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PROGRESSIVE

ZENTRUM

IMPULSE PAPER

What Does a Promising Future with AI Look Like?

A Progress Story

July 2024 | Dr. Thomas Ränge



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Introduction

Will Germany harness the potential of artificial intelligence in business and education, the health sector, and government and administration in a way that truly benefits society? What could a promising future with AI look like in 2030? What steps need to be taken today, by whom to turn this vision into a reality? This impulse paper sets out to find answers to these three questions.

To put it nicely, the expectations regarding the future benefits of AI applications in Germany are very low, proven by the data from the exclusive survey by Civey on behalf of „Das Progressive Zentrum.“ We can only speculate about the reasons, but it seems evident that we cannot achieve technical or social progress with too much pessimism. Therefore, this paper counters the pessimistic expectations with an optimistic narrative about the future. We base this optimistic outlook on the following fundamental position: Of course, a future with AI can succeed. However, we have to spell out this future in specific terms. Then, business and administration and those responsible in the education and health sectors, science, and civil society can work towards the success of this target vision. The search for a better future is always a task in the present.

The third part of this paper asks how. The key

points for the political and social decision-making options are rather easy to name. As a rule, the proposed solutions for digital transformation with more AI sound conclusive. However, in their implementation, they too often fail due to the normative power of analog facts. Of course, this paper cannot present any panacea for how AI systems can overcome Germany's digital inertia overnight. That's why it differs in form from typical policy papers. There are already many of these about AI – and especially many that shed light on the dangers associated with AI.

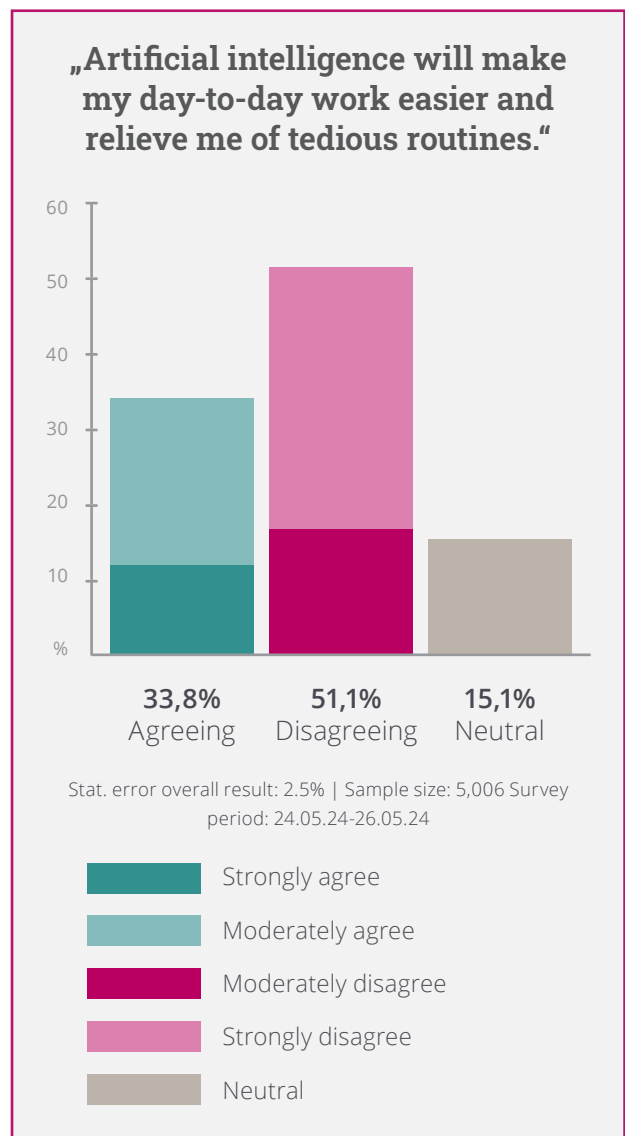
With the impulse paper „What Does a Promising Future with AI Look Like?“ we consciously want to use the creative possibilities of scenario techniques to set a different example in the political AI discussion. With our impulse, we would like to create interest in a promising future with artificial intelligence, which, in the spirit of a progressive agenda, will improve the lives of as many people as possible in all areas of life. It also wants to spark a conversation about the next concrete actions toward that future. Many things have already been tried. Many things have failed. But the subsequent conclusion cannot be: „Then let's drop the whole AI thing.“ Technology has too much potential to advance the economy, society, science, and government – and ultimately improve our lives.



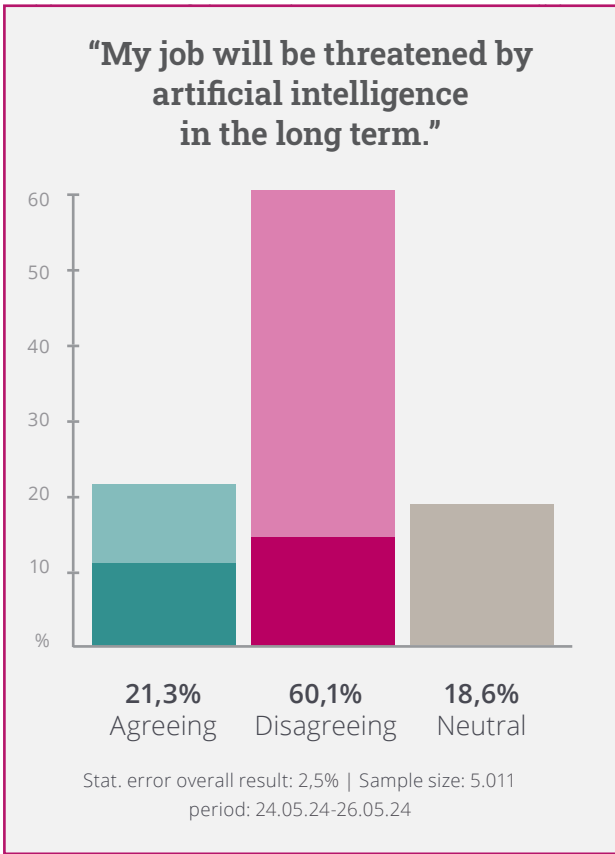
I. How healthy is skepticism?

The inventors, developers and providers of AI systems make big promises. Artificial intelligence will make our lives better in many areas. It will relieve us of annoying routines in everyday life and at work and free up time for creative and valuable activities. Thanks to AI, automation will help companies get a grip on the shortage of skilled workers, become more profitable, and thus also contribute to economic growth and prosperity. AI can help learners learn in ways that are tailored to their individual needs – from elementary schools to universities, language academies, vocational training, and continuing education, and especially clever, self-taught people with little formal education. Health systems will not only make systems that learn from data more efficient and thus save costs. They will also assist doctors with diagnosis and treatment decisions. The odysseys from doctor to doctor and examination to examination will then be a thing of the past. Artificial intelligence can accelerate the transformation into the post-fossil age and support the fight against climate change. And in public administration? The promise is that AI can finally increase the state's digital IQ, restore the administration's functionality, and thus strengthen citizens' acceptance of the state and democracy.

