

**Digitalization as a growth
driver in after-sales service**

A new Lease on Life for
Machine Manufacturing

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Executive Summary

After-sales service is increasingly becoming an important core business for the manufacturing industry, already generating half of the overall revenues for many companies. Digitalization is now creating new opportunity in this space by:

- significantly improving and expanding after-sales service offerings
- increasing the scope of targeted insights into customers and machines
- introducing new service business models and
- making service operations more efficient

One of the continuing megatrends we see on this market is the customers' desire to reduce complexity and prioritize operating expenditure over capital expenditure (OpEx not CapEx). Both play right into the hands of subscription models, in which machinery manufacturers assume responsibility for a pre-defined set of service tasks and invoice the customer by the hour or even based on production volume figures – which can only be objectively tracked and invoiced in real-time using digital tools.

One of the key advantages of digital services is the ability of networked machines to continuously collect data, but this also means that machines no longer “drop off the radar” once they are sold. Customers gain more and more insight with each dataset that is captured, providing valuable insight not only for after-sales service teams but also for the R&D department.

There can, however, be downsides to digitalization for after-sales service in the manufacturing industry. This is particularly true as price transparency grows in the spare parts market and new competition emerges in the form of digital pure players. The best way to address these challenges is to mount a solid service strategy, to invest in the right systems at the right time and to develop – and continue to enhance – service portfolios in close collaboration with selected customers.

In the medium term, digitalization in the after-sales service space can also open up new perspectives that no industrial manufacturer can afford to ignore:

- Analyses of actual equipment use and downtime can lead to innovations in new machine R&D
- Digital simulations can pave the way for new sales strategies or new training methodologies for customer technicians
- Remote support can improve the efficiency and efficacy of the service technician's operations
- The sales strategy for new equipment and after-sales service can converge, true to the motto: “It's the after-sales service team that seals the deal on the next equipment sale”

From analog to digital

How convenience and transparency have prevailed

Once upon a time, the streets of Manhattan were yellow with taxicabs. All the average New Yorker had to do was raise a hand or whistle to hail a cab. It worked like a charm, provided some other prospective client didn't wave a little wilder or whistle a little louder. Today's ridesharing apps like Uber and others have turned this system on its head. Even though the product itself is practically identical – a car and driver take passengers on request from A to B and receive payment in return – the actual service couldn't be more different.

New York City past vs. New York City present



These apps have made the taxi service

- faster, since the next Uber driver is probably right around the corner
- more transparent, as you know precisely who is driving and can rate his or her level of service
- easier, because you can order and pay conveniently through the app
- more convenient for business travelers, for example, because you no longer have to keep physical receipts for your expense report

The result: Uber and others have taken a huge share of the taxi market, providing 50 percent more journeys in New York than the traditional yellow cabs.

What can industrial machine makers learn from this case study? Quite a lot!

- Digital services can totally reshape a market
- Provided prices are comparable, customers will always go for the most convenient option
- When prices for after-sales service are too high, customers will be tempted to switch providers
- In the digital age, transparency has virtually become a commodity in its own right



How digitalization is changing after-sales service in the machine manufacturing sector

- Growing customer demands: Digital services like Amazon or Netflix have had a lasting impact on customer demands in the B2B area. They demand maximum flexibility with low investment and reduced risks.
- High transparency: Digital platforms are making it easier than ever for customers to compare services. Selling spare parts with a mark-up of several hundred percent is often a bone of contention. A lot of customers respond by bypassing the manufacturer's service in some cases.
- Online helpdesk: Companies can provide online support not only for their own service technicians, but also for those of their customers to address troubleshooting, verify diagnostics, exchange insights or optimize the machines.
- Machine data records: Tracking and analyzing machine data is becoming more and more the norm, but few companies are in the position today to exploit the associated opportunities and optimize how they use the data.



How digitalization is not changing after-sales service in the machine manufacturing sector

- Every service has to be worth it. For both the customer buying it and the service provider carrying it out. This can only succeed if the services represent an added value that the customer is happy to pay for.
- Not every customer will want the entire range of services. A lot of higher-end service providers only target a small number of customers that they have already been developing for years – others are just starting out. Still others are pursuing a specific service philosophy (e.g., "We always service our own machinery wherever possible" or "We only get involved when problems arise").
- The higher the level of service, the more risk exposure machine manufacturers have. It is therefore key for suppliers to accurately assess which services they should be offering to which customers.

From CapEx to OpEx

The evolution of the subscription model

As competition intensifies across the globe, the demand for subscription models is growing among customers in the industrial manufacturing sector (“pay per use”, “pay per month”, “pay per unit”, etc.). We are seeing more and more customers say they only want to pay for machinery when they use it or only for the actual output of the equipment, instead of buying the machines outright as was common in the past. This trend has brought about drastic changes in the business models of some industrial machine makers (e.g. in the area of turbines and printing machines as well as filling systems and forklifts).

But where did it come from, this growing desire of companies to reduce their capital expenditure (CapEx for short) in favor of operating expenditure (OpEx for short)? To only pay for the machinery’s actual utilization or output?

Better cost allocation

Customers that buy machinery will no longer have to depreciate these assets at a fixed rate over the course of several years – e.g., equipment financed over 5 years depreciates by 20 percent of the acquisition cost plus 2 percent interest per year. If they can instead allocate the cost of the machinery directly to the product itself, or maybe even to a particular phase of the production process, they can achieve more exact cost accounting and forecasting.

More flexible cost sharing

Subscription models can “breathe” – in months with higher order throughput, the utilization of the machines increases and is invoiced accordingly, while months with a lower throughput will incur lower costs as the machines are used less frequently. This acknowledges the reality that companies are increasingly being impacted by market volatility. Of course, customers understand

that they cannot expect a solution with 100% flexibility – after all, their suppliers have to earn a profit as well. In the end, there are a lot of alternative arrangements available between the outright purchase of a piece of machinery and a third-party providing machine capacity, some of which could be very attractive for both sides.

Opportunities in digitalization

Subscription models are only possible because we can link various machines on a digital network. This is what makes it possible to automatically and objectively measure the way a machine is utilized and charge a fee based on its use. Four partners are traditionally involved in this process: in addition to the buyer and the seller, there is an entity providing financing, most often a bank, and a payment and settlement agency. Customers find themselves still very much in the test phase: one of the reasons their interest is so high at the moment is their desire to put these new digital features to the test.

Machine manufacturers are interested in subscription models for two main reasons. First, they have the potential to improve customer loyalty. If a customer signs a subscription contract, they are probably planning to stick around for the foreseeable future. The continuous collection of utilization data will also enable machine and plant engineers to better track the key challenges their customers face and finally gain deep insight into precisely how, where and by whom their machines are being used.

The second key advantages of the subscription model is the ability to sustain a competitive edge. In some areas, it has become utterly unavoidable. They must face the fact that customers will be buying machines less frequently and that they

will have no choice but to follow suit when their direct competitors start offering this business model.

We are seeing more and more subscription models, particularly in segments where machines are largely standardized. In industries with a greater degree of variability, by contrast, the subscription concept is still in its infancy. Service models for aircraft turbines, for example, are already quite advanced. Leading turbine manufacturers such as GE and Pratt & Whitney – have been offering their customers subscription models in addition to traditional purchasing for many years now. Their subscription models set a fixed fee per hour of use, which has been customized to suit the customer’s specific needs. To date, more than 40% of the customers at Pratt & Whitney¹ are opting for this model.

The pay-per-use model has also long been established for the compressor stations that power gas pipelines. The positive experiences in this area have given manufacturing companies in the compressed air segment a good idea of what is possible. Today, compressor manufacturers like Kaeser² offer their customers subscription models that charge by the cubic meter of compressed air rather than selling the equipment outright.

