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CREATING VALUE FROM DATA

Identifying digital service
opportunities to unlock business
potential in the digital age

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1 EXECUTIVE SUMMARY

The pervasive spread of digital technologies in recent decades brought a significant boost in data availability, offering myriad opportunities for data-driven innovation in business models. Opportunities that remain largely untapped, however, as many companies lack the knowledge and processes to translate data into attractive propositions and create real added value. While incumbent and newly emerging competitors threaten existing business models, traditional companies struggle to develop new data-driven services and offerings.

The reason? Companies often face a mountain of unstructured data, tangled data streams, and scattered data sources. Moreover, many companies struggle to identify digital service potential and implement new offerings into their traditional service landscape.

That is why a solid data strategy is critical as it will reveal what kind of offerings and business models are suitable and ultimately decide how a company wants to position itself and

its data-driven services. Developing a comprehensive data landscape is an essential tool for crafting a successful data strategy. Mapping out data reveals strategic data classes and provides guidance which types of data to focus on.

While the development of a data landscape shows specific potentials for new digital offerings, a digital services strategy identifies and evaluates potential service areas for investment decisions. Based on the service and data strategies, concrete offerings defined by outcomes can be developed and outlined, including business model and value capture.

Once the strategy has been formulated and digital offerings have been defined, an implementation based on a clearly defined roadmap is the final step.

This paper aims to shed light on how to best navigate the data jungle and emerge equipped with the tools required to unlock the potential of data-driven business models for your organization.

Benefits at a glance:
Formulating and implementing a data strategy enables organizations to better structure data, gain more insights, and make better business decisions.

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2 UNCERTAINTY AND FEAR OF ERODING EXISTING BUSINESS MODELS

A changing environment: Today data-driven enterprises are the high performers, the market is rapidly changing. To sustain a competitive advantage companies need to successfully adapt to the new rules of the game.

As data is not only transforming isolated markets but the entire world economy, it is also ushering in a new era of global competition with new players threatening established market divisions. Accordingly, the pressure on companies to capture the value embedded in their data is steadily increasing. Just 15 years ago, predominantly major energy companies and banks constituted the world's most valuable companies by market capitalization. Now the picture has completely changed. Today, digital giants from the US and China that have embraced data-driven business models dominate the top 10 list¹ and are generally rated far better by stock markets.

Although the first sectors to be disrupted were mainly in the B2C sphere, there are now emerging platforms in B2B industries that threaten traditional incumbents – Amazon expanding into the B2B e-commerce space being just one example. It is unsurprising, then, that companies are now looking for ways to implement data-driven offerings themselves or even transform entirely into a data-driven business. And although such a transformation doesn't always come easy, established companies have significant resources such as hard assets, brand recognition, global distribution, customer relationships, data, and decades of institutional know-how. What often holds them

back with ramping up data-driven offerings successfully is uncertainty on the specific value of data and internal processes, organizational structures, and mindsets that are more suited to their existing business.

Leveraging data to create value through new offerings requires new organizations, cultures, and processes that are integrated or run parallel to the existing core business. Often access to the necessary data is not available or requires time-consuming negotiations with customers and equipment operators. While this task is far from simple, it is still faster to

implement in the first place from a transformational point of view than leveraging data to optimize internal operations. The latter ultimately requires a complete change of the existing operating model across all business functions, including a profound culture and mindset adaptation. Although the data is more readily available, the overall complexity is higher than when discussing an add-on to the existing core portfolio. That is why this paper focuses on the potential of data landscapes and strategy for the evaluation and implementation of new data-based business models.

A new mindset: Clear vision and goals facilitate the shift in a company's culture toward data-driven by clearly outlining future plans and benefits.



3 DEPLOYING A COMPREHENSIVE DATA STRATEGY

Staying true to the core: While digital transformation requires change, a data strategy that's clearly linked to overarching business goals promises better results and helps to adapt to ever-changing market needs.

Successfully introducing a data-driven business on top of the traditional core business is possible for well-established companies. Going beyond some early trials and pilots, in our experience, requires a strategic approach, however.

