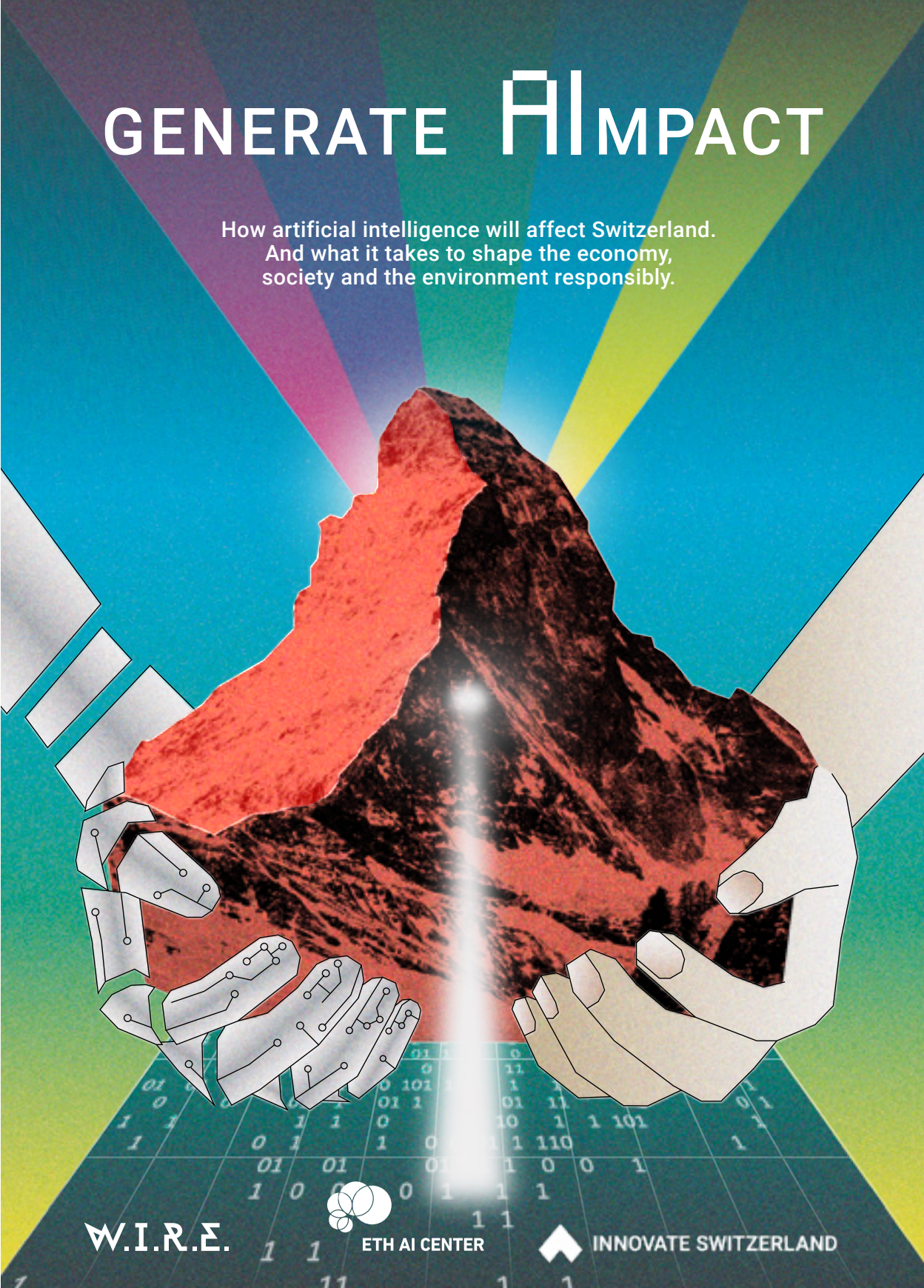
# GENERATE AI IMPACT

How artificial intelligence will affect Switzerland.
And what it takes to shape the economy,
society and the environment responsibly.



W.I.R.E.

