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Microsoft Services

Predictive maintenance

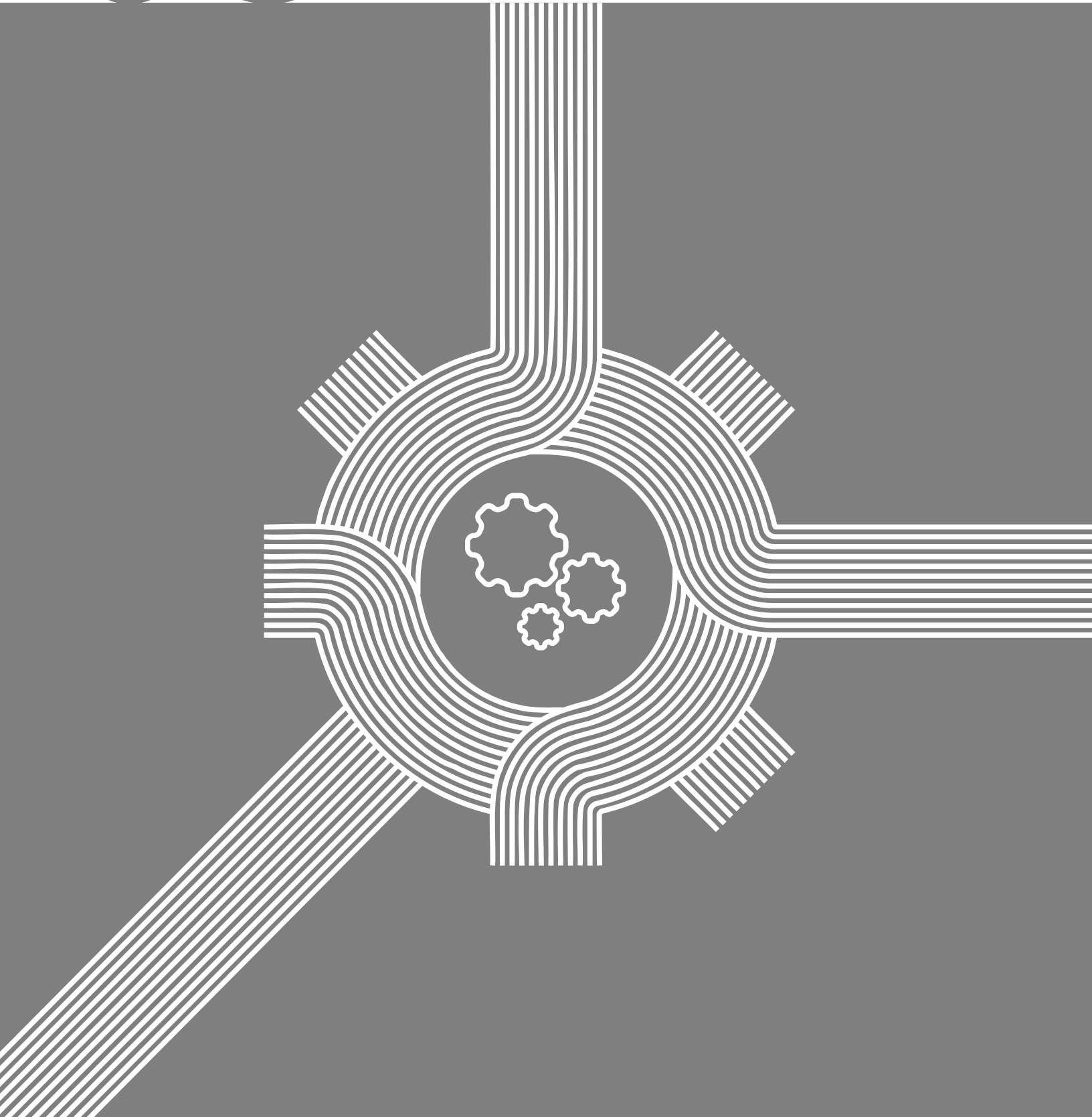### Manufacturing

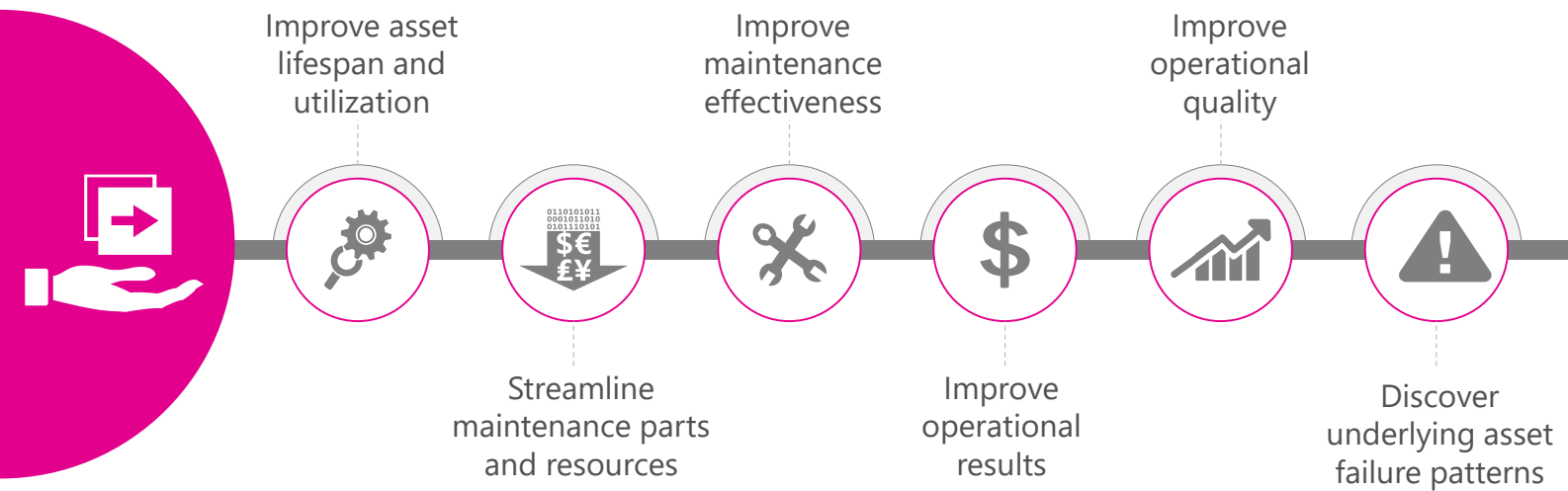Korcomptenz | Microsoft

The digital revolution has unlocked new opportunities for manufacturers to challenge the convention and re-think how products are developed, operations managed, and supply chains optimized.

Achieve higher operational effectiveness

Improve asset lifespan and utilization

Improve maintenance effectiveness

Improve operational quality

Streamline maintenance parts and resources

Improve operational results

Discover underlying asset failure patterns

In today's competitive environment, manufacturers must have complete confidence in their operations—the foundation of their success.

To win in their markets, manufacturers must execute consistently and improve performance constantly.

Digital Transformation is shifting the balance to manufacturers who can ensure critical asset availability and deliver on customer promises.

Organizations can realize new levels of asset utilization by implementing predictive maintenance—intelligent systems and devices that implement sensors and cognitive systems and automate data collection to improve overall performance.

With predictive maintenance, manufacturers can lower costs, drive higher output and efficiency, and enhance product quality.

Improve maintenance efficiency
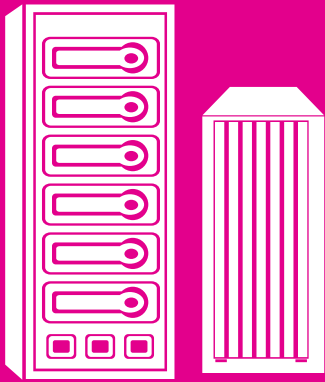
ANOMALY DETECTION
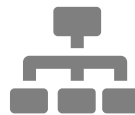Identify deviances from normal trends to predict potential failures

SMART SCHEDULING
Reduce overall maintenance budget and avoid loss of resources due to unplanned maintenance events

ASSET & INVENTORY OPTIMIZATION
Predict remaining useful life and optimum inventory levels of spare parts

REDUCE DEFECTS
Improve internal quality, scrap, and rework rates

Unlock new opportunities at the intersection of business model innovation, differentiated experience and technology integration