The debate whether to offer a subscription model is not an unequivocal yes or no question. Companies can choose from a variety of flexible model designs along the continuum of intermediate solutions ranging from an outright purchase in exchange for a one-off payment to a pure subscription model.

Fig. 1 – From one-off payment to an output-based model



Service digitalization as a critical success factor

Analog services – An unexpected anchor in economic cycles

After-sales service was, is and will remain a segment with enormous sales and profit potential for machine manufacturers. Services typically generate an EBIT margin that is several times higher than that of new machinery sales. And what is more: demand for machinery tends to be cyclical, while after-sales service has a stabilizing effect. Particularly in times of sinking sales and margins in the new machinery business, after-sales service can generate much-needed funds for investments.

But even though it's something people have been aware of for some time, many machine or plant engineering firms have not even begun to exploit the full potential of after-sales service. Why not? Industrial

machine makers are usually quite engineer-driven; the corporate culture is animated by a passion for technology and the focus is always on new machinery sales.

As a result, many of these firms don't give after-sales service the attention it deserves. They don't dedicate enough resources or implement the right processes to offer an innovative service package and protect against risks. The C-suite cannot muster any attention or excitement for the issue and career paths in after-sales service aren't appealing enough to attract first-class talent. And finally, these companies are not investing enough to tap the full potential of after-sales service – although in most cases it is precisely

investment in the service offering that will generate the profits that provide stability when new machinery sales are volatile.

While companies often celebrate a new machine order that generates millions of euros in revenue, the much smaller after-sales service contracts are rarely cause for excessive celebration. Companies often ignore the fact that in many cases these contracts can deliver significantly higher profits, and – depending on the duration of a contract – may even end up generating more sales revenue over the lifecycle of the after-sales service agreement.

“After-sales service in machine manufacturing rarely receives the acknowledgment it deserves for its considerable contribution to the bottom line – but this is finally starting to change.”

Oliver Bendig, German After Sales & Industrial Manufacturing lead at Monitor Deloitte

Fig. 2 – The huge potential for after-sales service in machine manufacturing

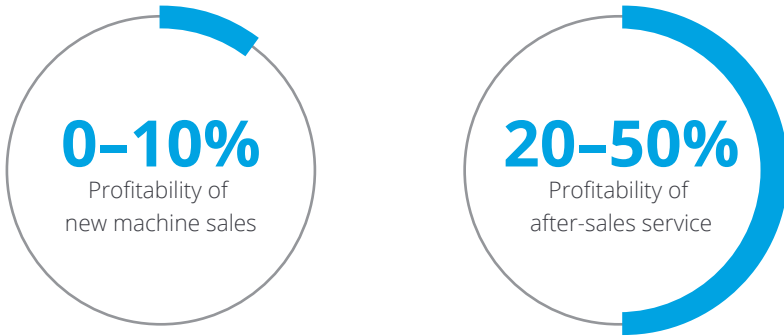
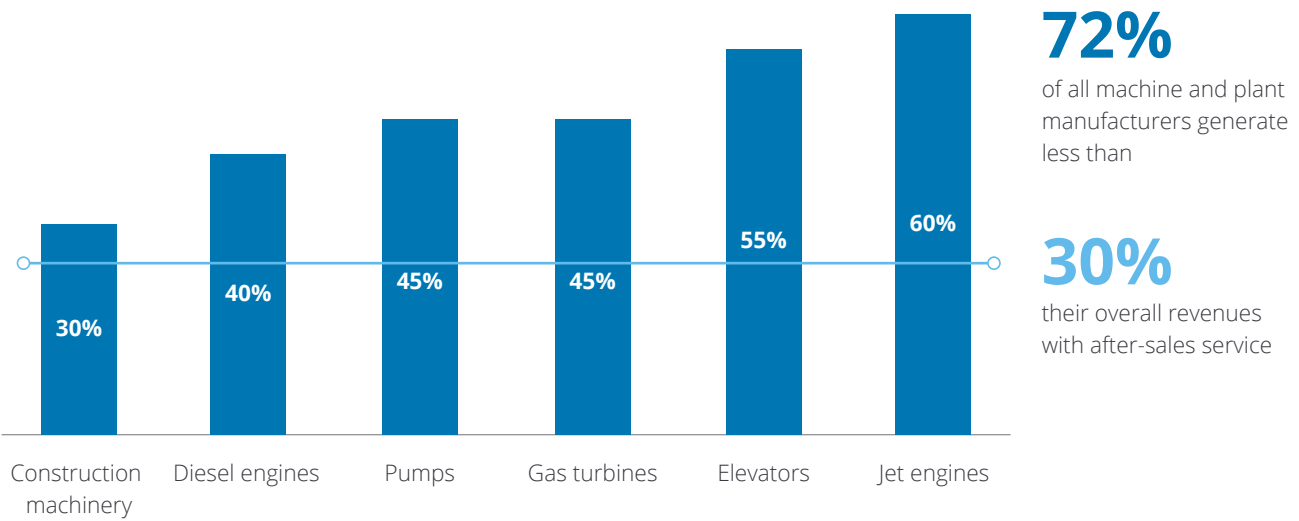


Fig. 3 – Target sales in after-sales service by industry – and current status quo³

Share of after-sales service in overall revenue by industry



Digital services – A decisive competitive advantage

As we have shown, after-sales service is already an important economic stabilizer for industrial machine makers today, and it has the potential to generate more than 50 percent of the profits for companies with an affinity for after-sales service. Digitalization is giving the service sector an additional massive push, maybe even what can be described as a “new lease on life”, because it will further bolster the overall trend towards a more service-oriented society.

One salient example of this is the automotive industry. People have been speculating for almost twenty years about transforming automobile manufacturers into mobility service providers. The emergence of mobility apps (moovel/Jelbi), online booking for car services and car-sharing companies (Flinkster/Cambio) have suddenly made this vision a lot more concrete. If car manufacturers allow third-party service providers like Wymo to gain a foothold in the market (Wymo is Google’s robotaxi subsidiary being piloted in Phoenix, Arizona), they may end up as manufacturers of standard vehicles being sold with the features and at the prices dictated by Wymo.

Industrial machine makers are in a similar situation. They have to make sure that pure service providers don’t come between them and their customers. The many splintered sub-markets for machine manufacturers and the specialist expertise that they require may make things difficult for newcomers from the digital space. We have, however, seen some initial signs that digital pure players are primed to challenge incumbents here as well. One example is Amazon Business,

a supplier that has already become well established in the highly attractive segment of standard spare parts.

The digitalization of after-sales service can give machine manufacturers a strong competitive edge against newcomers like these – primarily through two factors.

1. Increased sales potential through improved offerings

New machine sales have gone from being the crown jewel of machine and plant engineers to its problem child over the past few years. For some segments of the market, it is not uncommon for massive machinery deals to deliver little to no profit when all of the costs are taken into account. This creates a niche for well-positioned after-sales service providers that can use already installed machinery to generate profits for the enterprise as a whole.

Digitalization can play a helpful role here: while there is a lot of room for improvement in the traditional after-sales service segment, the biggest growth potential is mainly found in innovative digital offerings and processes. Customers see a clear advantage to invoicing for services based on digital tracking of machine use, for example. We have also seen a lot of quality gains in other services such as remote maintenance. Services like these are not exactly brand new, but our ability to transmit and analyze the associated data has improved significantly over the past few years.

