INTELLIGENT BUSINESS TRANSFORMATION

Digital economy, digital business, and digital transformation are not just trends of the future, but a new reality to which modern business in general and businesses themselves are committed. This raises the question of how to actually apply and use modern innovations in business. Case study participants will have to understand the latest technologies and develop a scenario and business model for a new service based on SAP Leonardo services that will increase productivity and have a positive effect on the company's business.

SAP

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Introduction

The head of the Retail Customer service department Mike[1] had just recently returned from Orlando, where the largest annual SAPPHIRE NOW conference had been held. This major SAP event had been attended by more than 20,000 customers and partners, the primary focus of which was, as expected, the digital transformation and technologies from SAP Leonardo. The exhibition was really awe-inspiring; the concept of intelligent interaction between people, things and businesses of the next generation was brightly and dynamically demonstrated. On top of that, naturally, the event was filled with exciting examples of applying the latest technologies in various fields - industry, manufacturing, FMCG and retail, transport and energy, medicine and construction.

With his morning cup of coffee, Mike went to a small corporate library in the lobby of the SAP office on the eighth floor - alongside the business literature on the shelves were the outstanding works of Toffler, and the works of Strugatsky and Azimov. "Well", Mike turned to an imaginary collection of science fiction writers and futurists, "Looks like your 'future' is here." After all, at some stage in the last century almost all these amazing technologies had already been described in one way or another, and nowadays we are already living in the same era of digital transformation. Without exaggeration, SAP is at the epicenter of the modern technological revolution.

Mike, in turn, was someone who had a direct influence on the digital transformation in Russia. The decisions made by his team have already helped many Russian companies make significant technological breakthroughs and now, he was ever more confident that the variety of services that had been presented at the exhibition is exactly what can now be offered to Russian companies to redefine their processes.

Today, the automation of processes and the reduction of financial and labor costs is commonplace in any business, in other words, companies try to optimize costs and increase revenue. The opportunity to do exactly this is provided by SAP Leonardo[2]. For instance, the innovative portfolio of SAP Leonardo IoT[3] makes it possible to mobilize data to transform business processes, as well as allowing for the development of new digital business models. Machine Learning will enable businesses to complement and automate repetitive tasks and open up entirely new types of digital innovation by examining data. The opportunities provided through this data will also assist in searching for new revenue streams, attracting new customers or improving existing business opportunities. The Internet of Things and machine learning, as well as other technologies, in turn, help to form an interconnected digital network of people, enterprises and things, in which the security of complex transactions is enabled through Blockchain technology.

Mike recalled some of the examples presented at the exhibition. For example, a solution for retailers and shopping centers, allowing one to navigate inside shopping centers, collect analytics about the movement of visitors and carry out marketing communications linked to cutomers' real-time location. Another example is tracking the precise work location of employees and equipment at enterprises, which makes it possible to conduct the monitoring, control, and optimization of technological processes.

These innovations have possible applications in all spheres of activity: mining, processing, food industries, logistics and transport, financial sector, insurance, energy and construction. As a result of incorporating such innovations, production facilities will increase the efficiency of design processes, will be able to more efficiently manage industrial equipment and logistics. People,

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[1] The characters are fictitious, the data might be changed for confidentiality reasons

[2] https://www.sap.com/products/leonardo.html, key technologies: machine learning, Blockchain, Data Intelligence, Big Data and Internet of Things

[3] IoT - Internet of Things

Introduction

businesses, machines and algorithms can freely interact and communicate with each other. This is the future.

Now, after the conference, Mike was full of enthusiasm and began to analyze the clients who could be presented with SAP Leonardo. Mike was confident that there are many companies that need new technologies among the larger customers. However, he decided to start with a small company, where maximum results can be achieved in a short period of time, by avoiding lengthy coordination and formal processes.

After a quarter of an hour he had chosen the dynamically growing company that sells the personal portable urban transport MyWheel[4] across Russia – an average enterprise, whose management has always pleasantly surprised him with their willingness to take advantage of opportunities that open up. He himself was a supporter of creating accessible and environmentally friendly ways of transport, and sincerely wanted a young but promising company to grow dynamically and develop.

He had a meeting with one of the company's top managers the following week, and this meeting was an ideal opportunity to present an innovative solution.

However, no matter how remarkable the portfolio of SAP Leonardo is, it is impossible to offer all the advanced technologies to the average business at once. With that in mind, it is necessary to choose the solution that is needed by the particular enterprise before meeting with the client. The main condition for choosing the direction of digital transformation is that the applicability of solution should be justified from the point of view of the economy and the future development of the company.

Here, the specifics of the industry as well as the company must always be taken into account. In enterprises where mass production is important, the main focus of digital transformation will be aimed at reducing operating costs, improving the level of quality and speed of supply to the end user. For enterprises that manufacture or sell special or unique products, digital technologies will first of all allow the development of products that better meet customer needs.

Mike took a pen and formulated the goal in his diary: identify the possibility for digital transformation in the company and offer the best solution from SAP that can be implemented in three years. Below he made a list of the tasks that he will present to his team during the meeting on Monday:

1. Analyze the five SAP Leonardo services and choose one that is most relevant to MyWheel's problems and processes

2. Based on the analysis of SAP Leonardo services, develop a scenario and business model for a new integrated S/4 HANA service. Describe how integration with processes in the company will occur: to offer a service architecture.

3. To assess the efficiency and profitability of the new service and business model, what effect to the business the customer will receive.

4. *** Present a prototype of the interface in SAP BUILD[5].

Separately, Mike noted that it is very important to consider strong arguments in favor of the chosen solution – at the first meeting with the client next week it is necessary to present a maximum of specifics and show the processes where improvements are possible. Knowing the client, Mike also noted to himself two important criteria: the feasibility and validity of the economics of the case. Only in this way will he be able to convince the company's management of the need to implement the advanced services from SAP Leonardo.

[4] A more detailed description of the company and its processes is presented later in the case
[5] https://www.build.me/

ABOUT SAP

About SAP

■ SAP: THE MARKET LEADER IN CORPORATE APPLICATIONS

When five managers who worked at IBM in 1972 decided to create their own company and to find a new way of doing business more efficiently, it was difficult to foresee that their software would eventually become the gold standard for global business solutions. The founders of SAP are Claus Wellenreuther, Hans-Werner Hector, Klaus Tschira, Dietmar Hopp and Hasso Plattner. Today SAP SE is one of the world leaders in the market of corporate IT solutions. The company helps organizations of all sizes and specializations to more efficiently leverage their business. Whether it's ancillary services or a board of directors, a warehouse or a store, desktop or mobile applications, SAP services make it possible to increase the effectiveness of interaction between individual employees and organizations in general, form a deep understanding of the business, and create a competitive advantage. SAP offices are located in 130 countries around the world. SAP services are used by such leaders of the domestic economy as Gazprom, Rosneft, Lukoil, RZD, Sberbank of Russia, VympelCom, M.Video, Eldorado and many others.

BUSINESS PHILOSOPHY

SAP is a customer-oriented company, which in itself is both a core value and a business philosophy. Unlike many companies, SAP sales proposals are based not on the product being sold, but on solving the existing business tasks of the customer. Having understood the customer's problem and determined the range of tasks assigned to the new software, SAP offers an individual, technically accurate IT service that meets the basic business requirements: ensuring the growth of business processes efficiency, meeting business needs, the ability to process large amounts of data and technologies, and receive support and advice on application issues. These basic requirements underlie SAP core competencies: business processes, business intelligence, technology and services.

