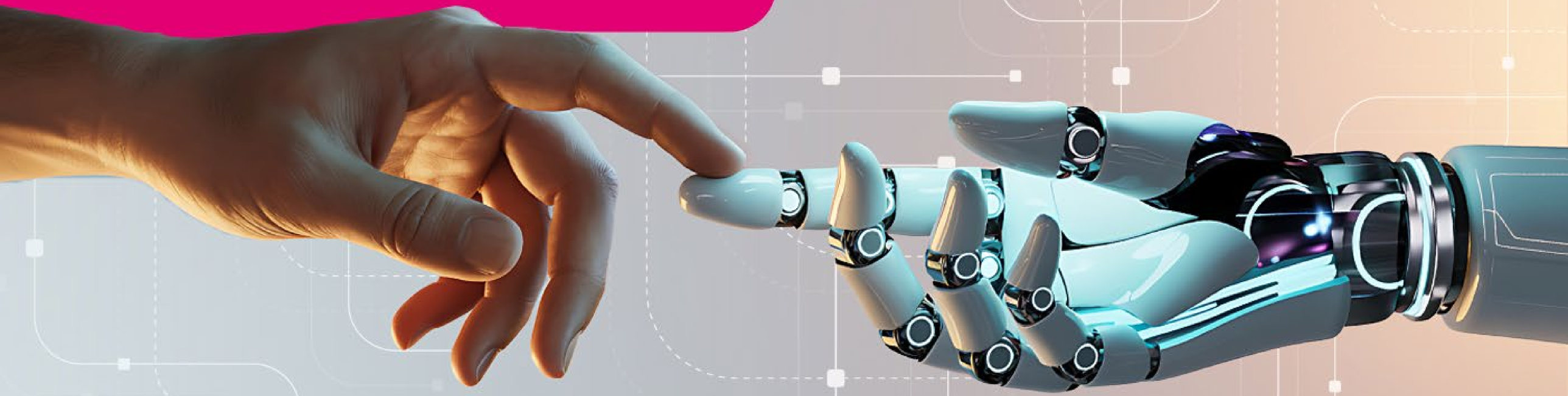
AI Reference Booklet

Discover success stories of how T-Systems is transforming the companies' and people's everyday life with its artificial intelligence expertise and giving a boost to the economy.

T Systems



Enterprise-ready AI. Secure. Ethical. Impactful.

This booklet showcases the success stories of T-Systems' clients—leading enterprises across various industries that have translated AI into tangible business value. Discover how they overcame challenges in data, technology, culture, and governance with end-to-end, secure, and sovereign AI services. T-Systems' human-centric and ethical AI solutions drive measurable impact in growth, efficiency, and customer experience - fully aligned with European standards.

T-Systems combines end-to-end capabilities, proven AI expertise, and European trustworthiness to de-risk and accelerate clients' AI journey. For example, a smart healthcare chatbot developed in a few days for enterprise search and content creation for a German hospital.

We hope these inspiring customer success stories spark ideas for your own AI journey.

Are you unlocking the full potential of AI?

Contact us now!

Online contact form

0800 33 09030

AI success stories

Baosteel Tailored Blanks: Secure and less cumbersome processing of documents thanks to artificial intelligence

Automotive

Mercedes-Benz: Up to 40 times faster evaluation of test drives with Data-as-a-Service

Automotive

Automobile company: 100% visual quality control for laser welding with the help of AI

Automotive

Toll provider: Significant productivity gains for core business using AI, powered by AWS Cloud

Automotive

Automotive OEM: The AI avatar as a sales trainer, hosted on AWS Cloud

Automotive

BARMER: A digital assistant for better customer service

Health

AI success stories

medbo: AI-driven Smart Health Chat for enterprise search developed in a few days

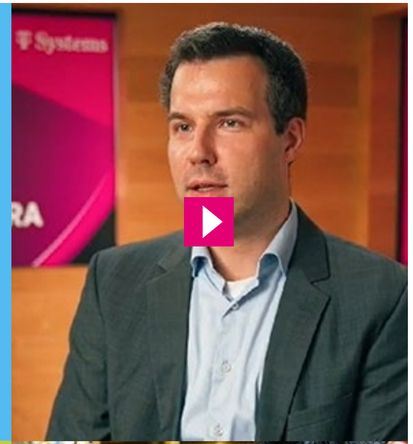
Health

AI reduces research time by 50% at ENERGIEALLIANZ Austria

Utilities

Deutsche Bahn: Significantly more accurate traveler information for customers thanks to artificial intelligence

Public Transport



Rhine/Main Regional Transport Association: Computer vision-based object recognition solution enables transport safety for autonomous shuttles

Public Transport

Transdev Service GmbH: A mountain of application forms cleared away digitally in five weeks with AI and UiPath

Public Transport

Aircraft manufacturing company: OEM digitalizes internal documentation processes for goods receipts and production with artificial intelligence

Transport

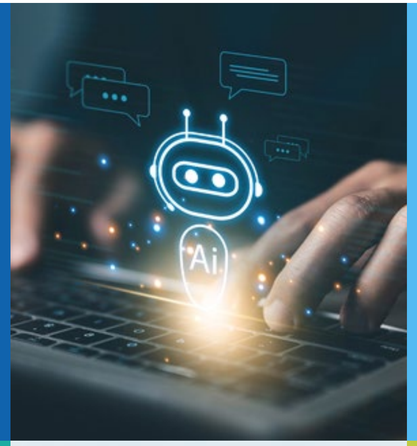
AI success stories

Logistic company: AI-based failure prediction in all relevant channels- customer support, incident response team

Transport

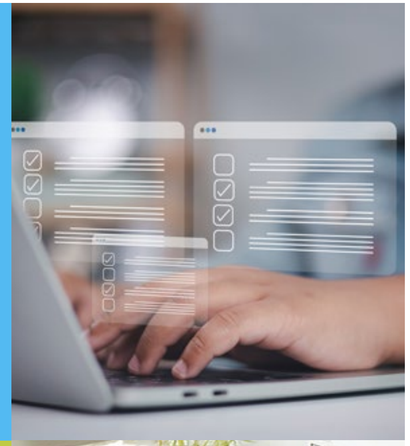
City of Nettetal: Secure chatbot uses LLMs from AI Foundation Services to increase productivity and administrative processes

Public



City of Nettetal: Automating administration with UiPath from the T Cloud Public

Public



T-Systems: Financial Controller Knowledge chatbot with over 99.5% accuracy rate to reduce timeconsuming searches in financial documents

Telecommunications

Fiber Factory: 75% faster calculation of potential routes for fiber-optic rollout with AI in the cloud

Telecommunications

Deutsche Telekom Technik: AI-driven data management for network operations center space optimization

Telecommunications

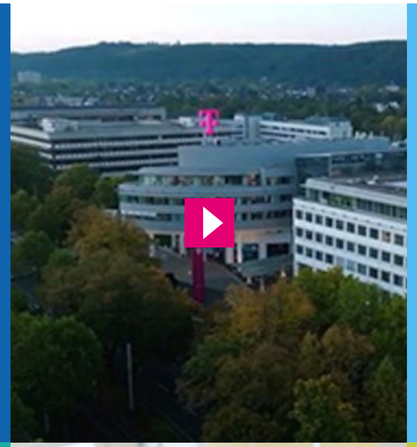
AI success stories

Deutsche Telekom Technik: AI for quality control on fiber optic construction sites

Telecommunications

Deutsche Telekom Service saves millions in costs thanks to AI-powered automated email processing

Telecommunications



amberSearch: The LLM Serving Service ensures 100% data sovereignty and seamlessly scales AI workloads to meet high-demand client needs

Information Technology
Business

rku.it: UiPath as managed service from T Cloud Public as basis for growth

Information Technology
Business

Cornelsen Verlag: AI offerings for schools rolled out 50% faster with the LLM Serving Service

Education

DeutschlandGPT: AI for the future of education on the T Cloud Public

Education

Process documents securely and with little effort

Boasteel Tailored Blanks uses the automated solution Tungsten TotalAgility for its invoices

Reference project:

BAOSTEEL

“All the relevant data for our invoice process is extracted by the Tungsten Automation software, matched with SAP, and forwarded to the downstream systems. That saves time – and, of course, money – in many places in the process.”

Süleyman Kücük, Team Leader, IT Baosteel Tailored Blanks

How can invoice receipt processes be optimized and automated? Baosteel Tailored Blanks, a specialist in lightweight construction that was founded in 1983, also faced this question. With 17 locations across three continents, more than 400 employees (239 of them in Germany), and revenues of around 148 million euros (data from 2019), Baosteel Tailored Blanks is a successful automotive supplier with expertise in lightweight construction – specifically in the area of laser-welded products. Most business enterprises still work document-based in many areas. Currently, portal solutions for the pure electronic processing of information primarily exist in the public sector. This applies in particular to invoices and credit notes, which are predominantly still submitted in printed form or, in rare cases, sent to customers as PDF email attachments. By contrast, the processes that are used for invoice and credit note processing are largely digitalized. This means that the relevant information, such as the invoice amount, has to be transferred from printed or PDF documents into an electronic, digitally processable format.

In the worst case, this involves an administrator entering the information in the digital system manually and then scanning the documents and importing them into the corresponding systems. These burdensome activities take up a lot of time and staff resources. The processes are also error-prone, because any typos made during the manual transfer of information can impair the process.

At a glance

- Highly automated solution for processing invoices and credit notes
- Automatic recognition of the type of document involved
- Integration with SAP and the ImageMaster archive system
- Reduction of manual activities and elimination of sources of errors

Automotive

The reference in detail

Customer pain points

Baosteel Tailored Blanks also has to deal with large numbers of invoices and credit notes every day. The company only receives 20% of them via e-mail as PDF files; the rest arrive as conventional printed documents. The challenge is to process these specific documents with a minimum of manual effort, with the files having to be digitalized, their content captured, and the original documents archived. In addition, all content must be passed on to an SAP workflow.

How T-Systems solved it

As part of a project for improving their invoice processing workflow, the company asked about an automated solution based on OCR and similar technologies. According to Süleyman Kücük, the previous process was error-prone, which required a lot of manual intervention by employees in the respective business unit and within Accounting. Since the company was unable to achieve the desired results, they decided to implement a solution from T-Systems, based on the Tungsten TotalAgility platform (TTA), a product for the digitalization and automation of document-based processes. All printed documents are now scanned and passed on to Tungsten TotalAgility, which automatically recognizes what type of document (invoice or credit note) is involved and then processes it in a workflow specific to the identified document type. Süleyman Kücük confirms this: “The recognition of data is outstanding. Subsequent corrections are only rarely needed.” The content (meta-data) that is relevant for the invoice process is then extracted and,based on the PO number, a query is started in the SAP database to find the transaction to which the invoice or credit note belongs. The digitalized documents and metadata are then forwarded to the ImageMaster archive system and from there to SAP. Recognition of the document type and extraction of the metadata are performed with the support of AI (artificial intelligence), which means no rigid set of rules has been defined. Instead, Tungsten TotalAgility has “learned” how to tell the documents apart and find the relevant data within them.

Business impact

Thanks to the smart solution from T-Systems, Baosteel Tailored Blanks is saving time and money, as the company itself confirms. It now has a platform that makes it possible to process invoices and credit note error-free, with a high level of automation. Only a few manual steps are required to send the documents and other important information to the responsible administrators within accounting, who can now approve transactions for posting with a few clicks of the mouse. The overall process is accelerated by the automation, giving employees more time to spend on other tasks. Süleyman Kücük underlines: “The solution is very stable. We haven’t had a single outage of Tungsten Automation so far.”

Further advantages:

- A platform is available that can be used for every process and the corresponding documents and content involved
- Enhancements are relatively simple, which means new processes can be implemented at short notice
- Thanks to the use of the AI technology, the system improves continuously. New document types or invoices from suppliers that the system has not yet encountered merely have to be taught – no rule sets have to be modified

Master of test data

With Data-as-a-Service, T-Systems is speeding up test drive analyses

“Data-driven decisions that previously required a huge workload and a much longer lead time are now possible.”

Bastian Wymar, Portfolio Management Data Intelligence, T-Systems

Many carmakers are convinced that individual mobility will remain a basic human requirement in the future. However, the CASE (Connected, Autonomous, Shared, and Electrified) era is changing the ground rules: Customer experience is becoming the priority. The focus is on sustainability, electric vehicles, and automated driving, as well as the potential offered by digitalization. All of these drivers are having a huge influence on the way in which cars are developed. In modern vehicles, driver assistance systems and online value-added services are becoming increasingly efficient, while vehicle electronics, onboard sensors, and bus systems are becoming more and more complex and are collecting more data. On test drives, it is important to analyze this data intelligently in order to meet very strict quality requirements further down the line during series production. Mercedes-Benz AG – with its focus on services and the development, production, and sale of cars and vans – is just one carmaker that found existing systems for collecting test drive data had reached its limits.

At a glance

Development engineers and IT departments have joined forces with T-Systems to create a future-proof end-to-end solution that is setting new standards for the sector. It is based on an intelligent combination of a central cloud and decentralized edge resources. T-Systems has submitted a patent application for a new type of software called Big Data Signal Processing, which runs on big data clusters of edge computers and makes the local analysis of highly complex, extensive measurement data up to 40 times faster. The local resources are connected to a central cloud for uniform, central access to the local clusters (federated Spark).

- Data transcoding of machine signals
- Up to 90 percent data compression rate
- Measurement data available within a few hours
- Data analysis up to 40 times faster
- End-to-end solution: network, cloud, edge, and applications

The reference in detail

Customer pain points

The test drives for endurance testing is one of the milestones in vehicle development. The engineers in the development departments specify the exact types of data to be recorded for these. Carmakers send a whole range of prototypes for new models to different test routes at the same time – to both deserts and permanent ice zones – to examine their behavior using a three-shift pattern. These handmade vehicles include extensive measurement technology to record the behavior of the different components (including the software) during the endurance test. During one shift, approx. 10 to 100 GB of data is generated in all sorts of data formats. Once the test drive has finished, the data is transferred from the car to a data warehouse and measurement data management system. The engineers at the development sites receive the raw data via file shares and copy it to local file systems. This process not only results in considerable data redundancy, it also takes a lot of time: It can take several days for the engineers to gain access to the measurement results. If errors are then detected, the cars and drivers have already gone to different places. That makes it extremely time-consuming and costly to reproduce the tests. The situation is further complicated by the current trends toward electric vehicles and automated driving, which are increasing the volumes of data recorded to TB levels. T-Systems has developed a new process to reduce the data provision time in the future.

