AUTOMATION KNOW-HOW

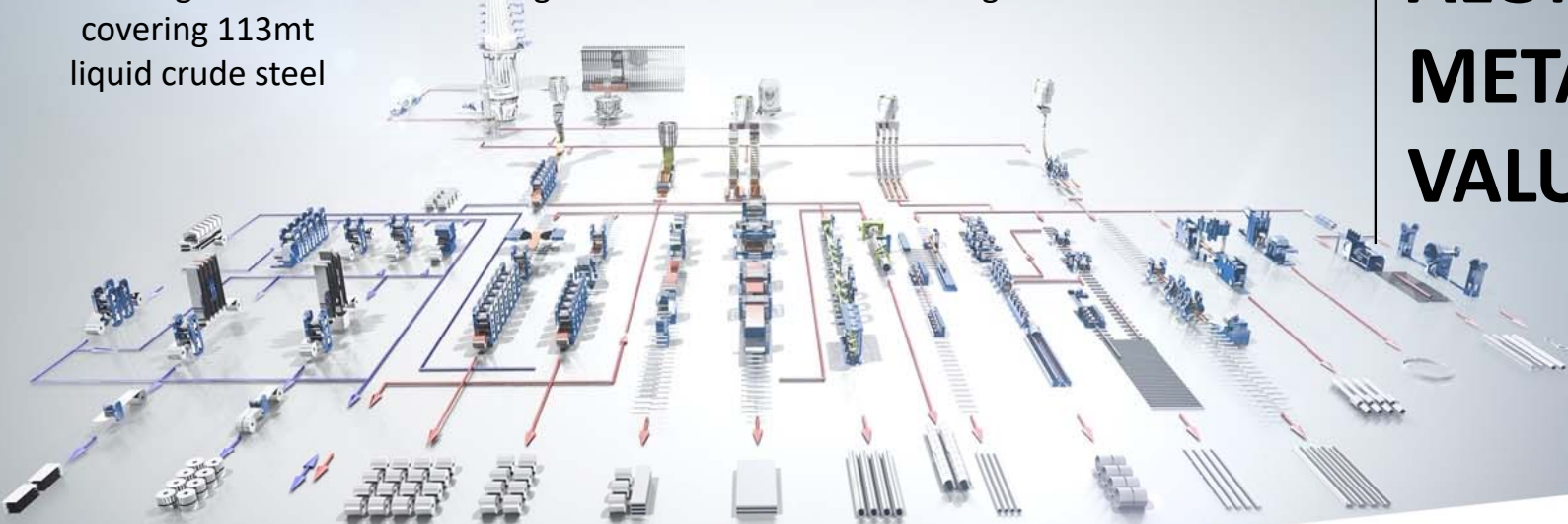
800+ global references



DIGITAL SOLUTIONS

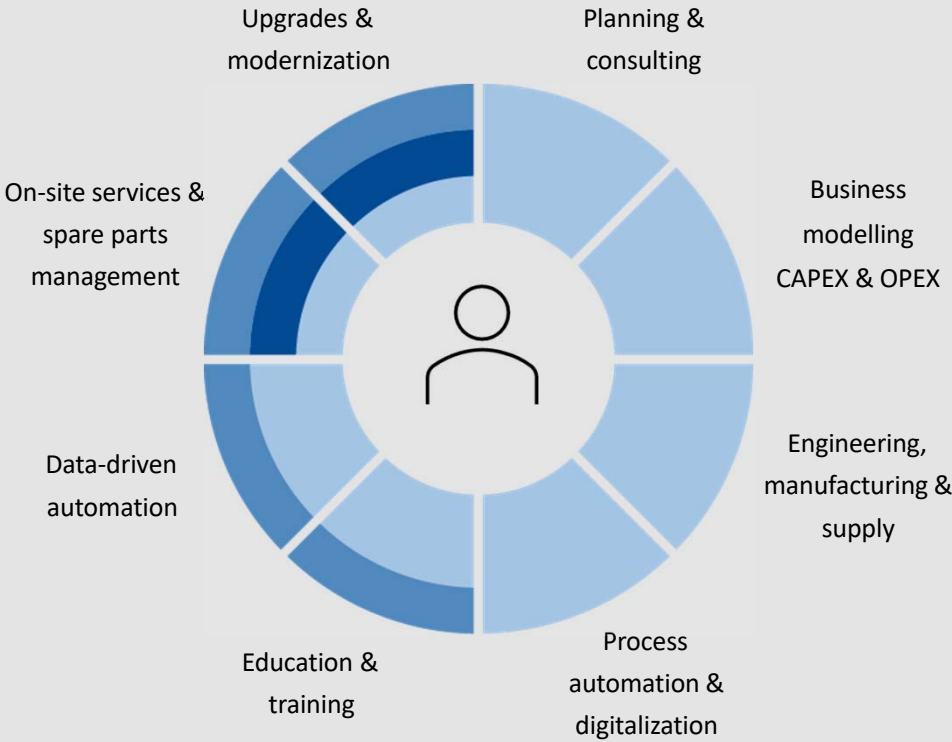
200+ global references

INTEGRATION OF UNIQUE CAPABILITIES ALONG COMPLETE METALLURGICAL VALUE CHAIN



Support throughout the entire plant lifecycle

SMS group lifecycle partnership



We **create** your asset



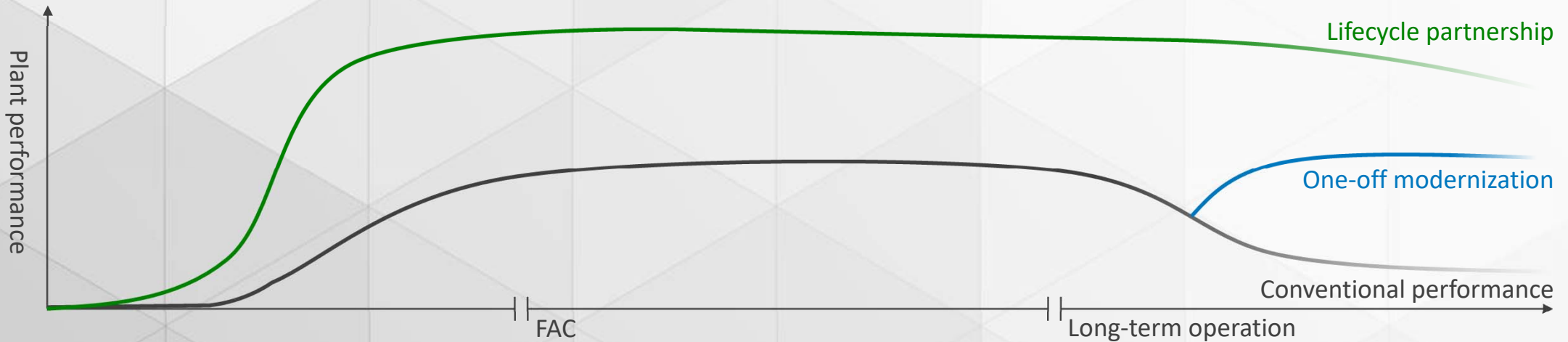
We **increase** your performance



We **manage** your lifecycle

Integrated solutions along the entire plant lifecycle

Lifecycle phases



CREATE your asset

Shortened ramp-up and increased total performance

- › Streamlined data management
- › Harmonized and pre-assembled of automation and digitalization
- › Operator trainings during commissioning