Data can help extend the range of products and services or completely transform a business model. Strategically thinking about these options before innovating or designing core processes is imperative. Like all of a company's strategic moves, a data-driven business strategy should be motivated by the business, not the available technology. Accordingly, data-driven offerings need a direct link to the overall business strategy to avoid rushing prematurely into propositions that do not advance overall competitiveness. From our experience, companies tend to establish new offerings and processes that are difficult to retrospectively adapt to the existing core business when starting their digital journey without a clear strategic goal in mind.

Key lessons to learn for companies include:

- New and adapted operating models or businesses have an impact on the existing core business. They need to be understood before a procedure "at the heart of the company" can occur.
- Credibility and a right to play in a specific field are prerequisites for success. It is easier to gain if new offerings have a strategic fit with the existing business and strengths.
- Limitations of money and resources need to be managed to realize the best impact/return on investment. Having a strategic view or hypothesis

before jumping into action significantly helps to achieve this.

- New business models and offerings require new skills not yet available in a company. Hiring or training the right people at the right time requires a basic understanding of where a company wants to go and in what stages.

Transferring a business to a data-driven company must be strategized and conducted with a clearly defined target situation in mind. Data landscape and analysis usually yield several possible options for development, not all of which will result in viable use cases. A specific strategy may, for example, require a particular set of data outside the company's purview. Gaining access is more often a legal challenge than a technical one, but if it cannot be managed to procure the data, the use case cannot be implemented.

It is essential to set a clear business objective and create a framework outlining the organization's growth strategy that links in with the overall business strategy. If the purpose and use of business data are directly linked to the core business goals, then the outcome will likely be profitable data use cases. Where management and operators fail to map their available data use cases with actual business needs, even the best-planned strategy fails to yield the expected results. Also, keep in mind that data-driven offerings need to provide a concrete customer value-add (strong primary use case). While the collected data might be used to develop additional use cases later (secondary use – generally not known in the beginning), this should not be the initial main purpose.

In reality, this is often overlooked. The pressure to adopt new digital offerings and leveraging existing data often pushes companies to dive immediately into developing initial use cases, often co-created with a pilot customer and sold "as-a-service". That is why the terms "use case" and "digital services" are often used synonymously. While such proofs of concept (PoC) may regularly be a success from a technological perspective, they have proven difficult to scale and turn into a profitable business. The term "PoC hell" is sometimes used when describing this situation where PoC follows PoC, but substantial business success remains elusive.

Another pitfall often observed is a technology-driven approach, where use cases are developed purely because new technology is available or hyped-up trends need to be addressed. Blockchain is a prime example. The risks lie

in limited customer acceptance or value. Such offerings either insufficiently address their needs or a different approach would be superior – maybe because older technology is still more reliable, alternative methods are more straightforward, or a more organic fit to the problem. Besides, it might not fit the business strategy while at the same time creating new dependencies and an installed base that needs to be maintained for potentially very long periods of time.

We know that a structured and strategic approach is crucial for successful digital service integration. Both the data landscape of an industry and the strategic fit of potential data-based service areas need to be evaluated. This approach must be closely linked to a company's overall business strategy to increase its competitiveness.

