

BearingPoint®

Service Goes Digital!

A toolbox for acquiring digital capabilities
for your service business

**BEST OF
CONSULTING
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Service Goes Digital!

A toolbox for acquiring digital capabilities for your service business

Digitalization in the after-sales market: a driver for profits and innovation for manufacturing companies

Digitalization has proven pivotal for differentiation in today's competitive service market.

Manufacturing companies are focusing on selling contracts in order to service products throughout their whole life cycle. In order to gain continuous revenue streams, digitalization has become key in enabling modern service models.

Increasingly, companies regard the addition of digital offerings to their service portfolio as a means to better deal with competitive pressures in their industry and to increase customer loyalty.

Specifically, benefits are seen in:

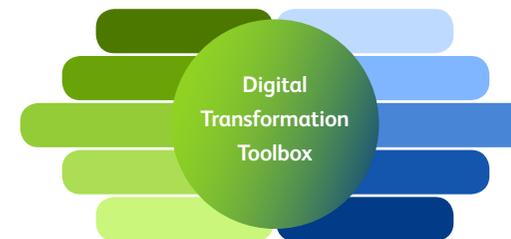
1. **Higher customer retention through digital business models and improved market differentiation against low-cost suppliers**
2. **Better ability to manage an ecosystem and benefit from generated equipment information**
3. **Quicker response time and decision making through online equipment status information**
4. **More interaction with customers via clients' own portals and apps**
5. **Enhanced competitiveness from a reduction of service delivery costs**

BearingPoint's Digital Transformation Toolbox

BearingPoint's Digital Transformation Toolbox supports the digital transformation initiatives of our clients. It represents a potpourri of potential digital service offerings with the proven ability to substantially benefit businesses through BearingPoint's expert know-how in client implementation projects.

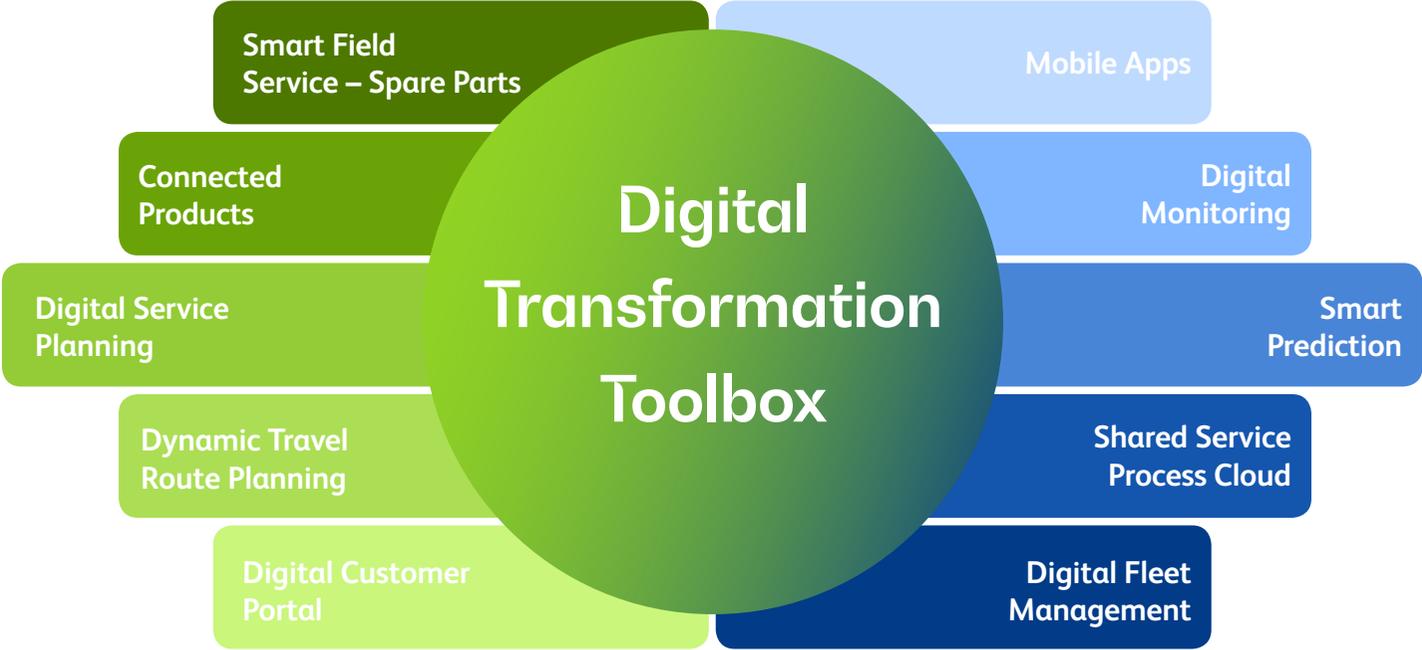
It lets you optimize your company's service processes and demonstrates how the existing processes can be transferred into an integrated digital framework within a global manufacturing environment.