MANUFACTURING AS A DIGITAL SERVICE

DEMAND MANAGEMENT

- Sales orders
- Selected quotations & estimates
- Forecasting
- Replenishment of stock
- Product configurations

MATERIAL ACQUISITION

- Supplier management
- Serial tracking
- Lot traceability
- Lead time management
- Material inspection

MANUFACTURING MANAGEMENT

Design & change control	Material & labor cost monitoring	Subcontract operations management	Tracking & traceability
Factory scheduling	Project-based monitoring		Supply chain management

INVENTORY MANAGEMENT

- Multi-use warehousing
- Stock categorization
- Inventory optimization
- Warehouse management
- Real-time monitoring & reporting

SALES MANAGEMENT

- Monitoring & management of margins
- Sales order management
- Repair & maintenance orders
- Payments & retentions
- Negotiation & monitoring of maintenance contracts

CUSTOMER MANAGEMENT

Customer contract management	Service level agreements	Installation services & assistance	Recalls, claims & warranties
Claims and reimbursements management		Human resource management	Remote monitoring

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Imagine if you could stay one step ahead of your maintenance needs, scheduling maintenance process and times optimally ...

Enable intelligent manufacturing, automation servicing, and cost-effective production support

FROM REACTIVE

Our manufacturing floor is experiencing too much down time, often in the midst of busy production schedules.

I am facing continuous pressure to avoid breakdowns, eliminate extended downtime, AND reduce maintenance costs.

We have diverse equipment from multiple vendors linked together in a manufacturing line where each contains its own silo of operating data.

We do not have the information we need to respond quickly at optimal times to ensure quality and the continuous operation of the manufacturing lines.

It is difficult to coordinate our vendors for just-in-time response.

TO PREDICTIVE

The information and intelligence built into our manufacturing equipment and our machine-learning-based predictions provide the insight we need to anticipate and prevent many breakdowns.

We identify optimum times and processes for refreshing our equipment, which increases manufacturing uptime and drives down costs.

Our equipment vendors can remotely monitor, assess, diagnose, and tune our manufacturing equipment, and work closely with us to improve equipment performance and lifetime, schedule maintenance, and reduce downtime.

We have realized major savings in maintenance operations and are now more flexible, productive, lean, and effective in running our shop.

See through the eyes of your customers

Inbound logistics

Optimize transportation

Monitor supply chain

Manage distributed orders (Purchasing)

Raw materials warehouse

Analyze delivery of materials

Monitor inventory lifecycle

Manage distributed inventory (Raw)

Finished goods warehouse

Manage MRO and WIP inventories

Manage maintenance of assets

Remote monitoring and control

Manufacturing execution system

Manage shop floor orders

Manage capacity, inventory, loss

Manage distributed inventory (FG)

Outbound logistics

Optimize transportation

Manage distributed orders (Sales)