ETH AI CENTER

INNOVATE SWITZERLAND

CHECK AI-N
SWITZERLAND IN THE NEXT PHASE OF DIGITAL TRANSFORMATION

B-AI-SICS
DEFINITIONS AND STATUS QUO OF ARTIFICIAL INTELLIGENCE

N-AI-VIGATE
FUTURE FRAMEWORK CONDITIONS FOR SWITZERLAND AND AREAS OF APPLICATION FOR LEARNING MACHINES

FOREC-AI-ST
OUTLOOK ON THE EFFECTIVE INFLUENCE OF AI IN SWITZERLAND

AI-MPACT
SUSTAINABLE FIELDS OF DESIGN FOR ORGANIZATIONS AND SWITZERLAND

AI-PPENDIX
BIBLIOGRAPHY
IMPRINT

Riccardo Merluzzi | Isabel Hoffet | Stephan Sigrist

# GENERATE AI IMPACT

**How artificial intelligence will affect Switzerland.
And what it takes to shape the economy,
society and the environment responsibly.**

# HOW AI CAN STRENGTHEN SWITZERLAND'S SUCCESS MODEL – BY BRINGING BENEFITS FOR SMALL ORGANISATIONS AND SOCIETY

### AI CAN HELP ADDRESS SWITZERLAND'S FUTURE CHALLENGES

For Switzerland, AI will become a crucial prerequisite to tackle upcoming economic, social, and ecological demands, such as improving workforce management and enhancing research excellence.

### POSITIVE IMPACT ON THE ECONOMY DESPITE UNCLEAR LABOR MARKET IMPLICATIONS

According to the surveyed companies, AI boosts productivity, profitability, and innovation capability in the Swiss economy. While AI reduces the overall need for jobs, it doesn't necessarily lead to fewer employment opportunities.

### OPPORTUNITIES AND RISKS FOR SOCIETY

AI tends to improve people's ability to make decisions, especially when dealing with disinformation, and makes a positive contribution to general prosperity. The impact on the areas of safety and fairness must be viewed more critically.

### ADDED VALUE FOR THE ENVIRONMENT

AI use increases energy consumption from a company perspective but also enables better resource utilization and supports slowing down the negative effects of climate change.

### WIDE RANGE OF APPLICATIONS BENEFITING SMEs

AI applications offer numerous possibilities, especially in partial automation, data analysis, early detection, and customer interactions. This technology opens doors not only for large corporations but also provides opportunities for the diverse SME landscape.

### LACK OF STRUCTURES FOR RESPONSIBLE AI USAGE

According to the survey, almost three quarters of organizations in Switzerland have a low level of maturity in terms of strategies or measures for dealing with the social challenges of AI. While certain corporations already have expertise in this area or can build it up based on their resources, small and medium-sized companies need to be strengthened in this regard.

### NEED FOR COMPETENCY BUILDING

To realize AI's long-term potential, skills development is essential, particularly for SMEs and the general public. This ensures tailored and pragmatic use of the technology.

## EXPERTS

**ADRIAN OTT**
Partner and Chief Artificial Intelligence Officer, EY

**DR. AUGUST BENZ**
Deputy Managing Director of the Swiss Bankers Association and Head of International & Transformation

**PROF. DR. BERTRAND LOISON**
Deputy Director and Head of Data Science, AI, and Statistical Methods (DSSM), Federal Statistical Office (FSO)

**CHRISTOF ZOGG**
Head of Business Transformation, Swisscom

**DR. CHRISTOPH NABHOLZ**
Chief Research and Sustainability Officer, Swiss Re

**DR. MONICA DELL'ANNA**
Board Member, Swissquote, and Chairwoman of the Board, B Capital Partners

**ERICH HERZOG**
Member of the Executive Board and Head of Competition & Regulatory Affairs, Economiesuisse

**PROF. DR. GUDELA GROTE**
Professor of Work and Organizational Psychology at the Department of Management, Technology, and Economics, ETH Zurich

**DR. JOCHEN DECKER**
Chief Information Officer, SBB

**KARIN TAHENY**
Chief Digital + Technology Officer, Switzerland Global Enterprise (S-GE)

**PROF. DR. MARCEL SALATHÉ**
Co-Director of the AI Center and Head of the Digital Epidemiology Lab, EPFL

**PROF. DR. CHRISTIAN SCHAFFNER**
Executive Director of the Energy Science Center (ESC), ETH Zurich

**CLAUDIA PLETSCHER**
Managing Director, fineminds

**PROF. DR. MARC POULY**
Co-Head of the Applied Artificial Intelligence Research Labs and Professor of Machine Learning and AI, Lucerne University of Applied Sciences and Arts (HSLU)