Our partnerships with leading technology providers enable integration of innovative solutions into a customer's own system environment.



Content

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Connected Products

Connected products contain an array of different technologies including sensors, microprocessors and software. Connectivity is realized by transmission technologies and communication protocols.

In the last years, a drastic price decline of IT-components has been a trigger for the implementation of connected products in manufacturing companies.

Processes such as remote monitoring, remote interventions and predictive analysis, which rely on connected products (see in the following chapters), raise industrial services to the next maturity level. Connected products enable not only single service functions but a whole service portfolio including fully automated processes.

BearingPoint provides solutions to enable connected products and their business eco system.

Shaping the customer experience by building a connected products ecosystem over three levels

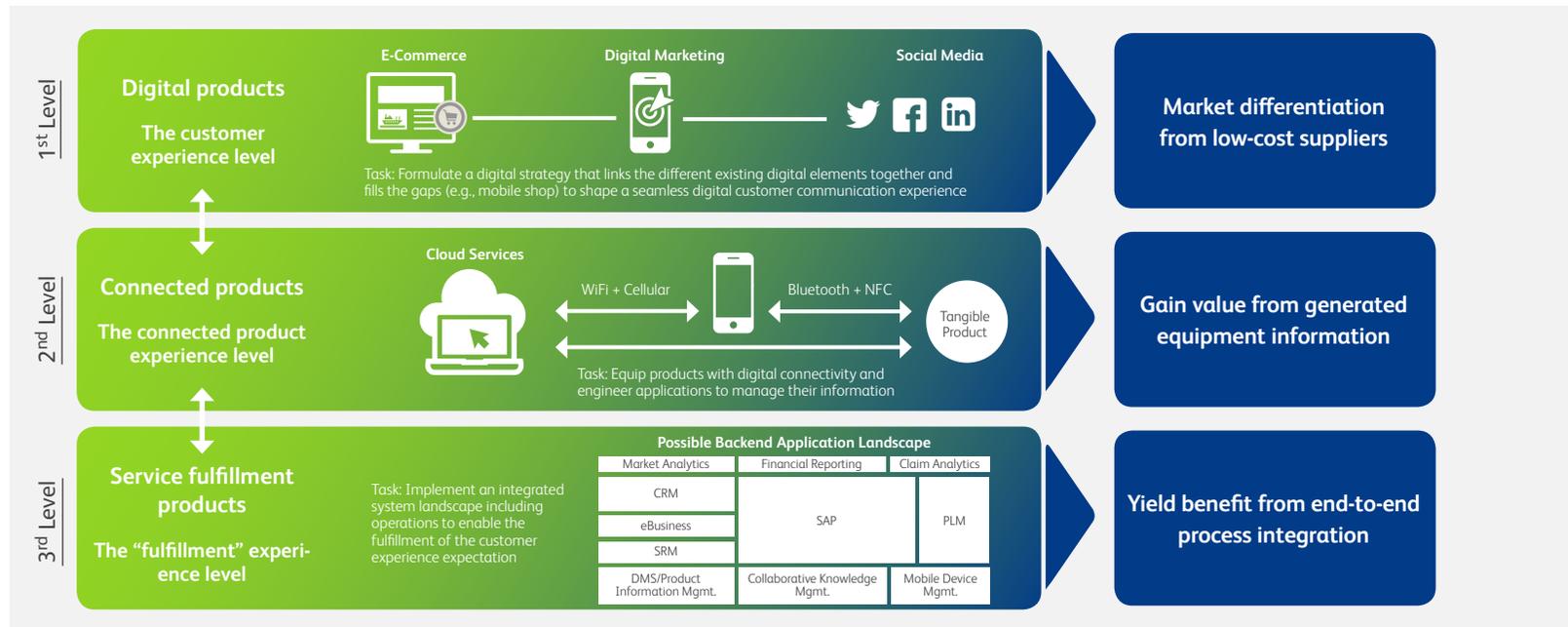
A digital ecosystem of a connected product may consist of three interdependent levels:

1st Level (customer experience level): Elements of e-Commerce, digital marketing and social media are applied to interact with the customer and maintain a digital relationship with the customer.

2nd Level (connected product experience level): Connected products extend the classic tangible product experience to a whole array of connected digital services and, thus, shape a digital product experience.

3rd Level (fulfillment experience level): A business application enterprise backbone shapes the customers experience, and this should be closely integrated with the other layers to enable a closed-loop digital and connected product business process.