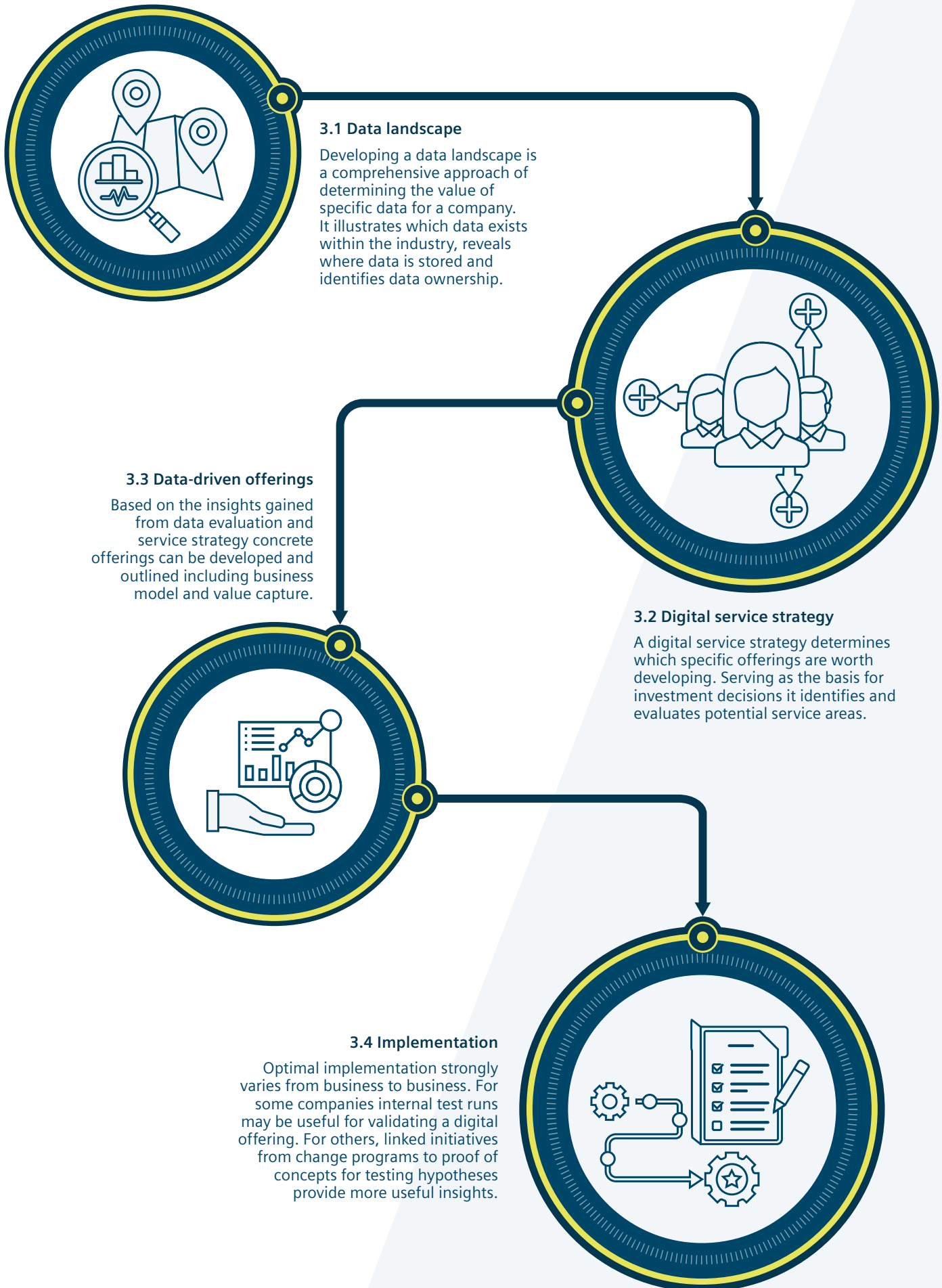


ETHICS: A NEW DATA PERSPECTIVE

The tsunami of data and the diverse world of internet-connected devices, 5G networks, machine learning, and artificial intelligence are ever-evolving. With these sophisticated possibilities comes a rising concern about using data and achieving data-driven business models' goals ethically. There is a definite need in the business scene for guidelines and principles, ensuring maximal utilization of the value of data while satisfying the highest standards for transparency and accountability at the same time.

Here, the main requirement is to go beyond the regulatory point of view (e.g., General Data Protection Regulation (GDPR)). It is also crucial to consider current case law and approaches applied in implementing emerging technologies in an informational environment that generates, transmits, processes, stores, analyzes, distributes, and actionizes data. A classic example of such capability is an analytics solution that provides more comprehensive consumer insights than traditionally available. In this context, an ethical and acceptable approach is necessary that not only demonstrates regulatory

compliance with GDPR, but also covers the ethics of profiling and predicting behaviors. This aspect is increasingly receiving attention from consumers and governments and, therefore, appears on the radars of regulators and policy-makers. Mainly due to technological advancements and their fast-paced development, the time has come for rules and frameworks guiding how to create and use data-informed insights supporting data-driven businesses ethically. Companies need to include ethical aspects of data collection and handling into their data strategy as well.