For each of these claims, several examples provide measurable evidence that artificial intelligence can actually improve work, education, health, and public administration. However, the German population does not believe the AI hype. Condensed to one sentence, a survey with more than 5,000 respondents conducted by the opinion research institute Civey on behalf of „Das Progressive Zentrum“ concluded that there is enormous skepticism that artificial intelligence will benefit the German economy, society, and democracy.

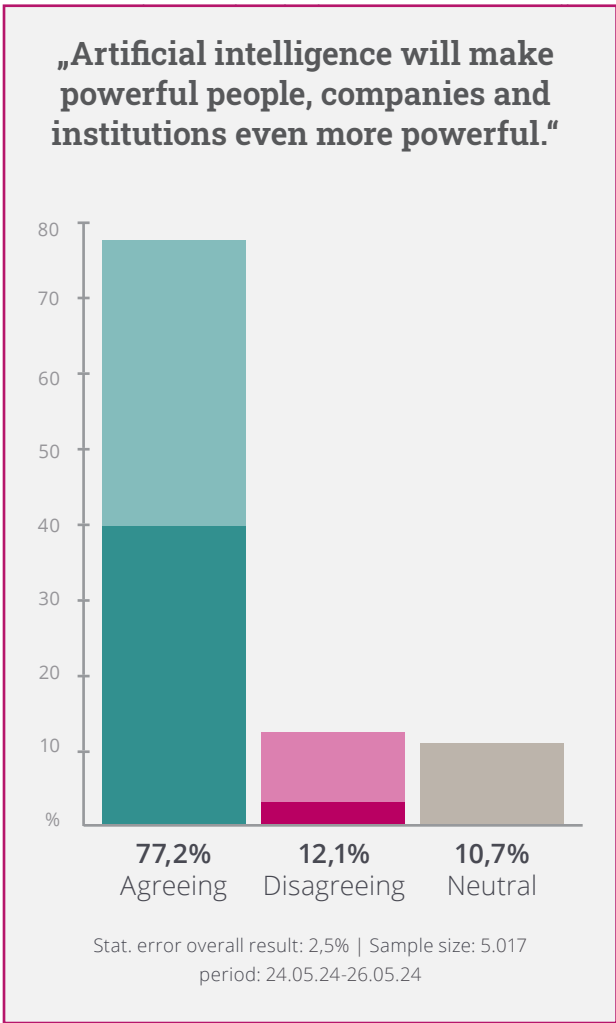


The vast majority of those surveyed do not believe that AI systems will make their work significantly easier or that German companies can take advantage of the opportunity to achieve competitive advantages through AI automation. The assessment that one's own job is not threatened by AI – from an individual perspective, the only primarily optimistic forecast in the survey, is consistent with that. There is particularly high skepticism that artificial intelligence can help students learn better and could save costs in the health sector. Most respondents do not trust the German administration to use AI intelligently. They are also convinced that Europe will no longer make up ground in the international race to develop AI. Meanwhile, with a three-quarter majority, the pa-



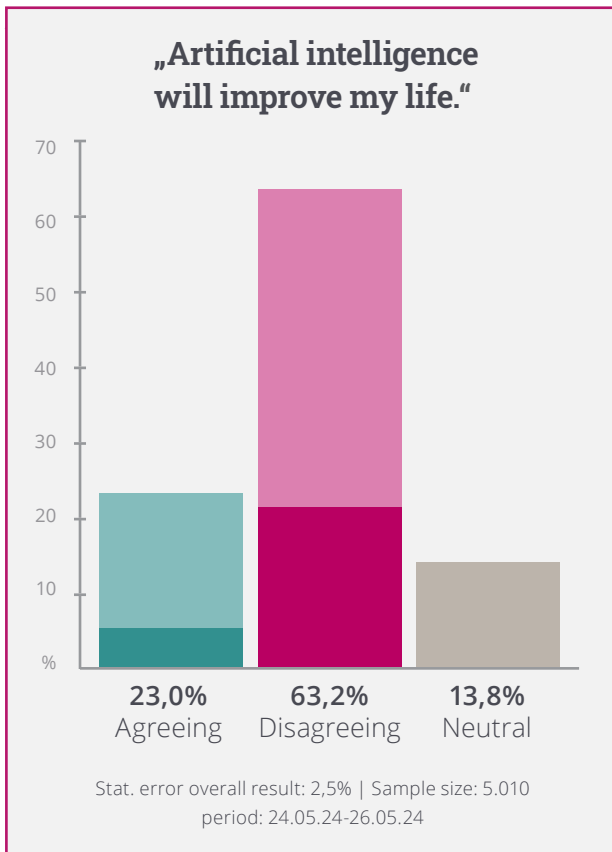
to be less politically deceived or manipulated by AI systems. According to the assessment, democracies cannot handle AI well, but autocracies can. Asked more generally, the vast majority do not believe that AI systems will deliver on the two fundamental promises of progress made by information technology: to empower individuals and enable societies to organize themselves better for the benefit of all.

More than 75 percent of respondents believe AI will lead to a further concentration of power in favor of those already powerful today. A deeper look into the survey shows that great skepticism extends across all age groups, employee groups, and education and income levels. East and West Germany are largely on par regarding AI pessimism. On some issues, men trust AI to contribute slightly more to social progress than women. The same applies to respondents with children compared to those without children and people from big cities compared to people from smaller towns and rural areas. However, there are significant differences depending on political affiliation. Among FDP supporters, almost half of those



prove my life.“ In all other political camps, negative expectations also dominate this fundamental question, albeit with a clear gradation: around one-third of Green and Left voters still believe in the individual progress potential of AI for their own lives. For the Christiandemocrats and SPD voters, it is less than a quarter. AfD supporters are most pessimistic about the benefits of AI – only 16 percent trust artificial intelligence to improve their lives.

How can we interpret these survey results? At first glance, they seem to confirm the cliché of German anti-technology sentiment and reflect general pessimism about the future. When it comes to using artificial intelligence, the motto seems to be: „I will not benefit from technical progress with data-rich systems, and neither will German companies, but the rest of the world will continue to move ahead.“



contradictory. On the one hand, AI systems are not nearly as valuable as providers and AI enthusiasts claim. However, where they can cause damage, they become highly efficient. Even the second look might not be clear-cut enough. A third conclusion from the negative survey data could be that respondents are indeed well-informed about how AI systems work and their impact on the physical world, including reinforcing information and power asymmetries. Therefore, they understand the performance of the systems when they are used consistently. However, at the same time, the respondents neither trust themselves nor the German economy, society, and certainly not the German government to use these competently for individual and collective advantage, which is again a bigger problem than it seems at first glance.