The Digital Customer Experience



Digital Service Planning

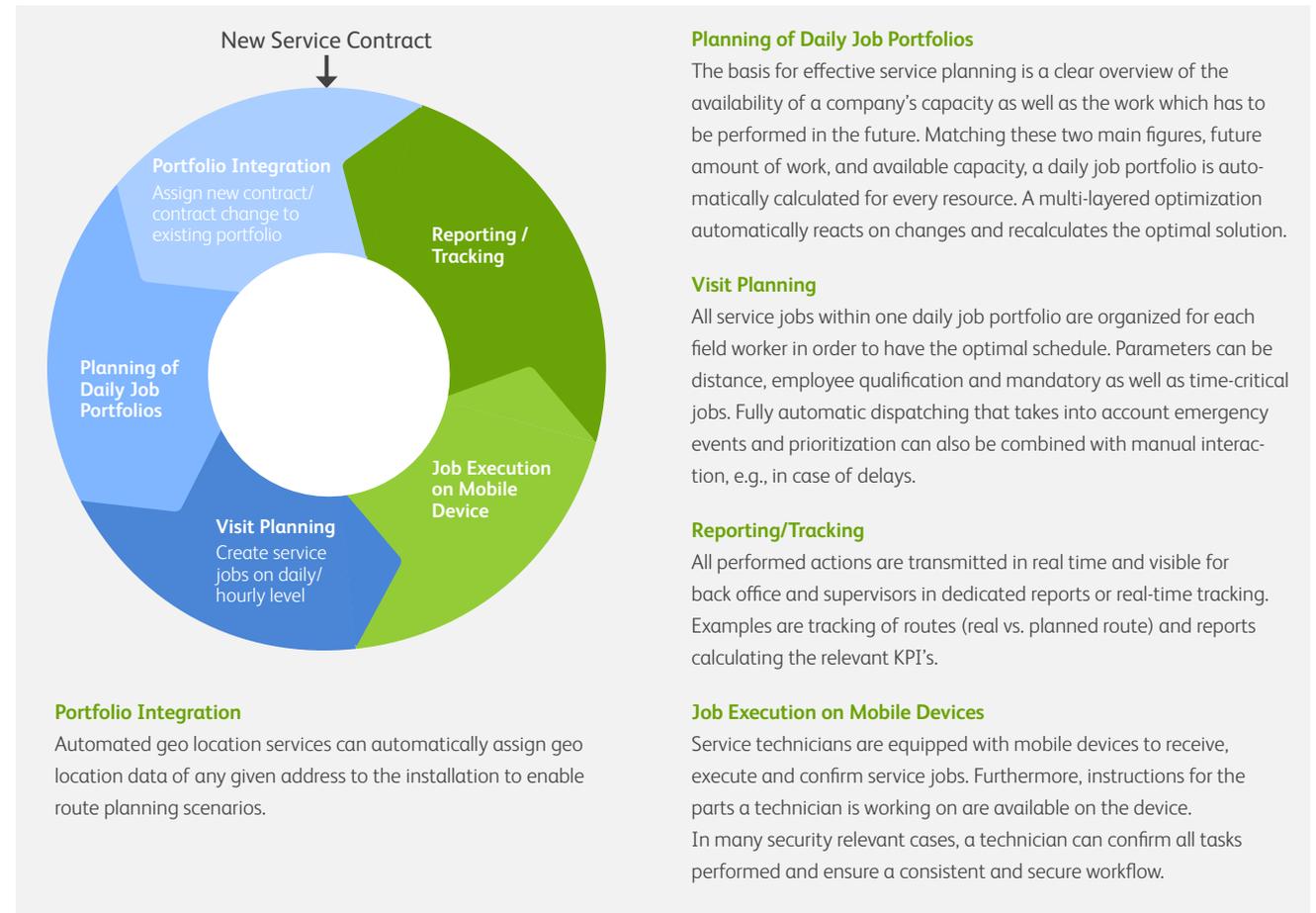
Service businesses can dramatically increase process efficiency through automated service planning. Modern service planning tools take into account upcoming workload and available resources to automatically calculate the most efficient solution in the given timeframe.

As daily workloads can change quickly, for example, due to emergencies, digital planning tools constantly optimize and recalculate job portfolios for every resource, integrating long-, middle- and short-term jobs.

If a business scenario requires technicians with different skill sets, e.g., for special jobs or machine-specific characteristics, automated technician selection can be considered. Already agreed customer appointments can be taken into account when scheduling. Specific rules for different countries, such as legal requirements for minimum numbers of visits, time between visits, or different service scenarios may even be considered within global service planning solutions.

Solutions vary from half-automated to fully automated processes without human interaction. The automation reduces management planning efforts and improves reaction times for new orders. The planning tool creates its own benchmarks and improves with each new calculation following pre-defined KPI's, ensuring continuous improvement.