Inbound/Outbound logistics
Manage distributed orders
Optimize transportation and routing
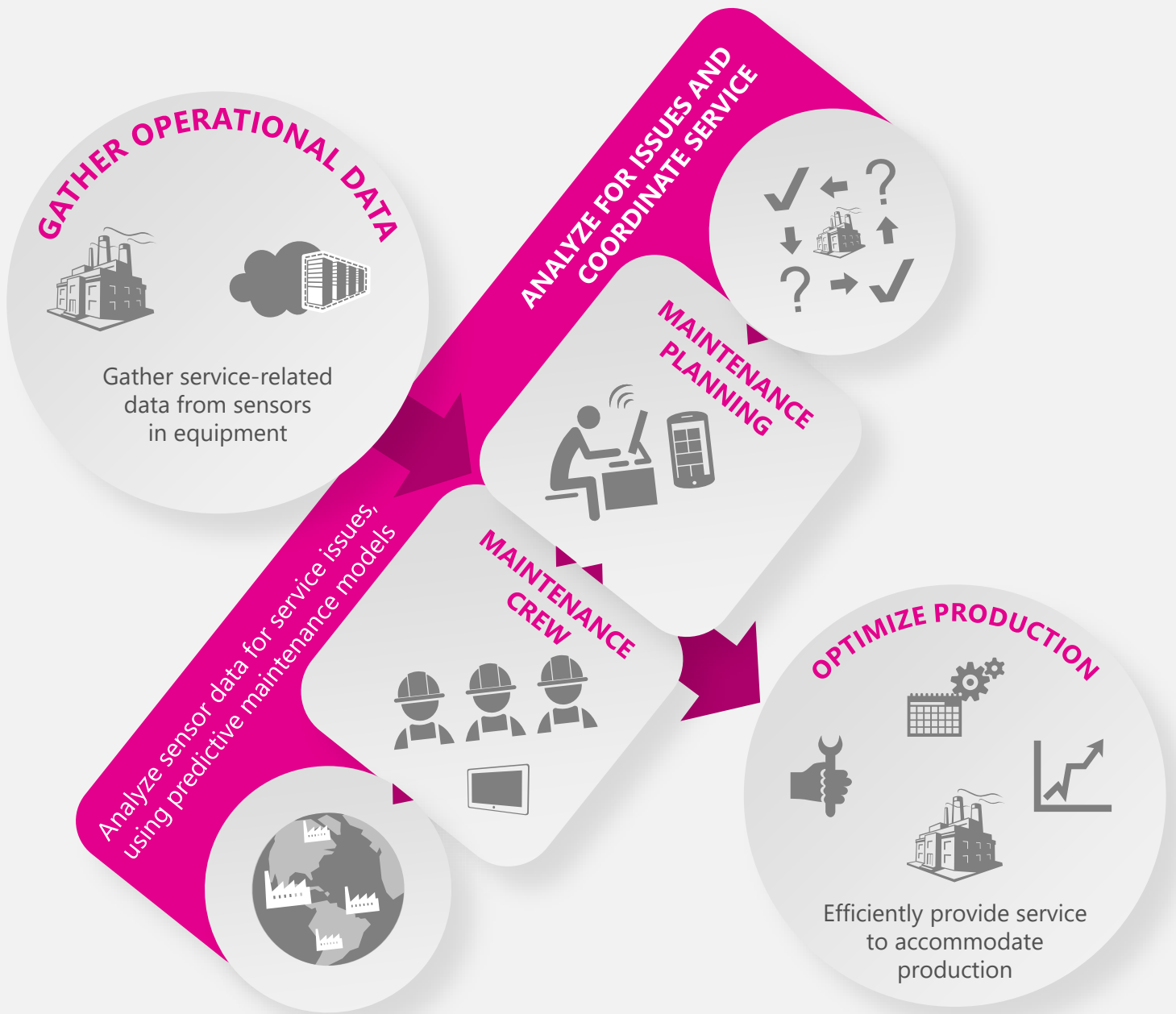Monitor supply chain performance

Warehousing
Manage distributed inventory
Manage capacity and consumption
Monitor inventory lifecycle