BUSINESS DEVELOPMENT IN THE CIS

Across the CIS there are 11 SAP offices: in Moscow, Izhevsk, Yekaterinburg, St. Petersburg, Novosibirsk, Rostov-on-Don, Kiev, Minsk, Almaty, Astana, and Baku. In Russia, SAP has a data processing center, a training center, a client development center in Moscow, and a situation center in St. Petersburg. Supporting the cloud development strategy, in December 2014, SAP became the first foreign company to open a data processing center (DPC) in Russia. The data processing center has all the necessary facilities for processing and storing data, including a backup site, and is certified to Tier 4 standards (the level of capacity availability is more than 99.99%). Earlier, in September 2014, the Mission Control Center (MCC) was opened, based at the St. Petersburg office of SAP, providing 24 x 7 proactive support services to customers in EMEA (Europe, the Middle East and Africa). The localization of SAP services continues in order to comply with all the legislative specifics of Russia, Kazakhstan and other countries of the Commonwealth as well as the translation of SAP interfaces into the local language.

The SAP Labs laboratory is a research and development center, which SAP opens in strategic regions of its presence. The expanding network of SAP Labs covers the whole world. Each laboratory has the flexibility of a small enterprise and is focused on the specifics of its region.

The research center is constantly improving towards more economical, faster and more efficient development methods, supporting SAP's success as an innovative company and a source of business growth for clients and partners.

Today SAP Labs CIS has a regionally distributed structure with offices in Moscow, St. Petersburg, Izhevsk and Kiev, where about 300 highly qualified professionals are employed.

The activities of CIS SAP Labs include:

- localization and adaptation of global SAP solutions to the requirements of local legislation, taking into account the peculiarities and best practices of local markets;

- support for entrepreneurs and business development of start-up companies, whose products and ideas are based on the use of the SAP HANA platform, through the business accelerator - the SAP HANA Startup Focus program;

- research and development in the sphere of cloud technologies, large data and calculations in real time.

An important part of CIS SAP Labs activities is the Co-Innovation Lab (COIL), part of the global network of Global Labs Co-Innovation Lab (COIL) laboratories. COIL supports and facilitates the implementation of external innovation projects based on SAP solutions. Those who initiate projects can be partners, customers, or developers looking for technology suitable for their solutions. Through the cooperation with COIL, our Russian partners' projects have become available not only in the territory of the CIS, but also across the world.

SAP Labs have opened D-shop, a unique workshop for Russian developers, where the latest developments and services, such as 3D printers, pens and scanners, quadrocopters, virtual/augmented/mixed-reality glasses, sensor networks and other technological devices are gathered in one place. Most of the technologies assembled in D-shop do not yet have a mass application as they have just appeared on the market. However, they do have broad prospects for use in real life. Primarily, D-shop is an innovative development center for employees and participants of the SAP ecosystem.

About SAP

SAP regularly recruits students for various practices and organizes classes for students: CodeJam, InnoJam. The appearance of D-shop allows the company to diversify this experience and use not only SAP software platforms, but also the latest technological platforms and gadgets for students to work with. SAP D-shop is a laboratory without specific tasks, providing everyone with the opportunity to invent something and immediately test it. Nobody knows the ideas that will change the world tomorrow, but they appear in exactly these types of places, those uniting enthusiastic people.

SAP STRUCTURE

Mike has already been working for four years for SAP Russia, and in his opinion this is an example of a modern flexible and adaptive organization. The way that the organization is structured allows you to establish clear responsibilities for each participant, reconcile business processes and offers unlimited opportunities for self-improvement and professional growth. The structure of SAP can be divided into the following departments.

Sales Department. The sales department can be considered to be a generator of the company's capitalization. This department is structured on a sectoral basis and is divided into a number of units, each of which is engaged in promoting SAP services in specific industries. Successful sales of software solutions require building long-term relationships with the client. This is a process in which all members of the sales team are involved: customer service managers, client program managers, business solution architects, industry consultants, and SAP development consultants.

Consulting Department. This department of the company is of no less importance than the sales department. Consultants in SAP are specialists, thanks to whom the company's software products are transformed into competitive advantages for the customers. These professionals are simultaneously fluent in the languages of both technology and business. Among them are solution consultants, responsible for the implementation of SAP services, as well as technology consultants that provide customers with technical expertise in the field of information technology. Business consultants help clients identify areas of potential growth, clearly identify the most suitable strategy for implementing SAP services and develop a concept for their optimization and further improvement. This is done based on the analysis of the industry specifics of the business, processes and priorities of the company in the implementation of the business strategies, and features of the company's internal processes. Their work is especially important as surprisingly often the implementation of SAP is becoming a new stage of development for clients, since with SAP the client receives world experience in managing business processes.

Development Department. The youngest sub-structure of the Russian SAP office, the Development department began its work in 2012. This unit is responsible for several areas: research and innovation, localization and technical services (technical support) for customers. This unit's presence is of special importance, since, on the one hand, it is a generator and accumulator of breakthrough technological ideas for business development both in Russia and globally, and on the other hand acts as a rapid response team to eliminate the technical problems that arise during implementation.

Training Programs Department. Education is the key to successful business in all industries. Naturally, this section plays an important role in SAP. This unit provides training for both SAP employees (primarily sales and consulting specialists), and specialists of client companies and partner organizations. For the purpose of training across the whole range of offered products, quality trainings of specialists are conducted.

Partnership Department. Active work with partners is an important component of SAP's business development strategy
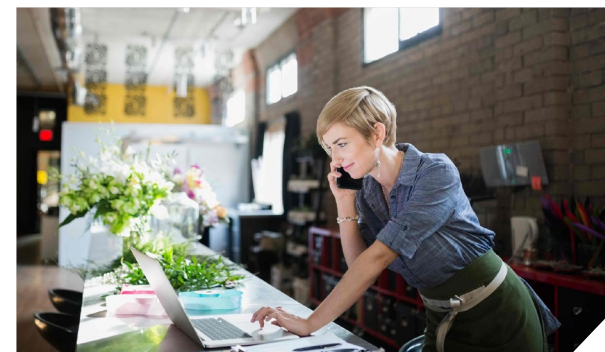
all over the world, including in Russia, since establishing stable and mutually beneficial relations with partners is an integral part of the company's successful development. Cooperation is carried out in the field of software sales, SAP implementation services, as well as in marketing and software development. The task of specialists is to support existing partners, as well as to expand the partner network, which involves the evaluation of candidates for partners and their involvement.

Marketing Department. In this important section of the company, global strategies and initiatives are born. Employees of the department are engaged in the implementation of a wide range of marketing activities: conferences and forums, promotions for direct contact with the target audience, the organization of interactive campaigns on the Internet, coverage of the company's activities in the media with the help of PR tools, exploring the market potential and conducting research.

Human Resources Department. More than 80% of the success of most companies stems from non-material components, such as the attitude to the company of its employees, their professionalism, their readiness to make the maximum contribution to the common cause. Thus, the main resource of any company is its staff, and the SAP staff department is always in the process of finding and forming the best team on the market.

About SAP

FINANCIAL INDICATORS

In 2017, revenue from cloud services and software increased by 8% with constant exchange rates and amounted to 19.5 billion euros. The revenue from cloud subscriptions and support services amounted to 3.83 billion euros. New orders for the cloud, which are a key indicator of the success of SAP cloud sales, increased by 30% by the end of 2017 and amounted to 1.5 billion euros.

The volume of current orders for cloud subscriptions and support services increased by 38% and by the end of the year reached 7.5 billion euros. New and current orders for the cloud are key indicators of the sustainable expansion of the SAP cloud. SAP is the fastest growing cloud business, with the main driver of its revenue growth since 2013 being the development of cloud services. The rapid growth in sales of cloud-based SAP services and revenue from support services provide more stable and predictable revenues. In total, revenues from cloud services, support services and software account for 83% of the total revenue for 2017. By 2020, it is planned to increase the volume of cloud services by more than 2.6 times, reaching a total revenue of 29 billion euros.