How T-Systems solved it

T-Systems is winning customers over with a high-performance end-to-end solution that optimizes the entire process and allows “data as a service” to be used. The core components of the solution are edge computing resources, a central cloud platform, the Big Data Signal Processing software, which is compatible with Hadoop/Spark, and the federated Spark system based on it. After the test drive, the measurement data (signals) is transferred to big data clusters via Wi-Fi. These are in the edge computing resources that are permanently installed at the test sites. They are managed and operated by T-Systems. Big Data Signal Processing (BDSP) is also installed locally on the systems. BDSP pre-processes the measurement data, i.e., the different data formats collected are transcoded into standard big data formats. And this is precisely the point: It enables processing to be up to 40 times faster for decoding and subsequent analyses than when using conventional tools. That’s because BDSP allows parallel interpretation of the measurement results recorded from distributed, binary, or textual trace files. In practice, the volume of data is reduced by up to 90 percent. BDSP also supports signal resampling and tagging and has an API for connecting to other systems. The edge part of the solution is complemented by a central cloud with a federated Spark system. This system enables engineers to access the measurement data – regardless of where it is located. The federated Spark system automatically identifies data for the developers. However, the developers not only find the right data, but also trigger the corresponding analyses on the edge servers via the cloud. That means that only instructions and results have to be transferred between the test sites and developers’ workplaces, rather than the complete raw data sets as in the past. This avoids the need for a costly expansion of the MPLS network. The solution also scores points for security: The measurement data is already encrypted when it is stored in the vehicle and remains highly encrypted and secure at all times. This also applies to the transport layers, including the transport protocols between the vehicle and edge resources as well as to network access points.

Business impact

With the new system, Mercedes-Benz is gaining a groundbreaking and future-proof platform that significantly speeds up work for development engineers and enables a faster time-to-market. The engineers at development sites can now gain access to measurement data within a few hours. On the one hand, they can start working with the measurement results immediately, and on the other hand, they can identify errors directly, allowing them to arrange a repeat of the test drive. This is bringing them closer to testing and reducing development cycles. The new solution has yet another benefit: Detailed measurement plans and precise specifications for the measurement data to be recorded are no longer needed. The engineers have access to the entire measurement data set at all times and can analyze it at a later date if specific questions arise. This creates tangible cost advantages and contributes toward sustainability.

The number of test drives is falling and the tests are becoming more efficient – allowing data-driven decision-making, which was only possible with a huge workload and much longer lead time in the past. The engineers can continue using their tried-and-trusted systems and also utilize different tools from the big data community, as the integrated API makes it easy to connect to BDSP. The API also offers another benefit: It now allows the actual use of the recorded data to be analyzed. On top of everything, the introduction of the new architecture is making it easier for carmakers to collaborate with suppliers and to control the data. Until now, suppliers received the raw data for their analyses and had to return their completed analyses back to the original equipment manufacturers (OEMs). Now it is possible for the suppliers to process these analyses directly on the carmakers’ systems, so the raw data no longer has to leave the plant.

Laser-sharp focus on quality for carmaker

AI-driven QA process helped automobile manufacturer reduce errors during production

“With its AI-based solution, T-Systems has supported the customer in optimizing its manufacturing processes in laser beam welding systems in terms of quality, robustness, and flexibility.”

Wolfgang Holz, Sales Expert AI, T-Systems International

In 2020, the customer, a globally renowned automobile manufacturer, approached T-Systems to create a solution that would enable effective monitoring and quality control of the laser welding process in their factories.

A key priority was to reduce process complexity for the plant manufacturer, increase process robustness, and improve the flexibility of the laser beam welding systems so that modularity could be leveraged in the future. Continuous monitoring of quality throughout the welding process was also a crucial requirement.

At a glance

- The customer was facing challenges with a complex and expensive laser welding quality assurance
- AI-based solution with focus on data modelling, anomaly detection by leveraging computer vision
- Technologies used include TensorFlow, Nvidia CUDA, OpenCV, Python, Tkinter, Docker, Jupyter
- The customer benefited from a massive reduction of errors during production

Automotive

The reference in detail

Customer pain points

The customer was faced with the challenge that there are hardly any sensor suppliers for the intelligent process monitoring and quality assurance of laser welding processes in metal processing, which means that an economically viable large-scale implementation of an overall laser system was not possible. Manual quality controls with laser technology, CT, etc. that have been usually used are too complex and cost-intensive. Even random inspections lead to faulty deliveries. Due to the high complexity of quality assurance for laser welds, there is a need for customized, efficiency-increasing process automation by means of intelligent algorithms. Essentially, the customer wanted to reduce the process complexity at their factory and improve process robustness and flexibility of the laser beam welding systems so that modularity could be exploited in the future. The customer also wanted to ensure reliable quality control of the welding before, during, and after the welding process. The creation of the necessary prerequisites for a system-penetrating use of laser beam welding was also a requirement.

How T-Systems solved it

The pilot solution provided by T-Systems spanned three “packages”: (1) Consulting (2) Development of a computer vision approach for the holistic process of laser welding (3) Provision of a summary of all the results.

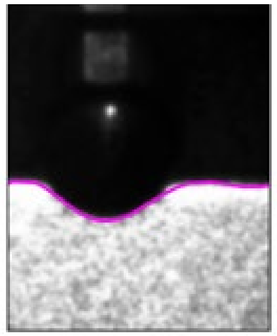
During the consulting stage, T-Systems provided advice on different approaches driven by AI for the detection of fault patterns; procedures for mapping the requirements for the whole process; labeling and preprocessing methods for the planned image identifications; generating further data for subsequent model training, along with documentation of all considerations and proposals.

Based on the findings during the consulting stage, T-Systems developed a computer vision approach for the automated quality assurance of laser welding. This included development of an AI software program for processing video files (around 500 different welding videos) of the process camera from the welding process, so that the evaluated video file is returned. T-Systems experts also worked on documentation of the data transfer, preparation of the data, and all analysis regarding methodology and results including evaluation of results. T-Systems provided its own GPU computers for the implementation of the training of computer vision models.

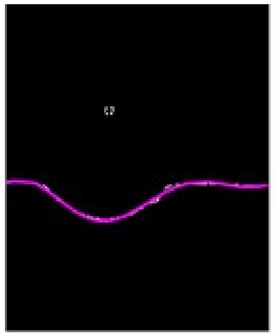
T-Systems identified four different use cases for laser welding, which are relevant: Edge & Notch Detection, Splatter Detection, Weld Through Detection, and Surface Pores Detection.

Edge & Notch Detection

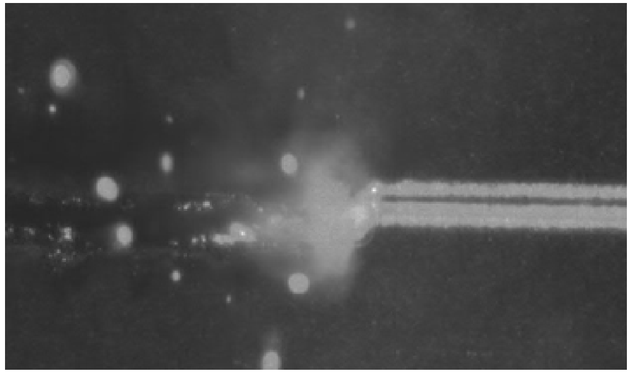
Original



Contours

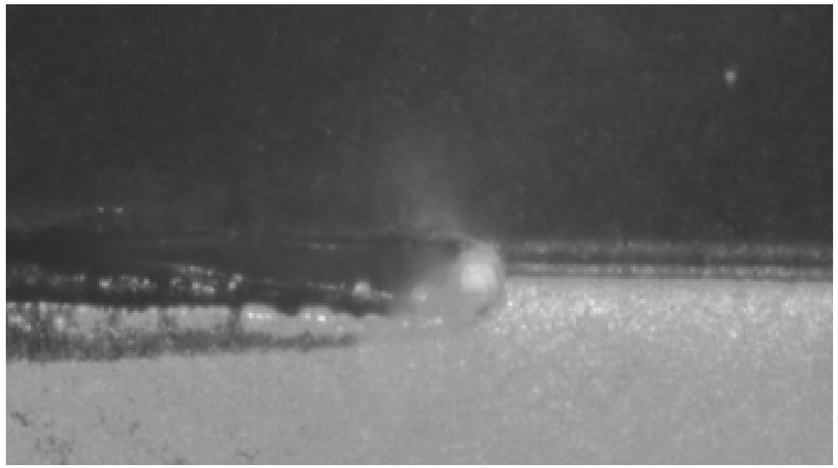


Splatter Detection

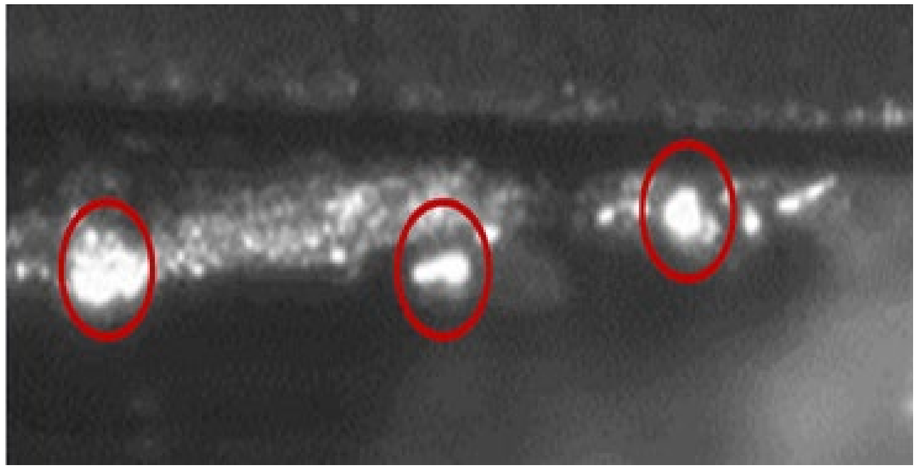


Automotive

Weld Through Detection



Surface Pores Detection



The deliverables of the third stage included a summary of all results of the project, code documentation, and consulting service for possible improvement of the code in the future with the aim of greater robustness and for industrialization.

Noticeable value additions from the T-Systems team were experienced data scientists from various backgrounds, previous experience of executing similar projects, use of AI Vision with ready-to-use services for computer vision, and local availability of experts.

Business impact

Turning to a future-oriented partner like T-Systems allowed the customer to focus on their core business. Regarding the detection of through-welding, weld spatter and enclosed pores, the customer experienced a 100% accuracy over a dataset of 500 different welding videos and thus a reduction of errors during production.

Regarding Notch Detection, the algorithm within this project is able to detect notches with an accuracy of around 94%. A consequence of a notch, however, will be a weld through, which – as mentioned – can be detected with 100% accuracy.

Moreover, early detection of failures helped prevent multiple bad quality welds, resulting in quality and cost optimization for the customer and reduced stress for the plant engineers. The solution also enabled efficient quality management and continuous improvement by avoiding complex systems and implementing a flexible, more cost-effective approach driven by AI. In addition, process robustness and flexibility are increased.

A significant leap in productivity for toll provider

T-Systems introduces Amazon Q Developer for AI-powered software development lifecycle

“Our customer reaches a new level of code quality and productivity for code generation using Amazon Q Developer, which we have seamlessly integrated into its existing development environments and organizations.”

Lydia Delyova, T-Systems AWS AI expert

We are still in the era of mobility, with individual traffic on the rise globally. Despite advancements in vehicle technology that have reduced greenhouse gas emissions per vehicle, overall carbon dioxide emissions from road freight transport continue to climb due to the sheer increase in traffic volumes. This growing traffic not only escalates carbon emissions but also strains infrastructure, requiring significant investments to maintain and modernize national traffic systems.

Intelligent tolling systems are emerging as a critical solution to regulate traffic and transform the mobility sector. These systems not only help manage traffic flow but also generate essential funds for infrastructure maintenance and the development of more environmentally friendly transportation options. In Europe, numerous tolling companies play a vital role in national traffic systems. These companies rely heavily on digital infrastructure, with software serving as the backbone of their operations to monitor traffic and collect usage-based tolls. Their business models are deeply intertwined with digitalization, enabling them to offer valuable insights and solutions for innovative mobility and traffic management.

One such toll provider is leading the charge in transforming road user management through digital innovation and strategic partnerships. Committed to enhancing the efficiency and sustainability of transportation networks, the company is continuously advancing its software to meet the demands of a rapidly evolving mobility landscape.

At a glance

- Software is at the heart of the tolling business and forms the basis for continuous innovation of services
- Ensuring high code quality
- Reducing employee burden for code review, generation, testing and debugging
- Avoiding inconsistencies and inefficiencies
- Introducing Amazon Q Developer to accelerate software development
- AI-assisted inline code generation, testing, debugging and review of code
- Integration of Amazon Q Developer Pro into existing organization that allows comprehensive control over the activities of accounts, users, and groups, ensuring organization-wide capabilities for efficient management
- Integration with developer’s IDE and many other AWS services such as AWS Lambda, AWS Glue, Amazon CodeCatalysts, Amazon QuickSight, Amazon SageMaker Studio and many more
- Usage of additional capabilities as extensions of existing environment
- Significantly faster code generation, test implementation and automated documentation, easier code maintenance and sw ifter debugging of issues
- Improved code quality
- Faster onboarding of new developers
- Great user experience
- Profound knowledge of AWS AI capabilities and expertise to integrate the AWS services into the customer’s existing development processes and tools for convenient usage and great user experience

Automotive

The reference in detail

Customer pain points

The tolling provider faces challenges in maintaining and enhancing their code quality while striving to improve the code generation processes. The existing methods for code review and generation are labor-intensive and prone to human error, which can lead to inconsistencies and inefficiencies. The company recognizes the need for a more automated and reliable solution to ensure high standards of code quality and to accelerate the development lifecycle.

The software provider intends to leverage the advantages of artificial intelligence (AI) to automate code reviews, enhance code generation, and ultimately improve the overall efficiency and quality of their software development processes. This shift towards AI-driven solutions is critical for maintaining their competitive edge and meeting the growing demands of the transportation technology sector. The company approached T-Systems to introduce AI capabilities to their software development.

How T-Systems solved it

To enhance software development efficiency, T-Systems implemented Amazon Q Developer, a generative AI-powered assistant, designed to streamline various tasks throughout the development lifecycle. Amazon Q Developer aids developers and IT professionals with coding, testing, upgrading, troubleshooting, security scanning, AWS resource optimization, and data engineering pipeline creation.

The service is available directly from AWS and thus integrated into the AWS console as well. T-Systems seamlessly integrated the service into the company's existing development environments and command-line interfaces. An additional single sign-on service (AWS SSO) allows for easy, efficient and secure usage. AWS SSO manages user identities and permissions across the AWS services according to the respective user's rights and permissions.