Manufacturing execution system
Manage MRO and WIP inventories
Manage production and maintenance
Monitor and control remotely
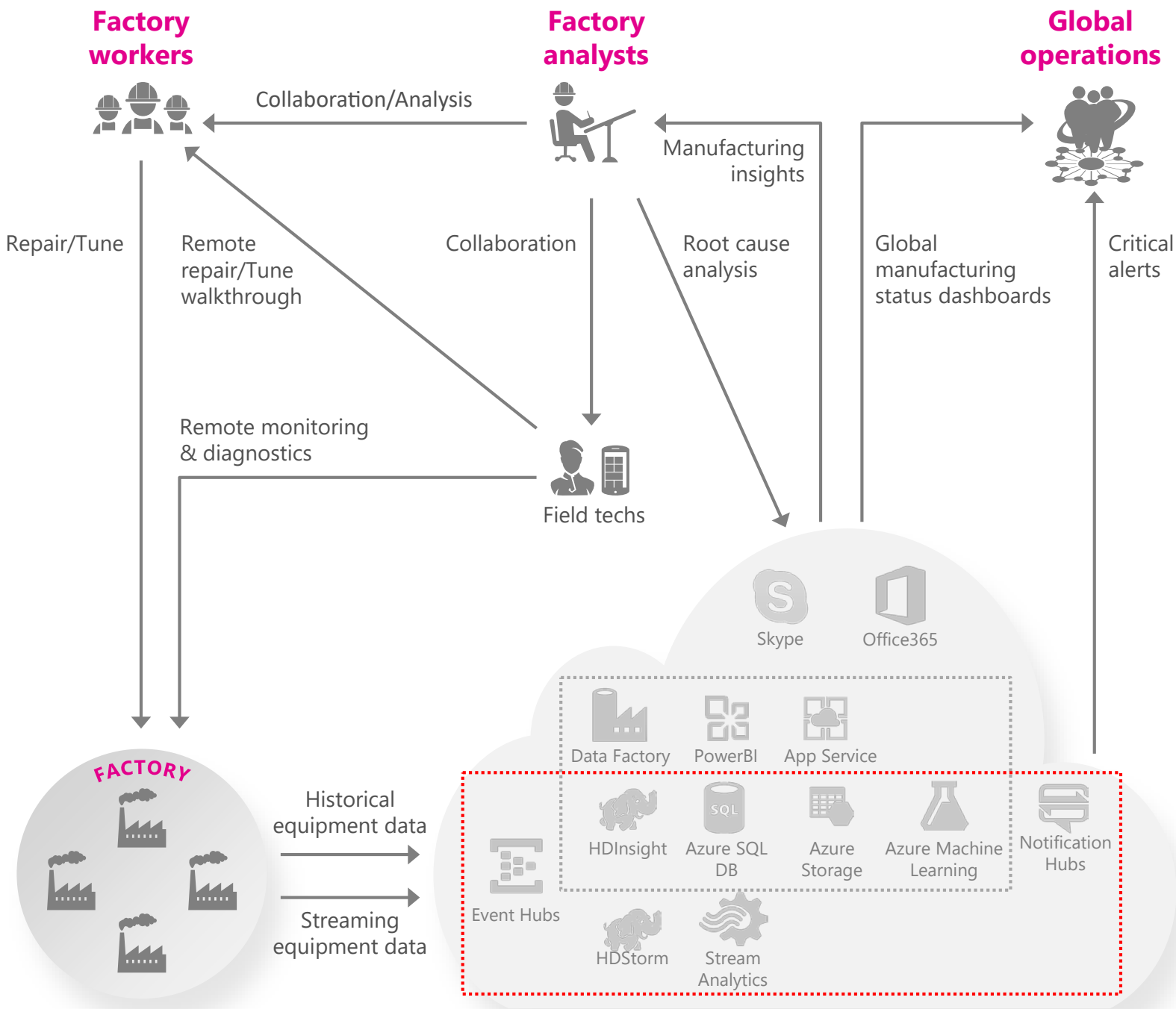
Move towards predictive maintenance

We can schedule our production efficiently because our equipment is monitored for signs that service is or will become necessary.

GATHER OPERATIONAL DATA

Gather service-related data from sensors in equipment

ANALYZE FOR ISSUES AND COORDINATE SERVICE

Analyze sensor data for service issues, using predictive maintenance models

MAINTENANCE PLANNING

MAINTENANCE CREW

OPTIMIZE PRODUCTION

Efficiently provide service to accommodate production

Top-line impact: We have made savings in maintenance operations and are now more flexible, productive, lean, and effective in running our shop.

BENEFITS	START	STOP	CONTINUE
Avoidance of production losses	Gaining and analyzing captured data intelligently	Reacting to maintenance needs	Focusing on production efficiency
Reduction in inventory costs	Sharing and acting on insights innovatively	Restricting service personnel to physical static systems for sharing information	Adopting new technologies
Reduction in expedited shipping costs	Sharing information with mobile staff seamlessly	Investing in conventional insight engines	Gathering and responding to real-time data
Avoidance of catastrophic shutdown losses	Predicting and performing maintenance proactively		
Reduction in supply chain management costs			