INCREASE performance

Stable plant performance and data-based decision-making

- › Holistically optimized production process
- › Data-driven operator guidance
- › Targeted service and maintenance

MANAGE lifecycle

Prolonged plant lifespan and focus on core business

- › Outsourcing on peripheric operations
- › Stable performance even in later lifecycle phases

Building tailor-made solutions for any use

Integrated solutions



We CREATE your asset

- › Power supply, distribution and management
- › Drive systems
- › Sensors & devices
- › Automation solutions
- › Data integration solution



We INCREASE your performance

- › Health & Safety Suite
- › Predictive Asset Optimization
- › Predictive Product Quality
- › Predictive Production Planning
- › Predictive Energy Management
- › Software & data model customization



We MANAGE your lifecycle

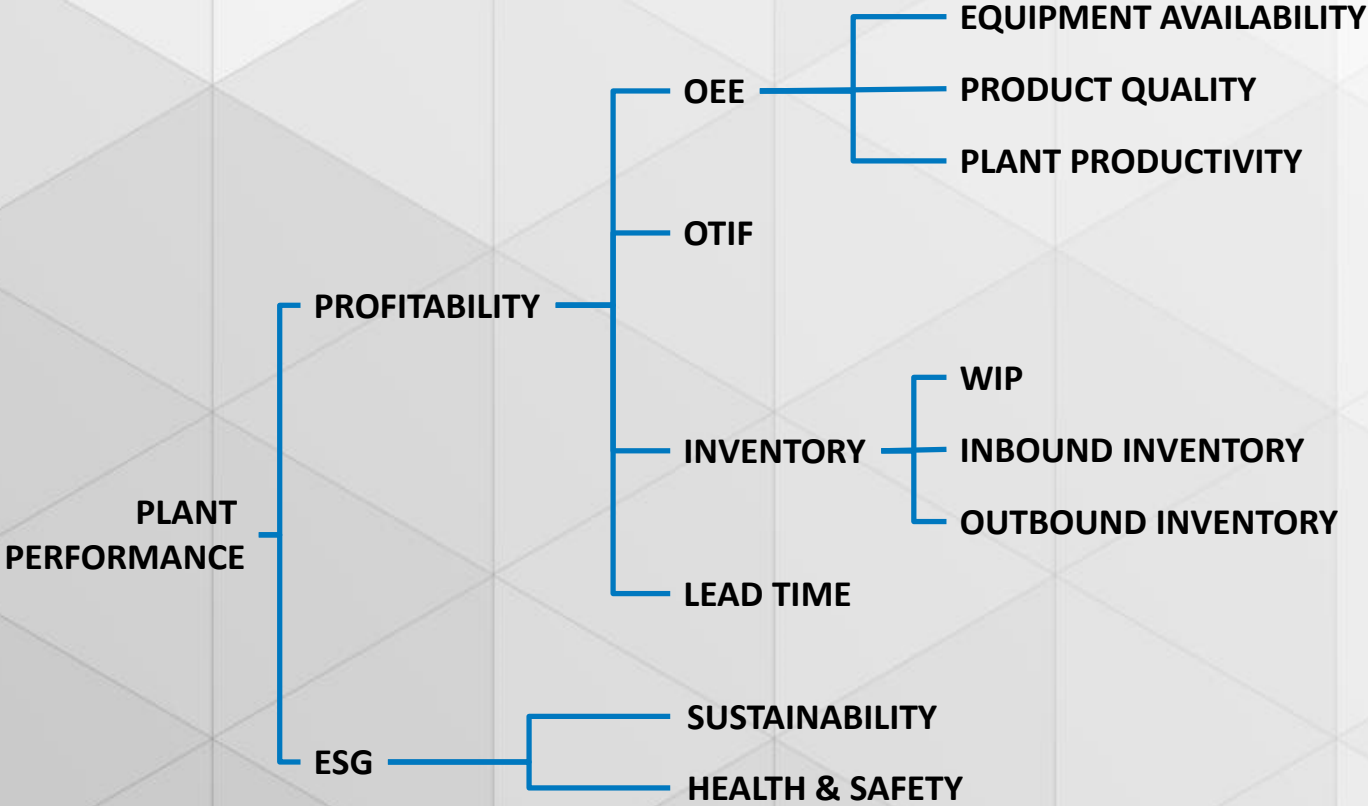
- › Spare parts & logistics
- › Maintenance & repairs
- › Modernization & upgrades
- › Long-term service agreements
- › Consulting & training



Compile tailor-made integrated solutions from our entire product portfolio and apply business models that match your needs