**DR. MARTIN MÜLLER**
Executive Director of Scientific Anticipation, Geneva Science and Diplomacy Anticipator (GESDA)

**PROF. DR. TORBJÖRN NETLAND**
Full Professor and Chair of Production and Operations Management, ETH Zurich

**DR. RAPHAEL REISCHUK**
Partner and Group Head of Cybersecurity, Zühlke

**REMI SABONNADIERE**
Co-Founder and Managing Director, Effixis, and Co-Founder, Prompt University

**DR. SARAH GENNER**
Lecturer and Digitalization Expert

**YANNICK HIRT**
Co-Founder and Managing Director, ODCUS

# CHECK-AI-N

## SWITZERLAND IN THE NEXT PHASE OF DIGITAL TRANSFORMATION

# FROM PREDICTIONS TO SHAPING SWITZERLAND'S DIGITAL FUTURE

Since the 1950s, Switzerland has established itself internationally as a highly successful economic hub, contributing significantly to the widespread prosperity of its population. This success is partly due to the country's transition from an industrial to a service-oriented economy. While the tertiary sector has flourished, industrial production continues to play a vital role in value creation. This is characterized not only by the complementarity of financial services and life sciences but also by the coexistence of large international corporations and numerous small and medium-sized enterprises, known for their high quality and adaptability.

With the ongoing digitalization, particularly the rise of Artificial Intelligence (AI) and its capabilities in generative content creation, global momentum is building. This raises the question of how Switzerland can position itself within this emerging landscape. Massive investments in AI, amounting to hundreds of billions of US dollars, are often accompanied by announcements of rapid transformations across various sectors – from media to pharmaceutical development, and from industrial production to logistics.[1] These developments carry expectations for AI-driven economic growth and productivity increases. Simultaneously, the media debate is marked by dystopian scenarios that stoke fears of AI causing humanity's downfall.

## MOVING FORWARD TO REALITY

In the media frenzy of escalating predictions, it is increasingly forgotten that AI has been a part of scientific research and development projects since the 1950s. Accordingly, AI has been used for many years in various everyday applications, from search engines to industrial robotics.[2]

In response to the prophecies of radical AI disruption, there is currently a growing number of critical voices identifying signs of a potential bubble.[3] There are increasing questions about whether these high investments in AI technologies are indeed profitable, and whether focusing on AI might result in losses as well as gains.

Additionally, there is growing awareness of the potential challenges AI poses to society and the environment – whether it concerns intellectual property protection, the spread of disinformation, rising energy consumption from training learning machines, or new risks from cybercrime.

## CONSEQUENCES AND FIELDS OF DESIGN FOR SWITZERLAND

For Swiss organizations and society, questions arise regarding the impact AI will truly have and how the country can adapt to the new framework conditions in this next phase of digital transformation. Specifically, decision-makers, organizational leaders, everyday users, and critical citizens need to define paths and strategies to meaningfully integrate AI applications into both professional and personal life.

## FROM PREDICTIONS TO PRGMATISM

For Switzerland, it is essential to develop a pragmatic approach following numerous predictions. This approach should help deploy AI where it creates tangible added value, contributing to Switzerland's success in the 21st century and positioning the country internationally with its strengths. Achieving this requires establishing a realistic and differentiated perspective on AI's role. Additionally, strategies and structures must be created to support various organizations, from from SMEs to large corporations, in navigating and applying AI quickly and seamlessly.

## RETHINKING ARTIFICIAL INTELLIGENCE

This study focuses on identifying practical applications that deliver real benefits for both large and small organizations and people with varying levels of education. A responsible and sustainable approach to AI requires laying the groundwork for innovation, not as an end in itself but as a means of addressing future challenges. It is essential to understand AI not as a stereotypical „magic bullet," but as a powerful tool to be used effectively across different application areas.

To establish a comprehensive understanding of AI's impact and to define the foundation for a forward-looking approach to technology implementation, in-depth expertise is necessary. This was condensed through 20 qualitative expert interviews with Swiss decision-makers and thought leaders from business and academia. Furthermore, potential hypotheses regarding the effects and application areas of AI

were tested through a quantitative survey of over 100 organizations. These sources, supplemented by extensive analysis of existing studies and condensed by W.I.R.E., form the results presented in this publication.

The following chapter delves into the foundational elements that enable a nuanced engagement with AI. The current state of knowledge regarding AI's influence is also explored. Chapter 3 presents Switzerland's future framework conditions, specific challenges, and application areas for AI's role in value chains across the economy, society, and environment. Chapter 4 summarizes the results of the quantitative survey, highlighting potential opportunities AI offers to address Switzerland's core challenges and provides an outlook on AI's future impact, including advanced theses on its influence in the economy, society, and environment. The final section presents overarching recommendations for action and design that serve as a foundation for shaping Switzerland's future and proactively guiding the next phase of AI engagement.