Amazon Q Developer provides real-time code suggestions and recommendations, helping developers build faster and more securely. It is envisioned to be integral across research, design, development, testing, and maintenance stages, from finding information and understanding code to brainstorming improvements and conducting code reviews.

Business impact

The implementation of Amazon Q Developer has yielded significant benefits, notably improving developer productivity and code security. It speeds up deployment and enhances the quality of the code, leading to a more robust and reliable software development environment.

By automating the creation of new code based on inline code suggestions (during code writing), developers can focus on more complex and innovative tasks, accelerating the overall development process. Additionally, the Amazon Q Developer Agent for software development speeds up and automates the creation of essential documentation and unit tests. This agent also helps to build AWS projects or own applications after an explanation of the expected feature in natural language.

The troubleshooting capabilities for Lambda, EC2, Amazon ECS, Amazon S3 or network-related issues enable developers to identify root causes faster, reducing downtime and operational inefficiencies. Developers can diagnose console error messages directly in the AWS Management Console. Amazon Q provides information about the error and the steps to resolve it. All these services, and some more, are directly available within the familiar development environment, creating an excellent user experience.

Utilizing the Explain feature, Amazon Q Developer accelerates the onboarding process of new developers, helping them become productive more quickly and gain a clearer understanding of new projects, which is a huge efficiency boost.

AI avatar as a sales trainer

OEM implements new training concept
with AI services from AWS

“GenAI is ideal for efficiently implementing innovative, interactive training formats. With the AWS-based avatar, we have created an easily reproducible solution for sales and marketing.”

Artur Schneider, T-Systems AI expert

The automotive industry is undergoing a profound transformation toward software-defined, electric vehicles. The contribution of digital components to a vehicle’s overall value is steadily increasing. Simultaneously, the market environment is becoming more dynamic, driven by advancements in technology and processes. To stay competitive and respond swiftly to customer demands, OEMs (Original Equipment Manufacturers) have significantly shortened the time to market for new vehicle development, now introducing new models every two to three years on average. This accelerated pace of innovation impacts not only production but also marketing and sales strategies.

Like its competitors in the automotive industry, a European OEM is closely monitoring advancements in digitalization to stay ahead of emerging trends and opportunities. What added value can artificial intelligence bring, for example? How can it generate competitive advantages, enhance efficiency, or empower and support employees?

At a glance

- Need for innovative training concept at OEM
- Existing classroom training courses are too inflexible, cost-intensive, and difficult to organize
- Limited availability of trainers
- Individualization of training courses
- Development of an AI-based avatar operated and hosted on AWS
- Natural language processing (spoken word for interaction with avatar)
- GenAI: Large Language Model (LLM) from Amazon Bedrock
- Enrichment of the LLM via RAG (Retrieval Augmented Generation)
- Flexible, individualized learning
- Efficient implementation of training courses (independent of time and location)
- Complete service from a single source
- Fast realization
- Solution from a single source: T-Systems combines excellent AWS know-how with AI expertise and ensures rapid implementation.

Automotive

The reference in detail

Customer pain points

The increasing number of models and a wide range of customization options, as well as vehicle specifications, posed major challenges for the sales management of a European OEM: how can sales staff stay up to date with information and details on new vehicle models? Traditional approaches, such as face-to-face training, resulted in high travel costs and logistical challenges. But the staff for online training, for example, is also in short supply. At the same time, different sales employees have different training needs, which the OEM was unable to meet with standard training courses (e.g., video sessions which lack interactivity and the option to raise and respond to questions).

The aim was to create an interactive, intensive learning experience with individual content on products and sales methods that would allow every employee to perform their training regardless of time and place. At the same time, the sales management wanted the training program to be easy and efficient to organize. The launch of a new vehicle model was to be used to test the suitability of artificial intelligence for the training courses.

How T-Systems solved it

“To create a training experience that is as realistic and personal as possible, we developed a digital avatar together with the OEM. It takes on the role of the trainer in the training sessions and provides the participants with the necessary knowledge about the new model,” says Artur Schneider, AI expert at T-Systems, explaining the solution approach.

The solution consists of several components. The technical basis for the avatar is services from Unreal Engine and AWS. The avatar itself is running in Unreal Engine, while the powerful cloud platform from AWS takes care of the rest.

First of all, AWS offers strong scalability based on training needs - including the necessary GPU resources to run an AI avatar. In addition, AWS also offers a wealth of ready-to-use language processing and AI services that can be easily integrated into functional solutions: Amazon Transcribe transforms audio to text, and Amazon Polly reverses text to audio.

But understanding language is, of course, not enough to hold training courses. This is where artificial intelligence, i.e., Gen AI, comes into play: a Large Language Model (LLM) operates in the background, which is provided by Bedrock. The pre-trained LLM receives specific context and product information via RAG (Retrieval Augmented Generation). A knowledge base is created in Amazon Bedrock, which then generates an Amazon OpenSearch vector database containing the necessary documents. When a user asks a question, a relevant query is created in the vector database, and the necessary information is sent to a Large Language Model (LLM) to generate the most appropriate answer. Therefore, the avatar has the latest information on the vehicle model at any time.

The final avatar is simply made available via a web browser. The background AWS capacities ensure real-time communication with interested parties without long waiting times.

Business impact

Training participants can talk directly to the avatar using natural language processing and output. This creates an individual discussion. Beyond that, the online availability of the training service allows sales staff to plan their training times according to their personal schedule. The OEM makes its training concept more flexible and offers its employees a new and intensive learning experience, regardless of the availability of trainers.

The customer did not need any prior AI knowledge to develop the avatar. The T-Systems team delivered the solution from a single source. This prototype was continuously optimized with internal data, demonstrating a commitment to quality and ongoing improvement.

The digital service employee

BARMER increases service quality with digital assistant

Reference project:

BARMER

With a budget of more than 37 billion euros and 9.2 million insured persons, BARMER is Germany's second-largest health insurance fund. Service is the top priority for the corporation under public law: insurance customers can contact them with their requests and wishes around the clock, through a wide variety of channels. The 2,000-strong service team fields 40,000–50,000 phone inquiries every day.

Their existing solution supported the usual features of a UCC system and multichannel contact center. But BARMER wanted to take the next step toward efficient, high-quality customer support: shorter wait times, faster processing of inquiries, and more time for in-depth discussions for dealing with complex matters.

At a glance

BARMER implemented a digital assistant in service. The voice bot recognizes natural speech and classifies the customer inquiries. Standard matters, such as address changes or requests for a new insurance card, can be handled by the bot; more complex inquiries are forwarded to an employee at the service center. With this digital approach, BARMER is reducing processing and waiting times, improving the customer experience.

- Increased service quality
- Greater service efficiency
- Reduction of processing and waiting times
- Cost reduction
- Optimal employee assignment to customer inquiries

Health

The reference in detail

Customer pain points

“Press 1 for...”– People who call helplines often have to fight their way through a labyrinthine voice menu, only to end up hearing

“The next employee will be with you in two minutes.” Waiting times are predestined in classic contact centers. Although BARMER has won multiple awards for its service, they wanted to optimize their common processes further. They wanted to improve accessibility, answer their customers’ questions more quickly, and give employees more time to speak in-depth with callers.

How T-Systems solved it

BARMER seized the opportunities presented by digitalization. As an added feature for the Genesys contact center solution, the company implemented a digital assistant. This voice bot is the first point of contact for callers. It is capable of understanding natural speech. It records the insurance number, saves it directly in the system, and classifies the inquiry. It answers routine inquiries, such as information about opening times and insurance rates, by itself. It also initiates standard processes directly, such as a change of address or issuing of a new insurance card. If the digital assistant hits its limits, it forwards the caller to a human colleague.

Business impact

With the digital assistant, BARMER has taken a big step toward its goal of improving service quality. Customers spend less time waiting on the phone; their inquiries are processed more quickly. With efficient resolution of routine inquiries, the bot reduces the workload for human employees. They have more time for more intensive customer support – providing advice, for example – and specialists for specific topics can be given targeted assignments. What’s more, the increased efficiency of the service processes means BARMER can save costs. At the bottom line, it’s a healthy combination: better customer service at lower costs.

- Efficient customer service
- Fast processing of inquiries
- Minimum wait times
- Reduced costs

AI in hospitals

Smart Health Chat for the German medbo hospital group

Reference project:

medbo®

“T-Systems created an easy way for us to dive into the world of artificial intelligence and guided us through the proof of concept as a trusted expert.”

Veronika Steinkohl, Deputy Director of HR and management spokesperson, medbo

medbo – that’s the name of the medical facilities in Bavaria’s Upper Palatinate district. The company specializes in psychiatry and psychotherapy for adults, children, and adolescents, as well as neurology, neuroradiology, and special competencies in forensic psychiatry. It is organized as a public agency in the form of a municipal company and receives public funding. The healthcare company provides outpatient, inpatient, and daycare treatment in eight locations: Amberg, Cham, Parsberg, Regensburg, Roding, Weiden in der Oberpfalz, Wöllershof, and Wörth a.d. Donau. Its headquarters, including administration, is in Regensburg. medbo cooperates closely with the University of Regensburg in the areas of psychiatry and psychotherapy for adults, children, and adolescents, resulting in the creation of three chairs to closely dovetail research, teaching, and treatment.

Like many other medical companies, medbo has recognized the potential of digital applications to support hospital and hospital-adjacent processes. Its nearly 4,000 employees confidently use digital workflows for their everyday work. medbo also operates the IBP, the largest educational institution in the healthcare sector in eastern Bavaria, as well as the medbo nursing schools, the company’s own vocational schools for nursing and nursing assistance at Regensburg Regional Hospital. Digital learning has long taken root here.

Still, as is the case in other regions, demographic change is a bitter truth in this corner of Bavaria as well, as the hospitals have to cope with increasing numbers of increasingly elderly patients. What’s more, the huge demand for medical, nursing, and therapeutic staff is difficult to meet due to the severe skills shortage. As such, further digitalization and a reduction of staff workload are essential to the healthcare provider’s viability. Artificial intelligence (AI) is one of the tools that medbo is exploring to handle the situation. AI has attracted a lot of attention in recent years, particularly in the medical sector. The potential of digital assistants in preparing for decisions, or as tools that handle administrative tasks like documentation, is readily apparent – with the associated relief for the skilled staffers.

Health

At a glance

- Reduce the workload of hospital staff
- Get started with artificial intelligence and explore its potential
- Search for a fast, cost-effective proof of concept
- Scenario: Internal knowledge management and content creation
- Use of T-Systems’ sovereign generative AI framework for healthcare: Smart Health Chat
- Customer-specific knowledge base enriched through retrieval-augmented generation
- Vector database built and filled with customer’s data and information sources
- Hosted in the T Cloud Public
- Built in just a few days, PoC (proof of concept) over nine weeks
- Highly intuitive user experience and time savings when formulating texts
- Extensive support by T-Systems as an experienced AI partner
- medbo is gathering in-house experience that will serve as a foundation for its future AI strategy
- The T Cloud Public is a sovereign hosting platform that can be used even for highly sensitive data from the hospital and healthcare sectors
- Out-of-the-box AI chatbot that can quickly be adapted to customer needs. Strong customer focus and high level of AI expertise from T-Systems

The reference in detail

Customer pain points

“We wanted to gain experience with the possibilities and limits of AI first-hand,” says Veronika Steinkohl, the Deputy HR Director and management spokesperson at medbo, about the project’s objectives. To do so, medbo established a PoC (proof of concept) to get started with artificial intelligence. How much relief can the technology actually provide for staff?

medbo wanted to start quickly and with little expense – with an out-of-the-box AI that does not require any training effort and can be implemented and used even without internal AI expertise. One key condition was defined quickly: the PoC was not to use any personal data and would only be used internally.

The team decided to implement a kind of enterprise search/knowledge management feature. To do so, it chose a conversational AI solution to find and summarize information from internal sources – in this case, the Board area’s 5 GB of documents such as press releases, minutes, construction reports, forms, and more in a variety of data formats (pdf, txt, docx, msg, xlsx). medbo found T-Systems to be an excellent partner for getting started with AI.

How T-Systems solved it

“Smart Health Chat proved to be the perfect solution for medbo’s requirements,” explains Steven Richter, Account Manager at T-Systems. Similar conversational AI solutions are already being used for production in other scenarios, such as for an automotive manufacturer.

The Smart Health Chat is hosted in the T Cloud Public . “Of course, we weren’t able to deploy the existing solutions on a one-to-one basis – automotive information isn’t much help for administrative staff at a hospital group, of course,” says Jan Müller from T-Systems’ Specialist Sales unit with a grin.

Still, this conversational AI solution already has many important features on board: it understands chat-based input and can browse sources, identify relevant knowledge, summarize it, and output it as text. Thomas Rothenbächer, project manager at T-Systems, explains: “We only had to give the bot the right context to ‘understand’ the hospital environment. We designed our sovereign generative IT framework flexibly for cases exactly like this.”

The bot gets access to appropriate data sources through a RAG (retrieval-augmented generation) approach. When the sources are extracted, the data is transformed and stored in a vector database. This database then serves as a continuously updated “context source”, which the bot searches when given the corresponding prompts. Both elements – the AI chatbot itself and the specific vector database – run on a customer-specific tenant on the T Cloud Public . This ensures that the data remains in-house and no one else can access it. The operational chatbot was created in just a few days. The project team then tested the solution over a period of nine weeks.

Business impact

The team members have given high marks to the tool’s features and user interface, as well as to the collaboration with T-Systems, summarizing: “The contact persons had business and technical competencies, and the operation of the software was comprehensible. We were in good hands with T-Systems.” They particularly emphasized the fast availability of the AI service and the time saved when formulating texts. The bot gave administrative staff a first step into the world of AI.

The PoC gave medbo a cost-effective opportunity to gather its first experiences with using AI and set the course for the next steps with this new technology. In addition to internal texts, Smart Health Chat can also search external data sources and add them to its vector database. What’s more, the AI concept also allows for the use of sensitive data: The RAG concept ensures data sovereignty, while the T Cloud Public and its supplementary agreements are compliant with German laws such as §35 SGB (regarding the processing of social data) and §203 StGB (regarding secrecy protection for professional secrecy holders).

In addition, Smart Health Chat also has a variety of additional use cases. Open interfaces enable its use in end-to-end (E2E) automation or integration with omnichannel management platforms.

AI reduces research time by 50% at ENERGIEALLIANZ Austria

GenAI-based “client radar” builds real-time customer overviews

Reference project:

ENERGIE ALLIANZ AUSTRIA

“Account managers have been able to halve their sales research time and are well prepared for any customer situation with the up-to-date, clearly presented, and high-quality information now available to them.”