Plant performance brought to the next level

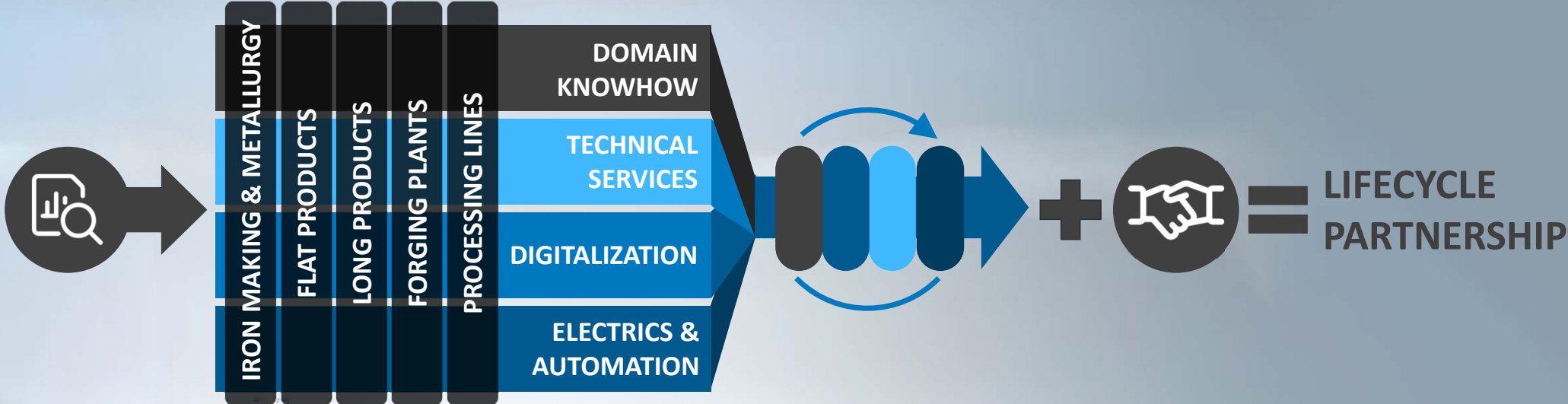
Addressing specific KPI fields



**FOCUS ON
PERFORMANCE
& PROCESS AND
NOT ONLY
EQUIPMENT**

SMS group - Integrated Lifecycle Partnership

Components and process

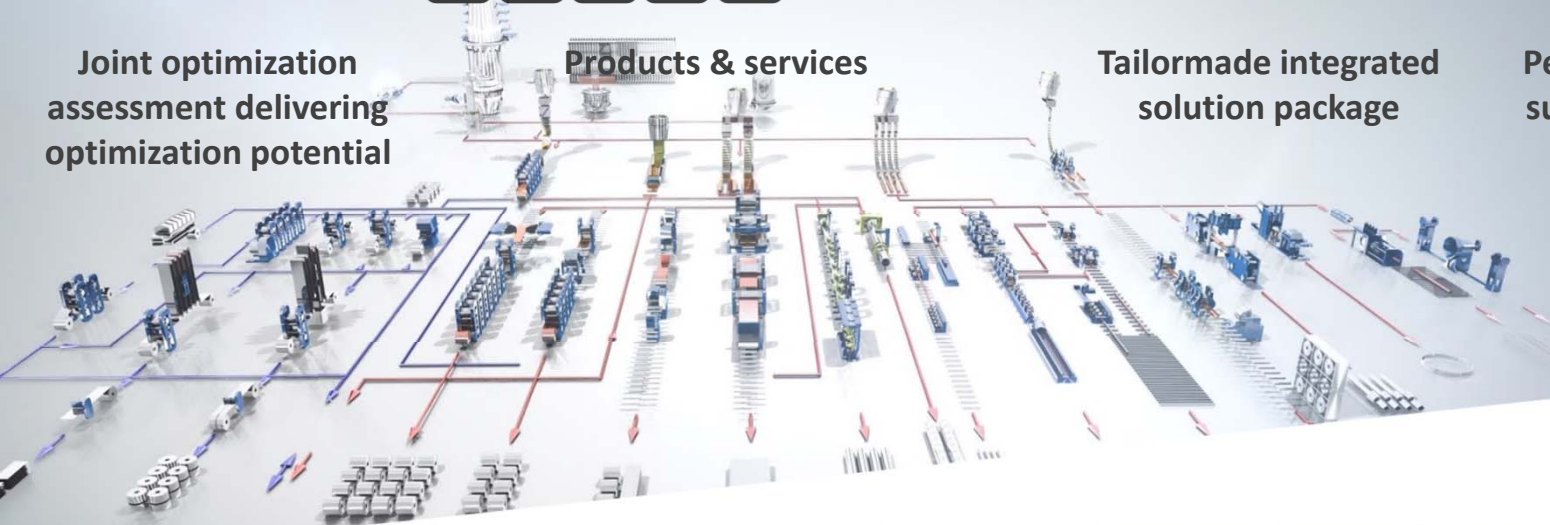


Joint optimization assessment delivering optimization potential

Products & services

Tailormade integrated solution package

Performance-based subscription model



Life-Cycle-Partnership at a glance

Our range of offerings



It has always been SMS group's attribute, to extend its partnership with customers well beyond the 'project' lifecycle.

We CREATE your asset

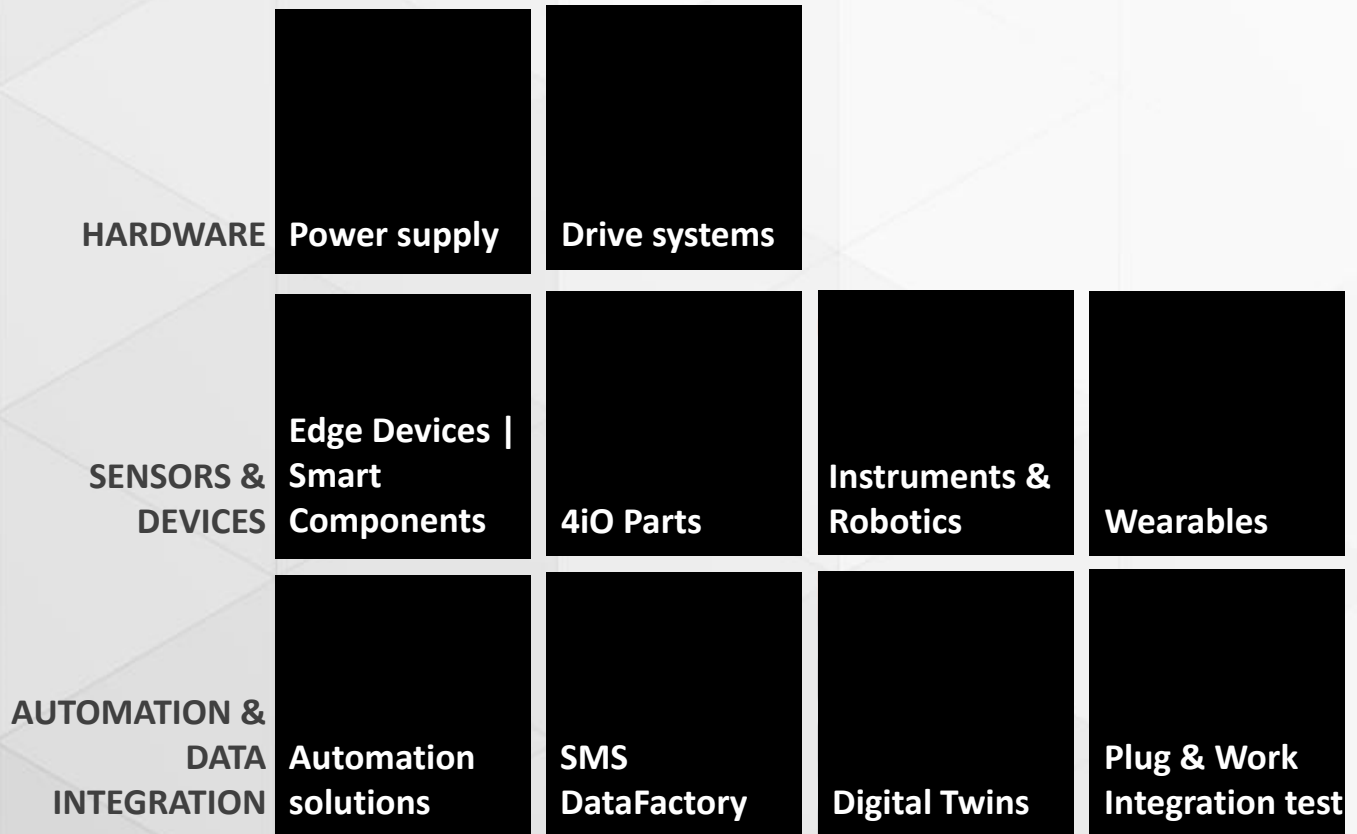
SMS @ group

SMS @ group

We CREATE your asset

Shortened ramp-up and increased total performance

- › With our X-Pact® Electrics & Automation and value-added components we render your plant digital ready.
- › With our SMS DataFactory turn data into information
- › By merging all relevant real-time process data, we build dedicated digital twins
- › With extensive operator trainings and integrations tests we shorten the ramp-up time in greenfield projects



Expertise along the entire metallurgical process chain

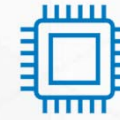
X-Pact® electrics and automation solutions

High quality and productivity using integrated solutions

- › In-depth **metallurgical know-how**
- › Technological **expert knowledge**
- › Long term **experience**
- › Everything from **one source**
- › **Customized solutions**
- › **Defense-in-depth security concept**
- › **All-inclusive modernization**
- › International setup
- › **Full service** 24/7 around the world
- › Performance-based subscription models



Design & mechanical processes



Digitalization



Service



Electrics & automation

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Product portfolio

X-Pact® electrics and automation solutions



Power supply

- › Full scope supplier for electrical power distribution for all voltage levels and all powers
- › Furnace electric
- › Compensation systems
- › **DC ECO GRIDS** green power systems
- › **X-Pact® High Current**
- › **X-Pact® Battery Storage**

Drive systems

- › Full scope supplier for medium and low voltage drive systems
- › **X-Pact® Drive**
- › Induction, synchronous and **torque motors**