SAP: INTERESTING FACTS

1. SAP stands for Systeme, Anwendungen und Produkte in der Datenverarbeitung or Systems, Applications and Products in Data Processing.

2. No. 4 among software companies around the world and the largest supplier of Enterprise Application Software.

3. SAP customers produce more than 77 thousand cars a day.

4. SAP has developed its programming language ABAP (Advanced Business Application Programming, initially in German Allgemeiner Berichts AufbereitungsProzessor), on which most of the company's products are written.

5. Twice recorded in the Guinness Book of Records: the first time as a company holding a world record for the size of the data warehouse being serviced, and the second as the co-creator, along with a group of partners, of the largest 12.1 petabyte data warehouse using the SAP HANA platform and SAP IQ .

6. SAP co-founder Hasso Plattner and Oracle co-founder Larry Ellison (the corporation's main competitor) compete in business and in the field of sport, competing against each other annually in the regatta.

7. All the meeting rooms in the SAP Moscow office bear the names of different islands: Mauritius, Cuba, Hawaii.

8. The Moscow division of SAP has its own music group What'SAP, which has been performing for more than 4 years, and not only at internal events.

9. There is a special room for developers, where they can get away from work. To activate the brain and relax, in this room you can use 3D-augmented/virtual/mixed-reality glasses, 3D-pens and 3D-scanners.

10. The company says that the Moscow office eats 150 kilograms of mandarins, 130 kilograms of lemons, drinks about 800 boxes of 25 teabags and about 2,000 liters of milk every month.

11. Founded by former IBM employees, SAP surpassed it in terms of capitalization in 2017.

12. According to brandz.com, in 2017 SAP was the most valuable German company, with the SAP brand being the most valuable in continental Europe.

DESCRIPTION OF S/4HANA AND SAP LEONARDO

Mike had brought a lot of materials, brochures and case-books back from the conference, and he was planning to give a small presentation of the system and its key features to his colleagues.
He recalled the conference and tried to summarize the main elements of the system.

Description of S/4HANA and SAP Leonardo

▪ S/4HANA

Being a rapid, intelligent and integrated ERP-system, SAP S/4HANA is a digital core that merges all internal and external business processes into a single structure, going far beyond traditional ERP-applications. In other words, the system unites all the processes of the company, provides the user with up-to-date information and analytics, and also arranges for complete integration of the enterprise into the world of digital technologies, allowing the user to manage resources in real time. The system is developed on the basis of SAP HANA - the advanced in-memory data platform, and offers a personalized consumer-grade user experience with SAP Fiori, available on any device, including tablets and smartphones. The system provides an unstructured search for information by documents, as well as the implementation of so-called fact sheets for different positions and different sites, not just working with data, but with KPIs; meaning that it is more than a mere interface, but rather a monitor. The SAP S/4HANA interface provides an analysis of multiple sections, for example, PnL data can be collected by departments not only at the end of the period, as usual, but online. Timely analysis of data based on current indicators, avoids any discrepancies and deviations, allows one to manage real-time processes, plan and forecast business online using historical data on the enterprise.

With a simple interface and universal functionality, SAP S/4HANA works on any device, supports scalability, real-time analytics and real-time processes. Compared with previous versions of EPR, S/4 HANA uses more intelligent interoperability technology, a simpler system landscape, and the ability to process large amounts of data.

As to be expected, SAP itself was the first company where the S/4HANA platform was introduced. The results were impressive - a decrease in labor costs on money management by 58% and a reduction in the time required to receive reports by 30%.

All departments of a large oil and gas company were transferred to a single system of general reference information. The processes for planning and accounting for maintenance and repair of equipment, as well as capital construction were automated. This allowed the speeding up of the calculations and improved the organizational discipline, at the same time reducing the coordination of payments of branches to one day. The production of reports in a large metallurgical company has increased by approximately a thousand times.

Regardless of the industry or the size of the company, the SAP S/4HANA service package for local or cloud deployment improves the performance of all divisions. For medium-sized businesses that cannot afford substantial expenditure on IT staff, there is a possibility of using cloud versions of functional solutions paid for by subscription to the SAP Cloud Platform. The platform provides resources for development using the Platform-as-a-Service (PaaS) model. Being concerned about configuring the software and hardware environment for development is something companies no longer need to do: all necessary information technology infrastructure, including computer networks, servers, DBMS and application development and administration tools, is managed by SAP. Operating systems, database management systems, middleware, development and testing tools are already installed and preconfigured. This environment is ideal to be used as a service: create databases and virtual machines, install, develop, test, and operate application software on them, change the amount of computing resources consumed.

A separate section at the conference Mike visited was devoted to the new platform service SAP Leonardo. Without this platform, it is conceivable that the transition from traditional business processes to digital transformation would be impossible.

▪ SAP Leonardo

One of the key advantages of the new S/4HANA is the availability of the digital innovation system SAP Leonardo, which combines the latest technologies and services to help companies in the implementation of digital transformation. Named in honor of the original "Renaissance Man", Leonardo da Vinci, the SAP Leonardo system helps companies enter the era of the new digital renaissance and move their business along digital lines. How the system is used is a choice customers can make depending on the timing of implementation. They can use cases and independently create the necessary solution, with the support of the SAP Leonardo Centers, for any industry or business process.

New technologies are integrated by SAP Leonardo on the SAP Cloud Platform and offers services based on the methodology of design thinking and expert knowledge to accelerate the process of digital transformation. The SAP Leonardo platform integrates the software capabilities of machine learning, the Internet of Things, functions for working with Big Data, analytics and Blockchain, providing the opportunity to connect people, objects and businesses, implement industry 4.0 strategies in the field of digital logistics, production and asset management.

SAP Leonardo Services

MACHINE LEARNING

In the not too distant future, artificial intelligence and machine learning will become an innovative basis for how companies receive and use the power of data and as a result launch an intelligent enterprise. Part of the Leonardo portfolio, the SAP Leonardo Machine Learning Foundation, is a set of machine learning services for various business processes, from invoicing to customer support and retaining users. Machine learning is embedded in corporate systems, allowing customers to supplement and automate repetitive tasks, as well as discover completely new types of digital innovations. Rather than programming clear rules, this is done by examining data. SAP Leonardo's memory capabilities and machine learning database provide text analysis, projections, spatial event streams and time series for creating intelligent applications that provide deeper understanding at unprecedented speed.

The basis of artificial intelligence is machine learning. Optical character recognition, forecasting based on multidimensional time series (a useful function, for example, in forecasting the optimal price of a product), and retraining finished models on specific client data are all made possible through a set of services and APIs with artificial intelligence functions. The new Bring Your Own Model (BYOM) service enables developers to deploy a model that has been trained in a different infrastructure, such as the Google Cloud Machine Learning Engine, in a SAP environment. This is a completely new kind of software that constantly learns and improves, every time the system receives new data, without explicit programming.

SAP's predictive analytics allows not just data scientists, but any person, to create thousands of derived variables from a wide range of data sources faster, and without writing a single line of code. The ability to constantly monitor data and make accurate intellectual predictions has a huge impact on business success. In fact, the significance of this advance is comparable to the transition from a cellular phone to a smartphone.

BLOCKCHAIN

Transactions are at the core of every business. As these transactions often pass through third-party intermediaries, such as banks, lawyers and brokers, information processing becomes both time-consuming and expensive. Blockchain technology can reduce the role of intermediaries, significantly speed up operations with several participants and reduce costs, while ensuring safety for all parties. People, businesses, machines and algorithms are free to make deals and communicate with each other without interruption. The use of various blockchain features, including event logging for tracking the phases of the product life cycle - from design to production and logistics, are offered by the joint innovation program of SAP Leonardo Blockchain. Simplification of the serial production of parts, processes for confirming orders, managing inventory, obtaining reliable confirmation of the authenticity of products and their compliance with technical specifications is done through this program. Additionally, SAP is studying the scenarios for managing digital supply chains, when different suppliers submit offers directly to the block system - allowing an increase in the efficiency of communication within the business network.