Tobias Unfried, Head of Information Systems at ENERGIEALLIANZ Austria

Be it commercial bakeries, consumer goods manufacturers, telecommunications providers, or insurance companies – the need for energy unites all companies, however different their business models may be. To safeguard gas and electricity supplies – and, as a result, business operations – companies need strong energy partners they can rely on.

The leading energy sales and trading company in Austria is ENERGIEALLIANZ Austria (EAA), which is based in Vienna. Founded in 2001, EAA supplies more than 100,000 customer facilities across the key account, industrial, and business sectors throughout Austria. With 140 employees and annual revenues of around €1.9 billion, EAA plays a central role in Austria’s energy market.

The EAA Group is the joint energy sales and trading company of BURGENLAND ENERGIE, EVN, and WIEN ENERGIE. Within the group, EAA is responsible for trading and selling electricity and energy-related services for key account, industrial, and business customers. The brands/subsidiaries Switch and NATURKRAFT were successfully established on the market to target customers nationwide in the consumer and commercial customer segments.

EAA offers individual electricity supplies for companies in Austria. Its portfolio ranges from standard products to flexible and customized energy solutions. It also advises customers on all matters concerning intraday trading and marketing balancing energy. In addition to supplying electricity, EAA also provides energy-related services – ranging from energy audits and transformer station maintenance to digital billing solutions – as well as resource saving, innovative green electricity solutions.

EAA’s motivation is to actively shape the future of energy to build a better today and tomorrow by developing innovative solutions.

Utilities

At a glance

- Leveraging AI potential for business and acquiring the necessary expertise
- Uncovering use cases that add value
- Implementing and testing a client radar as an initial solution: a knowledge management assistant
- Integrating relevant sources and defining prioritization criteria
- Provisioning a dashboard interface · Using OpenAI (Azure) as basis
- Operation within own Azure tenant
- IT as a business enabler
- Easy AI use and proof of added business value
- Less time spent on research by account managers
- Preparation time halved
- T-Systems provides comprehensive AI expertise and delivers the AI solution as a user-friendly dashboard
- With its end-to-end approach, T-Systems guided EAA through the entire process — from consulting to implementation and ongoing support — for a technology-agnostic solution
- ISG has recognized T-Systems as a leader in AI Services for Microsoft Clouds in Germany

The reference in detail

Customer pain points

“The disruptive features of AI are widely accepted. Our theory was that we could use generative AI to leverage solutions with major business benefits quickly and easily. We wanted to identify these potential applications in a structured process and implement and test one of them as an example,” said Tobias Unfried, Head of Information Systems at ENERGIEALLIANZ Austria.

In collaboration with the AI experts at T-Systems Austria, the IT and Business units at EAA launched a moderated “AI ideation process” using a co-creation approach. The partners identified a total of 40 use cases, three of which were shortlisted. In the end, a use case was chosen that supports customer care — the client radar.

“Our account managers spend a lot of time researching and preparing for sales meetings,” explained the Head of Information Systems. “They have to look through a whole range of media, find relevant publications, and prioritize and extract key content.” The number of customers taken care of by an account manager is usually in the double digits. On average, ten percent of their working hours are spent on this kind of preparatory work. Would generative AI reduce this?

How T-Systems solved it

Having identified the use case, T-Systems implemented the “client radar” as a digital sales assistant. As Microsoft Azure is set as the cloud platform within EAA, the AI service runs on the company’s own Azure instance. The service, however, has a platform-agnostic design: EAA can simply port it to another platform. Training a proprietary model was not necessary: the OpenAI pre trained large language model is perfectly sufficient as a basis. Specific information channels were added to it along with the topics the assistant should track.

The client radar searches the relevant channels and extracts customer-related and industry-specific information. The assistant evaluates the information and generates summaries in a userfriendly dashboard for the sales team.

The project partners collaborated closely while developing the service: the account managers’ feedback was integrated into the solution through agile collaboration so that the service was continuously enhanced right from the trial phase.

Business impact

With the AI solution, EAA is once again demonstrating its focus on innovation – and modern IT its importance as a business enabler. “T-Systems, the IT department and Sales worked together closely and developed a GenAI solution in just a matter of weeks. It provides noticeable benefits for the business and harnesses the potential of AI for non-AI experts,” said the IT manager.

The client radar significantly reduces the time needed to prepare for customer meetings. “Account managers have been able to halve their sales research time and are well prepared for any customer situation with the up-to-date, clearly presented, and high-quality information now available to them.”

In implementing the use case, EAA has opened the door to the world of AI: “We have built AI expertise and are now ready to take the next steps in innovation,” said the Head of Information Systems at ENERGIEALLIANZ Austria.

Deutsche Bahn: Significantly more accurate traveler information for customers thanks to artificial intelligence

Reference project:

DB

Transportation safety for self-driving shuttles

The Rhine/Main Regional Transport Association is piloting a novel mobility concept – with AI software from T-Systems

Reference project:

“Computervision, the solution from T-Systems, is enabling us to pilot autonomous, on-demand mobility and helping us to ensure that our passengers feel safe.”

Thorsten Möginger, Team Lead, New Mobility, Rhine/Main Regional Transport Association

The Rhine/Main Regional Transport Association (Rhein-Main-Verkehrsverbund, RMV) provides transportation to around 2.5 million passengers every day. It moved an impressive 808 million passengers overall in 2019. With nearly 300 cities and municipalities in the association, RMV covers nearly two-thirds of the German state of Hesse with its transportation services. Regional trains, metro lines, buses, subways, and trams drive more than nine billion passenger kilometers every year – making RMV one of Germany’s largest regional transportation associations. It provides environmentally-oriented mobility to people in the greater Frankfurt region and beyond.

Environmental protection aspects, not least the German government’s climate targets and the 9-euro ticket, have put public transportation back on the map for many travelers but have also shown where improvements are needed. The decision-makers at RMV are thinking about ways to make mobility more flexible and more customer-centric and to create stronger intermodal connections. Digital components also show potential here.

Specifically, RMV wants to pilot a shuttle service on the outskirts of its served area. Self-driving minibuses with a capacity of six to eight people will be deployed on routes where passenger volumes make it impossible to run conventional buses economically. This autonomous mode of transport saves the costs of drivers.

As the operator of this mobility-on-demand service, RMV is also responsible for monitoring passenger transportation – just like any other mode of transport. While driving personnel perform this duty on buses and trains, a different solution is needed for autonomous means of transport. RMV is piloting a digital solution for this task as part of a proof of concept that was launched in November 2022. Its subsidiary, Rhein-Main-Verkehrsverbund Servicegesellschaft mbH, has teamed up with T-Systems to do so.

At a glance

- New solutions for intermodal transportation
- Use of self-driving minibuses
- Satisfies the required monitoring of transportation safety
- A must: compliance with data privacy laws
- Computervision from T-Systems as object recognition solution
- AI-based application on a local edge device
- On-board analysis of video data
- Anonymized data is transported to the customer’s back-end system
- Dashboard for historical analyses and current status
- Data-protection compliant
- Foundation for business decisions

Public Transport

The reference in detail

Customer pain points

Serving main lines in cities and metropolitan regions is only one facet of public transportation. Another facet involves predominantly rural, structurally weak areas where passenger numbers are low – and transportation services have a low frequency as a result. All the same, large regional transport associations also have to think about how areas and zones with low passenger numbers can be connected to the transportation network efficiently and economically. To do so, they are increasingly offering on-demand services such as “call-a-bus” services or shared taxis.

The emergence of the first self-driving buses is giving new impetus to this topic. But will autonomous buses provide a foundation for operating such services economically? And how can RMV, as the responsible organization, sufficiently monitor operations, perform its supervisory duties, and guarantee transportation safety? And how can all of this be done in compliance with legal regulations? After all, RMV also has to comply with applicable data privacy policies.

How T-Systems solved it

In November 2022, RMV launched a pilot project to operate self-driving shuttles on its own premises. The project integrates Computervision, a solution for person recognition. Deutsche Telekom Business Services (DTBS), which has RMV as its customer, established contact with T-Systems, which is implementing the solution.

In essence, it consists of an AI-based application that is installed on a powerful edge hardware device and can be connected with an on-board camera, which can either be already integrated into the bus or installed specifically for this purpose. The solution also features GPS tracking. However, the true intelligence of the solution lies in its pre-trained, AI-based application. Among other things, it is capable of scanning the passenger compartment. It can handle four specific use cases: It recognizes how many people are on the bus, whether they are wearing masks, whether they are standing, and whether a passenger has forgotten a bag.

A potential add-on is a tablet PC or screen that is integrated into the bus. Communications with passengers are implemented depending on the customer’s requirements and can be mono- or bi-directional. For example, if a passenger is standing or not wearing a mask, they receive an appropriate message. The tablet PC also serves as an information medium in case unusual traffic situations arise – such as traffic jams or accidents.

The application on board analyzes the data from the object recognition software and transmits it to the customer’s back-end system. The T Cloud Public , including a dashboard from T-Systems, can also be used as the back-end system. The important factor: While the on-board application records and analyzes videos, no still or moving images are sent to the back-end system. The application only identifies “three persons”. This completely anonymized number is added to the dashboard and the stored data.

Business impact

The dashboard enables RMV to guarantee safety on the shuttle and to determine capacity utilization. Based on the data from the six-month proof of concept trial, RMV will be able to make sound business decisions on the wider deployment of the shuttles. At the same time, RMV has gained a solution that will also guarantee transportation safety in self-driving vehicles. In doing so, it is meeting its legal obligations as a transportation operator – completely compliant with data privacy laws since no personal information is transmitted.

A mountain of application forms cleared away digitally

T-Systems implements hyperautomation solution for the Deutschlandticket for Transdev

“Process automation with real added value for the business in just five weeks – thanks to T-Systems, we were able to issue Deutschlandtickets to all applicants on time.”

Katrin Rüchel, Managing Director, Transdev Service GmbH

With 7,800 employees and 54 active subsidiaries, the Transdev Group is the largest private mobility provider in Germany. Transdev operates a variety of rail and bus networks in all of Germany’s federal states and serves around 217 million passengers every year. In addition, as a sales service provider, Transdev Vertrieb GmbH is active in a number of major transport associations, such as the Rhine/Ruhr Transport Association (Verkehrsverbund Rhein-Ruhr, VRR) and the Rhine/Main Regional Transport Association (Rhein-Main-Verkehrsverbund, RMV). Transdev Vertrieb has also taken on ticket sales for a variety of rail operators, such as Go-Ahead Bayern, Erfurter Bahn, and Südthüringen Bahn.

Massive expansion of public transportation is an essential ingredient for achieving global climate targets, yet a majority of people in Germany continue to use private transport for their everyday mobility. The government wants to change this. With the introduction of the discounted “Deutschlandticket” (€49/month) on May 1, 2023, the German government set the course for a nationwide boom in public transportation. Within weeks, thousands of people decided to take advantage of this attractive offer, many of them switching from their previous monthly tickets to Deutschlandtickets. The consequence: Transportation companies faced a deluge of new applications for the Deutschlandticket – and had to process them all on time for customers to be able to use their tickets on May 1.

How could the “paper interface” be bridged to provide these applications to the IT systems in digital form quickly? This also posed a challenge for Transdev Service GmbH, which serves the customers and passengers of a wide range of companies.

Transdev initially planned to hire temporary helpers to manually enter the form data, but then T-Systems made a suggestion that greatly simplified the situation for everyone involved.

At a glance

- Heavy time pressure, heavy workload: processing the application forms for the Deutschlandticket
- Wanted: a digital solution as an alternative to hiring temporary helpers
- Compliant with all data protection and privacy requirements
- Process automation as a Service: hyperautomation solution from T-Systems and UiPath
- Rapid project launch thanks to provisioning as SaaS
- Realization in just five weeks
- Minimally invasive – without any major changes to existing systems
- Provisioning and operation of optical character recognition and software robot
- Data processing exclusively on the T Cloud Public and the customer’s systems
- Mountain of forms processed in time
- Permanently improved efficiency for the application process

Public Transport

The reference in detail

Customer pain points

“We calculate around five minutes per form for manual entry in the systems. As such, a thousand forms generate around 5,000 minutes, or over 80 hours, of monotonous work,” explains Katrin Rüchel, Managing Director of Transdev Service GmbH. And a thousand forms were merely a drop in the bucket. Transdev received thousands upon thousands of applications for the Deutschlandticket. The team planned to hire 60 temporary workers to handle the mountain of applications within the six weeks remaining until the launch of the ticket and get the data to the back-end Salesforce system.

Could a digital solution help – even across the “paper interface”? And if so, could the data be provided in compliance with with data protection laws? After all, the application forms contain personal information such as name, address, and bank details.

How T-Systems solved it

“In this situation, we offered Transdev a hyperautomation solution that we could deliver from a single source – process automation as a service,” says Jörn Bosse from T-Systems, who has supported customer Transdev for many years. Transdev decided to rely on T-Systems and their expertise in automation. It marked the starting point in a race against time.

T-Systems delivered the first version of the solution in just three weeks. “We had a tangible product in our hands very quickly. We were surprised that IT projects could be executed so fast,” remembers Katrin Rüchel. In the following two weeks, the solution was trained further, honed, and optimized.

Instead of typing each handwritten form into the systems manually, they were scanned at first. The next step required a component that could interpret the wide range of handwriting styles automatically and transpose them in digital form. To do so, T-Systems developed a solution based on the automation suite from its partner UiPath. This background service uses artificial intelligence to read the forms and decode the letters and words,and is complemented by a plausibility check. “Over the course of the project, it became clear that every form was not filled out perfectly. Typical mistakes included transposed numbers in the IBAN and missing mandatory fields. Our solution identifies such errors automatically,” says Sabrina Atazai, the project manager at T-Systems. At the same time, it also verifies the plausibility of the specified address data.

In case of any ambiguities, the bot documents the problems directly in Salesforce and forwards the transaction to a human processor. If the solution determines that all entries have been made correctly – or if the human processor approves – the data from the form is passed on to the second T-Systems development: a software robot (bot) that transfers the data to the CRM sys-tem of the transport association.

The entire solution went live on April 22, 2023, more than a week before the launch of the Deutschlandticket. The service is provided completely from the T Cloud Public , where T-Systems runs a dedicated UiPath installation in SaaS mode. It was able to automate the processing of around 600 applications per day, ensuring that all applicants received their Deutschlandtickets in time by May 1, 2023. This could have been scaled up effortlessly if more speed was needed.

CRM system of the transport association.