How to create value from data? A company's data landscape untangles complex data webs, reveals which data is relevant for business and uncovers potentials for monetization.

3.1 DATA LANDSCAPE

Data is fundamental to data-driven business models. Comprehensive knowledge and understanding of available data cannot, however, be presupposed. In reality, many companies already falter at this point, as closer inspection may reveal a complex web of unstructured data. Inaccurate, outdated, or misused information may result in misled initiatives. An in-depth analysis may also indicate that too little or a lot of unnecessary data is available. Finally, data can be scattered among many parties. For example, data about the capabilities, design, and production of a product often resides with its producer. In contrast, data related to its performance after purchase resides with its owner or operator.

How then to compile data into usable and actionable intelligence?

A methodology to derive a holistic data landscape reveals which data exists within the industry (vertically along both the customer journey and the

value chain) and where the information is stored, and by whom. Mapping potential offerings to the required data allows the identification of strategic data classes and their owners and, consequently, clarifies which types of data to focus on. This delivers one foundation for a fact-based discussion on the value of specific data for a company.

Creating transparency over data landscapes within the same company and in the market environment is crucial for developing a digital services strategy. Without knowing which data is available or needed, evaluating business potentials for digital services is impossible.

Besides looking at the data itself and its business-relevant aspects, data management and data governance need to be clarified when building a data-driven business. Therefore, companies need to address and answer the following questions when analyzing their data landscapes:

Data management

Data quality	How accurate is the data and how consistent? Is a data model that allows comparing related data from different sources implemented or available?
Availability & accessibility	Is all the data needed for an offering available and if so, is technical and legal access ensured?
Infrastructure & technology	Where is data stored and what are the technical prerequisites to access it?
People & skills	What competencies are needed? Can existing personnel be trained or does new manpower need to be acquired, maybe even through M&A?

Data governance

Responsibility & accountability	What roles are needed to ensure compliant handling of data? Who is responsible for what, who is ultimately accountable?
Legal & compliance	What is the legal framework? How to stay compliant? How to structure contracts with customers?
Security & privacy	How to ensure that data stays secure and customer privacy is not violated?
Culture & mindset	Which general culture and mindset needs to be fostered for a successful data business? How to drive the change?
Sustainability	How economically viable is storing every single piece of information owned for an indefinite amount of time?



3.2 DIGITAL SERVICE STRATEGY

If a data landscape development shows specific potentials for new digital offerings, establishing a digital services strategy completes the first analysis.

The purpose of a digital service strategy is to identify and evaluate potential service areas as the basis for investment in developing specific offerings. The focus is on analyzing potential services, how close they are to the company's core business, and where they fit into the customer's value chain. Services supporting the development of a customer's products, for example, are quite different from services supporting the operation of a customer's products. Similarly, services closely correlated to a company's products need to be separate from generic services that enrich the portfolio but are unrelated to existing offerings. Predictive maintenance and industry marketplace are both examples of service areas.

Once the service areas have been identified, they need to be evaluated in terms of potential strategic fit. The two main criteria providing clearest guidance, in our experience, are impact and chance of success.

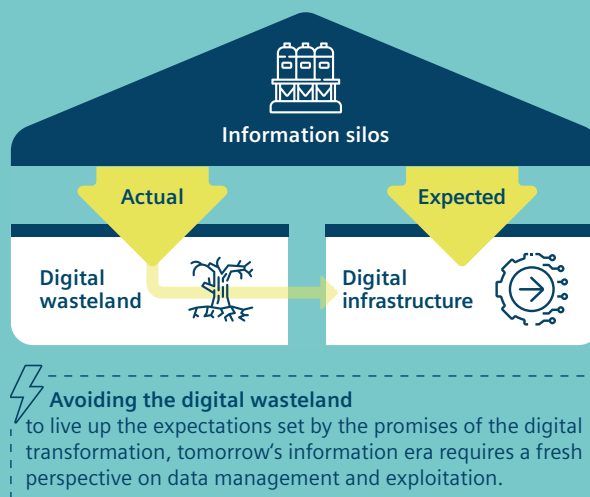
Impact describes the end value created both for customers and the company itself, e.g., through the data to which the company would get access. Chance of success requires a close look at available capabilities and the competitive landscape to check whether some other player in the value chain might perform the service better or if there is already a dominant established supplier.