Automated Tools for Digital Service Planning



BearingPoint & Fraunhofer: Collaboration for Digital Service Planning

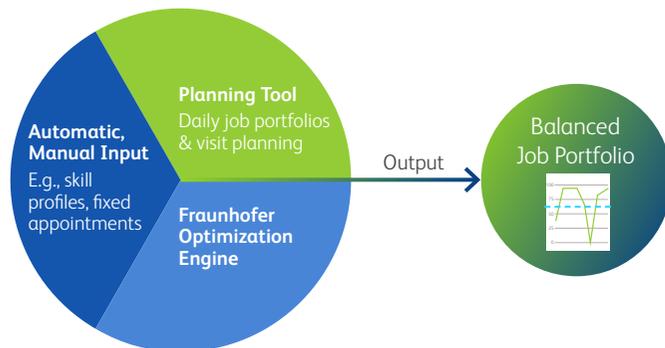
BearingPoint`s partnership with Fraunhofer Institute FOKUS enables a digital visit planning core, integrated in an innovative automated planning engine. With new methods to calculate balanced daily job portfolios, BearingPoint could implement innovative technology developed by Fraunhofer FOKUS into the Service Business.

BearingPoint & Fraunhofer FOKUS



Collaboration benefits:

- Algorithm taking into account individual requirements (e.g., fixed-time appointments)
- Fraunhofer Best-In-Class mathematics know-how in solving complex problems
- Proven transfer into business environments



Dynamic Travel Route Planning

Automatic travel route planning based on Esri World Geocoder for ArcGIS® and ArcGIS® Enterprise



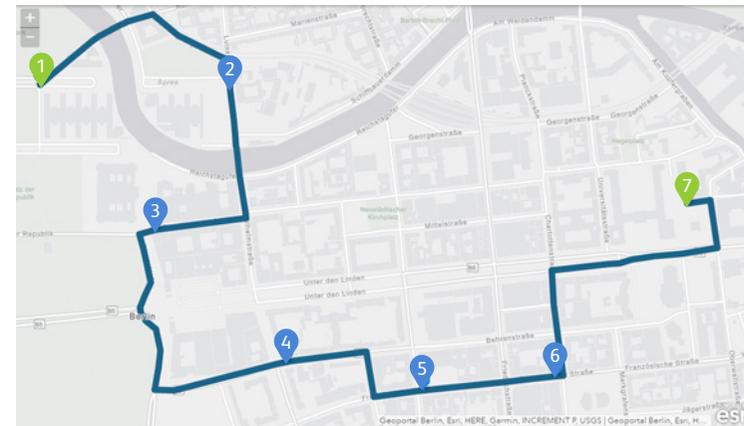
An automatic determination of the equipment's location delivers master data for route optimization.

The route planning engine is based on a geocoding tool that can be integrated into different systems like SAP or web-based portals. Once a written address is provided, the Esri World Geocoder service automatically creates a precise geo location for each unit of a customer's portfolio.

An exact position can also be assigned within a building.

New addresses or changes are automatically assigned to field workers and take into account daily route calculations. Based on the geo locations, optimal routes can be calculated with Esri ArcGIS Enterprise services. These geo locations enable business analytics for manufacturing companies.

Automatic route optimization is the basis for daily service operations efficiency. A feedback loop to the visit planning tool ensures a continuous information flow as a basis for quick reaction and optimization.



Digital Customer Portal

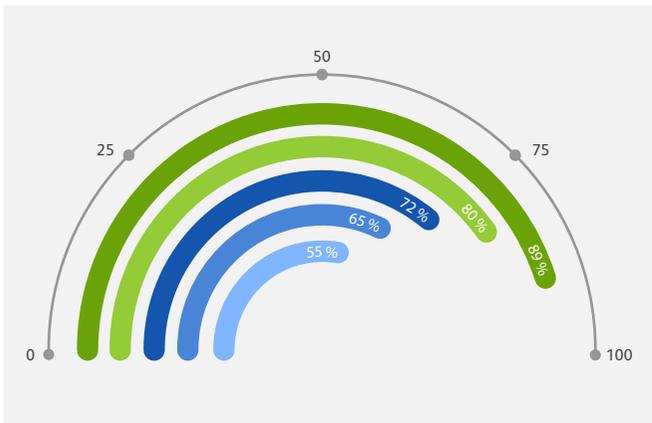
A digital customer portal is the main communication channel to the customer. Interactive and responsive reports about portfolio, activities and performance offer a transparent overview about the current status. In the intersection of internal and external information flows, the customer portal is integrating and aggregating all data into simple views for external as well as internal usage.

A digital portal supports a central, shared and collaborative way of working. The customer benefits from automated Service Level Agreement (SLA) monitoring and other self-service functionalities. Online availability of runtime and performance information is given as well as central compliance.

Potentials of a Digital Customer Portal

1. Increased customer loyalty through higher equipment transparency
2. Automated and easier management of customer communication
3. Reduction of administrative tasks (e.g., auto-upload of documents like invoices)
4. Full service orientation

Example: SLA Performance Monitoring

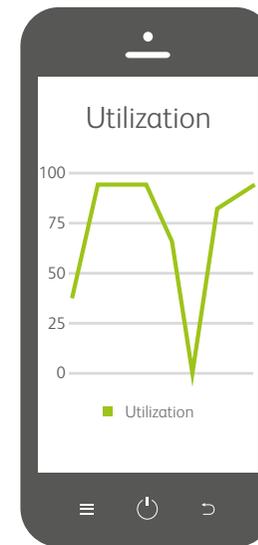


Mobile Customer Portal

The core information from a digital customer portal can be synchronized to a mobile version on a smartphone app. Detailed analysis, reporting and other back office functions will remain within the desktop version of the portal.