Innovate business models, services, and solutions that differentiate

Factory workers

Factory analysts

Global operations

Collaboration/Analysis

Manufacturing insights

Repair/Tune

Remote repair/Tune walkthrough

Collaboration

Root cause analysis

Global manufacturing status dashboards

Critical alerts

Remote monitoring & diagnostics

Field techs

Skype

Office365

Data Factory

PowerBI

App Service

HDInsight

Azure SQL DB

Azure Storage

Azure Machine Learning

Notification Hubs

Event Hubs

HDStorm

Stream Analytics

FACTORY

Historical equipment data

Streaming equipment data

Improving the way people and cities move while reducing the average length of service calls by 4x
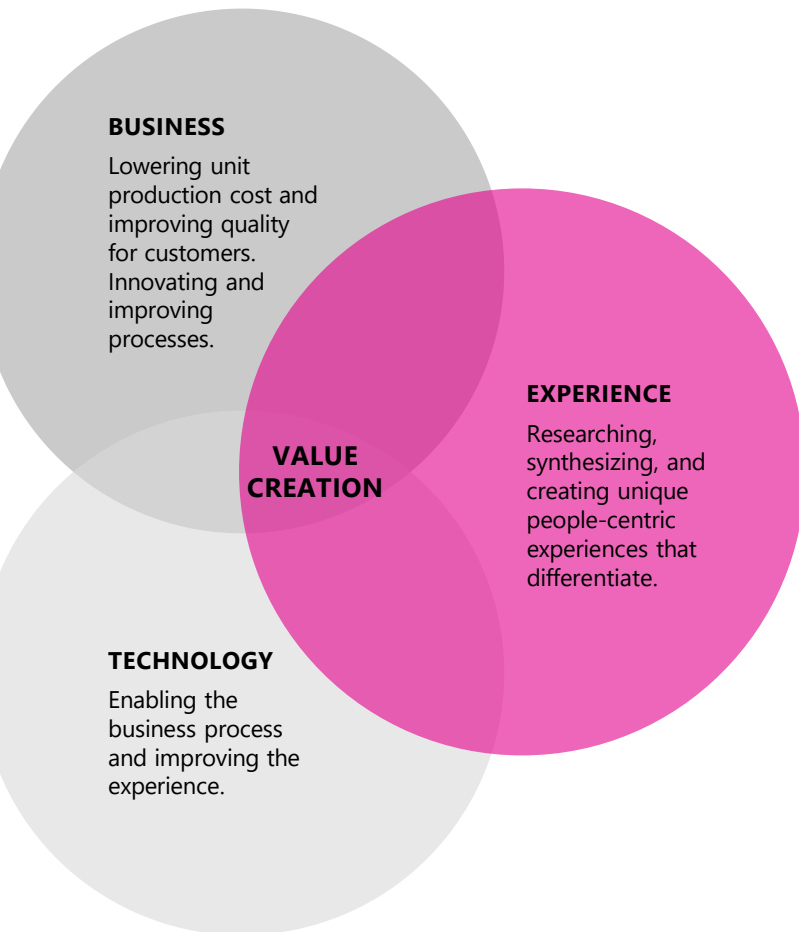
Twenty-four thousand elevator service technicians can now visualize and identify problems ahead of a job and have remote hands-free access to technical and expert information when onsite.

"

Predicting problems enables us to have fewer service interventions, and this equipment helps us do our job faster
— Andreas Schierenbeck, CEO of ThyssenKrupp Elevator

Design your digital strategy

BUSINESS

Lowering unit production cost and improving quality for customers. Innovating and improving processes.

VALUE CREATION

EXPERIENCE

Researching, synthesizing, and creating unique people-centric experiences that differentiate.

TECHNOLOGY

Enabling the business process and improving the experience.

Deliver business outcomes through your digital transformation.

Engage your customers

Deliver personalized, rich, connected experiences to your customers, inspiring loyalty along every step of the customer journey.

Empower your employees

Enable your employees to keep up with your fast-moving customers, efficiently collaborating to quickly meet customer needs with agility.

Optimize your operations

Increase the flow of information across your entire business, synchronize your business processes, and improve your interaction with your partners and supply chain.

Transform your products

Gather information about the use of your products, design innovative features, and collaborate with your development team to improve products and develop new ones.

You are reinventing what it means to do manufacturing, and we're committed to creating the right solutions for you.

Our solutions are disruptive and robust, delivering real results at speed.

Together, we can reimagine the art of the possible.

Microsoft Services empowers organizations
to accelerate the value imagined and realized
from their digital experiences.

Imagine.
Realize.
Experience.

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