To demonstrate how much progress these digital innovations have made possible, let’s look at the example of one North American

packaging machinery manufacturer. They have offered remote maintenance services since 2008 and have accumulated massive amounts of data through numerous embedded sensors. Initially, they limited their digital services to offering simple troubleshooting tasks, essentially ensuring that the massive amount of data they were collecting was useless to the after-sales service team. They were unable to use data analysis to derive meaningful service measures. When standardized data analysis platforms hit the market about a year ago, they were finally able to identify initial error patterns. Today, they are continuously analyzing all of the data collected on all their machines and providing information on potential problems or reduced output.

To be in a position to offer digital services, however, machine manufacturers have to first develop the necessary digital infrastructure. If Kaeser doesn’t know how many cubic meters of compressed air a customer is using, they cannot accurately invoice for their services. And if Pratt & Whitney don’t know precisely how long their gas turbines have been running, they cannot accurately invoice their services by the hour.

In summary, it is essential to recognize that digital technologies are the main drivers behind the ever increasing role that after-sales service is playing in machine and plant engineering. What is more, digital service models are offering many companies the opportunity to win back some of the sales they have lost to third-party service providers or to their customers themselves. Digital services

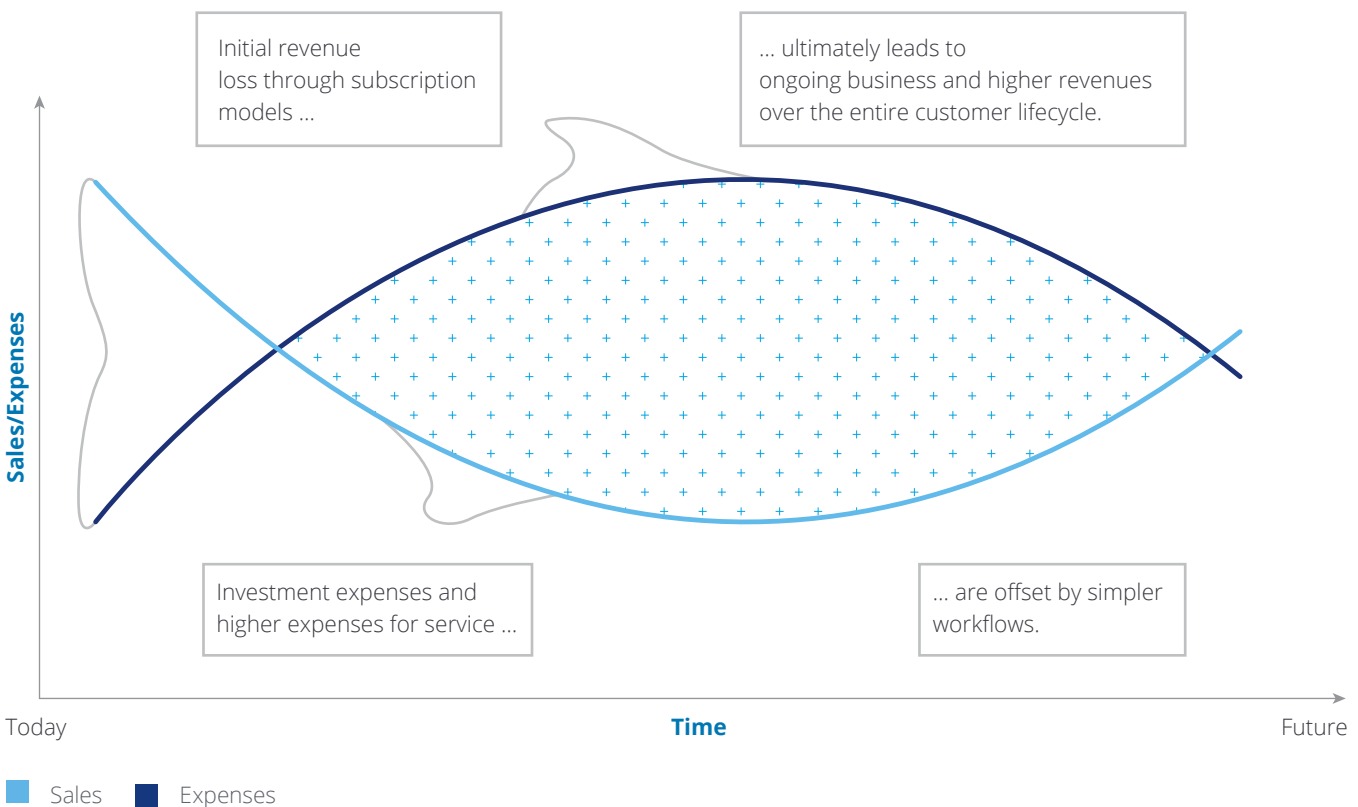
are helping OEMs get closer to their customers again. And if companies can offer subscription models and provide the services themselves, they will succeed in making better use of their own spare parts and technicians.

One traditional German company, Heidelberger Druckmaschinen⁴, is looking to exploit this effect to the full. In addition to offering machinery sales in the classical sense, they offer a subscription model that invoices customers for the actual number of pages printed and includes all machinery and after-sales service fees as well as consumables. The benefits for the customers are better cash flow (thanks

to lower capital expenditure) and more flexibility (thanks to the contract, which naturally has a minimum consumption charge). For their part, Heidelberg can finally start selling its own spare parts and consumables again (inks, lubricants, etc.). These costs are already factored into the subscription model and give customers more reliability in their budgeting and forecasting. Heidelberg expects to significantly increase its market share in consumables as well.

Beware: Subscription models slow down cash flow
 Industrial machine makers looking to switch to these models will initially “lose” their revenue from new machine sales. They stand to more than make up for these losses over the course of an after-sales service agreement, but there is no getting around the “dent” in the balance sheet for the first couple of years. Since the cash inflows from new machine sales are lacking, most machinery manufacturers find it beneficial to start early with their initial subscription pilot projects and then to increase the share of this business gradually over time – provided the experience and the results of the pilot project are positive.

Fig. 4 – Fish model theory for subscription models





2. Targeted insight into concrete customer needs through data collection

Digital services enable companies, particularly in the area of machine and plant engineering, to collect massive amounts of customer data and to put it to profitable use. In some sectors, machine manufacturers don't even know precisely where their equipment is being used. There is huge untapped potential for digitalization in these areas, where digital services could bring these machines and plants back onto the radar screen – and tap the potential to sell them profitable services or new machinery as a result.

One example here is the steel processing industry, where machinery is often in operation for 30 years or more. Machine manufacturers often have little to no insight into the current status of these installed units. This changes when new networked machinery goes online and enables data collection and remote maintenance. The machine manufacturers can also use the data collected about usage, maintenance calls and downtime to offer precisely those

services that customers need (e.g., upgrade deals at precisely the time when system performance starts to decline significantly).

An additional advantage to collecting usage data as part of after-sales service: industrial manufacturer can improve their own processes and machine designs. Having a better understanding of when certain machines are vulnerable or how customers use the machines in everyday operations can be extremely valuable insight for product development teams in particular. This allows industrial machine makers to get closer to their customers again and have the chance to optimize their machinery in a way that customers will appreciate.

“By definition, tracking machinery data hardly constitutes an advantage. It is up to manufacturers to turn data into tangible value-added benefits – measurable in dollars and euros – for their customers.”