For highly mobile customer groups, mobile apps provide all vital information required throughout the day. Equipment status changes are synchronized in real time and alerts notify the user.

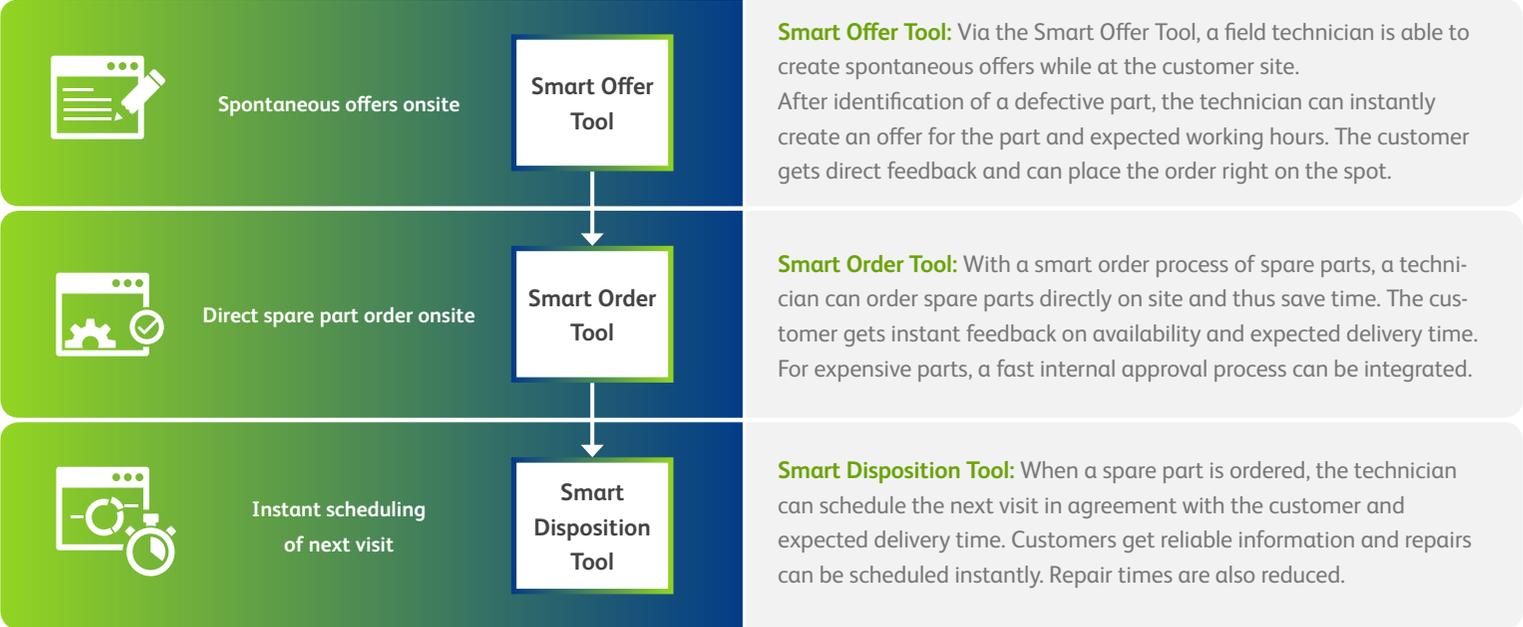
This way customers can access all necessary information “on the road.” Office administration is reduced to a minimum.



Smart Field Service – Spare Parts

A smart spare part process is achieved by establishing a closed-loop, customer-facing renewal process. Once a defective part is recognized, the service technician can utilize **Smart Tools** to offer the replacement, order the spare parts and schedule the installation in case of non-availability.

The three aspects of smart field service – spare parts



Mobile Apps

BearingPoint's expertise in mobile app strategies and implementation means that standardized functionalities are available on mobile apps and integration into existing business processes are facilitated.