Sensors and devices

- › Instruments
- › Beacons / RFID
- › Robotics

Automation

- › **Process controls**
- › **Process models** with learning algorithms
- › Basic connectivity in all directions with **X-Pact® Process Guidance**
- › Innovative software architecture
- › **X-Pact® Vision** Operation & Visualization
- › **X-Pact® Lights-Out**
- › **Plug & Work** integration test
- › **X-Pact® Service**
- › X-Pact® Service Portal
- › **X-Pact® Sense**
- › Upgrade package
- › **X-Pact® Defense in Depth**

Holistic approach from sensor level up to latest digitalization developments



SMS digital
DATA FACTORY



Digital solutions

- › Learning algorithms turning data into value
- › Performance based & new business models
- › Central perspectives for PREDICTIVE: Asset Health, Planning, Energy and Product Quality
- › App & Data Services Platform

digital ready with X-Pact® electrics & automation

- › Excellent basis for digital solutions: OT meets IT
- › Intelligent interconnection of Technological Control Systems (Level 1) and Physical Process Models (Level 2)
- › X-Pact® Process Guidance provides basic connectivity in all directions
- › Single data source of truth

Lifecycle services

X-Pact® Process Guidance

Provides basic connectivity in all directions

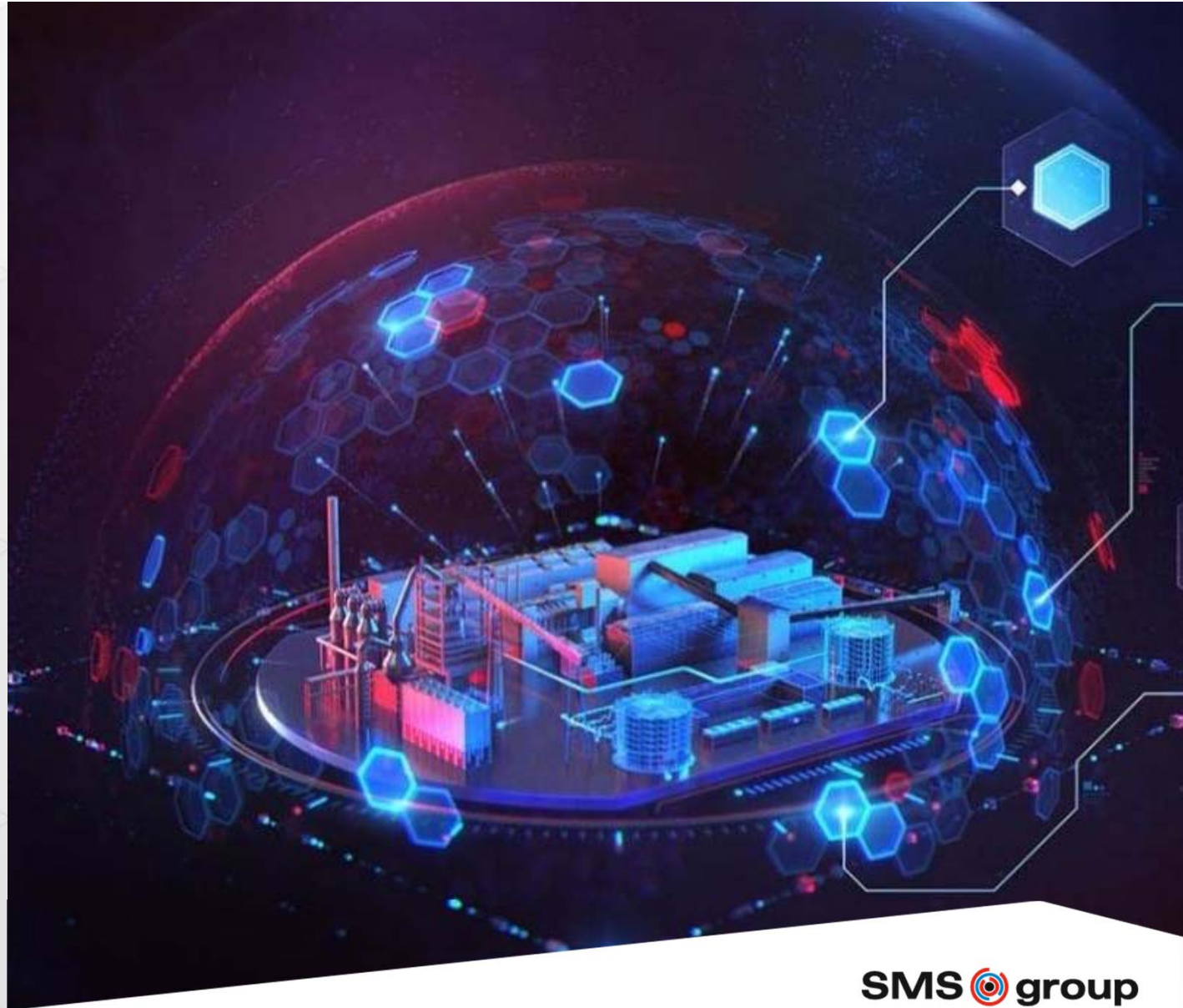
- › The same software infrastructure and methods for process guidance of all plant types
- › Optimal integration of all digital products and applications in an overall concept
- › Standardized operator interfaces
- › High diagnostic capability of our plants as a requirement for all predictive algorithms



Digital ready

Every plant is delivered digital ready

- › Get documented access to your data
- › Integrate existing and future software solutions easily
- › Plant and automation data is
 - › described via contextual information (metadata) and data access information
 - › published via the supported Interface Technologies in a standardized way



SMS DataFactory

Integration of multiple data sources. Data enrichment with meta information and length time correlation for full product genealogy.