**INNOVATE SWITZERLAND – BEYOND THE HYPE**

This mission unites the organizations within the „Innovate Switzerland" community, in collaboration with Microsoft and the Think Tank W.I.R.E., to systematically anticipate and contextualize new digital developments. For this project, a content partnership was also established with the AI Center at ETH Zurich, one of the world's leading universities, renowned for its differentiated perspective and responsible use of Artificial Intelligence.

We extend our special thanks to all individuals and organizations who made this project possible through their resources and expertise. Alongside the team from Microsoft Switzerland and the Innovate Switzerland community, we especially thank the AI Center at ETH Zurich and the venture capital firm Redstone VC for its analysis of AI start-ups in Switzerland.

All partners in this project are committed to the long-term, sustainable use of AI for the benefit of the economy, society, and the environment. Thus, the aim of this study is to create a concrete foundation that supports organizations in Switzerland to effectively combine artificial intelligence with human intelligence, enabling both Switzerland and the world to benefit in the long term.

**METHODOLOGY**

This study is based on a combination of qualitative and quantitative analyses, aimed at providing a comprehensive and practical perspective on the developments and impacts of Artificial Intelligence in Switzerland.

To precisely assess AI's influence on the economy, science, and environment, traditional macroeconomic data extrapolations reach their limitations. Therefore, this project's analyses are grounded in extensive desk research of relevant existing studies, a quantitative survey of over 100 representatives from Swiss companies, and 20 qualitative interviews with experts across various sectors and fields of knowledge, both directly and indirectly related to AI.

Based on existing knowledge and qualitative assessments, theses were developed iteratively following the „grounded theory model."[4] These theses were subsequently validated through quantitative surveys. The insights derived from these theses and design fields are rooted in established knowledge bases, but are primarily founded on the expert interview statements, interconnected with arguments synthesized by the study authors.

# B-AI-SICS

## DEFINITIONS AND STATUS QUO OF ARTIFICIAL INTELLIGENCE

# DEFINITION AND CURRENT STATE OF ARTIFICIAL INTELLIGENCE

With the growing influence of AI, it is essential to assess future opportunities and challenges with foresight. Based on high expectations as well as the challenges that the technology brings, numerous studies have been published since the launch of ChatGPT, examining specific aspects of AI's capabilities or extrapolating its potential impact on the economy. However, for many companies, the key question remains where and how AI can actually provide value.

„Looking at the Gartner Hype Cycle, generative AI is currently at the ‚Peak of Inflated Expectations.' The crucial question for me is: ‚Where's the beef?' Which use cases truly make a difference and can also be monetized within a company?"

Dr. Jochen Decker, SBB

„The impact of AI varies greatly depending on the sector. In some industries, it will be disruptive, while in others it will be more evolutionary. It is challenging to make generalized statements, as the influence depends heavily on the specific industry, function, or area."

Dr. Monica Dell'Anna, Swissquote

„We have long been living with AI and automated decision systems. It is worthwhile not only to look to the future but also to consider what already exists and the impacts it has. We should honestly confront these developments, seize the opportunities, minimize the risks, and not pretend that AI is solely a matter of the future."

Dr. Sarah Genner, Digitalization Expert

## DEFINITIONS OF ARTIFICIAL INTELLIGENCE

Artificial Intelligence is an umbrella term for a variety of technologies aimed at mimicking human cognitive abilities such as learning, problem-solving, and perception. AI is often divided into two categories: „weak AI" and „strong AI."

Weak AI already exists and includes specialized systems that can perform specific tasks better than humans. In contrast, strong AI (also known as Artificial General Intelligence) would theoretically be capable of carrying out any cognitive task that a human can do – though this goal has not yet been achieved. The ultimate form of AI would be „Artificial Super Intelligence," a hypothetical concept where machines surpass human intelligence across all dimensions, including cognitive, creative, social, and emotional capabilities.[5]

## MACHINE LEARNING

Machine Learning is a specific approach within AI, involving methods where systems learn from experience and data without being explicitly programmed. AI systems based on machine learning can make predictions or decisions by recognizing patterns in data. It forms the foundation for many modern AI applications, as it provides the capability to adapt to new data and tasks.