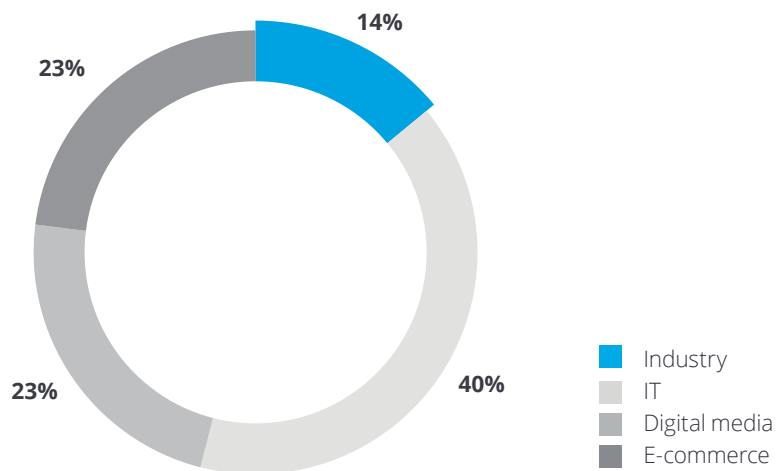
Thomas Döbler, German Energy, Resources & Industrials Leader at Deloitte

Five keys to success

Driving forces for a service-based digital business model

Digital service business models are rarely an overnight success. Companies have to first address several key factors, due in part to complex technological demands, but above all to the changes in corporate culture that this new business model requires. Many have “preached the gospel” on these models for years, particularly in the machine and plant manufacturing sector, but only a few companies have managed to get past the pilot stage.

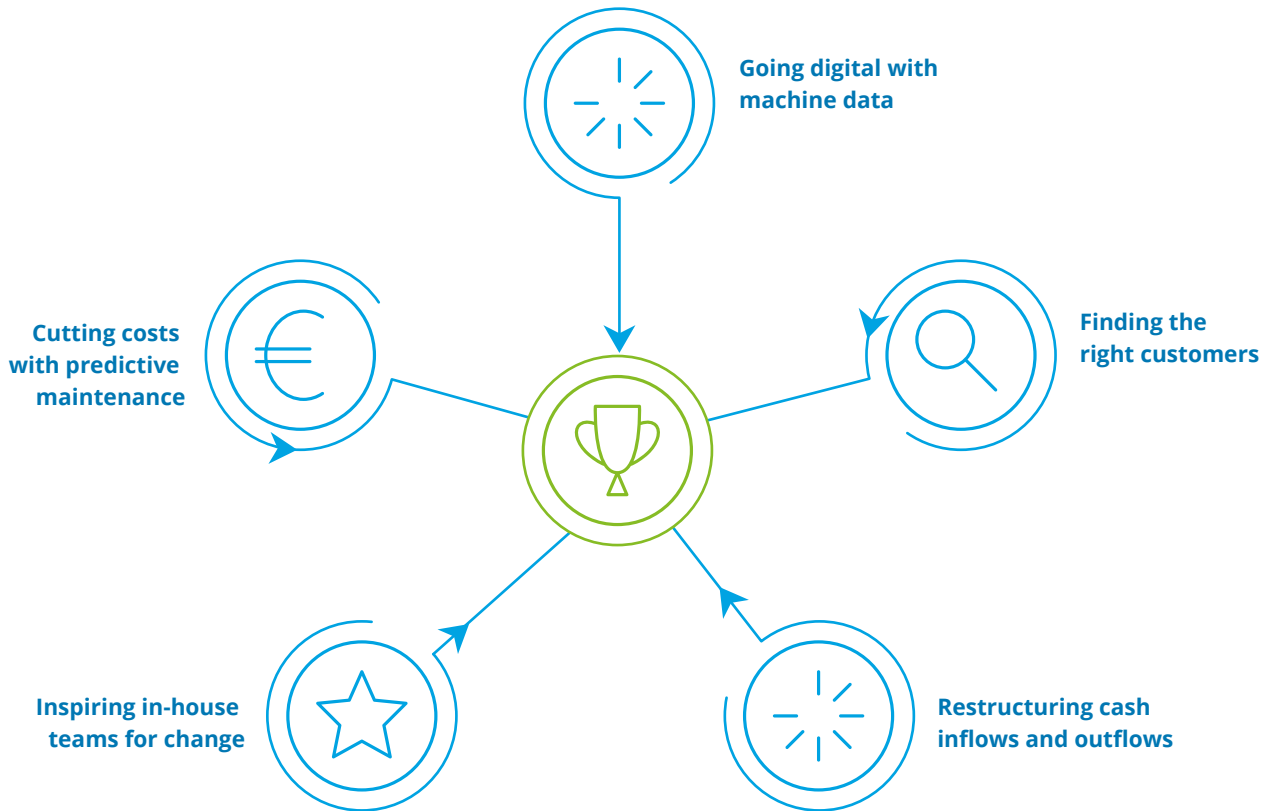
Fig. 5 - Distribution of subscription revenues in percent in Germany in 2018 by sector⁵



“For decades, we have been talking about how predictive and preventative maintenance will revolutionize after-sales service for machine manufacturers – but it is only now that we can guarantee these data-driven OEE improvements add real value for customers.”

Oliver Bendig, German After Sales & Industrial Manufacturing lead at Monitor Deloitte

Fig. 6 – Five keys to success for digital services in machinery manufacturing



“That won’t work in our complex environment” is a phrase you hear a lot among machine and plant manufacturers. But service champions in the sector have shown that there is indeed massive potential in digital services – with clearly visible and measurable success in the balance sheet! After several projects introducing service-based digital business models, Monitor Deloitte has identified five key success factors:

1. Digitalization and transfer of all major machine data

Before companies can offer data-based services, they must first make the data accessible. Often, older machinery doesn’t even have an internet connection – or has outdated security protocols that do not allow data to be transmitted. In new machines and plants, however, these are standard features. German elevator manufacturer thyssenkrupp, for example, no longer sells elevators without sensor technology and an interface to Max, its proprietary connectivity platform⁶.

Digitalization no longer requires companies to invest huge sums of money either: while it cost thousands of euros to install basic digital equipment in an elevator a few years ago, it only costs a few hundred today. One German tool manufacturer, to name another example, includes a digital module as a standard feature in every cordless screwdriver.



2. Selecting the right customers

Subscription models are not ideal for every customer segment. Depending on the level of sophistication in a customer's system (quality of maintenance, type of end products) there is a lot of potential to make – and to lose – a lot of money. Companies should only offer a concrete digital services package to customers that fulfill a set of important criteria, such as how long they have had a relationship with the customer, how competent their in-house maintenance team is, the overall condition of the customer's machinery or climatic conditions.

Heidelberg⁷ always starts with an in-depth customer analysis before offering models like these. Even though a lot of customers have requested these models since they were first introduced, the number of active service agreements in place is much lower. This is the only way the company can ensure that the advantages that exist in theory for both partners can also be achieved in practice.

3. Restructure and optimize cash flows to support the new business model

The decision to offer subscription or output-based models in addition to traditional one-off purchases has a huge impact on a company's cash flow. If a company moves all of its contracts to the subscription model, it would mean massive changes in cash inflows and outflows, which may even threaten the firm's future as a going concern. This is why many companies look to partner with leasing firms, banks or insurance companies, to start their own service divisions or to use the services of their own financial institutions.