Highly structured data and fully established data synchronization



Focus on data analytics and not on data preparation

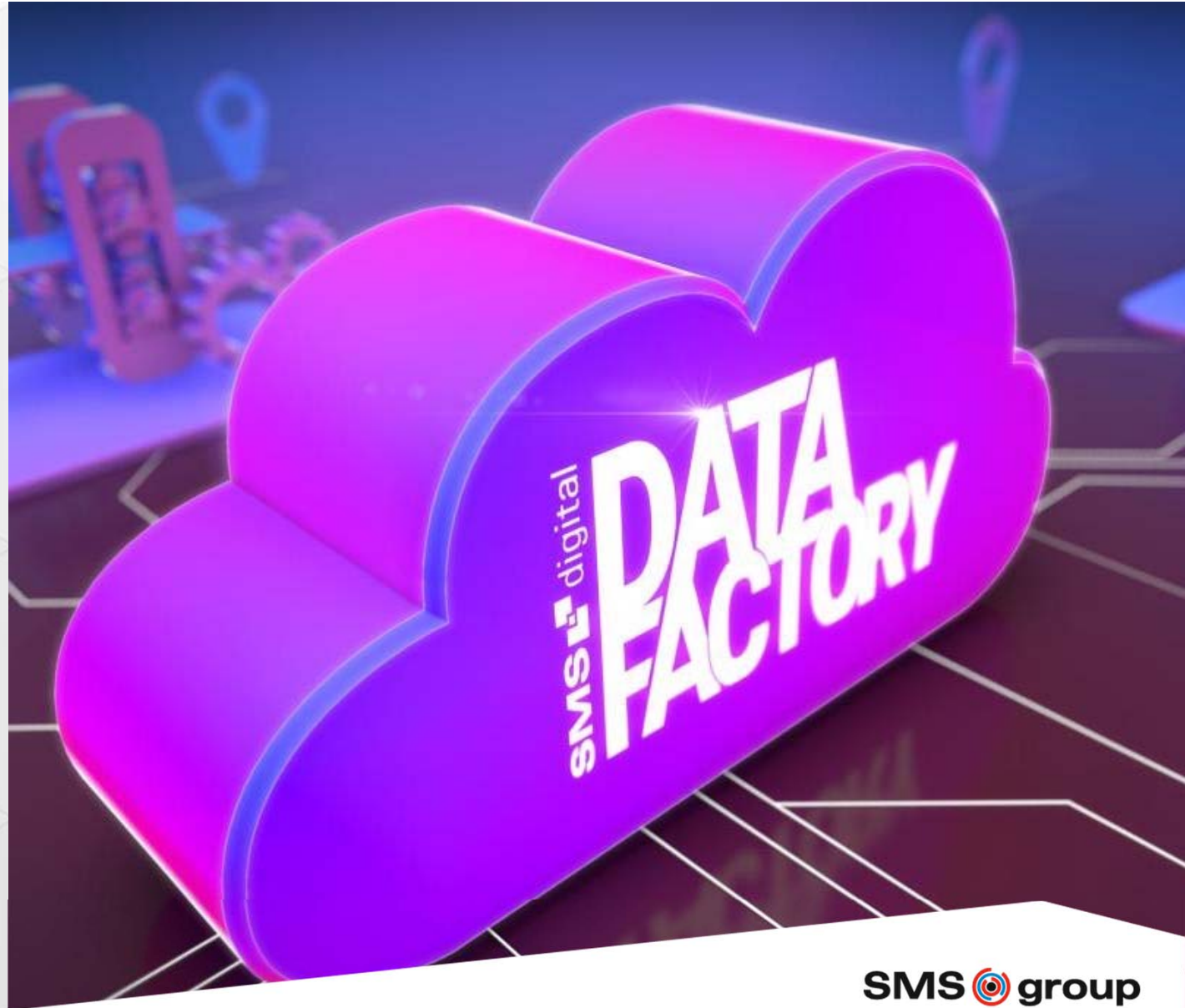


Opening new horizons for any type of app

- › Fully process chain optimizations
- › Machine Learning



Document & manage the genealogy of your product



Digital twin

Modular, growing system for the complete plant

1

Build up Digital twin by design during plant engineering phase

Virtual assignment of a plant using information model/ administration shell

SMS digital
DATA FACTORY

Information hub at

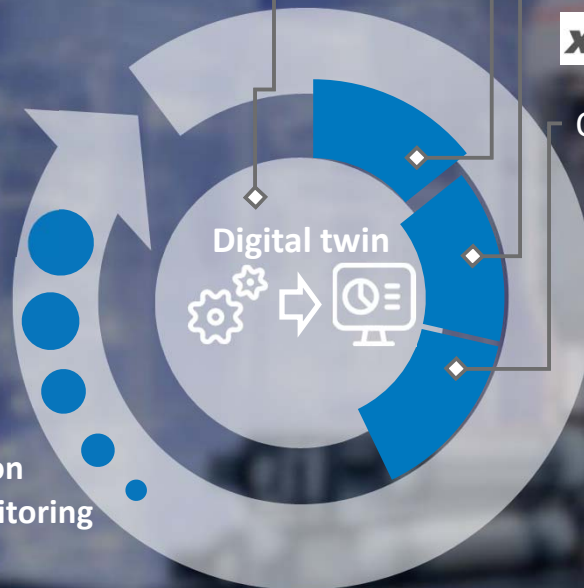
X-Pact® Process Guidance

Other data sources

2

Increase value of the Digital twin by online data connection from day one on

Fields of application of digital twin



3

Joint development of new solutions & use of AI to further optimize the twin

Prescription

Prediction

Optimization

Simulation

Monitoring

X-Pact® Plug & Work integration tests

**SWITCH ON
AND START
PRODUCTION
SAFE AND FAST**

PROCESS AUTOMATION CONTROL TECHNOLOGY

X-PACT®

Realistic 3D real-time simulation of the technology prior to installation

Pretested software before delivery

High product quality – from the very beginning – stable production

Personal trained at an early stage

Faster commissioning

Fast ramp-up

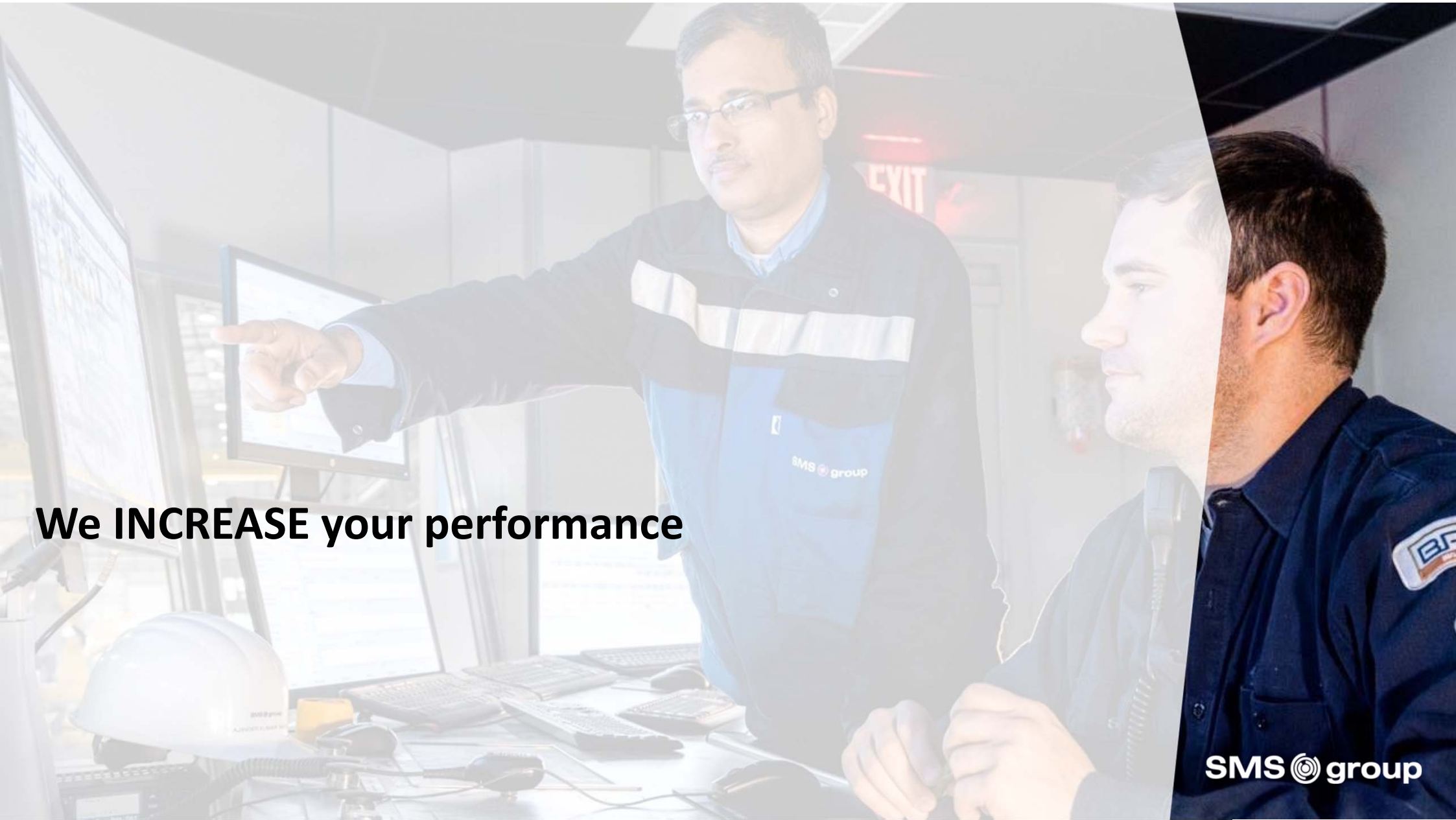
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X-Pact® Lights-Out