Businesses are helped by SAP to reduce intermediaries, accelerate processes, increase transparency, ensure quick return on investment, automate processes with SAP Blockchain services and perform digital conversion. Businesses wishing to experiment with Blockchain technology, or those beginning the integration of new models into their business processes are able to use the Blockchain-as-a-Service (BaaS) product, which will not only reduce the cost, but also decrease the risks involved. Running on the SAP Cloud platform, BaaS does not require any hardware or software to be installed inside the corporation. The basis of this product is comprised of the protocols and standards of the platform for Blockchain with an open code Hyperledger.

The companies Capgemini, Deloitte, GrainCorp, HCL Technologies, HERE Technologies, Moog Inc., Natura Cosméticos SA, NetApp and PeerNova together with SAP will present scenarios and business models for the use of Blockchain technologies in SAP solutions for managing the life cycle of products and resources.

ANALYTICS

All over the world progress is driven by business models based on data, and data has quickly become an important part of every business. Imagine that you can extract data from every business transaction and physical object, from cars to advanced technology objects. Yet how is data used to improve competitiveness and improve your profits? The SAP Data Network service for data intelligence makes monetizing data and information possible. Assisted by data intelligence, it becomes possible to aggregate and anonymize the available data and prepare it for commercial consumption. Using the Data-as-a-Service (DaaS) model, algorithms and analytical services or applications, your data can be combined, for example, with data from customers, partners, or other players. Each dataset is anonymized and aggregated to ensure confidentiality, while retaining the opportunity to compare one's own performance with that of industry peers. Compliance with regulatory requirements is met through the exclusion of any personal information, and the encryption of inactive data (data-at-rest).

Incorporating both business analytics and data analytics, Data Intelligence goes a step further by offering ways to monetize useful information extracted from data. It also assists with creating a new business, finding new customers and opportunities, entering related markets or expanding the core business through new opportunities of data processing analytics.

SAP Leonardo Services

BIG DATA

Zettabytes of data come from our computers, mobile devices and hardware sensors, creating an ocean of information known as Big Data. With the appropriate tools for working with big data, organizations are able to store, analyze, and manage it, as well as to extract valuable information from it that was previously unavailable.

Through the use of real-time analytical information, SAP Leonardo technologies, such as in-memory data management, analytical tools, artificial intelligence and machine learning, can completely change the decision-making process.

Analytics is not the only use of Big Data. The technology of SAP Leonardo also works with Big Data for production management, quality control, building supply chain, and other important company processes. On the basis of Big Data, the existing system of predictive analytics can make predictions, which is very useful in retail, telecom, energy, oil and gas - where big data is required to predict what will happen next and influence decision making.

Approximately between 60% and 73% of all data inside the enterprise is not used in the modern digital economy. The main problems faced by companies wishing to work with Big Data is a) the issue of storing a large amount of data; b) the processing technologies required for various unstructured data; c) the availability of a unified information architecture of the enterprise and a big data environment.

In response to existing challenges, the big data capabilities of SAP Leonardo provide services for petabytes of information regarding the collection, storage, processing and exchange of data. Companies acquire powerful business value from their data, rapid deployment, larger scalability, faster analytical processing and more powerful exchanges throughout the enterprise than before.

INTERNET OF THINGS

The Internet of Things suggests the connecting of devices to the company's business processes to achieve innovative results. You are able to mobilize data from the Internet, transform end-to-end business processes, develop new digital business models, and introduce new working conditions, all through the use of SAP Leonardo IoT.

A real-time management center, the SAP Leonardo IoT Bridge for the Internet of Things helps reduce, correlate and contextualize data obtained from sensors for the Internet of Things with business processes, as well as with both structured and unstructured data. Part of the IoT Bridge functionality, the SAP Global Track and Trace service allows one to model the monitored business processes, and transfer data to partners throughout the supply chain. Created on the Big Data architecture, this application allows the processing of large data sets at a high rate of production.

The management of many processes and systems is facilitated through SAP Leonardo IoT Bridge by using a unified command center to collect information. The location of the cargo and its contents, the status and progress of the vehicle along the route, tracking the status of delivery, cargo, transportation and the number of vehicles is part of this information. SAP collaborates with many companies to create innovations in the field of digital logistics, online control over cargo movement, as well as the integration of cloud-to-cloud with the Internet of Things cloud services.

SAP Leonardo IoT Edge is a service that uses the container infrastructure of the SAP Cloud Platform IOT services to work seamlessly with services such as SAP Digital Manufacturing. This service for digital production allows one to conduct multi-level analytics in the cloud with full visibility of different levels of production processes, and is fully and safely connected to the trading floor. As a result of this access, highly accurate information about business processes is provided for effective decision-making. Joint use of SAP services for the Internet of Things and digital production allows one to implement unified operations management and implement industry 4.0 strategies.

DATA INTELLIGENCE

SAP Analytics completely changes the way we work with data. Previously, companies would start with a huge data set, bring it all together, and visualize it, before finally having someone make a decision on it. Now the process reflects the complexity of decisions we make today. We learn from our data, train machine learning algorithms, apply those algorithms to situations and as we extract new data points from our decision-making, we continue learning. It's not about making the same decision again based on old data, but becoming more intelligent about the way we make decisions – and doing that very quickly using all the data available to us.

Data intelligence connects, aggregates, and anonymizes data to prepare it for commercial consumption. Data resides in various places, and for most companies this includes both on the premises and in the cloud. We need to be able to integrate that data– pull it all together into one place – and uncover its insights in order to get the most value from it. With live data connectivity, we let you take advantage of all your on premises and cloud investments, while connecting to the pace of innovation in the cloud.
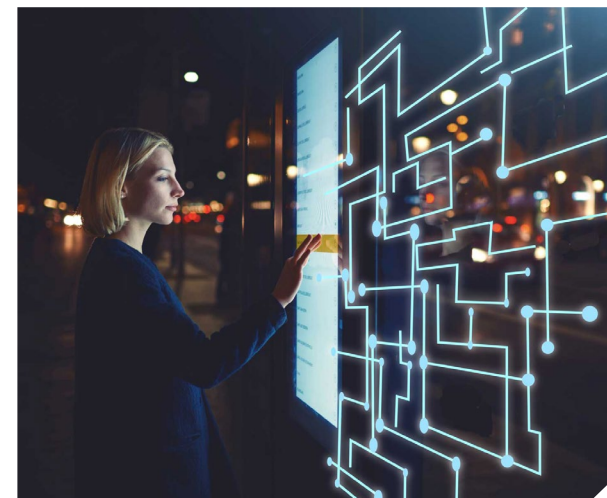
MYWHEEL COMPANY

MyWheel Company

Having outlined the main theses of the internal speech and the presentation about S4/HANA and SAP Leonardo, Mike decided to review the basic data that he and his team had collected on MyWheel as part of their previous project to implement the cloud-based SAP S4/HANA platform created on the Cloud Platform.

COMPANY HISTORY AND ORGANIZATIONAL STRUCTURE

MyWheel is a company engaged in the production of personal portable transport for use in urban environments. Its founders Eugene Frolov and Mikhail Zadorozhny decided to introduce the latest technologies into everyday life, making them accessible to a wide range of users, almost 10 years ago. That was how in 2009 MyWheel Incorporated (MWI), which is currently one of the leading domestic manufacturers of self-balancing scooters and unicycles, appeared.

Keeping in line with the concept of "eco-friendly", MyWheel always strives to balance the scientific and technological innovations with safety for the environment. Ideally, this is also the consumer's approach to nature, through the help of light, portable and environmentally friendly vehicles.