4. Inspire teams with the new model

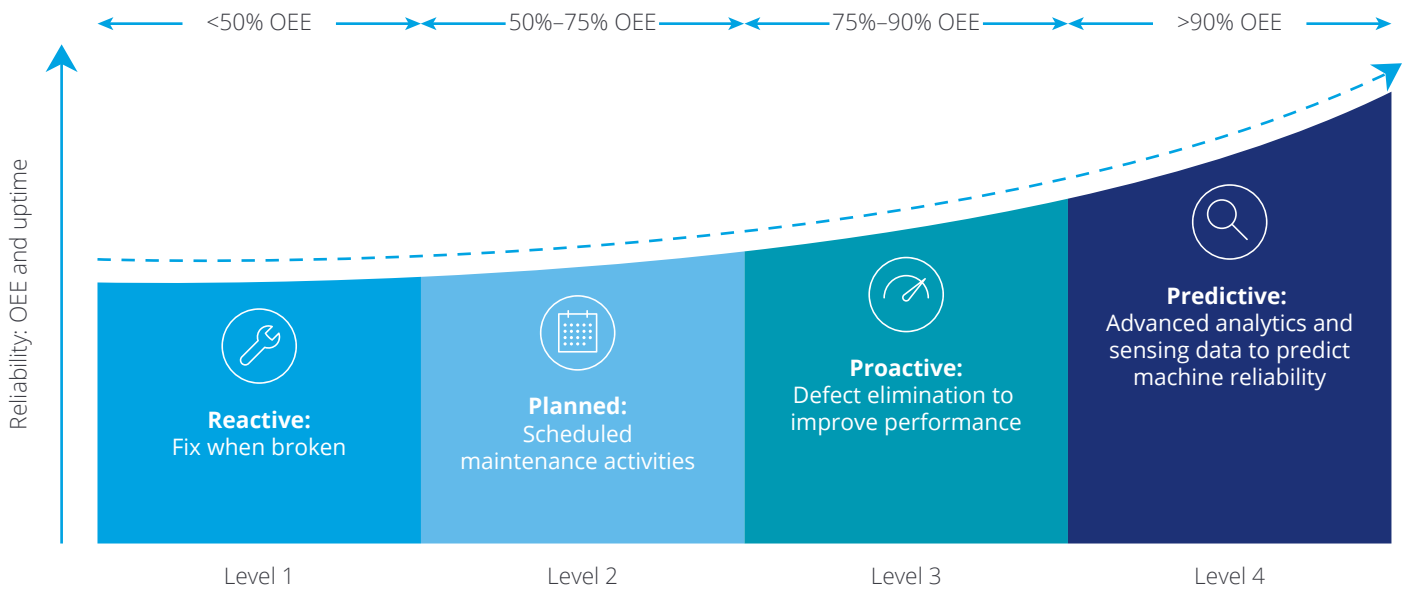
Introducing digital services and switching to a completely new business model mean huge changes for all employees. Management has to carefully align everything from issues driven more by cultural concerns ("Why aren't we directly selling our machines for full price any more?") to tangible organizational changes (like establishing a new department for digital services). De facto, these issues always go hand in hand with an overarching change management initiative and top management has to be proactive from an early stage in promoting the changes throughout the organization.

5. Using predictive maintenance technology to drastically cut costs

When machinery manufacturers offer their customers all-inclusive packages like a subscription model, they essentially assume all of the risk for machine downtime and therefore also the obligation to ensure the best possible maintenance. The only way to optimize in-house expenses and make a profit from models like these is to ensure you find the optimum way to identify, forecast and execute maintenance tasks.

As part of its subscription model, Heidelberg doesn't wait until a production line stops working to repair it – that would mean a financial loss for every page that isn't printed during the downtime. To be sure, predictive maintenance is only one way to achieve these goals, but it is the tool that is currently receiving the most investment and is expected to improve the accuracy of its algorithm in the coming months.

Fig. 7 – From reactive to predictive maintenance



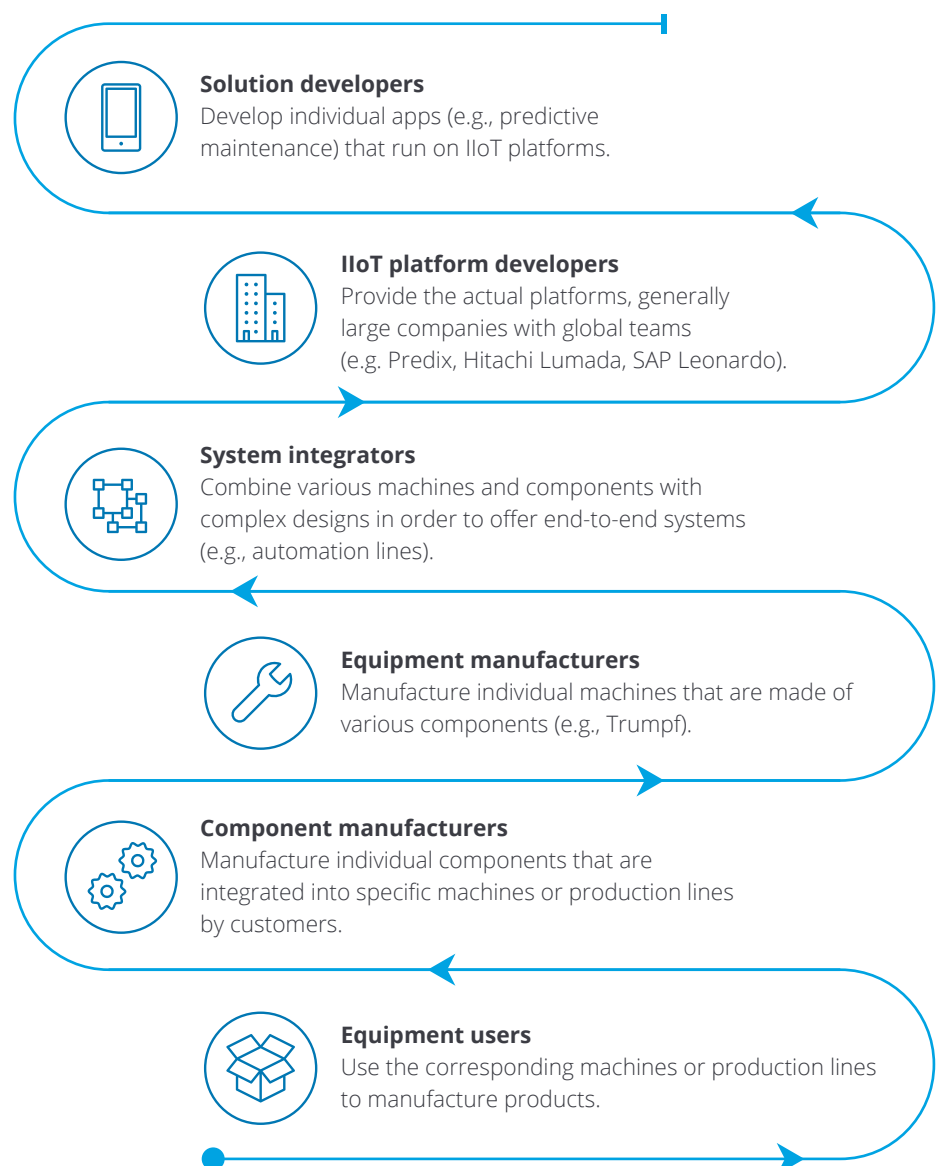
Opportunities and challenges

How digital services are changing the competitive landscape

There are two sides to the business in digital services for machine and plant manufacturers. Where there are massive opportunities there are also massive challenges. One of the biggest: industrial machine makers have to adapt to an entirely new kind of competitors. It is no longer necessary, for example, to have installed proprietary machinery in a particular plant to provide digital services for that customer.

As this diagram shows, we differentiate between six key players in the competitive landscape. For machinery manufacturers interested in offering digital services for plants and machinery, the question is: "Who is my real competition?" As with all of these digital offerings, that leads to a second question: "Who would be a good partner to offer these services on our behalf?"

Fig. 8 - Relevant eco-system players for digital services in machine and plant manufacturing



There would typically be three main competitors for traditional industrial machinery makers:

- **Customers that avoid paying for service:** They ignore or skip recommended maintenance intervals. This applies above all to smaller and more cost-sensitive customers, as well as certain kinds of machines that customers will tolerate being down for a short period of time.
- **Customers that handle their own maintenance:** Some customers, those from the chemical industry for example, see plant maintenance as one of their own core competences. They take care of a lot of maintenance tasks with their in-house teams.
- **Independent service providers:** As a rule, they can offer services at a lower price and arrive on site faster than the manufacturer's technicians.