The entire solution went live on April 22, 2023, more than a week before the launch of the Deutschlandticket. The service is provided completely from the T Cloud Public , where T-Systems runs a dedicated UiPath installation in SaaS mode. It was able to automate the processing of around 600 applications per day, ensuring that all applicants received their Deutschlandtickets in time by May 1, 2023. This could have been scaled up effortlessly if more speed was needed.

Business impact

“Thanks to process automation, we mastered a major, acute business challenge in a very short time – despite a few unexpected surprises,” summarizes Katrin Rüchel from Transdev. The costs for recruiting, hiring, and training temporary workers were avoided completely. The employees were relieved of having to perform an extremely monotonous task – and were grateful for it. At the same time, the AI-based intelligent automation has given Transdev a solution for the future. Service and sales employees gain more time to care for their customers. The quick wins of the automation project have awakened a desire to automate additional processes at Transdev. “What really won us over was the fact that we didn’t have to touch the existing landscape. The automation approach is ‘minimally invasive’, so to speak. That speeds up the rollout of automation solutions a lot and generates rapid business value,” says Katrin Rüchel.

“We think we might have been able to implement a similar solution with the options available in Salesforce, but never within the available time frame,” summarizes Jörn Bosse from T-Systems. In T-Systems, Transdev found a partner that not only provided the comprehensive hyperautomation expertise that was needed, but also brought a market-leading automation suite from its partner UiPath to the table. The T Cloud Public demonstrates its strengths in use and provisioning: It not only enables rapid deployment (as SaaS from the cloud), ensuring that projects can take off quickly; its location in Germany also guarantees compliance with all data protection requirements.

Taming piles of paper

OEM digitalizes logistics processes

“With a modern AI solution based on Tungsten TotalAgility, our customer is optimizing its documentation process for goods receipt and production. Physical and digital documents are being linked efficiently.”

Mario Schneemann, T-Systems

Today, machine production involves large value-added and partner networks. Large, complex machines often require hundreds of thousands of individual parts and components, some of which are already provided in integrated form by suppliers. And even though some of the added value is created by partners, the OEM still has to keep control over the quality of the parts and the finished product across all development steps. It also has to fulfill certain retention and documentation requirements.

So it’s no wonder that companies operate large archives, where a wide variety of original printed documents have to be filed to facilitate easy retrieval – even in the digital age. These include external documents like delivery notes, invoices, certificates, and package lists, as well as internal documents like design plans, standard forms, or working documents that production staff uses to make processes auditable and document them.

But printed documents always have a huge need for space, require a lot of effort and expense to manage them, and make retrieval very complex – in many cases, archive information cannot be retrieved with a convenient Google search, but instead has to be found and retrieved in its leading systems, such as SAP. AI-supported processes – in digitalization, search, document enrichment, and more – can simplify even complex logistics processes and make them easier for employees to use.

At a glance

- Modernization of logistics processes to increase convenience and efficiency of processes
- Implement Tungsten TotalAgility for AI-supported input management
- Digital solution replaces printed archives as leading system
- T-Systems ImageMaster as the enterprise content management system, combined with the Tungsten Automation AI solution
- Extensive automation of the archiving process
- Customer operates the system in-house at internal datacenter
- Use of Tungsten Automation & ImageMaster solution for additional use cases in production and maintenance

Transport

The reference in detail

Customer pain points

A European original equipment manufacturer receives many deliveries every day for final assembly work. Many of these deliveries also consist of partial deliveries, with delivery notes, invoices, certificates, packing lists, and more. As a result, employees in receiving have to handle, review, and check thousands of documents – and match them with the deliveries –every week and integrate them in the internal workflows. Handling these printed documents requires many manual activities. To alleviate the workload on employees, improve internal workflows, and reduce the error rate, the EOM chose to implement a digital solution for goods receiving.

Its plans involved implementing an ECM (enterprise content management) system to optimize the logistics processes. One of the requirements of the new system was the efficient transfer of printed documents to a digital format. In addition, the digitization process had to automatically identify and classify documents, extract the relevant data for partner systems such as SAP, and then forward the documents to an archive system.

How T-Systems solved it

Out-of-the-box ECM systems do not offer an easy way to integrate existing printed documents in the system. This requires digitization of the documents, also called “input management”, and a team of experts at T-Systems was quickly able to offer the right solution. It is based on a product from Tungsten Automation, which T-Systems has partnered with for many years. Their Tungsten TotalAgility (TTA) suite features an automation and digitalization platform that met all the requirements completely: from scanning with high-performance scanners or multifunctional devices through the handover to downstream systems. The solution can do much more than scanning documents in a flash – its special feature is “under the hood”: Integrated artificial intelligence identifies the scanned documents and extracts relevant data like delivery number, date, billing address, certificates, and more. As a result, the documents and information are saved in an easily retrievable man-ner in the ECM system. The system also allows employees to document goods receipts with photos, which are added to the appropriate files.

Something else is added to the “goods receipt file” too: the bar code of the physical file of the documents. This is because the OEM still has to retain the printed documents, due to statutory requirements and warranty issues. The digital solution merely reduces the retention period. A hand scanner is used to record the bar code or ID of the physical file system, linking the digital and physical documents.

TTA transfers the digital, tagged documents to a cache, from which the ECM system retrieves the data. Archive staff then knows which documents have to be assigned to the design department, to workbooks, or to complaints, respectively.

T-Systems designed the workflows in the archiving process and adapted Tungsten TotalAgility to the requirements of the company processes. The input management experts then trained the artificial intelligence to classify the documents. The OEM’s new, completely digital archiving process was created in just three months and now runs in the internal data center.

ImageMaster by T-Systems proved to be the ECM system that met all the OEM’s needs. ImageMaster is a tried and tested foundation for a new, digital archiving process that also guarantees auditability. With its standard interface, ImageMaster also enables external systems such as SAP to access the ECM data.

Business impact

The process owners are delighted by the possibilities and are now implementing the features for other company divisions. Thanks to digitalization, the documentation process has achieved optimum levels of efficiency; employees no longer have to perform many complex manual tasks. A process only has to be sent to a processing clerk when the AI reaches its limits, for example, if it cannot decipher handwritten documents accurately. This minimizes manual errors and ensures that the internal processes are running on reliable data. The interface to SAP makes this possible.

The customer has also recognized the solution’s potential for further use cases: Employees involved in the production and maintenance/repair of the machines also scan work process-relevant processes in batches. The properly trained AI can identify the documents based on the positioning and spacing between the bar codes and archives them accordingly, supporting the employees in meeting their documentation requirements. The company is currently discussing rolling out the intelligent document management solution to other areas that have to work with printed documents.

Worldwide operating logistics company: AI-based system transparency increases customer satisfaction

“T-Systems designed and deployed an AI-based real-time alerting system notifying all relevant channels (customer support, incident response team) in case of outages.”

Dominik Zabel, T-Systems

Transport and logistics play an important role in the business activities of enterprises. In an era of intense collaboration beyond the borders of an enterprise, efficient supply chains are key to business success. Big logistics companies deliver hundreds of thousands of packages each day to keep supply chains alive.

In the business customer segment, logistics providers offer their customers enhanced flexibility: Customers are provided with, e.g., access to the logistics company’s systems. They can then print shipping labels for their goods and packages on demand and on their own. The availability of the respective system is essential for an efficient package delivery process. If the system is down, delivery will be delayed. This will negatively impact the customer relationship and the company-internal processes, both of the sender and the receiver of the goods.

All things considered, the reputation of the logistics provider will suffer from unavailable systems. Results are a negative customer experience and revenue loss. The customer, a global logistics company, approached T-Systems to create a solution that would enable effective monitoring of critical interfaces to their customer-facing systems.

At a glance

- Disruptions and outages of the landscape for customer-facing shipping label system
- No transparency on the outage makes informing clients impossible
- T-Systems implemented a machine learning model to detect anomalies in internal metrics as well as external data based on the application and alerts relevant channels in real time in the event of an
- The client now has real-time insights and gets an early warning about system outages
- His customers get an early heads up reducing incoming customer support inquiries
- The new AI-based solution shortens downtimes and costs
- Improved customer satisfaction

The reference in detail

Customer pain points

A multinational logistics provider was repeatedly facing disruptions and outages of their landscape for these customer-facing systems. Business customers were not able to print shipping labels. What's more, the logistics company had no information about the outage and could not inform their customers. The outages were occurring without any warning or indication from the source systems that were causing them. And even though the heuristics for these issues were known, they were not automated, making the redressal process complicated, time-consuming, and costly. The company needed rapid root-cause analysis and problem resolution to maintain trouble-free operations at all times.

In 2021, the customer approached T-Systems to create a solution that would enable effective monitoring of critical interfaces to their customer-facing systems.

How T-Systems solved it

T-Systems systematically addressed all the pain points of the customer through a machine learning model that detects anomalies in internal metrics as well as external data based on the application and alerts relevant channels in real time in the event of an outage. T-Systems collected and prepared the relevant data from the customer, developed and trained the machine learning model with process insights of the customer's experts. The data-based approach reliably detects anomalies in the operations processes.

The solution comprises three functionalities: It enables early and automatic detection of outages for the shipping logistics system for business and major customers. It introduced an alerts system with automated workflows which enabled outage notification to central monitoring systems giving the logistics company the opportunity to inform their customers. The notifications from this real-time alerting system are sent out to customer support, incident response teams, and systems via e-mail, SMS, or Teams Webhook.

Lastly, the solution also mimics the strategies of the experts to perform root-cause analysis for incident detection

Data Sourcing & Processing

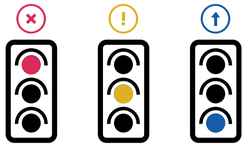
- Application metrics (#successful/ failed requests, error codes, response times)
- Systems metrics (SPU/memory load, network metrics)
- External outage notifications

Feature Generation

- Basic features like gradient, difference, moving average/std. dev., quantile ranges, etc.
- Short time Fourier transform, wavelet transformation
- Topological features: persistent homology, time delay embeddings

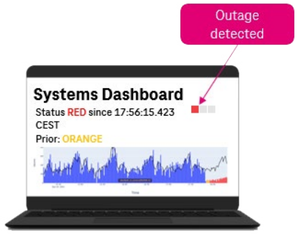
Anomaly Detection

- Heuristic model and decomposition model as reference
- Combination of different weak learners and boosting model
- Autoencoder Forest & Transformer Model



Monitoring & Alerting

- Dashboard
- Model Monitoring
- Alerting System (E-Mail, SMS, Webhooks)



Business impact

The solution solves a bugbear. The customer now has real-time insight and gets an early warning about system outages. They are able to give their customers an early heads up reducing incoming customer sup-port inquiries.

Furthermore, the new AI-based solution shortens the downtime considerably as root-cause analysis is performed automatically. This also means that internal efforts for problem resolution are substantially decreased, minimizing costs related to downtime.

The solution leads to higher system availability and transparent information to all parties. The logistics company can reduce the impact of system disruptions, leading to better customer satisfaction in the long term. In the next step, the machine learning model can be developed into a predictive maintenance model allowing the logistics provider to anticipate outages and avoid them.

AI for public administration

The city of Nettetal is leading the way:
AI chatbots relieve employees of content development and research efforts

Reference project:

Nettetal
SEEN. STADT. UND MEHR.

“Artificial intelligence is a powerful tool that can significantly simplify and accelerate many everyday processes within public administration. With the AI Foundation Services from T-Systems, we have found the perfect platform to realize our three-zone concept. It combines sovereignty with a wide range of AI models.”

Thorsten Rode, Head of the Municipal IT Service City of Nettetal

Nettetal is located in the west of North Rhine-Westphalia directly on the Dutch border. This town in the district of Viersen has 43,500 inhabitants and, with its lakes and forests, is a well-known local recreation area for the Rhine-Ruhr region. It was not created until 1970, when various smaller communities merged to form the city. They named themselves after the Nette, which flows through the city area.

Shortage of skilled workers in public administration is an issue in Nettetal. It is already foreseeable that a large proportion of employees will retire from working life by 2030. At the same time, not enough young people are moving up. Against this background, studies predict that hundreds of thousands of positions in the administration can no longer be filled. With the clock ticking, what can be done?

“We are consistently using the opportunities offered by digitalization in order to combat the foreseeable shortage of skilled workers and continue to function as a city administration,” explains Thorsten Rode, head of the city administration’s IT service. In recent years, the administration in Nettetal has established a digital, employee-centered culture: the 580 employees understand the potential, undergo continuous training and, of course, use modern digital tools such as artificial intelligence (AI) for their work.

At a glance

- **ASK**: All employees should have access to an AI chatbot that helps them with their work, with its use always tailored to the required level of protection for confidential, personal, and social data.
- **OLUTION:** Establish a hybrid 3-zone model for AI use to decide as per protection needs a highly secure green zone with in-house operation for sensitive data, supplemented by T-Systems’ AI Foundation Services for the yellow and red zones. With open-source models from the sovereign T Cloud Public for the yellow zone and other powerful models from the public cloud (OpenAI GPT, Google Gemini, Anthropic Claude) for the red zone. All this to enable flexible use, cover all use cases of the administration, and obtain language models through a contract.
- **ESULT:** The award-winning, multi-layered AI solution combines innovation and security. It increases employee productivity and makes the municipality fit for the future. Processing through a contract reduces costs and token-based billing ensures transparency.

Public

The reference in detail

Customer pain points

“Artificial intelligence is a powerful tool that can significantly simplify and accelerate many everyday processes within public administration,” explains Thorsten Rode, Head of the Municipial IT Service, City of Nettetal. The pre-formulation of business emails, the creation of dossiers or the writing of notes are tasks that arise constantly and from which AI can substantially relieve employees. But AI can also speed up rarer tasks, such as creating concepts or researching in the comprehensive database of the authorities. “Our plan was to make every workplace AI-assisted. All employees should have access to an AI chatbot.” However, it was clear: “We also process confidential, personal and even social data. The use of AI must be based on the level of protection of the data,” adds Rode.

How T-Systems solved it

“We decided to introduce a hybrid system for AI use,” explains Thorsten Rode, Head of the Municipal IT Service, City of Nettetal. In the so-called green zone, employees have maximum control and safety. Here, all data (including confidential and social data) can be used in AI in a legally compliant manner. The green zone is supplemented by a yellow zone that allows the processing of personal data and a red zone that brings maximum flexibility and functionality in the use of high-end models, but excludes the processing of confidential data.

“By combining these three zones, we achieve the greatest possible benefit with the least possible use of resources. Digital sovereignty is maintained through the strategic use of our own infrastructure, while at the same time we can offer flexible scalability depending on requirements and protection needs. Cost efficiency in particular benefits from demand-based billing in the external zones,” says Rode, highlighting the added value of the 3-zone concept.