The headquarters and research center in Tver is where the functions of managing product flows, finances, human resources, information technologies and sales are concentrated. The plant in Tver manufactures products for Russia and its neighboring countries, and the distribution of products in the central part of Russia and among retail Internet sellers is managed from its warehouse there. There is also a 20,000 square meter logistics center on location.

PRODUCT STRATEGY

Within a short period of time in existence, MWI became famous all across Russia for creating different formats of portable transport.

Convenient, mobile and easy to master, the company's products are popular among people of all ages.

The most important factor in the growth of MWI, both in the past and in the future, is product development. MyWheel actively invested in this area, with a focus on innovation, design, quality and safety.

Using feedback from users, dealers and professionals, the company constantly improves its products.

Two main types of mobile transport are produced by MWI – self-balancing scooters and unicycles. Two-wheeled self-balancing scooters are more stable and easy to master, on the other hand, unicycles are more practical and convenient for transportation. MyWheel uses only the best quality materials in the production of all its models. A magnesium-based alloy is used to make the solid, lightweight body of the self-balancing scooter, and it has a scratch- and damage-resistant coating. For the production of unicycles, durable high-quality plastic and light aviation grade aluminum are used.

MWI also sells related products: helmets, branded clothes, and other accessories.

Aimed at growing and diversifying the business, MWI is positioning itself as modern and environmentally friendly. In 2017, MyWheel took steps to develop a new offer - WheelSharing, which will become an alternative to the standard business consumption model. In recent years the manifestations of the sharing economy are increasingly evident: markets related to the joint use of personal transport have a forecasted average annual growth over the next ten years of 25% -35%.

MyWheel will have to change its standard product strategy, use innovative services to build relationships with customers in a different format, work with a large amount of data and

manage a new infrastructure in order to successfully develop in the direction of the Sharing Economy.

PRODUCTION STRATEGY

Three production complexes are operated by MWI, one each in Tver, Chelyabinsk and Yekaterinburg. Each production line has the capability of producing about 2000 portable vehicles per year, and each complex has three such lines. Provided that overtime hours are introduced and part-time employees are hired, these can be increased by 15 - 20%.

Using the facilities of reliable partners who own specialized enterprises, MWI has started producing unique silent motors and wheels for the manufacturing of the necessary complex elements. The company works with foreign suppliers, in particular, the lithium batteries installed in MWI products are ordered exclusively from Japanese manufacturers. MWI also maintains close cooperation with partners in the fields of research and design in order to provide innovation both in the materials for the vehicle and in their design.

MyWheel Company

MyWheel Inc's own innovation center works on the creation and improvement of software, processors for device management and security system interaction with users. Located in Tver, the center actively attracts both Russian and foreign developers. The final assembly of the parts is carried out by MWI at its production facilities. Finished products are either stored in local warehouses or sent to other regional distribution centers to fulfill customer orders.

Perfect coordination in the actions of all participants is required whenever there is a large number of intermediaries in the production chain. For example, the company lost more than 0.3 million rubles over the last year due to the fact that the company warehouses could not accept 10% of the products that had been manufactured.

A high level of adaptability is necessary in order to follow the novelties and offer the latest "wheel products" to the buyer, and for the company to maintain and expand its market leadership position. In addition to the automation of production processes, it is very important to use new innovative services - forecasting of demand and production, data analysis, and the use of machine learning technologies to keep in line with the company's course towards further growth.

DISTRIBUTION AND PARTNER NETWORK

Distributing exclusively through a network of branded stores, MyWheel is expanding through opening new premises. Specially trained consultants at these branded showrooms are able to offer qualified advice on any product across the MyWheel range. MWI stores always present the full line of products, including new items and prototypes of future vehicles. Also, one can try the products by registering for a test drive, and use the free repair and maintenance service.

MWI uses the Internet primarily as an information channel, thus increasing its opportunities for training consumers and partners and to advertise their products aimed at expanding their audience. The company's online store is a secondary sales channel, as the capabilities of the existing logistics system do not allow coordinating the logistical flows within an extensive supply chain.

The company's goal is to increase internet sales until they reach 80% of the total sales volume.

IT STRATEGY

Without reliable and timely information enterprise management is impossible. The quality of this information largely depends on the level of automation of the company's business processes. Until recently, the departments within MyWheel used a number of independent applications, self-written software that did not allow the use of new technologies.

A year ago, MyWheel made the move towards creating a unified digital core and centralizing all functions using S4/HANA. All areas of the financial and managerial accounts have been affected by this automation, and the company has received powerful analytical tools and the possibility of effective operational management of the enterprise. Increasing the speed and accuracy of decision making was the priority task of the transition to S4/HANA. This functionality implementation allowed the consolidation of data from the three MyWheel production facilities and the network of retail stores to operate and optimize all critical processes in real time. As a result, the organization of the main financial reporting, accounts receivable, creditors and subsidiary accounting was automated.

MyWheel encountered the need to consolidate information about materials and procurement within a single database and analyze it, so it launched the Materials Management S4/HANA functionality for the supply and inventory management function used in various business transactions, automated procurement of materials, inventory management, warehouse management, account control and stock overview of the material.
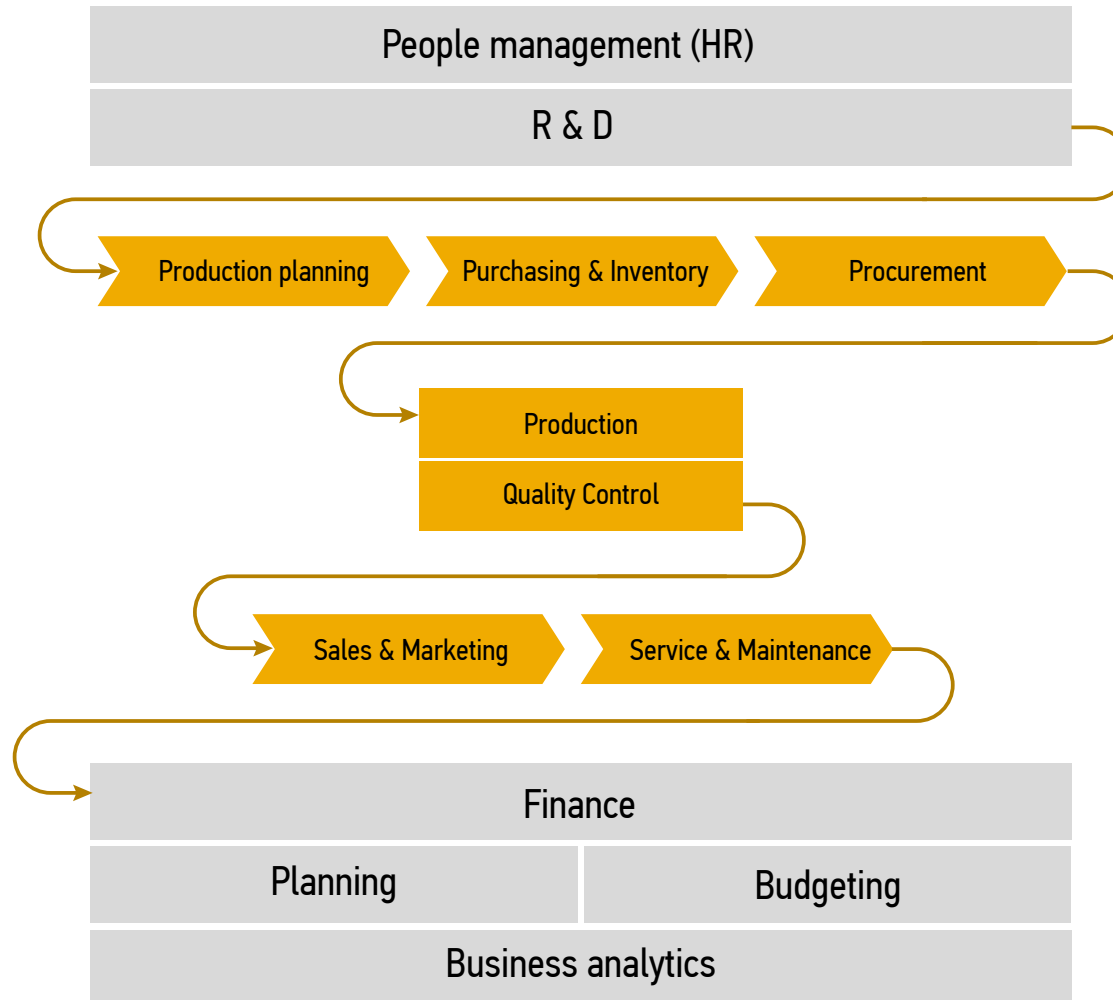

The company was unable to receive information from all suppliers through the traditional system, which slowed down the process of purchasing the product. The procurement information and the inventory management information systems gave MWI even more opportunities to work with the data and perform a more complete analysis of the procurement and use of materials. The Sales and Distribution functionality handled the distribution, sales, supply and billing tasks.