The competitive landscape is a lot more complex for digital services. If a manufacturer wants to offer predictive maintenance solutions, for example, these are the types of competitors they will face:

- **Parts manufacturers:** More and more component manufacturers are developing their own digital service solutions. ABB[®], for instance, offers digital solutions for equipment with their parts installed. This gives customers the impression that the manufacturer's components are installed in a variety of different machinery and that they therefore understand critical maintenance issues across machine manufacturers.
- **Software companies:** Large companies from the software industry, like SAP or Oracle developed predictive maintenance solutions some time ago and have hired sector experts to handle their implementation. Thanks to extensive expertise in the methodology used for data preparation and analysis, these companies can often identify error patterns without being deeply involved in machine-specific problems. That said, without any specialist knowledge at all, these algorithms rarely work.

- **Sector-specific start-ups:** In the past 24 months, we have seen more and more founders starting companies in the area of predictive maintenance – most of them in the US. A lot of these start-ups specialize in specific problems of certain industries and are therefore well-positioned to attack established players. Prominent examples of this are Uptake, Konux, C3IoT or Presenso, which offer software solutions that help customers to predict the optimum time for maintenance.
- **Other machine manufacturers:** Since it is not necessary for them to have installed the equipment, machine manufacturers are increasingly directly challenging their competitors in the area of digital services. Elevator manufacturers, for example, can make recommendations for maintenance using sensor technology, regardless of whether they built the elevators themselves or one of their competitors did (such as Otis, KONE or thyssenkrupp Elevators).

- **Customers:** Finally, the customers themselves are becoming important competitors in the lucrative service business. This applies especially to large companies that have developed their own maintenance solutions to avoid becoming dependent on individual suppliers.

The list of competitors in the service space shows that machine and plant manufacturers looking to gain relevance in the area of digital services will have to offer their customers significant added value versus the competition – often, having in-depth knowledge of the units they installed themselves is no longer enough.

But what can industrial machine makers do to succeed in this new competitive environment? Examples of successful and less successful companies underscore the critical relevance of four success factors:

- 1. Develop a master plan:** All too often, companies develop their digital services as standalone solutions without including all of the relevant departments in the process. Creating a holistic plan should therefore be the first step.

2. Invest early: No one can develop a digital service offering overnight. Machine and plant manufacturers have to (a) define the digital skills they need at an early stage, and (b) recruit experts that can cover these skills.

3. Don't reinvent the wheel, work with partners: For a lot of companies, it simply isn't possible to deliver a digital service solution with the right quality and at the time the market needs it. Especially when it comes to technologies like virtual or augmented reality or machine learning, there are a lot of companies that are interested in partnering with machine and plant engineers.

4. Get creative with your customers: Customers should be involved at an early stage in the development process for digital services. A lot of companies do not yet have a clearly-defined digitalization strategy and are very interested in working with their suppliers to fill that gap.

A look into the future

The industrial machine manufacturing sector is undergoing massive change. A lot of the technologies and organizational changes that are gaining relevance through digitalization represent both opportunities and challenges.

That is why taking a pragmatic approach to the valuation and implementation of digital technologies is so critical for success. It will be crucial for companies to remember to think about “the day after tomorrow”. Although some technologies are initially launched in isolation, the critical issue over time will be how to link everything in an intelligent network. Combining the most relevant technologies will allow us to define the lifecycle of the machine of the future. An example from the area of automation shows what that lifecycle could look like in four to six years:



In R&D ...

Qualified engineers – just like service technicians – are getting harder and harder to find, but we could soon see a series of technologies emerging that would significantly reduce development effort. In the future, R&D teams will leverage the sophisticated analysis of data from installed machinery to design new machines focused on improving customer benefit. A cockpit with artificial intelligence will support the process and a shared communication platform will keep the company in constant contact with its customers. That will enable the R&D team to work closely with the customer’s own technical planners and make it easier for the workforce on the production line to address – and solve – any service issues that come up. As a result, the machinery will be better aligned with the customer’s requirements, staff on both sides will make better use of the platforms and, most important of all, manufacturers can reduce their development timelines.



In Sales ...

Particularly in automation projects, it is often difficult for customers to imagine how a new system will work in practice at their facility. Enter the “Digital Twin” – which allows users to simulate situations throughout the machine’s overall lifecycle, from linking to the overall production system via virtual commissioning and identifying vulnerabilities to offering update and upgrade options. Using a virtual reality headset, the key account team can show the customers how well the new machine will fit into their production facility and discuss ways to make their production processes more efficient.



In Operator Training and Technical Support ...

In future, staff from the customer facility will also be able to take part in initial virtual training workshops using the Digital Twin – weeks before the machine is even delivered. The service agreement based on an operator model will have a clause that requires any staff working on the machine to be certified by the machine manufacturer.

When plant operators start their shift, facial recognition technology on the machine will identify them and provide all of the information and tips they need for their shift, which can even be customized to suit his or her way of working, e.g., there is a corrective maintenance procedure scheduled for today that will take this equipment offline for two hours. The operator obtains all of the information he or she needs in the VR headset and can ensure the process runs smoothly.



In After-Sales-Service ...

In the future, predictive maintenance systems will identify service needs long before an actual failure occurs and ensure corrective measures are planned in an optimum way. After all, machine downtime costs money – particularly when it's unplanned. Vibration sensors can detect when one of the rolling bearings becomes loose many weeks before the machine fails. The manufacturer's service platform will alert the customer that a service appointment is due.

If any benchmark reaches a critical level, the service platform initiates the service process. It determines the extent of the maintenance work to be done and orders any replacement parts that are required – but not before checking if it would be cheaper to order a spare part from a third party or make it in a 3D printer. The platform then triggers the corresponding process in the production planning tool, increasing cycle times to pre-produce enough parts over the next three weeks to ensure that the machine maintenance does not have a knock-on effect on output for the production facility as a whole.

On the day that the repairs take place, the plant operator knows precisely what to expect. Two days earlier, he went through the repairs process in detail with the manufacturer's service technician and used virtual reality to visualize all of the potentially critical issues. During the same period, the service technician studies the machine's data analysis records and discovers that the on-site maintenance team is not always following best practices. This had already been reported to the customer twice previously, but apparently they had not implemented the necessary changes.



Conclusion

Digitalization looks set to give after-sales service in the machine and plant manufacturing sector a new lease on life. As customer demands grow, many machinery manufacturers are recognizing the earnings potential of after-sales service and finally giving the topic the attention it deserves. This will require, as a logical consequence, serious investments to secure the future for after-sales service.

The only way to exploit the full potential, however, is to closely link new machine sales and after-sales service with digital infrastructure and ultimately create added value for customers. At the end of the day, no customer would be willing to pay even one euro for its supplier's digital transformation – it is the concrete financial benefits for their own company that will drive the willingness to pay for after-sales service.

Notwithstanding the many opportunities associated with technological advancement, it is important to keep one thing in mind: no innovation purely for innovation's sake. New technologies and service packages can only be considered relevant if the business case is clearly positive.

While some innovations are destined to remain a perfect pipe dream in a marketing brochure, others can generate measurable business value in a relatively short space of time. And that is what matters: the only thing that will make customers willing to pay a premium is when they can obtain real added value.

This is why industrial machine makers need to remember that digitalization and digital services are only one part of the solution. They need to be integrated into an overarching service strategy. Only if the overall service offering is geared to the customer can the individual elements of the solution make a meaningful contribution – a contribution towards improving service for the customer.