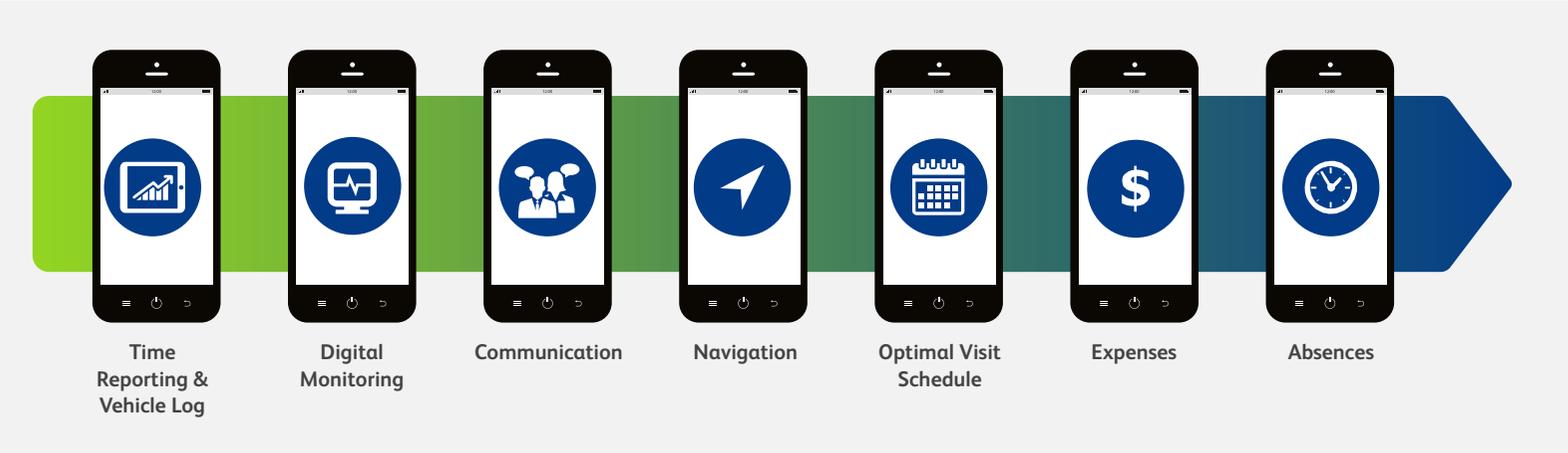
Mobile integration plays an important role in modern business process management and architecture. Many processes are made available on mobile devices to increase speed and efficiency. Reporting from and to mobile devices with interface to ERP or SharePoint systems are available and individually adjusted to the company's needs.

Key benefits are:

- Direct data transfer between mobile and office solutions
- Proven impact for operational work in the field

The following overview shows different examples of mobile apps used in manufacturing companies.

Examples of mobile apps



Digital Monitoring

Digital Monitoring allows for remote surveillance and diagnosis of machines. Digital Monitoring combines the disciplines of mechanics, electronics and IT. Machines are equipped with sensors and transmit live data to a central hub where all available information is analyzed. A rules engine routes the data according to predefined rules and triggers follow-up processes such as preventive maintenance & interventions.

Proactive instead of reactive

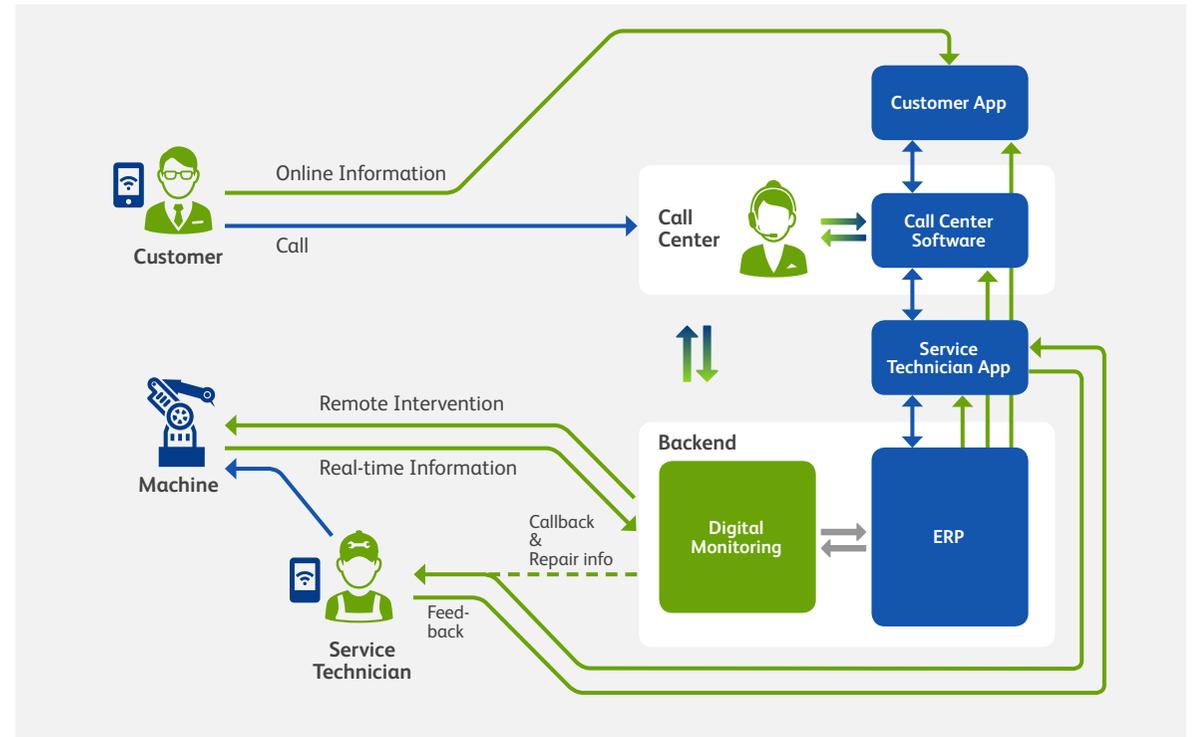
Incidents can be noticed before the customer is aware of it. Secondary damage can be avoided and outage minimized.