The company automated the processes of procurement, production, sales, finance and controlling as a result of the transition to S4/HANA. During the year, the company's production volumes were significantly increased and its sales markets expanded, creating the need to implement high-quality strategic planning in MWI. Currently, the company's weaknesses are its long-term planning and forecasting, due to the fact that they are based primarily on the perception and experience of MyWheel management.

MWI has set its next goal: the transition to new innovative services based on the existing digital core of S4/HANA.

MyWheel Company

People management (HR)

R & D

Production planning → Purchasing & Inventory → Procurement

Production

Quality Control

Sales & Marketing → Service & Maintenance

Finance

Planning | Budgeting

Business analytics

Production planning. The beginning of any procurement is the determining of demands for the material resources of the organization:

• Defining a planning horizon
• Choice of forecasting method
• Demand forecasting

During the first stage of the production process, the company estimates the demand for the product and related merchandise, and, based on this data, outlines the amount of certain goods it will be able to produce as well as the amount of material required for this. Following that, the corresponding raw materials are purchased.

The current planning system the company uses is based on the organization's historical experience. Management believes that this system is obsolete and should be replaced. Due to errors in forecasting, the capacity of enterprises was under-utilized by 12% during the year, causing the company to lose about 4 million rubles.

Procurement, supply. The process of purchasing the materials required to meet production needs from suppliers includes the following:

• Selection of suppliers
• Negotiations on prices
• Transportation to distribution warehouses
• Inbound and outbound quality control of goods
• Delivery acceptance
• Processing of refunds

The company cooperates with major suppliers that provide the company with key raw products and materials, as well as related components and merchandise.

Through improved internal discipline and transparency in dealing with important business data the company plans to reduce costs related to purchases by 17% next year.

MyWheel Company

However, the main problem of supply, that of sourcing reliable suppliers of quality materials and services, remains unresolved. As a result, 10% more time needs to be spent by the company monitoring the quality of materials. Management believes that this can be made better by improving the monitoring and information gathering system.

Inventory Management. Management of the company's current assets is an important part of the general policy, the main objective of which is to ensure an uninterrupted process of production and sale of products while minimizing the total costs of servicing stocks, includes the following:

• Definition of the geographical location of warehouses
• Choosing the optimal storage scheme
• Implementation of the inventory management system
• Transportation of goods to regional warehouses or shops

MWI's traditional stock management system was sufficient to manage intra-warehouse logistics and stocks that supply a network of branded stores. However, the significant growth of the partner network and the development of the online store require this process to be modernized.

Production. The transformation of materials and semi manufactured products into final products is known as the production process.

Unicycles and self-balancing scooters consist of multiple components, which are manufactured separately. Included in these are wheels, body, batteries, lights, engines, and coasters, as well as other components. All products have a processor, security system, and a gyroscopic system that provides stability and balance, though some models also include built-in speakers and LCD displays.

MyWheel has three manufacturing plants, each of which consists of three main sections: production, assembly and finishing. Sequential production lines carry out production with a free rhythm. In the assembly workshop, parts that the company orders from partners and those made in the production hall are assembled to create the finished product. Motor engines, wheels and batteries are the components most commonly sourced by MWI.

Each model is tested upon completion of its assembly. Provided the inspection yields positive results, the product is packaged and sent to the finished goods warehouse, from where it enters the market.

The section that is most conservative about change is production, and therefore changes rarely occur there and are usually minor. The obsolescence of the production process, combined with the network expansion, leads to regular failures in production. The disparate nature of the IT landscape makes finding possible improvements in the production and release of competitive products difficult.

Frequent breakdowns at the most inopportune moments are a major problem affecting the company. When this happens, the downtime can last for a period from several hours to several days, significantly impacting the amount of goods produced, and, accordingly, key financial indicators. Thus, in each factory over the last year, downtime due to failures was from 3 to 4 weeks. Significant conveyor downtime is another problem for the company which amounts to 16 weeks annually; an estimated loss to the company of 3.4 million rubles. Management believes that the percentage of operating time for each of the conveyors can be increased.

Quality control. Control is an integral part of the technological process. The purpose of control is as follows:

• Ensuring high quality production
• Minimizing material cost
• Prevention of poor quality products
• Prevention of production facilities failure

Product testing is one of the stages of production control. This is done using a mini training ground created in each production workshop of the company. Testing the quality allows one to determine how much the finished product meets the basic criteria.

The lack of quality control in real time is a significant problem for the company. Often, product flaws are only identified during the testing phase, making an increase in the company's expenses related to correcting errors by 2 million rubles.

Sales and marketing. At this stage it is anticipated that the distribution, selling, trade, management of goods production and sales strategy are done with the help of certain methods:

• Definition of target segments
• Management of marketing campaign
• Promotion management, promo actions
• Management of loyalty programs
• Development and implementation of the brand strategy

The Internet and in-store salespeople are the key marketing channels, and the main sales channel is the sellers.

Despite the fact that the company's goods are in demand on the market, finding buyers is a significant problem, which is not so easy to solve using current resources and competencies.

MyWheel Company

Service, and the processing of incoming requests is a complex of measures that includes the handling of incoming requests, and is aimed at improving user experience and customer service through:

• Resolution of disputes
• Processing of returns

Human Resources (HR) is aimed at providing the organization with quality personnel capable of performing the assigned labor functions. It is responsible for:

• Hiring specialists with the necessary skills
• Training of specialists, and their development
• Optimization of the structure and coordination of departmental activities
• Improvement of working conditions

A recruitment specialist is a person with extensive experience in the industry, with an understanding of what kind of people to look for, where to search for them and which tasks they are suited to in order to optimize the processes of the enterprise.

Research and Development (R&D) performs a set of functions aimed at obtaining new knowledge and practical application when creating a new product or technology.

Business analytics provides a description of the company's performance, which is necessary for further analysis of the data and decision-making.

• Analysis of collected data
• Identification of areas for improvement
• Proposing ways to solve problems

Based on the example of its competitors, MWI's management believes that the company gathers and analyzes insufficient data. For example, information is not collected and processed directly from production, slowing down the decision-making process and the response to glitches by 20%. In addition, the CEO of the company, having visited the recent conference on production innovations and having learned what Blockchain is, was eagerly anticipating using this technology in the enterprise.

Finance (Planning, budgeting).

This department is responsible for the planning of all revenues and directions of expenditure to ensure the organization's development. The process of financial management in an enterprise includes:

• Planning, budgeting, and forecasting
• Profitability and cost management
• Monitoring and reporting
• Reporting and disclosure
• Receivables management

The financial management process in MyWheel was significantly less effective prior to the company's transition to S4/HANA. Due to the diverse nature of IT systems, monitoring the costs and cash flow in real time was not possible. Currently, consolidated data is seen by the financial department in real time, but it is unable to cope with its processing due to a significant increase in the network of stores and partners, which continues to grow. The CFO is dissatisfied with the quality and speed at which primary documentation is processed, the completion of financial closing processes and the formation of external and internal reporting. Also, the inability to carry out quality planning and forecasting is of concern to him.