In the next chapter, you will discover how machinery manufacturers are developing ambitious but easily workable strategies for after-sales service that optimally link digital elements with analog elements to generate sustainable growth.

Monitor Deloitte Service Excellence

Service transformation

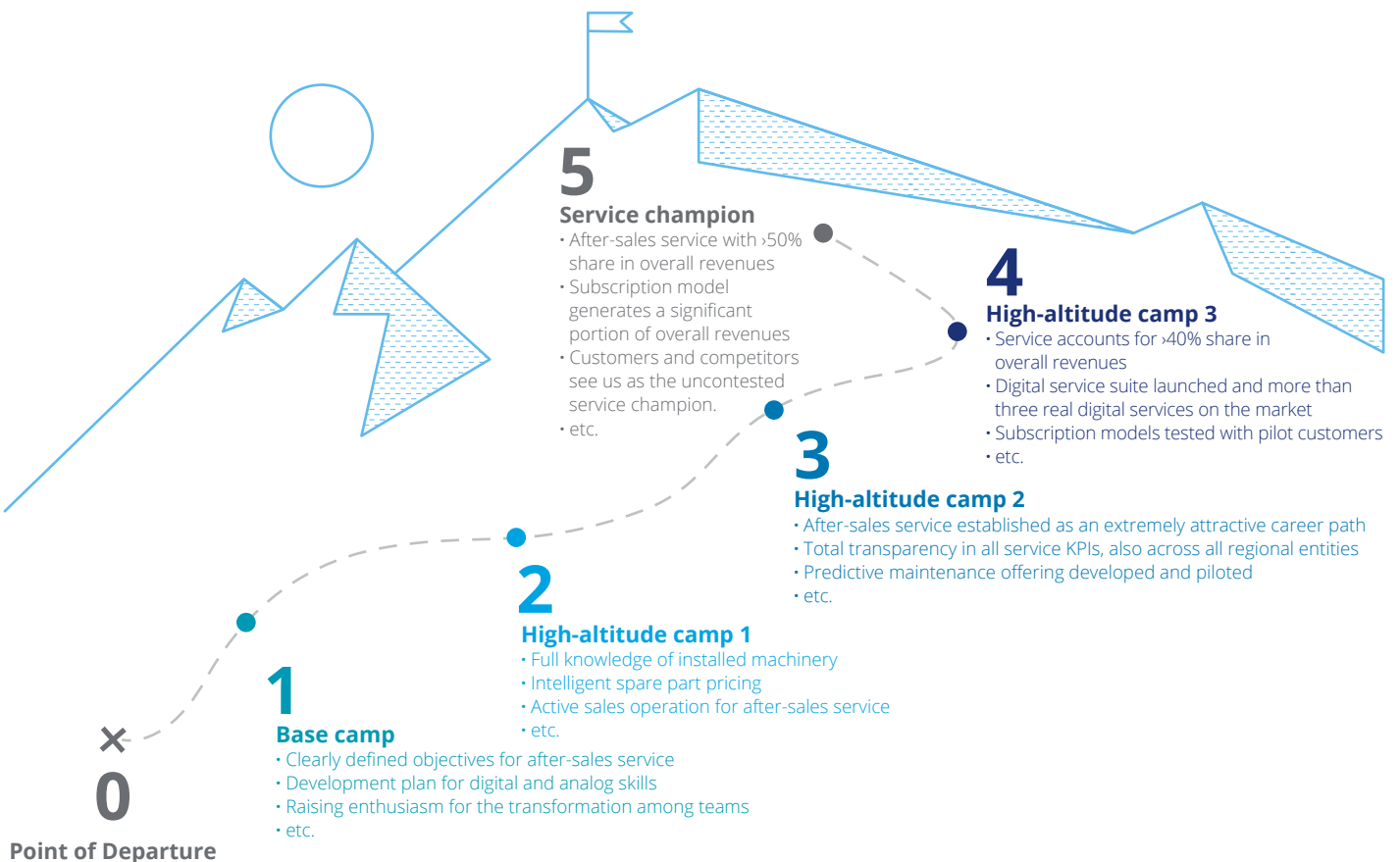
Providing top-level service is never the result of a single ingenious act. On the contrary: successful service organizations are created over many years of continuous improvement. The decisive issue for the continuous improvement process is having a development plan that you reevaluate and adapt on a regular basis.

Just like the first climbers to summit Mount Everest, after-sales service teams need planning, timing and strong will to make it to the top. The only way to reach the peak

is to take the journey in stages. Whether you are setting out to climb a mountain or introduce a new after-sales service package, the first step is a thorough medical check to make sure the “summitteers” are fit enough for the climb – the so-called “Point of Departure” – and a detailed plan of the route”. It will be completely different for every summit and every company, but you need to make sure it is as detailed as possible. The better the roadmap, the more reliably you can plan your path to the summit.

The next steps are more dependent on logistics: you need to locate, build and supply one base camp after the other before you can set off on the next part of the trek. Future service champions never take on the entire mountain all at once; instead, they take a step-by-step approach to each stage on their way to the top. The fact that the first few stages are quite doable makes it feel easy at the start; it isn’t until you get a bit higher that the more difficult sections emerge.

Fig. 9 – The path to becoming a service champion (project example)



How one European machinery manufacturer will summit the service peak

The board of directors of one Europe-based industrial machine maker formalized their objective: they wanted their firm to offer the best after-sales service in the entire industry and to generate half of its revenues with service tasks. This goal turned into a concrete vision statement: to become the uncontested service champion within three years and to implement all of the relevant digital technologies to make that happen.

They used the vision statement as a basis for their detailed roadmap – the path to the summit as described above. The individual milestones (“high-altitude camps”) reflected the needs of the customers and the company. In this case, it was essential for the roadmap to involve a wide variety of departments and regions. Everyone was called to provide honest support for the plan in order to build enthusiasm for the implementation phase.

Base camp: “Securing the sanitation facilities”

A pragmatic evaluation of the status quo was quick to point out: the company was miles away from becoming a service champion in some areas. They were not sharing some information between divisions, they were not using existing technologies to their full potential and the after-sales service concept did not even play a role in new machine sales. So, the first objective was to address precisely these issues and to ensure they were implemented in every region. This was seen as a necessary foundation to leverage additional – and above all more complex – optimization measures later on.

Among other things, the list of initiatives from this first phase included worldwide standardization of the service agreements and portfolios, the provision of customer-oriented and cost-optimized services using a state-of-the-art operator model, and recruitment for the corresponding staff throughout all regions.

High-altitude camp 1: “Achieving the first milestones”

During the three-year transformation plan to become a service champion, the enterprise made sure not to overwhelm the finances or the teams, which is why most of the measures implemented in the first 12 to 18 months were not aimed at being the best in the industry right from the start. Instead, most of these measures were more focused on catching up to the competition.

High-altitude camp 2: “Achieving the second milestones”

The initiatives in this phase included rolling out a successful pilot subscription package complete with a scaling strategy, a fully developed predictive maintenance solution, minimum 30 percent share of the after-sales service market for its own machinery and systems, as well as a service IT platform that is fully integrated into the company's ERP and CRM systems and offers a real-time cockpit for all service teams.

High-altitude camp 3: “Achieving our goals for 2023”

While becoming a “service champion” was the actual summit, it was still important to define concrete initiatives that could be achieved in approximately 36 months. This final “high altitude camp” provided the foundation they would need to tackle the peak. If everything goes to plan, the company will be ready in two years to embark on its final climb to the summit.

Some of the initiatives of this final phase are as follows. Firmly establishing a subscription model that beats all of the competition on this market. Making its predictive maintenance solution the market leader and adaptable for machinery from other manufacturers as well. And last but not least, transforming after-sales service into one of the company's “star performers” that is firmly embedded in the corporate culture and recognized as a prestigious service in line with its contribution to the bottom line.