## DEEP LEARNING

Deep Learning is a subset of machine learning that uses artificial neural networks inspired by the structure of the human brain to tackle particularly complex tasks. These networks consist of multiple layers (hence „deep"), allowing the system to detect very abstract and intricate patterns within data. Deep Learning is often applied in areas with large amounts of data, such as image recognition, speech recognition, and natural language processing.

Due to the high complexity and numerous layers within a neural network, it becomes challenging for humans to understand how the system arrives at its decisions (the so-called „black box" problem). The model autonomously identifies patterns from the data and adjusts millions of parameters, which limits transparency. This lack of explainability presents a particular challenge in critical areas like medicine, law, or finance.[6]

### GENERATIVE AI

Generative AI, which is based on machine learning and deep learning, is a specialized application where AI models not only analyze data but also generate new content, such as text or images. Large language or image models are used to produce new outputs based on statistical patterns found in the training data.

One of the most well-known and widely used generative AI applications is ChatGPT, which is based on a Large Language Model (LLM). It is trained on extensive text data to generate human-like text by analyzing the statistical relationships between words in a sentence to create contextually relevant and coherent responses. A central component of this technology is Natural Language Processing (NLP) – a research field focused on enabling computers to understand, process, and generate natural language, thereby facilitating human-computer interaction through language.

### RESPONSIBLE AI

With the increasing use of AI, awareness of the potential risks associated with this technology is also growing. Consequently, there is a greater call for ethical guidelines to ensure responsible use. A well-known approach is that of the OECD, which developed guidelines that are aligned with sustainable development, the protection of human rights, and democratic values. The principles include fairness, privacy protection, transparency, explainability, robustness, security, and accountability.[7]

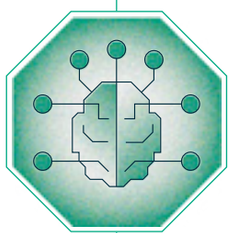
## ARCHETYPES OF ARTIFICIAL INTELLIGENCE

The current focus when discussing AI often centers on generative solutions that form the basis for language models and image generators. These receive the most attention due to their novel capabilities. In reality, however, there are various fields of AI application, which can be divided into four categories based on their capabilities and areas of use. These include the ability to analyze and structure data, the ability to make predictions, the optimization and control of processes or machines – as a component of robotics – and the ability to generate language, images or designs.

„AI will initially bring significant value in areas with low margins and automated processes. It will primarily gain traction in tasks with repetitive characteristics. However, with the ability of large language models to combine data in new ways, increasingly complex tasks that were previously unfeasible can now be automated."

Adrian Ott, EY

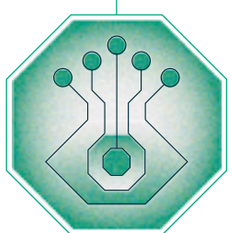
## FOUR CATEGORIES OF AI



### CLASSIFY & UNDERSTAND

AI systems that categorize data into predefined groups and understand human language as well as context.

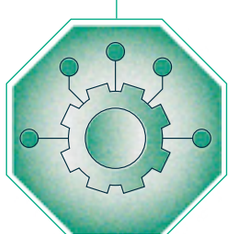
Image recognition, spam filters, medical diagnosis, sentiment analysis, language translation.



### PREDICT & RECOMMEND

AI systems that predict future events or trends and suggest courses of action based on user preferences or behaviors.

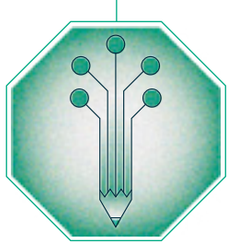
Sales forecasting, stock market predictions, weather forecasting, product recommendations, personalized content recommendations.



### OPTIMIZE & CONTROL

AI systems that manage or regulate systems and processes to achieve desired outcomes, including process improvement and resource allocation.

Autonomous vehicles, robotic process automation, smart home systems, industrial process control, supply chain optimization, route planning.



### GENERATE & CREATE

AI systems that create new content by recombining data and patterns learned during training.

Text and video creation, image synthesis, music composition, code generation.