Skepticism is a virtue of information and science. Critical reflection is a motor of technical and social progress. But at what point is skepticism unhealthy? Pessimism is irrational, at least if the goal is that the future will be better than the past and present. Be-

cause pessimism has the unpleasant quality of becoming a self-fulfilling prophecy. When individuals or collectives do not believe in a better future, they do not even try to shape it. Or specifically applied to the survey: If a society does not trust itself to use a future technology with demonstrably great positive and negative impact for its own benefit, it will very likely not apply it. Pessimism is more than a waste of time. It fuels a negative downward spiral into lethargy.

The philosopher Ernst Bloch condensed the positive reversal of this negative logic in his formula about the „constructive power of concrete utopia.“ When people develop a concrete vision of a successful future, they also find the creative power to make a good part of the utopia become reality. Because in the sense of positive psychology, with the help of an optimistic vision of the future, they develop the necessary energy to work toward this promising future. The great skepticism towards artificial intelligence that emerges from the survey data points to one thing first and foremost: Germany has not yet found an optimistic narrative for a future with AI. For most of the population, a better future, thanks to artificial intelligence, does not seem plausible. They are obviously afraid of falling into the technology trap that the economic historian Carl Benedikt Frey describes in his bestseller „The Technology Trap“ in analogy to the temporary impoverishment of broad sections of society through automation in the Industrial Revolution. This is not only unfortunate and irresponsible. The fear of automation through AI represents a major missed opportunity for Western societies on the verge of demographic decline. Artificial intelligence is one of the best bets we can make today, and not just because of the challenges of aging societies.

In his essay „What Does Progress Mean Here?“ in „Die Zeit,“ the sociologist Andreas Reckwitz points out that the classic narratives of the progress of liberal societies have dramatically lost credibility in the age of poly crises. Therefore, defending the progress of the past and preventing regression would already be a success story today. This ana-

lysis is plausible from a bird's-eye perspective on the entirety of geopolitical and social developments and is conclusively justified by Reckwitz in his essay. However, the crucial point is that technology is the positive exception. The breakthrough innovations in artificial intelligence are effective and open new, better technical solutions to social problems than those we knew before. AI is an advanced technology whose relative contribution to human advancement is growing. It just needs to be used correctly and consistently for progress. The economy, society, and the state need an optimistic target vision to achieve this.

II. Empowering machines – A tale of the future from the year 2030

Productivity growth thanks to robot returns

November 6, 2030. The Advisory Council for the Assessment of Overall Economic Development presents its annual report at the Federal Press Conference. It is entitled: „Investing the Robot Returns Wisely.“ The last two annual reports were significantly more optimistic in assessing the nation's overall economic situation than in the mid-2020s. At the start of the new decade, the economy is coping with the demographic challenges much better than many feared. German companies were initially not pioneers in introducing AI-supported automation tools. But as more boomers retired, the pressure to act increased. By 2026 at the latest, word had gotten around among the self-employed, medium-sized businesses, and corporate boards: the AI tools of the so-called „Robot Process Automation“ (RPA) can actually take over routine activities that consume massive amounts of time in employees' everyday lives. Clerks no longer have to do manual rework in the SAP system because the sales tax was unfortu-

nately stated in the wrong line on the invoice or a number was incorrect in the zip code of the delivery address. At regional banks, AI bots sift through the many inquiries coming in via voice messages, email, and WhatsApp. The system answers some of these so precisely that the case is sorted out for the customer. The rest of the inquiries are reliably forwarded to those employees who are responsible and competent.

In the service industries, there are finally chatbots that help customers and don't drive them crazy. The breakthrough here was the so-called Large Language Model (LLM), which better contextualized human language than all previous AI approaches. Large language models also operate behind the scenes of the corporate knowledge GPTs, which are now standard in companies with over fifty employees. These internal company chatbots are trained with all the company's documents, making all the company's

knowledge available. In practical terms, this means that any employee can ask the system any question at any time and will receive an answer as if it were from an exceptionally competent colleague who is particularly patient, speaks any language, and does not look condescending when asked stupid questions. Now, Siemens actually knows everything that Siemens knows.

For the internationally successful Hidden Champions of German medium-sized businesses, the AI systems not only optimize production, merchandise management, and logistics thanks to data-rich predictions but also almost entirely take over the documentation for the regulatory requirements of the many EU regulations. Unfortunately, Europe has made little progress in reducing bureaucracy, but at least AI is helping to cope much better with the Supply Chain Due Diligence Act. International corporations, in particular, really appreciate this. German companies have developed specific expertise in the use of so-called Edge AI. These are systems where data does not have to be sent to a cloud data center first to run the application on-site. The AI performs its service on chips at the point of application in an energy and data-saving manner. An ecosystem of Edge AI providers has also emerged around the Karlsruhe Institute of Technology (KIT), thanks partly to outstanding spin-off conditions for science-related startups there.

Most cities today have fully automated bakeries. The operators fill the baking robots with fresh ingredients in the evening. At four in the morning, machines start working with high precision and place the loaves and rolls lukewarm in the dispensing machines. Unfortunately, there is no longer any chatting with the bakery staff. In most regions, there is no staff. The fresh rolls are cheaper and may taste even a little better. German mechanical engineering is currently doing excellent business worldwide with smart robotics. The fact that German high-tech companies in the B2B sector were very good at connecting intelligent software with physical systems in the early 2020s was often overlooked at the time. Mechanical engineers have been able to defend

their global market leadership in many areas and, in some cases, have even expanded it with smart machines. This was also successful because German companies were largely able to stay out of the tech cold war between the USA and China.

The German chemical and automotive industries are also doing surprisingly well. In chemistry, the trend toward relocating energy-intensive processes abroad has continued. However, with the help of AI, it has become significantly more innovative in developing new materials and biochemical processes. These are the new export hits. The German automotive industry was also clearly underestimated. The American and Chinese superstar companies do not have a quasi-monopoly on autonomous driving. There are robo-taxi fleets in the city centers of Munich, Hamburg, Cologne, and Berlin that German automobile manufacturers operate with German vehicles. Manufacturers continue to earn very good money, especially in the luxury segment. Unfortunately, the automation of train traffic is slow to progress at the Deutsche Bahn. This is particularly unfortunate because autonomous rail driving is technically relatively simple. After all, on some pilot routes in rural Lower Saxony and Bavaria, regional express trains now always run on time without a human train operator and are rarely canceled. In their annual report, the experts at the railway also see „significant catching up to do to increase automation potential.“ However, for the entire national economy, they state: „After years of stagnation, Germany has returned to a path of above-average productivity growth, which is reflected in company balance sheets and wage developments.“ The main conclusion is: „Companies should invest a significant part of the automation profits in further automation of processes and production because the last few years have shown that employees are not running out of work thanks to AI tools. They just make them more productive.“

Better education with ed-tech

Digital innovations are challenging to implement in the education system. Students are generally happy when they have access to knowledge via screens. However, teachers are often skeptical that digital technologies can improve learning, and so are many parents. Don't children already spend far too much time on cell phones, tablets, and computers? That AI math learning assistants can promote individual learning at an individual pace, that a creative approach to foreign language lessons with ChatGPT prepares you better for a world with ChatGPT than a ban, and that middle school students have a lot of fun training a neural network themselves that can then be used to determine bird songs was something that individual teachers in pioneering schools already demonstrated in the 23/24 school year. But AI only became widespread in schools in 2026 thanks to a killer app for teachers: a teacher bot that significantly simplifies lesson preparation based on the curriculum and the class's level of knowledge and then corrects the tests so well that the teacher only has to take a quick look at it. With the use of and benefit for the teachers, the openness in the system finally increased.