Business modeling and value capture considerations are handled separately, often tied to the concrete offerings rather than being developed generically for complete service areas.

DATA FRUGALITY – KEEPING A CLEAN HOUSE

One component of a data strategy that should get more focus is data frugality. Not a new phrase in itself, but a concept that is gaining more and more traction as many organizations are beginning to see the disadvantages of the ongoing exponential growth of data. Most of the mainstream data exchange methodologies still rely heavily on replication and synchronization, which are examples of concepts built on the premise that storage and bandwidth are non-scarce resources. However, from both a sustainability and complexity point of view, the opposite is true: More data – and therefore an increase of data processing and exchange – will require more energy and make matters more complicated. Either way, the equation of not aiming for data frugality soon becomes problematic with

many mission statements and digital transformation initiatives, and therefore should be handled accordingly.





3.3 DATA-DRIVEN OFFERINGS

Once both the data and service strategy have been elaborated, concrete offerings based on the outcomes can be developed and outlined, including business model and value capture.

One crucial aspect is the differentiation between primary and secondary use cases, especially when the main question is about creating value from data. There are many examples in the market about use cases that generate a lot of value from data not foreseen when the use case was initially developed. It is a common pitfall to set out either searching for such "money fountains" or developing offerings with the accumulation of data as the primary purpose and hoping that somehow this data will magically enable thus far unknown – but highly profitable – use cases.

That rarely works in our experience. Use cases should be defined from the get-go by a clear customer value and business model – the primary use case. If a company is lucky, then the gathered data might allow further usage and monetization – the secondary use case.

Another critical factor, especially in this stage, is the consideration of all stakeholders. Use case ideation and development usually require cross-functional teams spanning numerous disciplines, such as finance, IT, sales, and R&D.



EVALUATING THE CONCRETE VALUE-ADD OF NEW DATA-DRIVEN OFFERINGS FOR YOUR CLIENT IS CRUCIAL FOR SUCCESS.



3.4 IMPLEMENTATION

Once the strategy and digital offerings are clear, it becomes all about implementation and execution excellence. Each company's journey is unique here, as it depends on existing capabilities, specific needs, and industry particularities.

Companies may try new offerings in-house first before turning to potential customers. Another option is to start a series of linked initiatives, such as a complete change program or a series of proofs of concept for testing hypotheses and gaining insights.

Research suggests that one of the most prominent inhibitors in data-driven business model implementation is personnel issues². This is why promoting a data-driven culture is essential for successful implementation. A company's management team's mindset should reflect the change toward a data-driven

approach, embracing concepts including value-add through data, different business models or revenue streams, and launching numerous initiatives in parallel. Clear responsibilities need to be defined. Furthermore, data governance and management need to permeate a company's business processes. To achieve this objective, new competencies may be required. These might be hard to find considering the stiff competition amongst companies for talent.

While each company has some of the needed skills in-house and many have already taken their first steps toward data-driven offerings, we have found that a holistic approach utilizing external competencies where needed is an essential enabler for successfully creating business potential from data.



4 CLIENT STORIES



4.1 FINDING THE RIGHT STRATEGY

A successful MedTech company searched for new business opportunities to generate an additional revenue stream through new digital business models. Up to that point, the company's business had mainly focused on high-tech medical devices. As the healthcare industry is undergoing a period of significant change with many digital solutions and services on the horizon, healthcare data holds great potential for all included parties such as patients, healthcare providers, payers, and physicians.

However, significant challenges in leveraging this data include the fact that it remains mostly unstructured (80%) and stored in hundreds of forms such as lab results, images, and medical transcripts³. There further exist various control points for data ownership in the landscape. Of the six generic data classes identified – device data, asset data, process data, clinical data, standards/laws, and behavioral data – the company had access mainly to device data from their own offering and some clinical data

acquired from partners. Existing and newly emerging competitors (e.g., tech giants, pharma) already own control points or are moving to acquire them through patient consent for data ownership or ownership of key infrastructure.