S4/HANA and SAP Leonardo in use

The Swiss Federal Railways (SBB) uses SAP Leonardo to reduce electricity costs. The railway's energy production is designed for maximum loads, but consumption fluctuates wildly, having sharp peaks and deep dips. The SBB required a solution to save energy through predicting, and consequently balancing, energy consumption. Balancing is carried out by means of the short-term shutdown of non-critical energy consumers, such as heating and air conditioning systems at peak times.

The world's largest chemical producer, BASF, uses the SAP Assets Intelligence Network to improve reliability and safety in production, as well as to build automation and to form relationships with equipment manufacturers and service organizations.

Often referred to as "Facebook for Machines", the SAP Assets Intelligence Network service has allowed BASF not only to ensure the availability and relevance of all information about the equipment used (for example, technical documentation, spare parts catalog, etc.), but also to collect information about the operation of this equipment and provide it to manufacturers and service organizations. This is done to improve both the quality of the product itself and the service, as well as to create new sales opportunities based on this information, such as repairs based on physical condition and potential repairs. The forecasting of equipment failure allows the company to better plan maintenance and minimize production downtime.

BASF realized another interesting project in the wine business. This will come as news for many, but BASF is also the largest wine distributor in Germany. For their wine store, they created a smart wine shelf based on the Hybris service. A smart wine shelf assists buyers in choosing the right wine, taking their preferences, situation and other factors into consideration.

From the perspective of the industrial Internet of Things, regulating the transition from planned repairs to those required according to the physical condition can rightly be considered one of the most demanded tasks.

Thus, with the help of SAP services, Trenitalia can determine which elements require maintenance, and which **elements** of the system that function in the normal mode **do not require additional intervention.** The SAP system is trained to select the most suitable mathematical model for each individual type of equipment. For example, there is no direct correlation between the run of a train and the wear and tear of the door mechanisms. It is more reasonable to use the quantitative calculation of opening-closing cycles, as well as the performance of the mechanisms of door drives. Together, these two indicators help to accurately determine the wear and tear of machinery and the timely servicing of them.

Founded in 1580 at the mouth of the Rio Plata, **Buenos Aires** faces the problem of torrential rains every year. Due to its aging infrastructure and high population density, flooding often led to serious negative consequences. Through the use of the SAP HANA platform for real-time sensor analysis of the drainage system sensors and the SAP Mobile Platform for maintaining the cleanliness of streets and storm drains, special services of Buenos Aires can be carefully prepared and minimize the risks caused by torrential rains. The authorities use SAP services to support the urban infrastructure and manage the complex relationships with contractors and suppliers, thus improving not only the quality of their services, but also people's lives.

A vivid example of a change in the business model is the shift from selling products to selling services. In the strictest sense, **Kaeser Compressors** sells air. The customer is now free to choose whether the work of the compressor equipment will become capital expenditure (CAPEX) or operational (OPEX). Choosing the second model, the customer no longer has to concern itself with maintenance of the equipment, as this is now the responsibility of the manufacturer, who undertakes the task of providing the customer with an uninterrupted supply of air, and this is not easy. Kaeser Compressors work in the most remote corners of the world, and sending a qualified specialist who can quickly solve problems to such locations is very challenging. That is why it is very important to know about possible problems in advance and this cannot be done without systems of predictive maintenance.
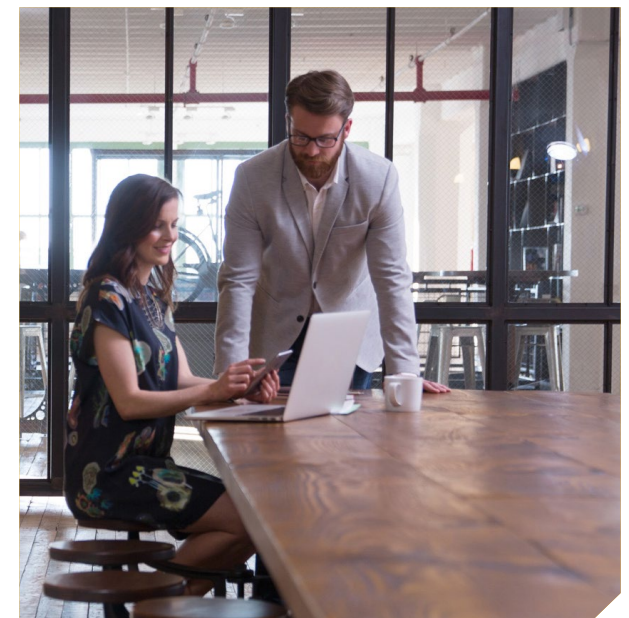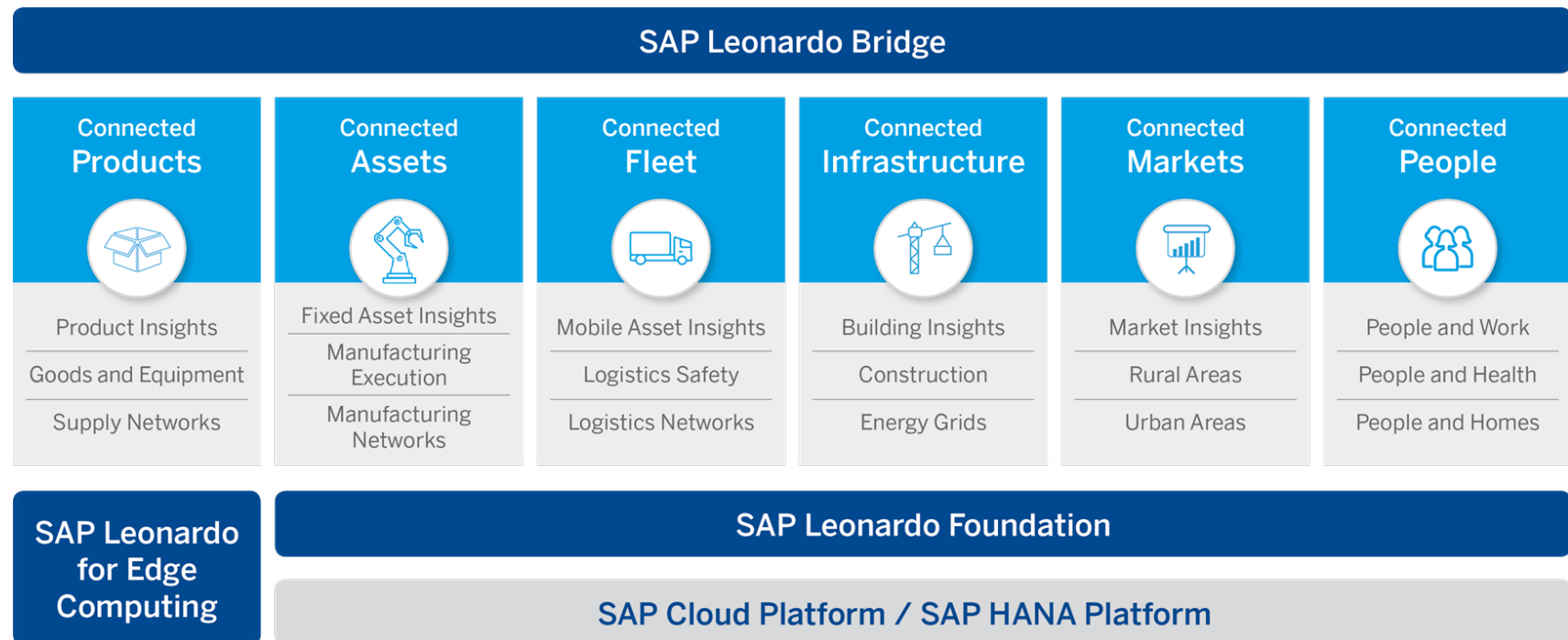
ANNEXES