Reduction of onsite visits

Wear-down of machines can be detected at an early stage. Costs for repair can be reduced as machine data is made available before remote or onsite intervention occurs. Errors can be solved remotely.

To maximize the benefit of Digital Monitoring, a close integration with the company process architecture is recommended. The digitalization of industrial service models & customer service staff leads to improved customer service.

Digital Monitoring: Integration into Companies' Process Landscape



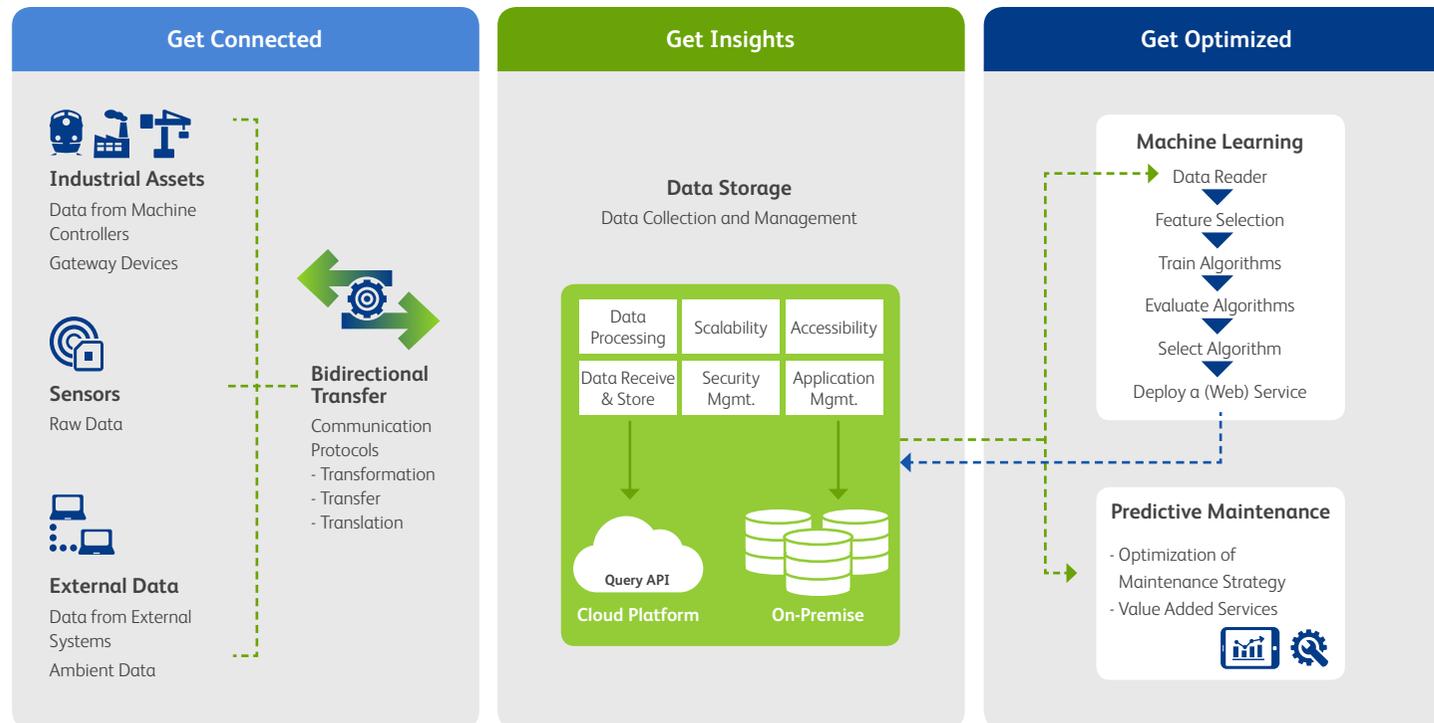
Smart Prediction

Smart Prediction represents the prediction of machine-related events. It requires a solid connection via remote monitoring infrastructure (“Get Connected” – compare Digital Monitoring chapter). All sensor equipped machines collect data which is processed in cloud-platforms or on-premise solutions (“Get Insights”). Remote Monitoring rules are enriched with complex situation-dependent causalities leading to automated decisions based on the collected data (“Get Optimized”).

In state-of-the-art solutions, data is continuously analyzed and clusters are monitored. Available clusters are processed with statistical methods and evaluated by taking into account live sensor data, business rules, historic machine data, master data and performed actions. Learning algorithms continuously improve the rules engine that takes past decisions into account.