There is one particular way that becoming a service champion differs from summiting Mount Everest: while Mount Everest has been an iconic symbol of the Himalayas for millennia, the service summit keeps on changing. What remains is a constant challenge that you can never stop trying to master.

The Service Cascade

Every service strategy starts with a holistic concept of after-sales service that succeeds in cleverly networking traditional and digital technologies to create measurable benefits for the customer.

The Service Excellence Cascade is Monitor Deloitte's structured approach to developing service strategies and putting them into practice. This process begins by setting ambitious yet realistic objectives for the after-sales service team. The final step is the in-depth worldwide implementation of a service concept focused on the customers' concrete needs.

After-sales service weds the unique expertise of an industrial manufacturer with the specific needs of the customer. That creates value!

- **What is our winning aspiration?**

Should after-sales service account for 40 to 50 percent of sales in the future or would 10 percent be enough?

- **Where will we play?** Should all of our service be on offer in every country in the world, or only in certain areas – e.g., in countries where the number of installed systems reaches a specific threshold? Do we want to offer services only for our machinery or also for the competition or perhaps even for entire production facilities?

- **How will we win?** What services should we include in our portfolio and which business model would be best for each service? This is the money question, which ultimately comes down to this: what is the added value we can offer and how can we convince the customer to pay adequately for such benefits? And most importantly from the customer's point of view: what are we offering our customers that sets us apart from all of our current and future competitors? How can we put our customers in a position to generate more profits at least in part due to our unique service offering?

- **What capabilities must we have?**

What infrastructure do we urgently need so that we can offer our customers the service portfolio we envision – at the right time, in the quality we are striving for and at our target cost?

- **What management systems do we need?** What does our detailed roadmap look like if we want to implement all of the measures in our PowerPoint presentation and to turn them into cash? And above all: how can we track the success of each of these initiatives?

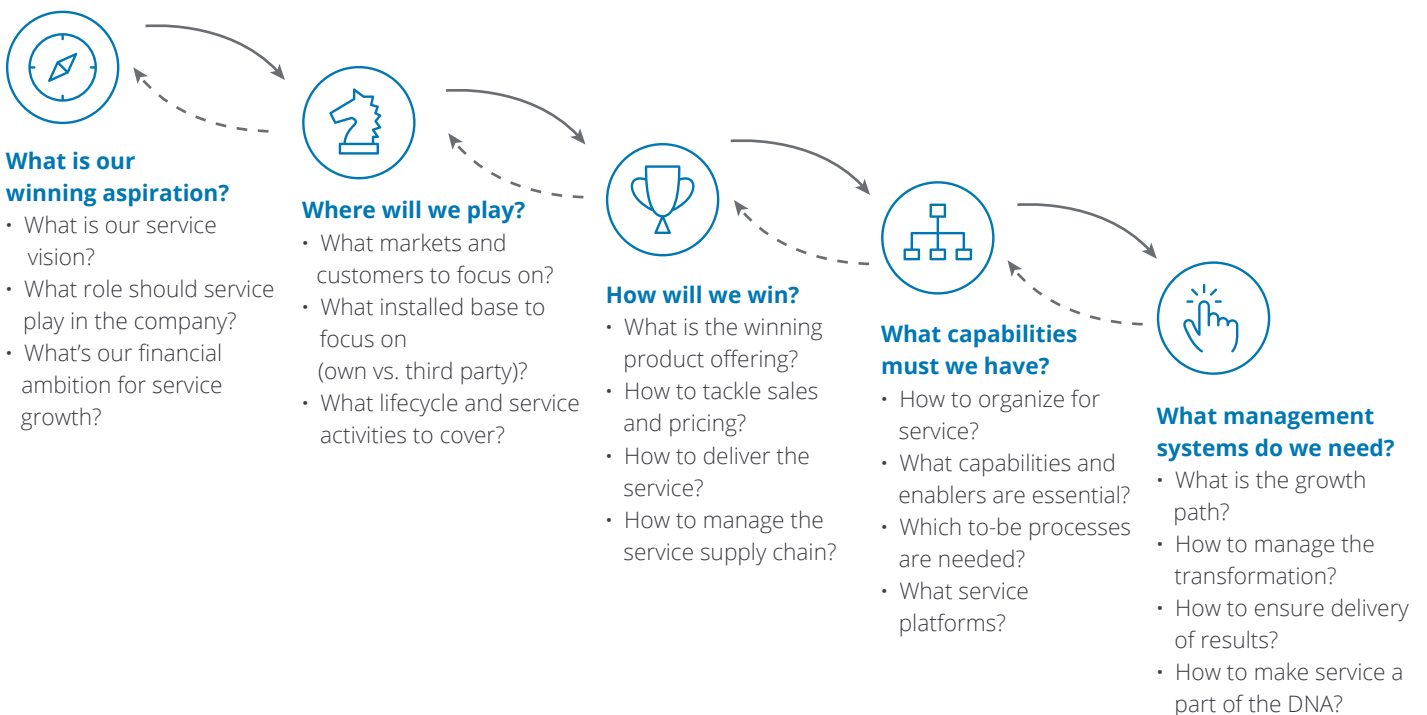
Service in machinery manufacturing has always been the most important, yet most underestimated and frequently forgotten profit champion. Thanks to the opportunities presented by digitalization, we can finally “remove the shackles” and exploit this untapped potential. As a result, a lot of machinery manufacturers will see their after-sales service transformed from a problem area to a decisive factor not only for profits, but also for customer satisfaction, improved machinery, new earnings potential and an attractive career path within the company.

It's time to act now – seize the opportunity that digital transformation can offer your service team and your entire enterprise!

“Defining a clear-cut strategy for customer service is crucial. However, manufacturers are often tempted to pursue every single available opportunity at once. They would be well-advised to first do their homework and gain transparency about the status of their installed base before making the transition to a subscription service model.”

Oliver Bendig, German After Sales & Industrial Manufacturing lead at Monitor Deloitte

Fig. 10 – Monitor Deloitte Service Excellence Cascade



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Endnotes

1. Andrew Tanner (Global VP Customer Service), Pratt & Whitney, in an interview with The Economic Times, 2015, available at <https://m.economictimes.com/industry/transportation/airlines/-aviation/pratt-whitney-to-focus-on-powered-by-hour-business-model/articleshow/48908789.cms>, downloaded on October 17, 2019.
2. Kaeser Compressors, Compressed Air Resources, available at <https://us.kaeser.com/compressed-air-resources/>, downloaded on October 17, 2019.
3. GEXSO, Global Excellence in Supply Chain Operations Study 2017 – After Sales Service in the Manufacturing Industry, available at <http://gexo.com/en/study-supply-chain/>, downloaded on October 17, 2019.
4. Heidelberger Druckmaschinen, Heidelberg Subscription Model, available at <https://heidelberg-subscription.com/>, downloaded on October 17, 2019.
5. Billwerk, Subscription Based Services, Page 7, April 2019.
6. Hyun-Shin Cho (Head of Digital Transformation), thyssenkrupp Elevators, in an interview available at <https://diginomica.com/thyssenkrupp-elevators-gets-a-lift-from-digitalisation-with-microsoft-azure>, downloaded on October 17, 2019.
7. Heidelberger Druckmaschinen, Performance Analysis for Heidelberg Subscription Model, available at <https://heidelberg-subscription.com/>, downloaded on October 17, 2019.
8. ABB, Advanced Digital Services Brochure, available at <http://search.abb.com/library/Download.aspx?DocumentId=9AKK197306&LanguageCode=en&DocumentPartId=&Action=Launch>, downloaded on October 17, 2019.

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