Several learning programs are in use today, particularly in STEM subjects and foreign languages, that turn an unpleasant feature of computer games such as Fortnite, The Sims, or Clash of Clans into a positive: they are addictive. Children and teenagers get sucked into digital learning worlds and then no longer notice how time flies. When they emerge from the gamified learning worlds, they are more intelligent. Some large game providers have recognized the trend as a market opportunity and are building 3D worlds for augmented reality glasses that, for a change, do not provide incentives for in-app purchases but rather for learning success. In some states, there are app stores where teachers and students can download digital learning offers free of charge.

Robo-teaching is leading to structural changes in more and more schools. Because part of the lear-

ning – especially practicing – is successful in individual digital worlds, teachers have more time for small groups. Today, their work is closer to the vision with which they once started their careers.

The progress made by Ed-Tech in vocational training and continuing education is also impressive. Some of the classic curricula have also migrated to apps that understandably present complex topics and make dull learning content at least bearable enough to consume so that not every learning unit means a hard fight against your inner weaker self. AI learning assistants have proven particularly effective in training low-skilled and low-wage workers. Immigrants and refugees have not only been able to significantly improve their German skills through language learning apps and programs. With the help of augmented reality glasses, imparting knowledge and skills is now much easier. In factories, for example, the glasses provide visual instructions on how exactly a specific work step should be carried out. Of course, these glasses also have an AI translator built in.

AI makes you healthier

In the mid-2020s, there was great hope that researchers would be able to use AI systems in the coming years to discover several new and radically better active ingredients against diseases that are difficult or impossible to cure, especially neurodegenerative diseases such as dementia and Parkinson's, but also viral diseases and metabolic disorders. Unfortunately, this hope remains unfulfilled to date. The scientific reason for this was already foreseeable at the time. For AI systems to be truly useful in innovation, they must be able to test their proposed solutions in simulators. In physical systems, for example, when developing better wind turbines, this works very well because all influencing variables are known and can be calculated and simulated. Sadly, there are still no good simulators for the human body. Unfortunately, human biology is too complex, and the causal relationships at the molecular level are often poorly understood. Although AI systems can provide increasingly better information about pos-



sible drug candidates, pharmacological progress must continue to make its long way through Petri dishes, animal models, and clinical studies. Perhaps the step into the digital model will be successful by 2040. And personalized medicine, thanks to AI, is still more of a hope than a medical standard.

However, diagnostic AI and decision-assistants for doctors have brought significant advantages for most patients. Where images play a role in the diagnosis (e.g., X-rays, CT, and MRI), algorithms now provide more competent assessment almost everywhere. They recognize better and earlier when something goes wrong in the body and assign it to the correct pathology with very high accuracy. Contrast media no longer needs to be taken before the images are taken. Today, artificial intelligence creates the contrast. Informed patients expect doctors to use AI tools and then use their experience to conduct a plausibility check. Combining artificial and human intelligence also leads to significantly better therapy decisions. Doctors, in turn, use exploratory AI systems particularly intensively. All medical

knowledge is stored in these systems. The crucial difference to digitized medical literature is that the systems provide information about what a doctor should look for if they don't really know what specific symptoms indicate or the obvious diagnosis clearly doesn't apply. Medical databases have become AI omniscient sparring partners that have improved medical decisions significantly. Incidentally, the improvement lever through AI was so great here because the rate of wrong choices made by human intelligence and experience was so high.

Of course, better diagnoses and treatment decisions at an early stage not only increase the patient's chances of recovery. They also save the healthcare system the expensive patient odysseys from doctor to doctor, with many unnecessary examinations and the use of cures that do not cure and, in the worst case, even cause harm. An important building block for this was finally making the electronic patient file functional while fully compliant with data protection rules. This was a major accomplishment, and it became possible when special interests were overco-



me in a system where too many actors benefited from a lack of transparency.

Doctors today particularly like those AI systems that relieve them of the many annoying documentation requirements and reduce billing efforts. The operators of medical practices, hospitals, and care companies use intelligent companies like all other companies. They automate routine tasks, control processes intelligently, and plan capacities better thanks to better predictions, which do not harm any patient but benefit the employees. The industry-specific inflation rate in the healthcare sector was reduced by a third within just a few years. For statutory and private insurers, AI has made the world a much better place for another reason. They use AI systems very successfully to detect billing fraud.

Incidentally, the all-too-human conflicts in shift planning in hospitals and nursing services have eased significantly. The leaders are happy they no longer have to do this miserable task. Employees notice that an AI planning tool has no personal preference.

Increasing the state's digital IQ

A Civey survey with more than 5,000 respondents in May 2030 showed that citizens are quite satisfied with digital citizen services. For three years now, they have been able to skip the trip to the government office for many administrative services. You can (finally) change your place of residence from the couch in your new home, request a new driver's license if you lost your old one, and you can apply for parental allowance on your smartphone. Applications to the building authorities can also be easily submitted online in many cities. Fulfilling all the requirements of building law is still a Herculean task, but at least an AI assistant now guides you through the thicket of regulations, which works surprisingly well. Administration chatbots now answer queries around the clock in generally understandable language so that citizens can actually apply the answers. The bots even offer the appropriate forms without asking and provide information about what the citizens should pay attention to that they may not have even thought about, true to the online motto:



Anyone who has used this administrative process has been interested in this service.

The survey participants rate the fact that they have significantly shortened the processing times for applications very positively. This is possible because public administration today, thanks to RPAs and AI, automates the process routines for standard cases and then only refers special cases to people. The public service also uses this to compensate for the growing personnel gap, which is not getting smaller. In the coming years, Generation X will retire.

Looking back, it is still regrettable that introducing these systems took so long. Because public administration, with its clearly defined rules, processes, and decision-making criteria, is actually an ideal case for partial automation with the help of learning algorithms. Not everything shiny on federal, state, and local government websites is digital gold. The twenty thick binders required to apply for a wind turbine no longer have to be carted to the responsible authority in the van. Here, too, digital applications are now

sufficient. However, even today, no AI can prepare these documents error-free. A lousy process remains a lousy process, even if it is digitized.