■ **Leonardo Services**

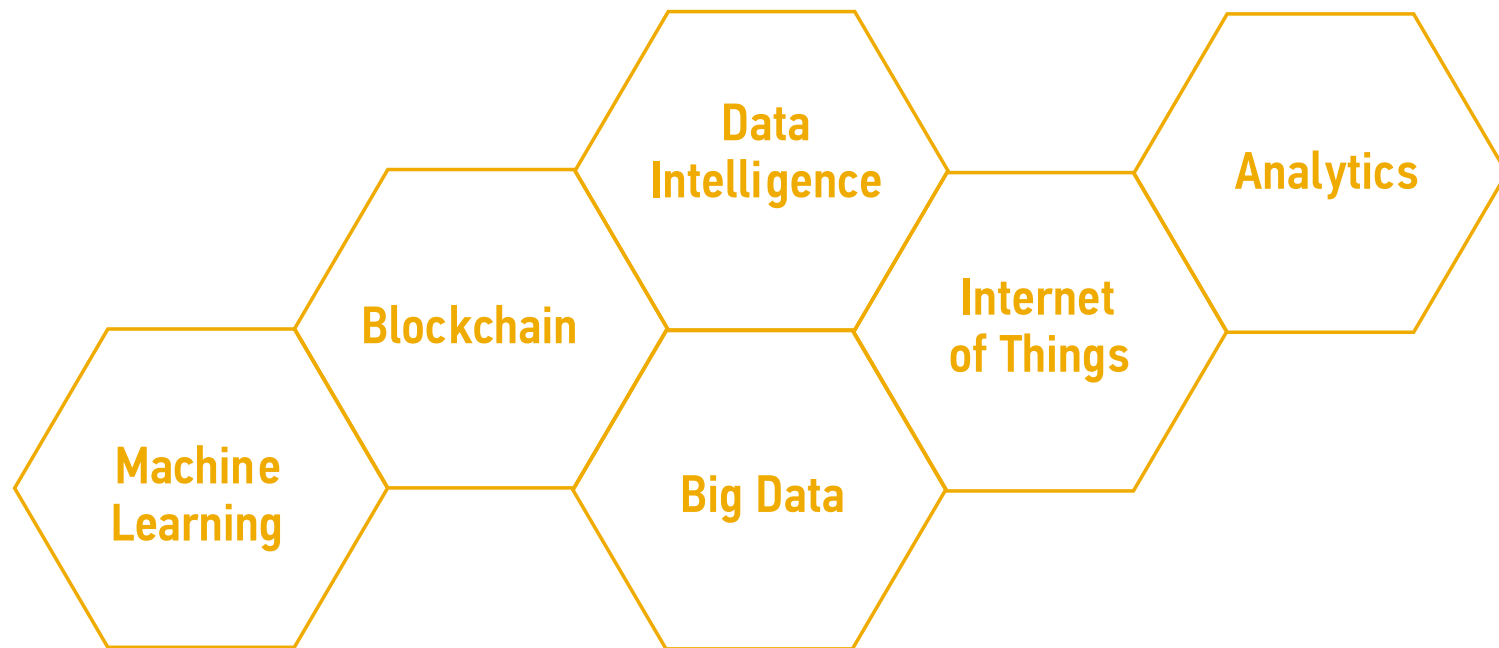# SAP Leonardo: Connecting Things with People and Processes

Helping companies innovate with business models, processes and the way people work

SAP Leonardo Bridge					
Connected **Products**	Connected **Assets**	Connected **Fleet**	Connected **Infrastructure**	Connected **Markets**	Connected **People**
Product Insights	Fixed Asset Insights	Mobile Asset Insights	Building Insights	Market Insights	People and Work
Goods and Equipment	Manufacturing Execution	Logistics Safety	Construction	Rural Areas	People and Health
Supply Networks	Manufacturing Networks	Logistics Networks	Energy Grids	Urban Areas	People and Homes

SAP Leonardo for Edge Computing	SAP Leonardo Foundation
	SAP Cloud Platform / SAP HANA Platform

Annex 2.

■ **Leonardo technologies**

SAP NEXT-GEN

SAP NEXT-GEN: AN INNOVATION COMMUNITY FOR SAP LEONARDO

SAP next-gen

SAP Next-Gen is an innovation community for SAP Leonardo, providing support for 350,000+ SAP customers across 25 industries in 180+ countries. SAP Next-Gen provides SAP customers and partners with the opportunities to create breakthrough innovations and accelerate the roadmap for forming an exponential enterprise and digital future. This is done through building links with students, startups, leading academic organizations, accelerators, venture capital funds and other partners on their way to implementing innovations using SAP Leonardo. Click here for more information.

SAP University Alliances

Through the SAP University Alliance, teachers are provided with SAP services and academic materials for use in educational and research activities, in order to provide quality training for designers, developers, data analysts, engineers / makers, entrepreneurs and business leaders for exponential enterprises of the future. Incorporating an extensive network of more than 3,300 universities, including 96% of the world's leading universities in 113 countries, SAP University Alliance aims to develop critically important skills for the digital future among representatives of the academic and student community, as well as among school pupils, and to ensure their collaboration with experts and top management from business. Click here for more information.

THE GLOBAL GOALS For Sustainable Development

All SAP Next-Gen services and activities support SAP's commitment to the 17 UN Global Goals for Sustainable Development.

SAP next-gen

SAP Next-Gen is a project-based learning format, based on the Stanford University d.school model. It is aimed at attracting motivated students, leading scientists and researchers to solve real industrial problems and create prototypes of innovative solutions using the SAP platform at SAP Next-Gen Labs centers on the grounds of leading Russian and world universities.

FOR BUSINESS REPRESENTATIVES:
- Innovative "smart" solutions and business scenarios using SAP services and methodologies, based on non-standard ideas of students, graduate students and teachers.
- Presence centers in leading universities, where innovative ideas can be outlined in the form of master classes, hackathons and brainstorming sessions with students, start-ups and SAP experts.
- Interaction and excursions to key global and regional innovation hubs: Silicon Valley and Stanford University, Innovation hubs in New York, Singapore, Potsdam, Munich, Moscow, St. Petersburg, Kazan, Minsk, Almaty, etc.

FOR UNIVERSITY TEACHERS:
- Work with SAP services and methodologies not only in terms of education, but also research, as well as implementation of project-based learning formats to address real-life industry challenges.
- Joint innovations with SAP and industry leaders on major topics of a particular university.
- Development of the culture of technological entrepreneurship and business incubation in the university through market leader support.
- Participation in a global academic network of 3,500 universities and the network of more than 70 SAP Next-Gen Labs centers around the world.

FOR UNIVERSITY STUDENTS:
- Formation of the skills required for project work through the opportunity to purchase a portfolio of implemented innovative tasks, usually unavailable within the framework of a typical internship.
- Reduction of time and "logistics" costs to acquire the necessary skills for solving real business problems as well as gaining project experience.
- Implementation of compulsory university works (coursework and graduation papers) in the relevant areas and self-assessment of one's potential in various fields of activity.

SAP NEXT-GEN IN NUMBERS

72 (8 in the CIS)	Innovation Centers SAP Next-Gen Labs in partnership with universities
215	SAP Next-Gen innovative projects University + Business
189	SAP Next-Gen Innovation Tours to the Silicon Valley, New York and Berlin
32	SAP Next-Gen industry and special technical laboratories
113	Countries
3300 (113 in the CIS)	Universities

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SAP