The team started building the green zone in 2024. To this end, the city operates its own GPU servers in its own rooms. Various open-source large language models (LLM) run here, including a 32 B Qwen. “In this setup, employees can have corresponding tasks completed with the help of a chatbot. All prompts, data and results remain in-house.” The in-house models are very suitable for most tasks. But for more complex topics, employees expect more efficient models. To meet these needs, the IT team established the yellow and red zones.

With T-Systems’ AI Foundation Services, Rode found the perfect complement to his in-house approach: “For us, it was convincing that we have access to a wide range of different models in one place – and that we can also obtain them from a sovereign cloud. This combination – breadth of models and a scalable, sovereign cloud – is unique in the market.”

In the yellow zone, Nettetal uses open source models, e.g. Mistral or Qwen. These are operated on the sovereign T Cloud Public. Through the LLM Serving Services, Nettetal also gains access to the latest GPT, Claude and Gemini models, which are provided by Azure or Google, among others (red zone). T-Systems provides the models through the standardized OpenAI API and bills for use via a token-based approach. The token-based model is a usage-based pricing model. It calculates the costs based on the amount of tokens consumed, i.e. words or parts of words that are sent to the model in prompts and returned by the model in its responses.

Retrieval Augmented Generation (RAG) can be used to securely combine internal sources with external models. The vector database then provides contextual information to the model used. This results in an AI-based self-service solution for IT support, research functions for service agreements and instructions for urban planning.

Humans play a crucial role in Nettetal’s AI concept. Employees decide on a caseby-case basis which zone to use for their request. “For us, this means that we have to empower them accordingly. To this end, we have established a multi-stage training concept. General guidelines are laid down in an AI compass. If you want to use AI, you also need basic training, which you can complete through our internal instruction portal the “AI Seahorse”. For employees who want to delve deeper, there are further training courses and certificates, but also regular exchange rounds such as the AI Café,” says Thorsten Rode.

Why T-Systems?

Trusted partner with a sovereign, high-performance, European cloud. The wide range of language models offered by the LLM Serving Service of T-Systems’ AI Foundation Services comprehensively supports AI initiatives in public administration. Independent benchmarks position T-Systems as a leader in the fields of AI and cloud.

Business impact

In November 2025, the city of Nettetal received the Digital Award in Bronze for the GDPR-compliant portal at the KOMMUNALE administrative trade fair in Nuremberg – a recognition of the groundbreaking AI project. “Our approach proves that we don’t have to choose between safety and innovation. With the right concept, we can achieve both and at the same time increase productivity and accelerate administrative processes,” Rode sums up. With T-Systems, the city has a trusted partner who gives it easy access to all models from a single source in an as-a-service mode via the AI Foundation Services. Per-token billing offers the city full cost control, while the sovereign cloud helps to meet legal requirements.

Digital administration – here’s how it works!

The town of Nettetal is using UiPath from the T Cloud Public to introduce automation in compliance with data-privacy requirements.

Reference project:

Nettetal
SEEN. STADT. UND MEHR.

“We have no choice but to industrialize administrative work as well. Using automation from the sovereign cloud and having access to T-Systems’ external expertise is the ideal solution in our situation.”

Thorsten Rode, Head of Municipal IT in Nettetal

Nettetal is located in the western part of North Rhine-Westphalia, on the Dutch border. Situated in the Viersen district, it has 43,500 inhabitants, and its lakes and forests make it a well-known local recreational area for the Rhine-Ruhr region. The town was established in 1970, when several smaller communities were merged. It was named after the River Nette, which flows through it.

Like many municipalities, Nettetal’s officials must respond to a growing shortage of skilled professionals in public administration. A significant number of employees are expected to retire by 2030, while too few young workers are entering the field. Studies predict that hundreds of thousands of administrative positions may remain unfilled. The pressure is increasing in Nettetal, as elsewhere. What’s the solution?

“We have taken up the challenge,” said Thorsten Rode, Head of Municipal IT, “and we are consistently embracing the opportunities offered by digitalization to address the anticipated skills shortage and ensure the town continues to function effectively.”

What other towns are still discussing, Nettetal is already implementing. The town has been working on its digital transformation for years, with more than 100 digitalization projects already completed. During this period, Nettetal has successfully established a digital, employee-centric culture: its 580 employees understand the potential of digital tools and actively support the transformation. In recognition of its initiatives, Nettetal received Bronze in the Digital Award at the KOMMUNALE trade fair for municipal administration in November 2025 in Nuremberg for its GDPR-compliant portal, which uses open-source technology and artificial intelligence.

The AI portal, which uses large language models from the T Cloud Public, enables employees to assist citizens more quickly and more precisely with their requests. It clearly demonstrates the benefits of applying AI in everyday administrative work. However, according to Thorsten Rode, the AI portal’s development journey is far from complete. “As an IT team, we want to work with the e-Government team to leverage the potential of automation, low-code solutions, and AI for our colleagues in the specialist departments.”

At a glance

- Unburdening employees and overcoming the skills shortage
- Planning through to implementation of digital services
- Introducing automation using software robots
- First process: SEPA direct debit
- Finding an efficient and future-ready automation platform
- Automation in line with the legal framework
- Minimal operating effort and no additional workload for the IT team
- Use of UiPath from the T Cloud Public to meet requirements
- Creating software robots together with T-Systems
- Knowledge transfer by collaborating on projects
- Free up employees from monotonous tasks
- Limit additional work for the small IT team
- Sovereign cloud complies with data privacy requirements
- Platform for further (including intelligent) automation
- Safeguard future-readiness

The reference in detail

Customer pain points

Many administrative processes in a town involve regular bank transfers from citizens and companies, ranging from real estate taxes to kindergarten fees. Nettetal processes around 4,000 tasks each year that require SEPA direct debit mandates to be entered or updated in the SAP system. The administration teams receive these requests through various channels, phone, post, email, or the web portal.

“If we assume an estimated processing time of just ten minutes per task, this results in around 650 working hours each year. Altogether, this represents a significant time saving that can help when hiring new staff,” said Thorsten Rode, Head of IT.

Manually transferring data into the SAP system is not only inefficient but also monotonous and error-prone, certainly not a preferred task for administrative staff. “It lends itself perfectly to automation to reduce our colleagues’ workload. Software robots can complete the transfer much faster and more easily,” explained Rode.

To introduce the automation platform, the town sought a partner that could transfer its expertise to the small IT team as part of the first automation project. The platform also had to be sovereign in the long term, meaning secure technology, cmpliant data privacy, and simple, user-friendly operation suitable for a compact but capable IT team.

How T-Systems solved it

Thorsten Rode first spoke with T-Systems at the Smart Country Conven- tion. They later deepened their exchange at a strategy workshop with North Rhine-Westphalia’s local governments in 2025.

“With UiPath from the T Cloud Public, T-Systems offers a unique service on the German market: a leading automation platform with extensive options, including AI, operating on Germany’s leading sovereign public cloud,” said Rode. In September 2025, Nettetal decided to use UiPath as a managed cloud service for its automation initiatives.

Working together with T-Systems’ automation experts, the town developed a SEPA software robot that automatically transfers submitted data to SAP. The robot was completed by early 2026. The project operated cross-functionally across various departments—reflecting Nettetal’s standard approach. “We can only achieve the best results when everyone involved works together,” said Rode.

T-Systems is responsible for operating the automation platform and automation services, allowing the IT team to focus entirely on the town’s digitalization roadmap. Through the joint project, Nettetal’s IT experts gained their own automation skills, which they plan to apply in their next automation initiative starting in the first quarter of 2026.

Business impact

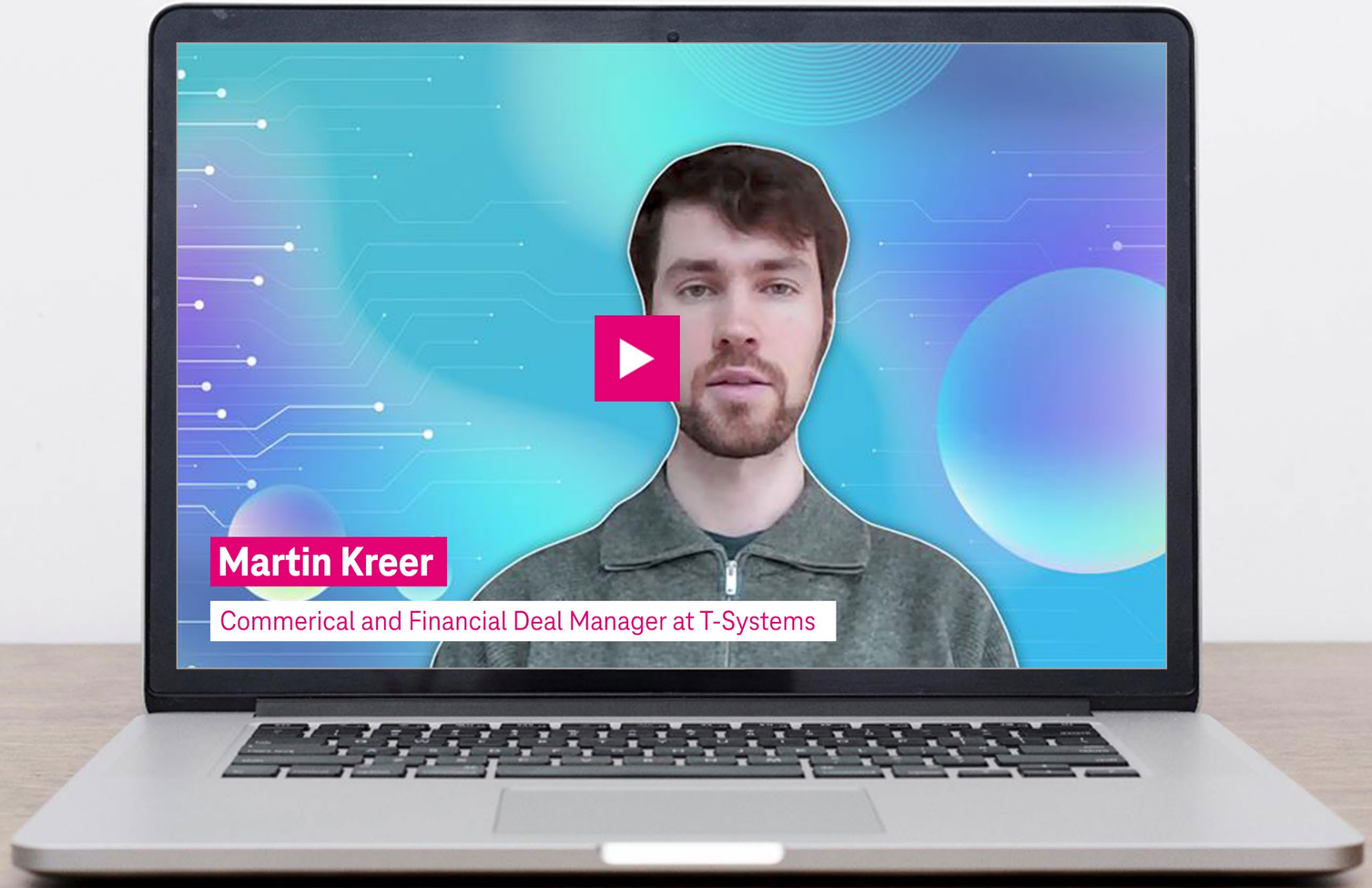
We have no choice but to industrialize administrative work as well. But we only have a small team in Nettetal, so we must use our resources as efficiently as possible,” said Thorsten Rode, Head of IT. “Using automation from the cloud and accessing T-Systems’ external expertise is the ideal solution for a town like ours.”

From 2026 onward, 400 employees with PC workstations in the administration office will benefit from automating the frequently used SEPA standard process. “We’re not just making plans; we’re implementing solutions that genuinely make a noticeable difference to our collagues,” said Rode.

The UiPath platform also opens up many additional opportunities, including the use of AI for intelligent automation. UiPath from the T Cloud Public provides Nettetal with a tool that enables it to expand automation while meeting stringent legal requirements such as data-privacy regulations. It establishes a future-proof foundation for reducing employee workload and ensuring effective municipal operations despite the predicted skills shortage.

At the same time, new digital tools create development opportunities for employees beyond traditional administrative tasks. Staff can now actively contribute ideas and identify further processes that could be optimized using robotic process automation (RPA).

T-Systems: Chatbot with over 99.5% accuracy rate to reduce time-consuming searches in financial documents



Reference project:

T Systems

Telecommunications

Fiber Factory

T Cloud Public : Turbocharger for Network Rollout

Thanks to Telekom's fiber-optic rollout, over 33 million households in Germany have access to speeds of over 50 Mbit/s. This already facilitates working from home, data-hungry streaming, and connecting business users. In the next step, Deutsche Telekom plans to expand the fiber-optic network for up to two million additional households each year starting in 2021. The rollout will involve extensive construction work. Scalable, secure re-sources from the T Cloud Public are supporting the efficient planning of these measures.

The Fiber Factory, a division of Deutsche Telekom Technik GmbH, is responsible for planning the nationwide fiber-optic network. Until now, this had to be done by hand, as many processes had to be initiated and processed manually by employees. However, thanks to the use of a geospatial data infrastructure (GDI) and an artificial neural network (ANN) developed by the Fraunhofer Institute for Physical Measurement Techniques IPM and operated in the T Cloud Public , this is now a thing of the past. The goal: to plan up to 15 times more connections annually than before. The GDI was developed by Deutsche Telekom IT GmbH, which is also responsible for operating it for the Fiber Factory.

Deutsche Telekom and Fiber Factory

The Task: For the development of new rollout areas, planners used to have to photograph and manually evaluate all the locations themselves. In order to implement new fiber-optic networks more quickly, they were therefore looking for an automated solution. It would have been highly uneconomical to keep the data in their own data center in the long term.

The Solution: Instead of the planners, the T-Surface Car now takes the photos on site. Artificial intelligence evaluates the data and determines the best routes for the fiber-optic networks. All the required computing and storage resources can be dynamically obtained from the T Cloud Public in a pay-as-you-use model.

The Advantages: Deutsche Telekom Technik GmbH has been working with the cloud solution in live operation since January 2020. This allows planning processes to run faster and more efficiently so that significantly more rollout areas can be developed than before.

The Costumer: Fiber Factory

In the Fiber Factory, several thousand planners from numerous regional locations coordinate Telekom's fiber-optic rollout – right into the customer's home (fiber-to-the-home, FTTH). In doing so, they determine not only the optimum location for new cables, but also the project costs, including the anticipated material and personnel expenses.