Meanwhile, even skeptics have to admit that the state has significantly increased its digital IQ in many areas. Many AI systems are used in traffic planning and management to predict future needs and control traffic flows in real time. Predictive maintenance has become standard across government infrastructure. The fact that a motorway bridge has to be blown up because it was not renovated on time should not happen again. Artificial intelligence is now finally accelerating the energy revolution. It has long been clear that this is theoretically possible. Now, it works in practice. AI systems are prediction machines. Today, they precisely predict regional electricity needs and compare them with weather forecasts and electricity production from wind and sun. Intelligent feed-in from renewable energy ensures better grid stability. Smart grids smooth out peak loads through incentives so that industry and private households shift their consumption to peri-



ods of high availability and low usage. The growing energy storage systems are, of course, also integrated into the smart grid, and increasingly, so are the batteries of electric cars. Many private households now fuel their vehicles with their own solar systems and are ready to feed energy into the grid when the AI predicts high demand. The experts call this „vehicle to grid.“ The owners of the electric cars that provide solar power like “v2g” very much, as they make very good money from it.

AI is the most crucial helper in basic research for dramatically better batteries, of course, not only in Germany, but German research impresses in this field not only with „high impact research papers“ but also with spin-offs of battery startups. Researchers at the Max Planck Institute for Physics of Light in Erlangen once again achieved a scientific breakthrough in 2028 that could actually make nuclear fusion a reality. They have built an AI simulator that allows the electromagnetic cage for the ultra-hot plasma to be precisely controlled. So far, this has failed to maintain the fusion reaction over a long pe-

riod. It is actually a realistic scenario that the first fusion reactors will come online in the second half of the 2030s.

The German Armed Forces have significantly upgraded their cyber defense with AI systems in recent years. The attacks are increasingly being carried out with the help of artificial intelligence. They are best detected and defended against using AI. The military does not provide detailed information on this or autonomous weapon systems. The Civey data from 2030 suggests that many respondents don't want to have exact insights. Meanwhile, there is increasing social consensus that Germany, Europe, and NATO can only remain effective if they invest massively in military AI. The fact that secret services and the Office for the Protection of the Constitution are intensively using AI to prevent attempts to influence elections is also met with general approval. The Western democracies learned quickly in this area. Deepfakes have also lost much of their subversive power. AI not only detects them as fakes more and more reliably. At some point, they simply became boring.

The rule of law has also made significant strides in the application of AI. Tax authorities and public prosecutors are increasingly leveraging AI systems to uncover cases of money laundering, tax evasion, and other forms of economic crime. An AI even managed to uncover a form of subsidy fraud previously unknown to the authorities. The AI detected anomalies in applications that had gone unnoticed by human reviewers at the Federal Office of Economic and Export Control (BAFA). AI systems now outperform most human investigators in detecting forged documents. They also assist the police in using facial recognition to identify perpetrators and predict potential crime hotspots. Police officers appreciate the significant reduction in paperwork thanks to AI bots.

The German authorities still do not use any systems that autonomously make decisions that affect individual citizens. There is still a consensus that well-educated people with a hopefully well-developed sense of justice should decide the right to social benefits, asylum, the extension of the right of residence, or even a prison sentence. In the Civey survey, an overwhelming majority also reject using robo-judges, who administer justice for minor offenses in some US states. However, so-called de-biasing systems for state decision-makers are met with approval. In many cases today, employees and civil servants have to have their decisions checked for plausibility by an AI system. There has been a significant change in the perception of AI in this area. AI decisions have long had the reputation of reproducing human biases in decision-making processes, thereby amplifying and scaling injustice. AI is a master of pattern recognition. When trained with the right data, they can reveal patterns of human bias and poor decisions. If people take machine advice, it can improve human decision-making. In the context of state decision-making, better means fairer. Of course, citizens can also use AI systems to check whether decisions about them are plausible and well-founded. If the state uses artificial intelligence intelligently, it will become more powerful. They can become empowering machines for citizens being as fortunate to live in a state governed by the rule of law.

III. Rational technology optimism

We don't know the future. It remains unpredictable even in times of artificially intelligent prediction machines. But we can imagine a future worth working towards. The future scenario outlined here may seem very optimistic. But it is plausible in terms of scenario research. Any improvement in the 2030 narrative to the current state of affairs is possible with technological means already available today. Whether AI will deliver on its promises of progress in the future is not a question of available technology. It is a matter of human intelligence to use the systems in such a way that they actually benefit in value creation and education, health, and public administration. Of course, the state cannot do everything in this way. But it can prevent or accelerate progress.

Where can the state control? And where not?

In recent years, some policy decisions have been made that give reason for rational optimism that at the end of this decade, citizens will respond more positively to questions similar to those in the current survey. The Health Data Act and the Register Modernization Act will enable many applications described above, provided the laws are consistently implemented. Data is the fuel of all AI applications. Both laws aim to make them available. If the laws are consistently implemented and the data is used routinely, they can overcome the inertia in two important sectors that have dominated digital transformation at the interfaces of the economy, society, and government to date. However, for companies of all sizes to make better use of AI to become more innovative and productive, more government support is not necessarily needed. Above all, more clarity in the analysis and consistency in setting the right government priorities are needed.

The current funding programs are often pots of

money that are used when a project will be carried out anyway. A few hundred million euros in funding for autonomous driving will not decide whether the German automotive industry will shape the technological paradigm shift itself or become dependent on Big Tech companies. The state funding budgets are negligible, considering the necessary development budgets for level 4 and 5 autonomies. The fact that manufacturers and suppliers are happy to take these subsidies makes business sense but is economically nonsensical. This tax money would be better invested where 100 or 200 million euros can make a big difference, for example, in the operation of AI in schools.

A good government investment could be an app store with high-quality, secure learning apps that all learners nationwide can use, from elementary schools to continuing vocational training shortly before retirement. Lecturers at schools can help ensure that the apps are used extensively in schools. In the UK and Italy, generous tax breaks for companies' IT investments have sparked a push for digital modernization. This could also help German companies, now at the bottom of the list regarding IT spending in the G7. These depreciations of, for example, 130% would probably also be economically viable. However, the use of AI automation tools in German companies will likely increase significantly in the coming years. Firstly, the systems are currently proving that they can do a lot of what they promise. And secondly, demographic pressure is forcing companies to use these tools. The market has to sort it out itself.

What does the ideal IT look like for the federal state?

Government remains faced with the difficult task of healing the fundamental contradiction between

data-rich information technology and a federally structured state. IT and AI thrive when they centrally organize infrastructure, data, and applications. However, the most critical public IT services are provided by the Bundesländer and municipalities, i.e., in highly decentralized structures. Rationally speaking, the online access law has failed. The so-called EFA approach („Einer für Alle“), in which pioneers in municipalities and Länder share their successful applications with others, has only had a few successes so far. Is it due to the approach or the inconsistent implementation? Or due to a lack of data pools? Opinions differ. The big question remains: What does the appropriate IT landscape look like for a federal state? With the introduction of AI into systems, this question becomes even more pressing. Nobody knows the perfect answer to this. But there are pragmatic solutions.