Operating in a highly dynamic and resource-saving way

- › Completely networked plant and **connected with remote pulpits**
- › **Reduced on-site crew** for operation & maintenance **by highest automation degree**
- › Highly specialized remote control crew
- › Holistic concept for **security**
- › Maximum use of predictive maintenance
- › **Maximized OPEX results**





We INCREASE your performance

SMS  group

We INCREASE your performance

Turn data into information and information into value

- › Intelligent interconnection of basic automation, process automation and digital solutions
- › We merge digitalization expertise with 150 years of metallurgical knowhow
- › Our software solutions derive actionable items that guide operators
- › Thanks to the high degree of interconnection, we feedback information into automation systems or derive maintenance tasks

HSE² Suite

**Predictive
Asset
Optimization**

**Predictive
Product Quality**

**Predictive
Production
Planning**

**Predictive
Energy
Management**

**Artificial
Intelligence |
Data Science**

The SMS group approach

Merging Domain Expertise with Digitalization Knowhow

SOFTWARE SOLUTIONS

Viridis Energy & Sustainability
Suite

Manufacturing Execution
Suite

Product Quality
Suite

Asset Optimization
Suite

Infrastructure
Solutions



ADVANCED SERVICES

Expert know how
Equipment | Consulting | Process

Training

Software & data
model customization

Software maintenance

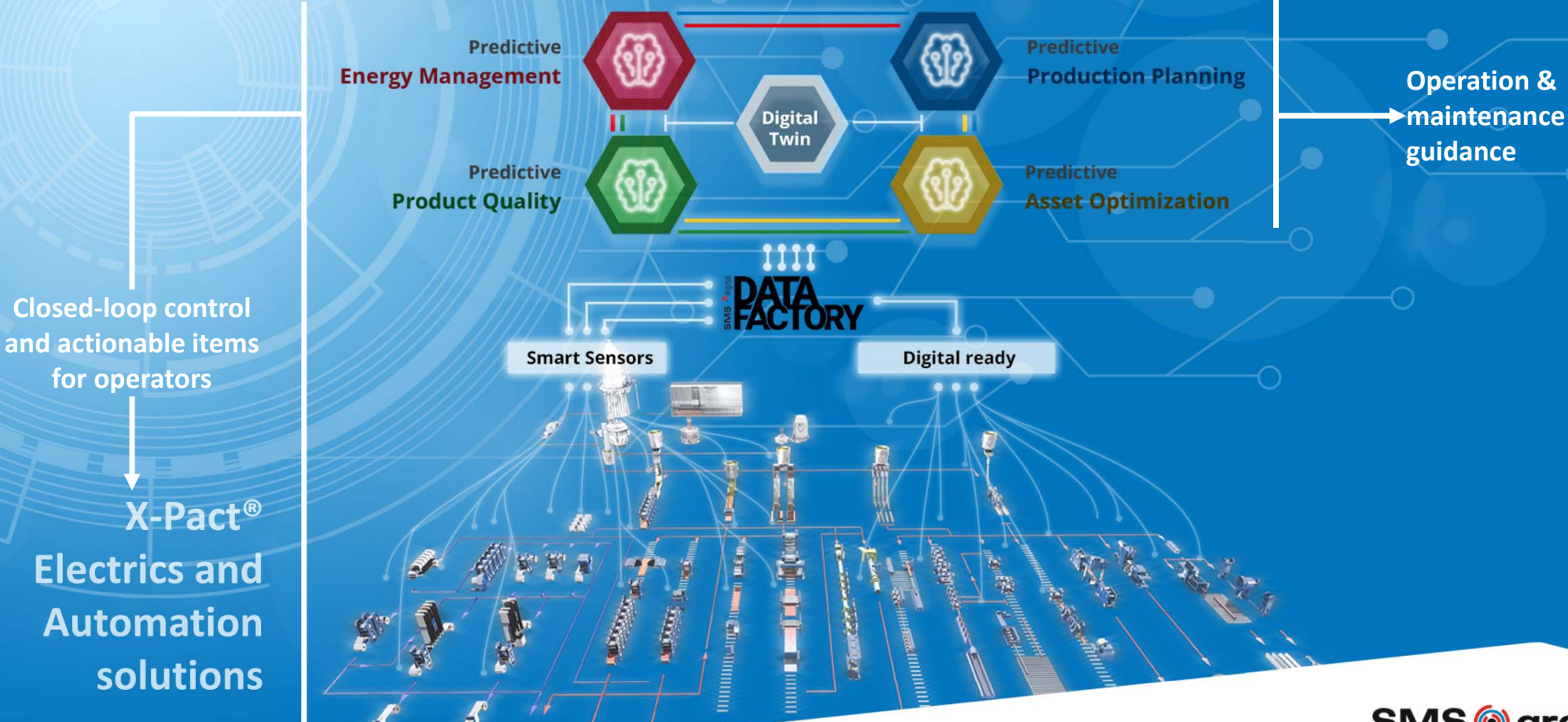
BUSINESS MODELS

CapEx- based business models

Subscription models

Performance-based contracts

Autonomous Plant Operation



Interconnection between automation and digitalization



Predictive Asset Health

- › 10-25% lower maintenance cost
- › 15-25% lower downtime
- › Anomaly detection
- › Error prediction
- › Causal investigation
- › Maintenance recommendations



Predictive Product Quality

- › 6-8% lower cost of quality
- › Maximum prime quality rating
- › React to process deviations in real-time
- › Auto adaptation of process parameters
- › Product quality certification



Predictive Production Planning

- › 1-2% increased EBIT
- › 10% improved OTIF
- › 15% less transition
- › Demand Forecasting & planning
- › Pre-Grouping
- › Sequencing & rescheduling



Predictive Energy Management

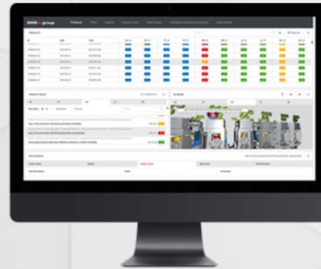
- › Up to 7% reduction of energy & utilities costs
- › Track and optimize energy flows along the entire plant and energy matrix