Customer pain points

Until now, it has been very complex and expensive to create rollout plans for new fiber-optic connections. During on-site inspections, the planners usually took several hundred photos and laboriously evaluated them manually. There was also no nationwide uniform procedure for determining the best possible route. As a result, the employees in Hesse proceeded differently from those in Bavaria or Lower Saxony.

How T-Systems solved it

Deutsche Telekom Technik GmbH has been using a geospatial data infrastructure to optimally position new fiber-optic cables since 2018. Data from various sources, including land registry data, aerial photos, and live images from the T-Surface Car, are integrated into the infrastructure. The vehicle, which is equipped with laser scanners and cameras, takes photos and 3D point clouds and uses them to generate a two- and three-dimensional image of the rollout area. In order to operate the geospatial data infrastructure and process the collected data of up to 500 gigabytes per rollout area, the Fiber Factory requires extensive computing resources in a matter of seconds, allowing for the swift creation of new rollout plans. The solution: dynamic IT capacities from the T Cloud Public .

The photos and 3D point clouds taken by the T-Surface Car are then loaded into an Object Storage Service (OBS) bucket in the T Cloud Public . In this way, employees don't have to worry about scarce storage resources, even with large data volumes. In the next step, the artificial neural network evaluates the data from the survey vehicle and classifies it according to 30 different surface and object types. To carry out the classification, the T Cloud Public scales horizontally with 20 graphics processors (GPU VMs). The ANN has already been trained by the Fraunhofer Institute with over 90,000 photos and can thus be used as a docker container in the planning process.

All of this data is used to calculate the surface structure of the rollout area as accurately as possible. A process that runs automatically in the T Cloud Public via several GPUs. A big plus: Usage is dynamic and based on the pay-as-you-use principle. This means that there are always sufficient resources available when employees plan the fiber-optic rollout for several areas in parallel. If less cloud capacity is required over a certain period of time, costs are also reduced. During the winter months, for example, when weather conditions prevent the system from being used.

Business impact

Since January 2020, the AI-based process in the T Cloud Public has made it possible to calculate rollout costs much more accurately – and much more quickly and scalably than before. Automated planning can reduce the planning period by up to 75 percent and planners can turn their attention to other rollout areas. And the Fiber Factory is also on the safe side when it comes to data protection.

When images are taken by the T-Surface Car, houses, people, or other sensitive information such as license plates are automatically rendered unrecognizable. In addition, the T Cloud Public makes it possible to process and store all data in one of Deutsche Telekom's German data centers in full compliance with GDPR.

AI-based network operation center space optimization

DT Technik leverages a data-driven approach for efficient utilization of its facilities

Reference project:

“The cooperation with T-Systems regarding the integration and usage of different approaches including ML technology as well as rule-based algorithms advanced the project to the next level.”

Leonhard Jugenheimer, Squad Lead at DT Technik

Deutsche Telekom Technik (DT Technik) is responsible for the planning, construction, and operation of critical technical infrastructure facilities and systems, and technology rollout within Germany for Telekom Deutschland GmbH. In 2022, DT Technik approached T-Systems to create a solution that would enable them to effectively utilize space in their network operation centers (NOCs).

A key priority was to automate the interpretation of the NOC layouts that were available as graphical data in Microsoft Visio and thereby reduce manual research time.

At a glance

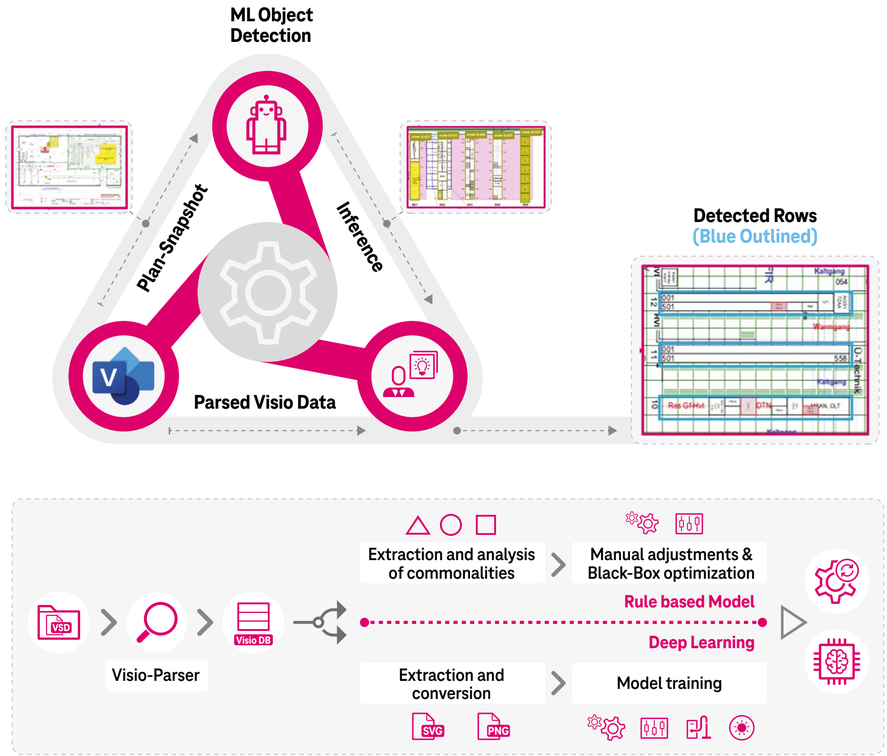
- The NOC plans data was only available in a graphical format (MS Visio) and interpreting these plans manually was a time-consuming and error-prone task.
- T-Systems leveraged an algorithms-based approach to automate the interpretation of the NOC plans.
- Technologies used: Kubernetes, Python, VS Code, Label Studio, FiftyOne, PyTorch, Aspose, Kotlin, Java, MS Visio, C#, REST API, PostgreSQL.
- Outcomes: standardized data management, process automation, optimized space utilization, elimination of manual activities, end-to-end digitalization of the process.

Telecommunications

The reference in detail

Customer pain points

Network operation centers are very crucial for business organizations that require high availability at all times. Employees managing NOCs need to monitor one or multiple networks for any conditions that may require special attention to ensure uninterrupted services. In this instance, the customer was struggling to optimize their NOC spaces because the plans were originally in manually prepared MS Visio drawings. DT Technik employees would consult these drawings for manual research activities, for example, to plan for racks and optimize the available space. This was a very time-consuming task, and it also made computer-aided optimization processes impossible. The customer needed a solution that would help recognize the objects in the Visio drawings and relate the objects to the texts in the drawings.



How T-Systems solved it

T-Systems has been pioneers in the data space technology for over five years now. With their deep know-how in the AI/ML space, they developed a Machine Learning-powered microservice called “Data Transformator”, which combines domain expert-driven rules with computer vision deep learning within an ensemble model. This model, called “deep object detection model”, enabled automation of Visio object recognition and interpretation of Visio drawings. The Visio files were parsed and analyzed for domain objects. The detected domain objects were served via dedicated REST API and front-end application. Then, the results were saved in a relational database (PostgreSQL).

The implementation of automation scenarios for the specialist pages was made possible through automated assignment of operating points. The detection system was thoroughly monitored and tested against the label data validated by domain experts to ensure quality.

Business impact

With the AI-based automation solution provided by T-Systems, the customer was able to save manual efforts and time and focus on their core tasks. The solution also helped them achieve process and system optimization, resulting in reduced operational costs. Data forms the backbone of any AI-based initiative. The solution provided by T-Systems helped the customer to achieve effective data management and cleansing, which, in turn, provided a valuable data feed for a holistic digital twin of the network center. The customer’s future migration needs are also addressed with this solution as T-Systems, with its forward-thinking approach, has established a future-proof platform architecture comprising a modular structure.

Deutsche Telekom Technik uses AI for quality control on fiber optic construction sites

Reference project:

Telecommunications

Deutsche Telekom Service saves millions in costs thanks to AI-powered automated email processing

Reference project:

Telecommunications

Artificial intelligence – sovereign data

amberSearch uses the LLM serving service to create a package for companies with sensitive data

Reference project:

amberSearch

“With the T Cloud Public and the LLM serving service from the AI Foundation product family, we’ve found an elegant answer to the strict requirements our customers face – especially in regulated industries – about data sovereignty when using our AI services.”

Bastian Maiworm, Co-founder, amber Tech GmbH

“Just where did I put that information I really need right now?” That’s a typical everyday situation for many office workers. Searching for enterprise information robs them of nearly a half-hour of working time on average – every day. In such scenarios, artificial intelligence can truly contribute to higher employee productivity.

This is where amber Tech GmbH comes in, with its amberSearch service: “It’s our mission to break up the status quo of outdated B2B software solutions and give our customers the added value of ultramodern artificial intelligence (AI) and an intuitive user experience in our enterprise search products,” explains Philipp Reißel, co-founder and CEO of the AI specialist, which is headquartered in Aachen, Germany. amberSearch makes AI accessible even for companies that don’t have giant budgets or immense IT resources. A 30-person team at the company is now working on making internal information accessible quickly and easily. “We offer out-of-the-box solutions that are fast and easy to roll out, but still generate major added value for companies,” adds CRO (Chief Revenue Officer) Bastian Maiworm.

The business concept of using artificial intelligence for enterprise search – searching within a company’s internal resources – is winning people over: The name of the service has become synonymous with the company’s name. The AI provider has built a large customer base across various industries and different company sizes. Its customers include large companies like Schüßler-Plan, Zentis, DB Regio, and Landmarken AG, as well as SMEs in the mechanical engineering, biotech, and financial fields. Pharmaceuticals and financial companies face stringent compliance and security requirements; such companies are very careful to make sure that their internal data remains internal. The key phrase here is “data sovereignty”.

At a glance

- amberSearch, the leading AI-based enterprise search
- Cloud foundation for the business model
- Need to satisfy customers’ demands for data sovereignty
- Cover peak loads
- Provide amberSearch from the T Cloud Public
- Cloud bursting via the LLM serving service to mitigate peak loads
- Serves data sovereignty demands from sensitive customers in regulated industries
- Guaranteed high-quality AI services
- No fixed costs, needs-based usage
- Selection of different LLMs for enhancing the service
- Access to Telekom’s large partner/customer network
- The T Cloud Public is a trusted European cloud with ready-to-use large language models
- T-Systems stands for data protection-compliant, secure, trustworthy AI

Information Technology Business

The reference in detail

Customer pain points

“Setting up our own infrastructure management and hosting was out of the question – we wanted to concentrate on our customer projects and the evolution of our AI solutions, and avoid unnecessary fixed costs,” says Maiworm. With this in mind, amber Tech quickly decided to go with the cloud. “The T Cloud Public is a reliable platform that gives us the freedom to run our business. It scales with us and saves us from having to procure and run our own resources.” This also includes demands for GPU resources, to train and run their AI services. At the same time, however, the company is facing increased demands for data sovereignty: AI users, particularly financial firms, want to ensure that amberSearch has no way to access their data, even theoretically.

How T-Systems solved it

“The T Cloud Public gives us a simple, elegant solution to this as well,” explains Bastian Maiworm. In 2024, Deutsche Telekom launched the LLM serving services in the AI Foundation product family, a pool of ready-to-use large language models (LLMs) and embedding models that can be integrated seamlessly with customer AI applications through an API key. In this approach, leading open-source models from Meta or Mistral are hosted in the T Cloud Public , while closed-source models from OpenAI, Google, or Anthropic are provided through third-party platforms. Each customer manages their API keys in a portal, where users are also administered and token usage can be displayed. “This is very convenient for users of the T Cloud Public like ourselves. We can use these services as burst capacity through our own installation.” In other words: Normally, amberSearch serves customers from within its own installation. In response to specific inquiries or high loads, this installation is extended seamlessly through the T Cloud Public – and not only at the level of simple infrastructure resources (IaaS). When can this become necessary?

To understand, remember that amberSearch consists of two components. The original component is the model for searching and rating enterprise information, developed by amber Tech. The second part acts as the user interface: an LLM processes the queries and formulates an answer from the search results.

“The LLM serving service from Deutsche Telekom gives us access to the LLM pool, which is staged directly in the T Cloud Public . When our customers have increased demands for security, they get the corresponding LLM services directly from the T Cloud Public – with which they have already concluded an agreement for commissioned data processing. As a result, even amberSearch has no theoretical way to access the data.” This means amberSearch users can satisfy even the highest requirements for data sovereignty.

Business impact

amberSearch is an example of a perfect interaction between cloud computing and AI. The company is building and developing its AI business model with the LLM serving service based on the T Cloud Public , fully scalable and with adaptive costs. The T Cloud Public also delivers another factor: “The LLM serving service means we can also meet our customers’ demands for high levels of security and sovereignty for their sensitive data.” In addition, amber Tech has the possibility of experimenting with different LLMs, to ensure that their AI services are always of high quality. Last but not least, amberSearch benefits – beyond the cloud and use-based LLMs – from Telekom’s customer and partner network.

Intelligent automation for energy suppliers

rku.it procures UiPath as a managed service from the T Cloud Public

Reference project:

rku IT

“UiPath from the sovereign T Cloud Public – the perfect package for us to get our intelligent automation solutions off to a flying start: the Energy Automation Sphere gains a solid foundation.”

Christian Kenter, Service Owner for Automation and Data-Based Services at rku.it

rku.it GmbH, based in Herne, is the leading solution provider and operator for medium-sized and large utility companies in Germany, Austria and Switzerland. Its customer base comprises more than 130 companies from the energy industry, public transportation companies and local governments. rku stands for “Rechenzentrum kommunaler Unternehmen” (data center for municipal enterprises). The company has had this name since 1970, when it was renamed from “Lochkartengemeinschaft kommunaler Unternehmen GmbH” (LKU) [punch card association of municipal enterprises], a name that goes back to 1961. Although punch cards are now just an anecdote in technological history, back then, they were high tech. Looking back highlights what is still important for rku.it today – its commitment to leveraging technological innovations in close collaboration with its customers. The company has now grown from its seven employees in 1961 to a current team of over 470 employees.

It supports over 6,500 users. The energy suppliers in its customer base bill more than 4.8 million meter points across around 80 productive systems using ERP application software in the rku.it data centers. Alongside software from SAP SE and Schleupen AG, the IT service provider offers its customers additional software solutions. Core components include applications for billing energy sales, energy data management, data exchange processes, portal solutions, document management, and business Intelligence applications for corporate management. rku.it’s portfolio also includes the Smart Meter Gateway Administration and Business Process Outsourcing products in the areas of EEG (German Renewable Energy Sources Act) and KWK-G (Combined Heat and Power Act) billing, consumption billing, energy data management and billing for charges.