The first step in public IT development is introducing the same project management standards that have long been common in successful companies. This includes, above all, realistic budgeting and straightforward controlling. This may sound obvious. The many IT investment ruins in federal, state, and local governments prove that the state can learn much from companies in this area. Both public administration and the national economy could benefit significantly if the usual suspects were contracted less often in government procurement, and instead, more German and European startups from the growing GovTech ecosystem were considered. Competition not only stimulates business in this area but also prevents excessive dependencies on individual providers, the so-called vendor lock-in.

And, of course, the big issue of better data access for everyone who can drive innovation for the benefit of all must finally be cracked. Here, too, the last few years have unfortunately shown that there is usually no lack of goodwill. But too many devils in too many details prevent data access from opening. Generous depreciation options for investments in data pools would be worth a political attempt to make the most critical resource of AI applications more available to more developers. From today's

perspective, giving field tests with many players from industry, medium-sized businesses, startups, science, and civil society access to data seems to be an excellent approach to finding the best way to share data. The state can not only provide support and moderation in this area, but it can also share its data better and more generously. All of this can happen immediately.

Most importantly, however, we must stop ignoring the big IT elephant at the interface between state and society. The next federal government will have to make a significant effort to centralize federal IT and move data and applications to a sovereign multcloud much more consistently. A separate digital ministry with comprehensive competencies would most likely be an advantage regarding this. In any case, courageous IT procurement is finally needed, in which the state guarantees the acceptance of applications that are still being developed. It also requires the political courage to admit that expenses for many IT projects in an outdated, fragmented IT landscape of the federal, state, and cities/municipalities must be written off as bad investments, as „sunk costs,“ which brings us to another major contradiction in the digital change requirements of the state and IT. The systems must continue to run safely and, at the same time, should begin a technological leap in development with AI. However, the leap is usually only technically possible with an entirely newly developed system.

The state and its system developers cannot avoid a transition phase with dual structures in many areas. There will be the classic IT of the local citizens' office. In addition, the digital citizens' office must then be set up with entirely new processes in the cloud leapfrogging all IT legacy. Double structures are expensive in the medium term. However, the investment will pay off in the long term because the more citizens realize how much better the new services are, the sooner the old structures can be switched off.

„It's madness to always do the same thing and expect a different result.“ This sentence is often used

when discussing the digital transformation of the state and public administration. Unfortunately, it hits the nail on the head, even though the quote probably doesn't come from Albert Einstein.

Progress data

Artificial intelligence is a major technological opportunity for social progress. However, only individuals, companies, societies, and states that do their digital due diligence and then use AI intelligently will benefit. The government and state can undoubtedly take a leadership role here. With its enormous investments in AI research and chip development over the last three years, the Biden administration has sent a clear signal: a promising future with artificial intelligence is not only possible, it is probable.

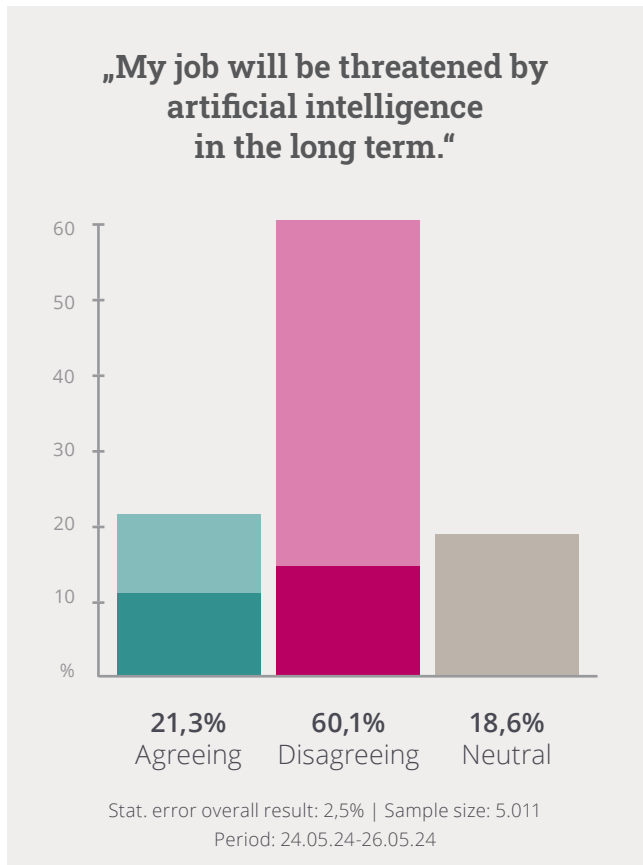
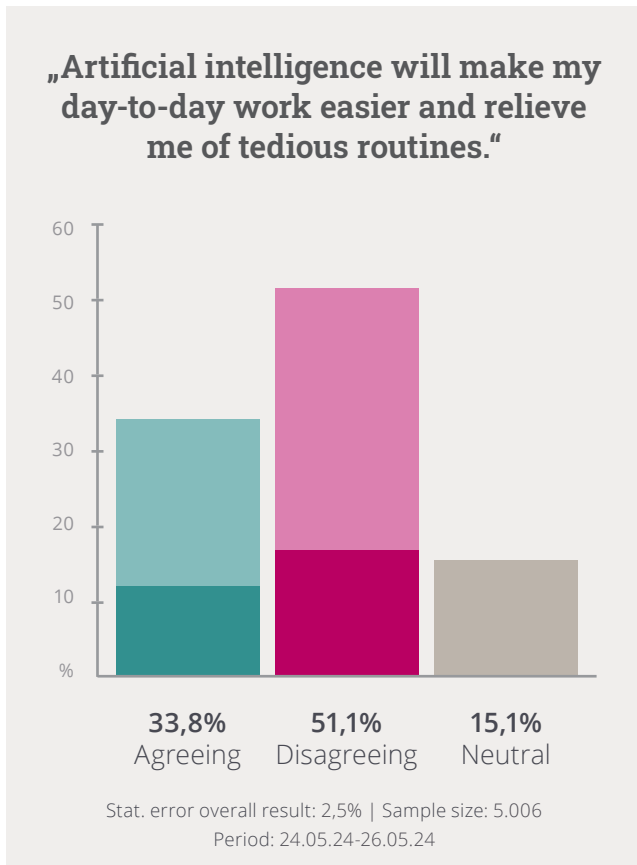
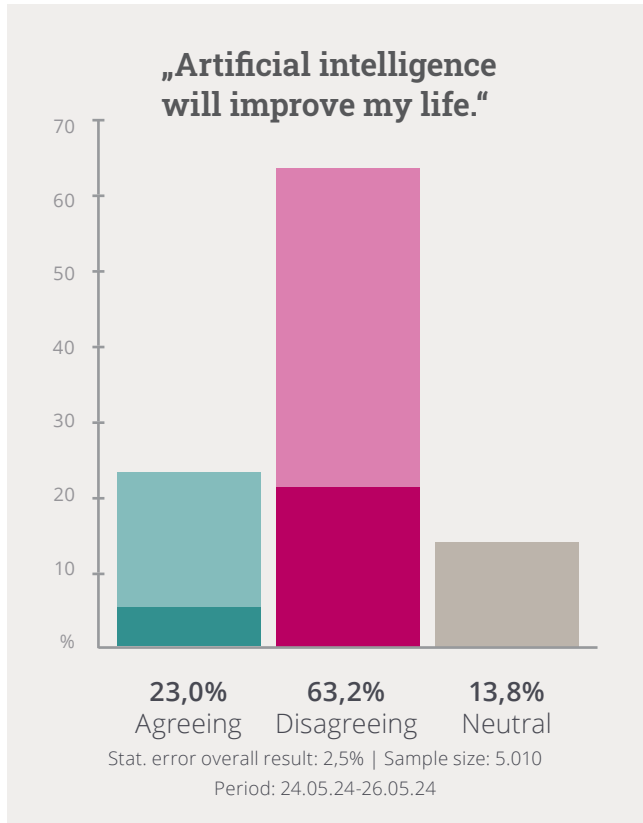
Germany has everything it takes to overcome the challenges described. We have the capital and the brains. It is up to us to deliver on the promise of technology. Andreas Reckwitz rightly emphasizes in his essay that narratives of the future can only remain credible if they gradually fulfill their promises. AI systems have a big advantage here. Their benefits for the economy, education, health, and the state can be measured in stages. Progress narratives with technology can prove their successes with data. We have to write them. Then they come true.