Product portfolio

Digital solutions

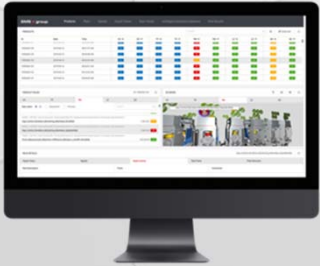
SMS digital
**DATA
FACTORY**



Infrastructure & data management	HSE ² Suite	Predictive Asset Optimization	Predictive Product Quality	Predictive Production Planning	Predictive Energy Management
<ul style="list-style-type: none"> › SMS DataFactory › Digital Twins 	<ul style="list-style-type: none"> › Personal Protective Equipment and machines/equipment › Geo-Fencing and high-speed warning capability › Identification of hazardous situations 	<ul style="list-style-type: none"> › Visualization › Condition and Process Monitoring › Condition and Process Prediction › Prescriptive Asset Optimization 	<ul style="list-style-type: none"> › Quality Execution System › Metallics Optimizer › Cracks Preventer › Caster Throughput Optimizer › Material Properties Suite › Strip Width Minimizer 	<ul style="list-style-type: none"> › Business Planning › Production Planning › Supervision › Logistics › Business Intelligence 	<ul style="list-style-type: none"> › Viridis Performance › Viridis Process › Viridis Dispatch › Viridis Contracts › Viridis Carbon › Viridis Dynamics

Digital solutions

Highlight references



Predictive Asset Optimization



Predictive Asset Optimization



Predictive Production Planning



Predictive Energy Management





We MANAGE your lifecycle

We MANAGE your lifecycle

Prolonged plant lifespan and focus on core business

- › We are always close to our customers
- › We handle spare parts logistics and manufacturing components in OEM quality
- › With long-term service contracts and outsourcing solutions, we support customers in their everyday operation
- › With education and consulting services we share our OEM knowhow and partner our customers in their daily operations

SPARE PARTS & LOGISTICS	Spare Parts Supply	Inventory & Logistics Management	Warehousing Solutions	
MAINTENANCE & REPAIRS	Maintenance & Repair Services	Long Term Service Agreements	Workshop Operation	Technical Support & Diagnostics
MODERNIZATION & UPGRADES	Equipment modernization	Control Upgrades	Value-added components	
CONSULTING & TRAINING	Audits & Consulting	Trainings	Teleservice & Automation support	Reliability engineering

Spare parts and logistics

We **MANAGE** your lifecycle

Spare parts and logistics for metallurgical plants

- › On-demand OEM spare parts supply
- › Tailor-made regular spare parts packages
- › Inventory and logistics management
- › Warehousing solutions including planning, procurement, and logistics.

YOUR BENEFITS

- › Improved security in production planning
- › Lower capital employed
- › Improved plant availability



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Maintenance and repairs

We **MANAGE** your lifecycle

Tailor made solutions for all requirements

- › Equipment check
- › Repair services and maintenance services
- › Emergency support
- › Long-term service agreements

YOUR BENEFITS

- › Quick response times
- › Specialized staff
- › Focus on core business



Long-term service agreements

We **MANAGE** your lifecycle

True lifecycle partnership

- › Long-term service contracts ranging from single services to integrated service solutions
 - › Technical outsourcing services
 - › Roll shop operation
 - › Mold and segment refurbishment

YOUR BENEFITS

- › Reduction of operational expenditures
- › Improved plant availability
- › Maintenance in OEM quality



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Modernization and upgrades

We MANAGE your lifecycle

Keep your equipment state-of-the-art

- › Respond to changing customer demand, higher quality requirements and more volatile production chains
- › Equipment must be critically examined

YOUR BENEFITS

- › Improve yield, quality and efficiency
- › Tailor-made modernization concepts with minimum downtime

Reliability Engineering eXcellence

We MANAGE your lifecycle

Key Performance Indicator Improvement

- › Based on our (REX) approach we
 - › Jointly evaluation of the agreed scope of equipment and processes
 - › Identify cost & performance improvement potentials
 - › Recommend focus areas & measures to sustainably improve the targeted Key Performance Indicators.



TECademy

We **MANAGE** your lifecycle

True lifecycle partnership

PROJECT-RELATED TRAININGS

- › Classroom trainings at SMS group facilities, on site or virtual
- › Practical on-site trainings

HOLISTIC EDUCATION

- › Expert trainings on technology, maintenance or plants
- › Individually design programs according to customer needs
- › eLearning on demand and live

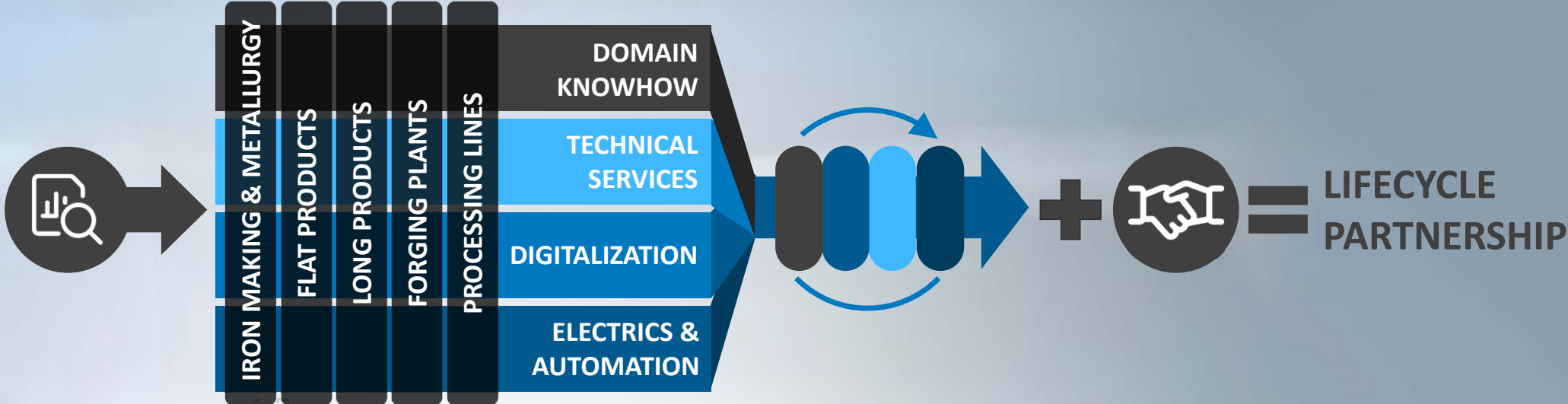


A conceptual image showing a human hand on the left and a white and blue robotic hand on the right, both reaching towards a bright, glowing light source in the center. The background is a blurred cityscape. The image is split vertically, with the left side being light blue and the right side being dark blue.