The prediction of machine failures provides anticipative scheduling of maintenance visits before damage occurs.

The landscape of smart prediction



Shared Service Process Cloud – a shared service process ecosystem

The increasing connectivity along digital service processes and the Internet of Things lead to an interconnected ecosystem of multiple parties and stakeholders. A shared service process backbone based on cloud technology is an enabler for delivering services via a service network where information is shared and process automation is established. Permanent service monitoring enables service contract compliance within an open business process architecture.

Different business scenarios are enabled via a shared service process. End customers, B2B business partners and internal employees receive and deliver data within a common, shared ecosystem based on cloud technology.

Benefits of a shared service process ecosystem:

- Shared machine data between all partners in the ecosystem (e.g., logistics and service data)
- Intercompany collaboration to fulfill customer service requests and address exceptions
- Closed loop process scenarios enriched with data from different sources
- Timely routing of predicted events to affected stakeholder
- Full customer transparency on compliance with service level agreements across the ecosystem

Shared Service Process Backbone: various business scenarios established via cloud connection



Digital Fleet Management

Companies which operate their own fleet for mobile services (e.g., repairs, spare parts, mobile stock, test & certification and other purposes), have special needs to manage this fleet and related administrative information.

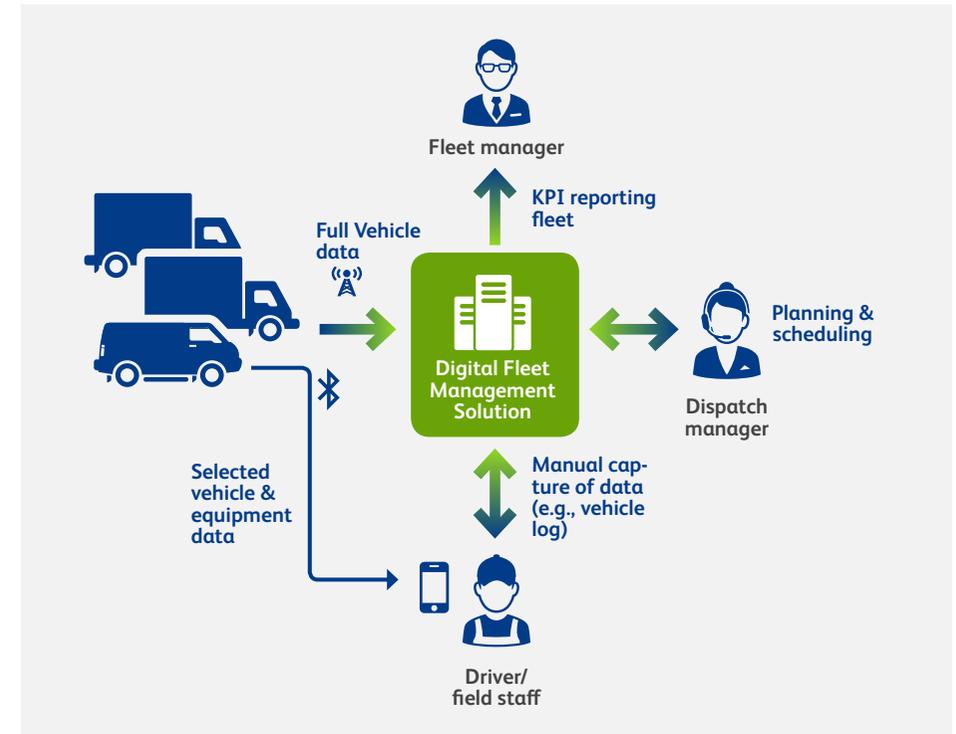
Data on current location, utilized capacity, fleet maintenance status, adherence and governance on legal requirements (e.g., driving hours) as well as communication with a driver or technician are essential elements of an efficient business process.

A Digital Fleet Management architecture is composed of different technologies presented in this paper (Digital Monitoring, Connected Products, Mobile Apps etc.) and applies these specifically to mobile fleet and mobile equipment scenarios.

The digitalization of fleet management processes yields substantial benefits:

- Proactive maintenance enabled through current operation and maintenance status information of the fleet
- Short-notice job order dispatch based on current location, route optimization and status of all vehicles or equipment
- Mobile vehicle log recording
- Less paper work
- Monitoring of allowed routes and location tracking

Digital Fleet Management Solution



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About BearingPoint

BearingPoint is an independent management and technology consultancy with European roots and a global reach. The company operates in three units: Consulting, Solutions and Ventures. Consulting covers the advisory business; Solutions provides the tools for successful digital transformation, regulatory technology and advanced analytics; Ventures drives the financing and development of start-ups. BearingPoint's clients include many of the world's leading companies and organizations. The firm has a global consulting network with more than 10,000 people and supports clients in over 75 countries, engaging with them to achieve measurable and sustainable success.

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