Results of the survey

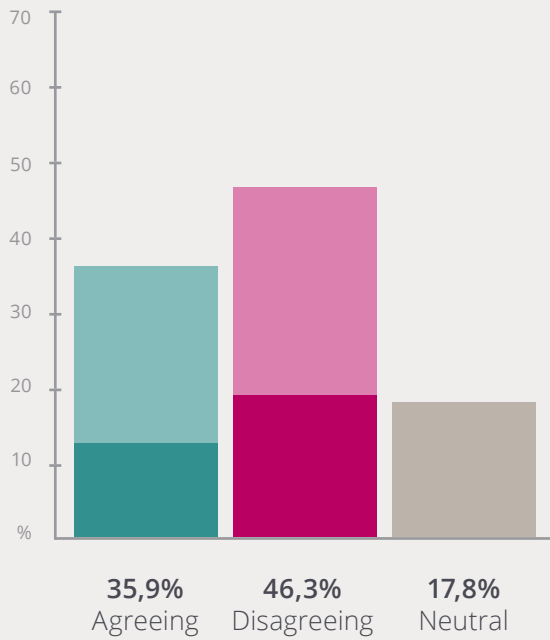
To what extent do you agree with the statement:

- Strongly agree
- Moderately agree
- Moderately disagree
- Strongly disagree
- Neutral

Methodology: The data was collected by Civey via an online panel with around 5,000 verified participants. The results are representative of the German population due to quotas and weightings, taking into account the statistical errors shown in each case. You can find more information on the methodology in the research institutes [white paper](#).

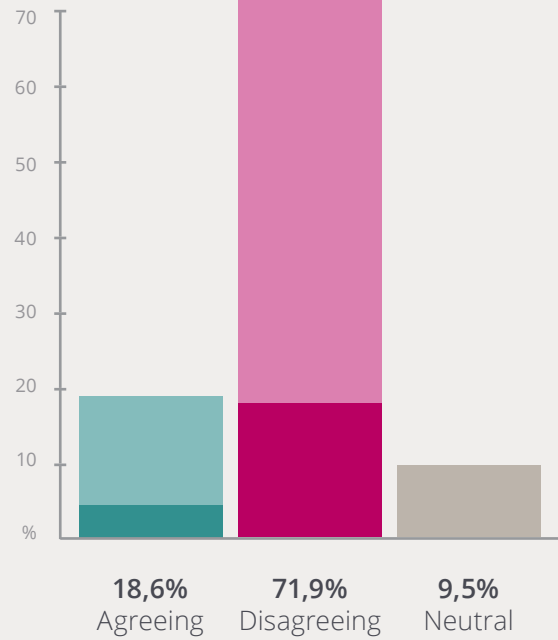


„Artificial intelligence makes German companies more competitive.“



Stat. error overall result: 2,5% | Sample size: 5.013
Period: 24.05.24-26.05.24

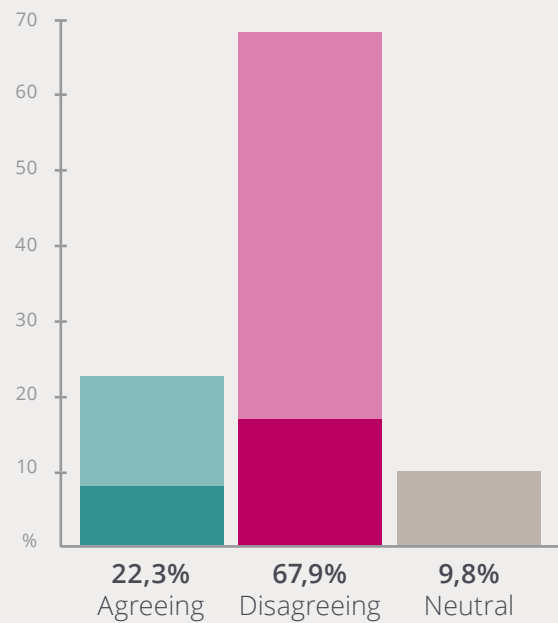
„Pupils will learn better and more with artificial intelligence.“



Stat. error overall result: 2,5% | Sample size: 5.008
Period: 24.05.24-26.05.24

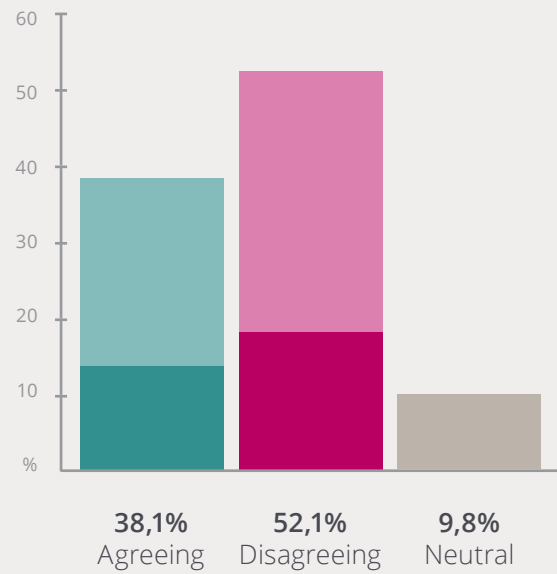
„In the future, I expect my doctor to use artificial intelligence in my treatment.“