Potential strategic options for healthcare players were identified as lying in data collection, aggregation, or application development with different flavors depending on the selected focus area. After an immersive process of identifying data types, internal and external data owners as well as access options to data (e.g., data is owned, can be made accessible through partnership or acquisition), the team identified a suitable strategy, taking into account the large installed base of the MedTech company as a lever to create new digital business models based on generated data.

As a result, the MedTech company was able to define appropriate strategic moves to position itself successfully within the competitive data landscape.

ANALYSIS OF AVAILABLE DATA CLASSES:



Device data

Technical access for company produced devices only, limited use rights, no ownership of data



Asset data

No technical access, no use rights, no ownership of data



Process data

Access to some customer data, limited use rights, no ownership of data



Clinical data

Access via collaboration, limited use rights for de-identified data, no ownership of data



Standards / laws

Accessible although only partially digitized, use rights via licenses, no ownership required



Behavioral data

No access, use rights or ownership



4.2 FROM STRATEGY TO IMPLEMENTATION

A traditional, internationally operating electronics business wanted to optimize its existing product portfolio. The threat posed by substitutes and competitors outside their current competitor landscape was one of the main catalysts. Identifying concrete use cases to gain access to data and monetize it to create fast data-driven revenue was another strong management ambition.

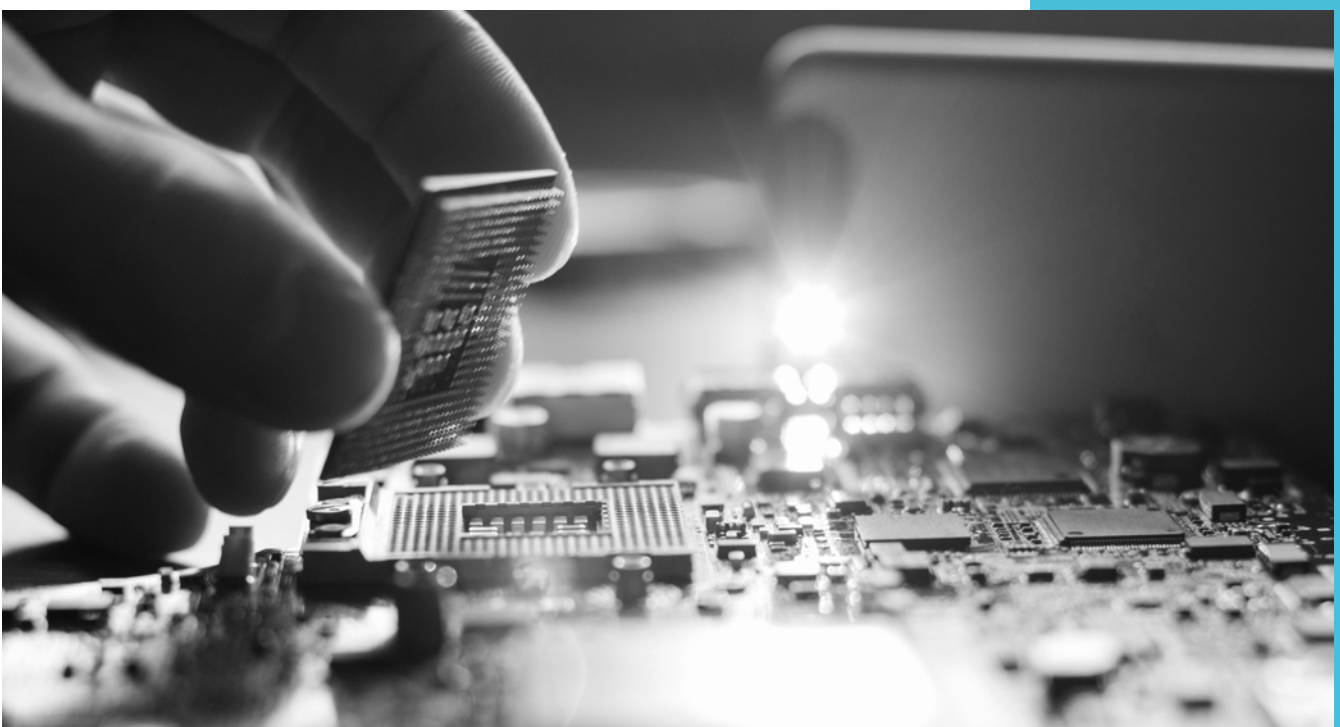
Major hurdles in achieving this ambition lay in the lack of a strategic basis and insufficient knowledge about which data was genuinely relevant. The team defined a strategic target picture within the related industry, including strategic control points. As a basis, a myriad of data types was identified and