With the “Energy Automation Sphere”, rku.it is addressing the growing challenges faced by energy utilities as a result of evolving business areas and increasing regulation. At the same time, it is becoming more and more difficult to find employees. “The Energy Automation Sphere’s partially and fully automated solutions make life noticeably easier for employees in day-to-day business operations”, said Christian Kenter, Service Owner for Automation and Data-Based Services at rku.it. The suite comprises over 400 robotic solutions that include calculating new rates, identifying meter reading errors, producing bills and managing customer data.

Since 2018, rku.it has been deploying one of the market leaders to provide automation solutions: UiPath. At e-World 2025 and 2026, rku.it is presenting the Energy Automation Sphere with its new opportunities for intelligent automation and hyperautomation to a wide audience.

At a glance

- rku.it: Leveraging business potential with intelligent automation
- Access to new UiPath modules necessary
- Higher license costs
- Suitable infrastructure resources required (e.g., GPUs)
- Meeting regulatory requirements
- Migration to the T Cloud Public
- Provision of the current UiPath version including tools for intelligent automation
- End-to-end package: use as a managed service from T-Systems
- Best technology, best price
- Full data sovereignty
- BSI C5 certification
- Scalability for new business: stepping stone for growth

The reference in detail

Customer pain points

“Our automation solutions have been very well received by our customers,” explained Mr. Kenter, “but we want to go beyond simple automation. We can see potential among our customers for intelligent automation and hyperautomation.” The RPA (Robotic Process Automation) software robots are connected using artificial intelligence to enable this. This also enables process and task mining and document recognition.

Implementing new intelligent offerings for its customers also meant rku.it needed to realign its commitment with UiPath. These new solutions will only be possible with further modules from

UiPath, which come with additional license costs. At the same time, artificial intelligence also needs GPU resources for training and operation – another necessary investment in addition to the new UiPath licenses. rku.it wanted to minimize investment risks while, at the same time, creating a high-powered sovereign platform that meets all regulatory requirements. This is where T-Systems came in.

How T-Systems solved it

T-Systems gives rku.it access to UiPath’s current version (V 24.0) – as a managed service from the T Cloud Public. “We convinced the customer by having the best technical rating and the most attractive price in the tender process,” said Simon Spenler from T-Systems. The reason for this: the unique combination of a sovereign German cloud, which has already been on the market since 2016, and the UiPath expertise that T-Systems contributes as a UiPath platinum partner.

Within a matter of weeks, T-Systems provided the new UiPath installation for rku.it, following which rku.it migrated its services to the new platform. Since then, the platform has been operated by T-Systems in a highly secure data center in Germany. T-Systems also provides rku.it with first-level support for UiPath. The BSI-C5-certified T Cloud Public meets all sovereignty demands made by rku.it and its customers.

Why T-Systems?

T-Systems, UiPath’s platinum partner, provides rku.it with UiPath as a managed service from a sovereign, high-performance German cloud.

Business impact

“We are delighted to be able to offer the Energy Automation Sphere in collaboration with UiPath and T-Systems. At rku.it, we rely on strong partnerships and know that major projects like this can only be executed by working together and pooling our expertise. I’m convinced that we can create added value for our customers at exactly the right moment with this product,” said Matthias Junker, Director of Operations and Member of the Management Board at rku.it.

rku.it creates the basis for business innovation – without having to invest in infrastructure and software first. rku.it can use the cutting-edge opportunities provided by UiPath as a managed service from the T Cloud Public at any time while costs remain stable. Data remains in Germany and the cloud automatically provides the infrastructure resources required as and when necessary – the perfect package to enable growth with intelligent automation in regulated markets.

Artificial intelligence to improve education

How publisher Cornelsen rolled out a new AI solution for schools faster with the LLM Serving Service

Reference project:

Cornelsen

“The LLM (large language model) Serving Service on the T Cloud Public is the right combination for the sovereign development and sovereign operation of Cornelsen Verlag’s AI toolbox. The rapid rollout enabled Cornelsen Verlag to be one of the first companies to offer a service of this kind.”

David Jonas, Pre-Sales, T-Systems

The digitalization of school education is gaining momentum. With their OER (open education resources) strategy and “Digital pact for schools”, Germany’s federal and state governments have laid the groundwork for increased use of digital media in schools.

Cornelsen Verlag reacted to these developments at an early stage. The schoolbook publishing house, headquartered in Berlin, Germany, maintains a program of 17,000 books in some 40 disciplines. It publishes 1,500 new schoolbooks every year. At the same time, Cornelsen is also a high-tech company that began publishing education content digitally – on the Web and via app – in the 2010s. The services the company offers to schools, teachers, and students include online diagnostics to assess the current level of knowledge of a class, e-books for hybrid classes, a lesson manager that simplifies lesson planning, and interactive exercises that students can complete themselves on tablet or desktop PCs.

The trend towards GenAI and the availability of pre-trained LLMs (large language models) have opened up additional potential for the publisher’s digital services. In 2024, the company decided to start a new chapter and build an AI toolbox for school classes under the name “Cornelsen.ai”. The AI tools are intuitive to use and have been tailored to the needs of teachers and student teachers. They make it easier to organize lessons, help plan sequences of classes, and provide feedback. They also take the skills and curricula of the respective German states into account. Services for students will follow.

Cornelsen uses the T Cloud Public together with the LLM Serving Service. The T Cloud Public is a sovereign cloud platform that satisfies the demands of both “simple” web services and artificial intelligence.

At a glance

- Expand their digital offerings by capturing the potential of GenAI for education
- First-mover advantage: Fast launch of the AI toolbox for teachers and student teachers
- Sovereign, legally compliant provision of the education service: processing of personal data
- Operating platform: T Cloud Public
- Large language model from the LLM Serving Service – also from the T Cloud Public
- Token-based billing
- Reliable throughput for the services, even as system loads grow
- Rapid rollout: Time to launch reduced by 50 percent
- Advantages of the cloud: minimum investment risk, full scalability
- Options to improve quality through a rich selection of (new) LLMs from the LLM Serving Service
- Deutsche Telekom: a powerful, trusted digitalization partner for SMEs
- T-Systems customers benefit from a sovereign European cloud with a rich selection of LLMs through the most-developed LLM serving service on the German market

The reference in detail

Customer pain points

For its AI toolbox, the tech team at Cornelsen initially used OpenAI (GPT-3 and -4) and Azure to explore the possibilities offered by artificial intelligence. It quickly became clear that the LLMs are well suited for developing new services for education. In addition to adding value through additional content, the LLMs also sped up development of the services themselves. In other words, Cornelsen would quickly be able to roll out its AI toolbox on the market. At the same time, however, the use of services like this for education in Germany is governed by clear rules, especially when users' personal data is processed.

The team decided to look for a different technical solution in which both the LLM and the underlying cloud platform complied with national and European regulations. It found the right sovereign solution in the T Cloud Public from Deutsche Telekom, running the LLM Serving Service.

How T-Systems solved it

Cornelsen has been a customer of the T Cloud Public for some time now. As such, it was easy to access the LLM Serving Service, which offers a pool of different closed-source and open-source LLMs, via API or through the console.

They can be used on demand in an "as a service" mode. Billing is token-based. Deutsche Telekom offers a variety of rate plans that gives the customer the models and throughputs (token per minutes, request per minutes) they need for their use cases.

Cornelsen chose the Standard3000 rate plan of the LLM Serving Service and uses the Llama3 model in particular. The combination of Llama and the T Cloud Public gives the team far-reaching sovereignty for its service: Llama is open-source, just like the T Cloud Public , which is based on OpenStack. The comprehensively certified cloud by Deutsche Telekom also complies with all the legal requirements that apply to online services used in public education.

"In addition to this basic criterion, the customer was particularly interested in two factors when it came to choosing the LLM service," explains David Jonas from T-Systems. "Firstly, Cornelsen had dedicated contact persons at all times when developing the services, who could provide support for a variety of questions. And secondly, the LLM Serving Service delivers reliable performance even when the load on the service increases," continues Jonas.

Business impact

"The LLM Serving Service from T-Systems enabled Cornelsen Verlag to roll out its new AI service to the market quickly. Using open-source LLMs in combination with Cornelsen's AI toolbox greatly simplified the go-live," summarizes Jonas. Using the cloud and the cloud-based LLM cut two to three months off the time to market. In total, the project duration was reduced by half – enabling Cornelsen to capture first-mover advantages in a young market.

In addition, Cornelsen enjoys the typical benefits of cloud computing for its service: a market launch with minimum capital outlays and low financial risk, as well as automatic scaling as the service becomes more popular. With the "per token" cloud pricing model, costs scale in parallel to revenues. Last but not least, Cornelsen can now simply experiment with other LLMs to see if they improve the quality of the AI.

AI for the future of education

DeutschlandGPT runs BildungsLLM, a specific educational product, on the T Cloud Public

Reference project:

GPT

“The T Cloud Public is the perfect operating platform for BildungsLLM. Its sovereign attributes satisfy our high demands for security and control, enabling us to offer our customers a complete package for modern education.”

Leonhard Benkert, CEO DeutschlandGPT

Germans have long recognized artificial intelligence as a key future technology. After all, one thing is certain: Without AI, Germany runs the risk of falling behind the international competition. Despite this, one-third of companies in Germany are intentionally avoiding AI – primarily due to concerns regarding data protection, data security, and data sovereignty.

The heart of this problem: The leading AI providers are headquartered in the U.S. or China, and primarily process data on servers abroad, where sensitive information could be intercepted or stored and fall into the wrong hands. Still, many people use these solutions, because they promise huge advances in productivity and efficiency.

DeutschlandGPT wants to position its AI solutions as an alternative to the established American and Chinese providers – artificial intelligence Made in Germany, for Germany. The software company from Germering, just outside Munich, has specialized in developing a sovereign AI platform. “Our mission is to create secure, independent AI solutions that release creativity, promote innovation, and offer long-term solutions to the challenges we currently face,” explains Leonhard Benkert, CEO of DeutschlandGPT.

AI by DeutschlandGPT means that sovereignty, security, data protection, transparency, and competent support are all included – certified in accordance with ISO 27001. The company’s AI products combine the performance of modern AI with uncompromising protection of digital self-determination. They make AI trustworthy and sovereign. In addition to businesses, the company’s customers also include private individuals and the public sector.

The education system in Germany is undergoing rapid changes: On one hand, nearly every school is suffering from unfilled positions, a shortage of teachers, and canceled classes, while on the other hand, requirements are changing constantly. Teachers have to integrate new learning concepts and teach new skills, while also using modern media. The potential of artificial intelligence for the forward-looking evolution of education is evident: AI can provide uncomplicated support for classroom teaching and school projects, reducing teachers’ workloads. Students learn about the professional use of modern IT, which will benefit their further education or vocational training.

With its current project, “BildungsLLM” (Bildung = education; LLM = large language model), DeutschlandGPT is going back to the roots of its parent company, Titanom, a software developer for the education sector. “Our goal is to merge our years of experience in education with our expertise in AI development, to provide a didactically high quality language model to learners in Germany.”

Education

At a glance

- Novel LLM for school education in Germany
- Goal: Faster go-live for the new service
- Meets the extensive regulatory requirements in the education sector
- T Cloud Public as a sovereign operating platform
- Didactic, specific BildungsLLM runs in the AI Foundation Services
- Simple access via API and integration options for a variety of learning platforms
- “Guardian” features and anonymous use
- Meets the extensive regulatory requirements
- Full scalability and competitive, pay-as-you-go pricing model
- Sustainable operations
- Pioneer: An innovative tool for modern school education
- The leading sovereign European cloud is perfect for the legally compliant, scalable operation of AI services in the education sector.

The reference in detail

Customer pain points

Widely used LLMs like GPT-4 are mature, accepted by the market, and often used for business applications. However, there are several obstacles to using it officially in schools: The solution must be run in the EU, for instance. In addition, there must be transparency as to how the provider of the model (the AI service) handles the entered data. This is not usually the case among the publicly available American models. As such, suspicion is advisable. Students’ prompts could be saved outside of Germany, enabling tracking of individual students. Secondly, simply answering questions does not meet the demands of a proper education. Schools need a “didactic” LLM that helps students to develop solutions themselves and achieve their learning goals. It should support students in finding a solution instead of outputting finished answers – like it does in the business domain. What’s more, the underlying model must guarantee legal certainty for schools and offer “guardian” features that ensure that prompts and outputs satisfy ethical guidelines, security specifications, and content restrictions. Malicious and unwanted prompts must be blocked and inappropriate answers filtered.

DeutschlandGPT also faced another important question, however: Where should the finished model be run, legally watertight and sovereign, when it is finished? That’s where Deutsche Telekom and its T Cloud Public came into play.

How T-Systems solved it

In early 2025, DeutschlandGPT developed BildungsLLM, a basic “didactic” model, specifically for use in German schools. In addition to being tailored to the didactic requirements of education, it has also been optimized for the German language. It is based on an enhancement of the Llama 3.3 70b open-source model, which DeutschlandGPT implemented by feeding its internal data, along with synthetic data, directly into the new model. Interactions with BildungsLLM are not saved, which ensures the anonymity of students. Guardian features for ethically correct use have been integrated in the technical infrastructure. These guardian features are a key security element of the product. They form the first line of defense against improper and dangerous prompts. They identify potentially malicious content automatically and block it before it is processed. This not only safeguards the model, but also – and above all – protects students against incorrect responses and inappropriate answers.

The BildungsLLM has been offered as part of the AI Foundation Services from the T Cloud Public since April 2025. The T Cloud Public gives DeutschlandGPT and its customers a secure, sovereign, scalable operating environment in Deutsche Telekom’s high-security data centers in Magdeburg and Biere. As such, the BildungsLLM satisfies all legal requirements. It can be used and integrated in existing learning platforms easily, thanks to an API, creating an ideal package for the next generation of reliable education.

Business impact

In the T Cloud Public , DeutschlandGPT has the operating platform it needs to meet the demands of the AI provider and its customers in the education sector: far-reaching sovereignty, data privacy, security, and scalability. The cloud ensures a rapid rollout of the service on the German market. The pay-as-you-go billing model in the T Cloud Public also supports DeutschlandGPT with expanding its business: Costs develop in parallel to revenues. The ISV does not need to worry about infrastructure management tasks and can concentrate fully on enhancing and marketing its pioneering service.

Since it runs in Deutsche Telekom’s sustainable data centers, the service’s carbon footprint is minimized. The data centers run on 100-percent renewable energy sources and have received multiple awards for their sustainability, including the Platinum Award for green data centers. That means the AI model is also hosted in a sustainable manner.

BildungsLLM gives schools a tool that can raise education to a new level easily – legally watertight, compliant, and out of the box – capturing the potential of AI for school education.

Thank You!

T Systems