Stat. error overall result: 2,5%
Sample size: 5.008
Period: 24.05.24-26.05.24



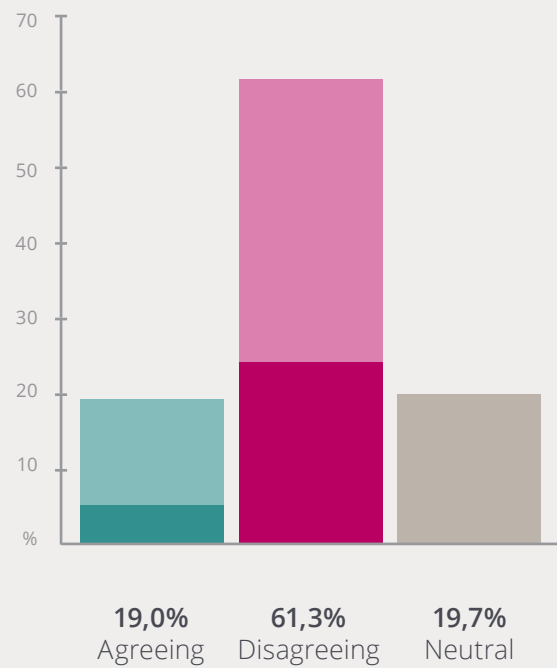
„Artificial intelligence will make German administration significantly more efficient in the coming years.“

Stat. error overall result: 2,5%
Sample size: 5.011
Period: 24.05.24-26.05.24



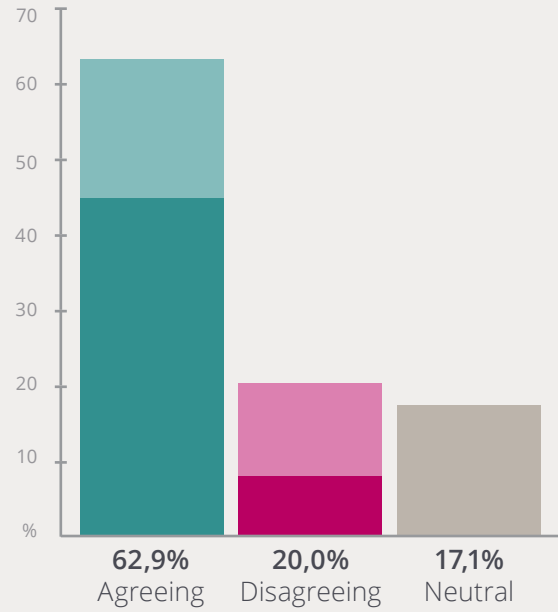
„The EU will regain ground in the international race for artificial intelligence.“

Stat. error overall result: 2,5%
Sample size: 5.012
Period: 24.05.24-26.05.24

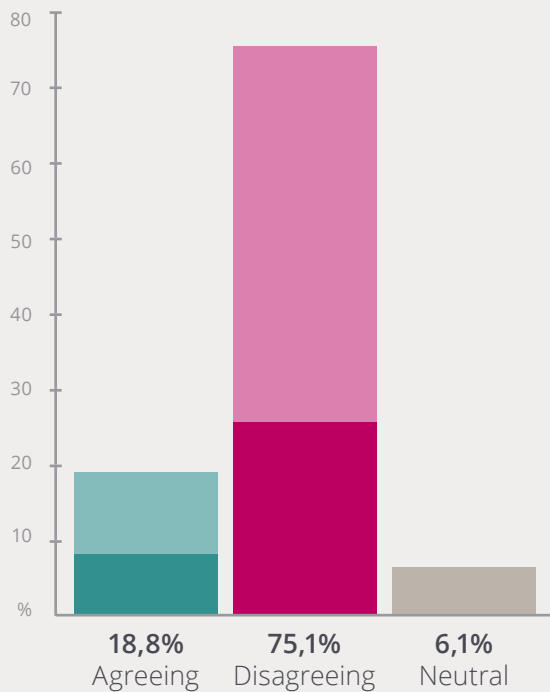


„Artificial intelligence will benefit autocracies more than democracies.“

Stat. error overall result: 2,5%
Sample size: 5.012
Period: 24.05.24-26.05.24

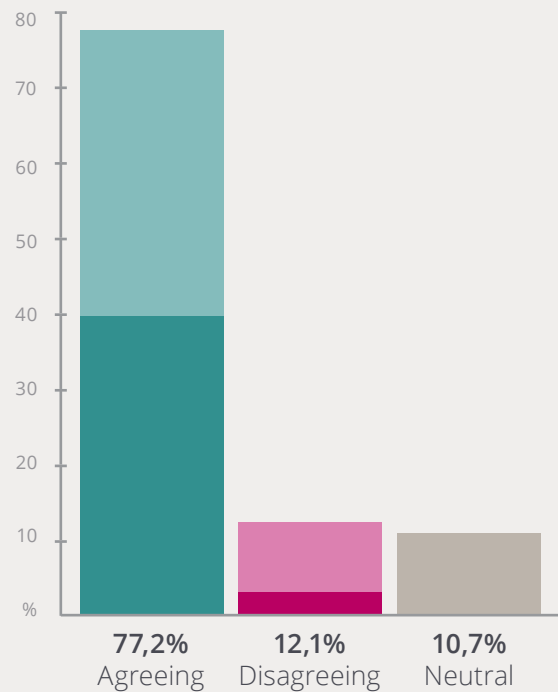


„Citizens will quickly learn not to be deceived or manipulated by artificial intelligence (e.g. deepfakes).“



Stat. error overall result: 2,5% | Sample size: 5.012
Period: 24.05.24-26.05.24

„Artificial intelligence will make powerful people, companies and institutions even more powerful.“



Stat. error overall result: 2,5% | Sample size: 5.017
Period: 24.05.24-26.05.24

About the author



Dr. Thomas Ramge Thomas Ramge thinks and writes at the intersection of technology, economics and society. He has published 20 non-fiction books that have been translated into more than 20 languages, including “Mensch und Maschine”, “Sprunginnovation” (with Rafael Laguna de la Vera) and “Das Digital” (with Viktor Mayer-Schönberger). His essays and reports have appeared in Harvard Business Review, MIT Sloan Management Review, The Economist and Foreign Affairs, as well as FAZ, Die Zeit and Welt am Sonntag.

Ramge is an Associated Researcher at the Einstein Centre Digital Future and host of the podcast SPRIND. He has been honoured with numerous awards, including the German Essay Prize 2022, the Axiom Business Book Award 2019 (Gold Medal, Economics), the PWC Business Book Award on Innovation, the getAbstract International Book Award 2018, the Herbert Quandt Media Prize, the German Business Book Award and the ADC Award (Gold).

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About Das Progressive Zentrum



Das Progressive Zentrum is an independent and non-profit think tank based in Berlin. Since 2007, our research, publications and events have helped stimulate ideas for societal progress, provided guidance for decisive political debates, and facilitated collaborative networks for progressives from across Germany, Europe and North America. We strive for a sustainable society that provides equal and good opportunities for all.

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Caveat

New technologies always carry great ambivalence. This applies particularly strongly to artificial intelligence. Of course, AI's dangers are tremendous and rightly discussed extensively. I know them. In this impulse paper, I deliberately focus exclusively on the opportunities associated with AI because the current dose of skepticism in the AI discourse already seems very unhealthy to me.

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Partner's note

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