Summary

SMS group - Integrated Lifecycle Partnership

Components and process

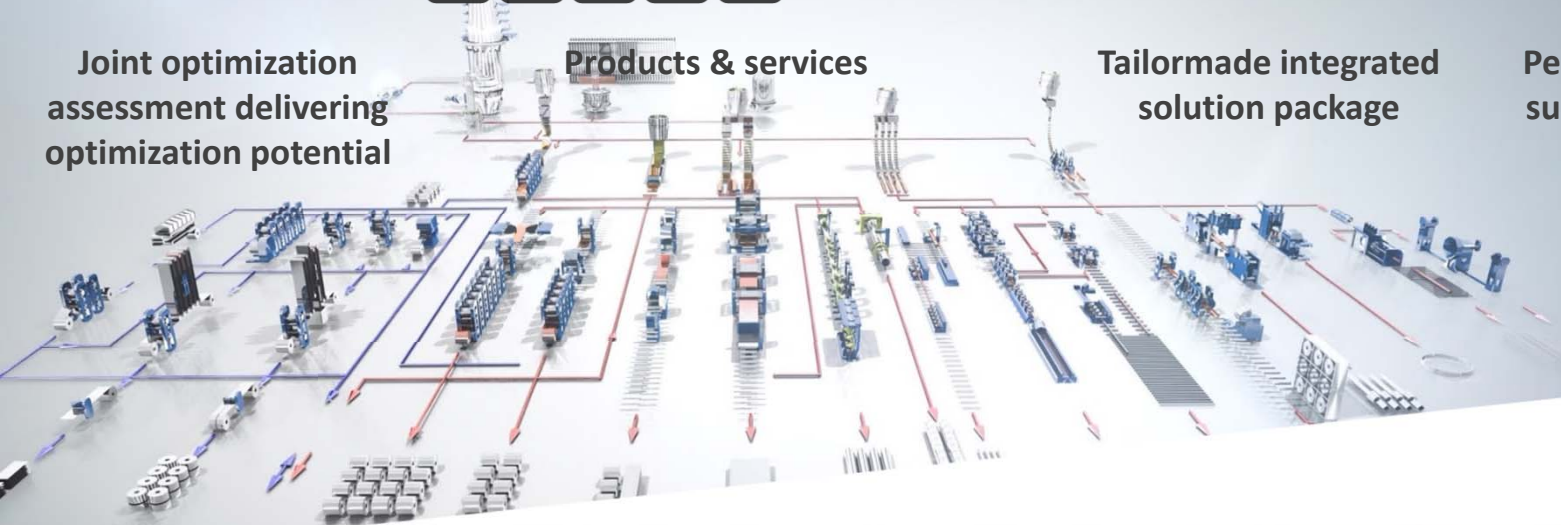


Joint optimization assessment delivering optimization potential

Products & services

Tailormade integrated solution package

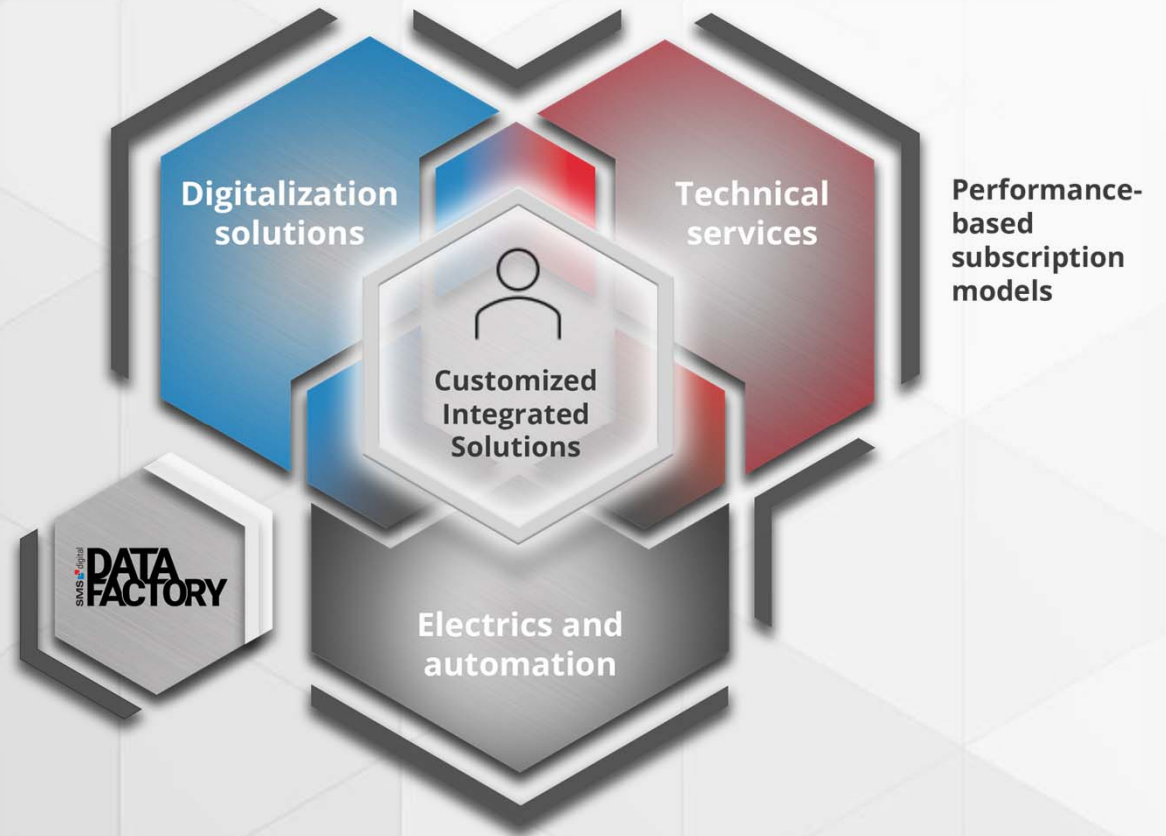
Performance-based subscription model



Integrated Lifecycle Partnership

Integrated solutions boosting performance

- › Harmonization of automation, digitalization, service and operation
- › Data-driven decision support in real-time - Your staff is provided with the right information and supported in decision making
- › Service concepts for operations, maintenance, and outsourcing across the entire lifecycle
- › Performance-based subscription models enable a long-term partnership with shared risk



Your benefits at a glance

Integrated solutions boosting plant performance

- › Outstanding equipment availability
- › Highest product quality levels
- › Best class output
- › Optimized operational expenditures and risk
- › Reduced of CO₂ footprint
- › Increased employees' safety



OUR DRIVE | YOUR PERFORMANCE

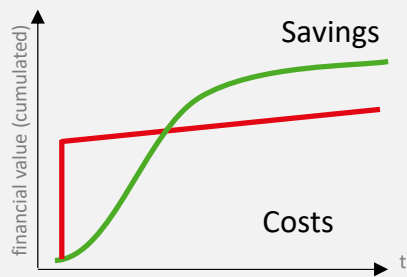
Bringing partnership to a new level

Standard business models

CONVENTIONAL CONTRACTING

- › Configuration of product suites according to customer needs
- › Commissioning of product suites
- › Extension / adaptation of products with advanced service packages

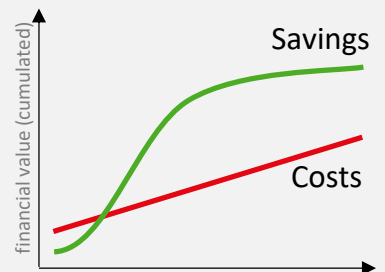
CAPEX investment



SOFTWARE AS A SERVICE

- › Configuration of product suites according to customer needs
- › Customer access to selected products
- › Regular software servicing and maintenance

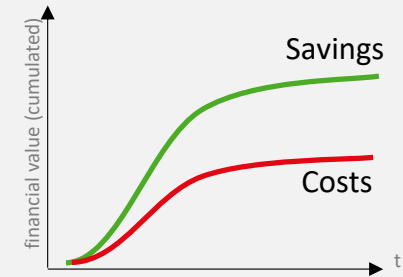
Fixed periodical fees



PERFORMANCE BASED CONTRACTING

- › Use case definition and value estimation
- › Utilization of product suites for identification of value levers
- › Hand-over of actionable items to customer
- › Individual developments

Performance-based payments



Joint audit & consulting projects

Let's step into a new era of partnership

- › Identify the **potentials of your equipment** and processes in a joint optimization audit
- › Development of **tailor-made integrated solutions** from SMS groups extensive service portfolio
- › Utilize SMS groups dense service network with 5000 employees in over 60 Locations worldwide
- › Make SMS group your lifecyclepartner and design **performance-based subscription models** based on your needs