complex data landscapes along industry value chains mapped out, enabling the identification of numerous data-driven use cases. The multiple data-driven initiatives and use cases already ongoing within the organization now garnered focused management attention. Examining the various possible playing fields as illustrated in the data landscape in joint workshops led to the identification of over 100 potential use cases.

As a result of the team's assessment of all cases, the most promising use cases were further detailed and are currently being implemented.



Uncovered: The company's high potential for data-driven business was untapped. An in-depth analysis identified more than 100 possible use cases.





5 KEY RECOMMENDATIONS: HARNESSING THE POWER OF DATA

Discover your potential:
A comprehensive data
strategy will guide you
in your transformation
toward data-driven
offerings.

For companies old and new in nearly every industry, a data-driven approach is rapidly becoming a strategic imperative, one that can make or break a company's ability to retain customers, grow revenue, and maintain a competitive advantage. For traditional businesses, a data strategy is an essential prerequisite and key to establishing data-driven services. In many cases, progress without a specific use case in mind, or data initiatives have been limited to individual units rather than focusing on the organization's core. However, a successful move toward a data-driven offering requires a direct link to the overall business strategy, and data-driven offerings need to provide tangible customer value add. A comprehensive strategy must be mapped out before starting the transition process to ensure that the focus on overall competitiveness is not lost and to maximize the value add that data can provide.

Deciding which data is most applicable and the nature of that data's acquisition – access to required data is vital – is pivotally critical to the success of data-driven business construction and broadening of the digital services portfolio. To make an informed decision, analysis of

the data landscape and data transparency is fundamental.

Data can be utilized most effectively when there is a clearly defined target. Starting out by having a clear goal on your value and to whom you will be offering it will help.

Achieving your goal may require a multi-faceted, cross-functional approach. Set up your roadmap for implementation accordingly. Keep in mind that cross-functional teams are needed analogously, and new competencies may be required as well. Where applicable, validate your offering in an in-house implementation before bringing it to market.

Such change processes typically necessitate a shift in mindset toward a data-driven culture where data governance and management become an integral part of a company's business processes.

Each journey toward a data-driven business is different and unique. A competent partner and robust ecosystem can help kick-start your digital journey – by accompanying you along the entire process from defining a successful data strategy to implementation, or only by filling gaps in capabilities.

ABOUT SIEMENS ADVANTA

Siemens AG (Berlin and Munich) is a global technology powerhouse that has stood for engineering excellence, innovation, quality, reliability and internationality for more than 170 years. Active around the world, the company focuses on intelligent infrastructure for buildings and distributed energy systems and on automation and digitalization in the process and manufacturing industries. Siemens founded the new business unit Siemens Advanta on April 1, 2019 with its headquarters in Munich, Germany. It has been designed to unlock the digital future of its clients by offering end-to-end support on their unique digitalization journey. Siemens Advanta is a strategic advisor and a trusted implementation partner in digital transformation and industrial IoT with a global network of more than 8,000 employees in 19 countries and 89 offices. Highly skilled and experienced experts offer services which range from consulting to design & prototyping to solution & implementation and operation – everything out of one hand.

Further information is available on the internet at www.siemens-advanta.com

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THANK YOU

To all contributors for their time and insights.

ABOUT ATOS

Atos is a global leader in digital transformation with 110,000 employees and annual revenue of € 12 billion. European number one in cybersecurity, cloud and high performance computing, the group provides tailored end-to-end solutions for all industries in 73 countries. A pioneer in decarbonization services and products, Atos is committed to a secure and decarbonized digital for its clients. Atos operates under the brands Atos and Atos|Syntel. Atos is a SE (Societas Europaea), listed on the CAC40 Paris stock index.

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