# BROAD TECHNOLOGICAL ECOSYSTEM AS THE FOUNDATION FOR AI

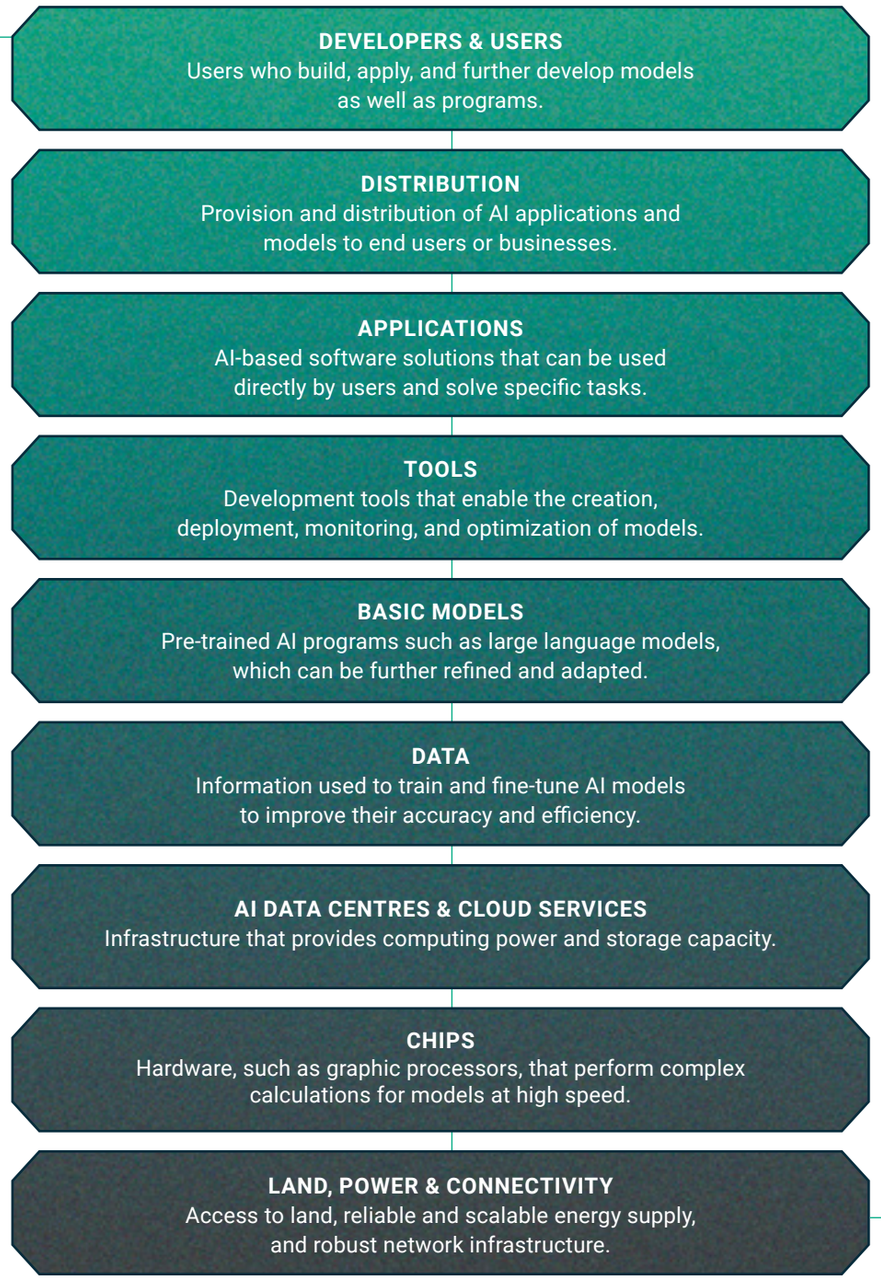
Artificial Intelligence relies on an extensive portfolio of different technologies and structures, extending beyond the well-publicized „Large Language Models (LLMs).“ This entire ecosystem is also known as the „technology stack.“ To fully harness AI’s potential, understanding the overall infrastructure is crucial. This infrastructure consists of multiple layers, of hardware, software and human components that have to work together to create value.[8]

### LAND, POWER & CONNECTIVITY

The foundation for operating an efficient AI system lies in the physical infrastructure. This includes access to suitable locations, reliable and scalable power supply, and robust network infrastructure, which enable the operation of data centers and provide the necessary resources for AI technologies.

### CHIPS

This layer in the technology stack includes specialized hardware such as Graphics Processing Units (GPUs) and Tensor Processing Units (TPUs), which are essential for providing the required computational power. GPUs, originally developed for processing 3D graphics, have proven versatile due to their ability to perform numerous calculations in parallel, making them particularly suited for training complex AI models. TPUs, on the other hand, are specifically designed for deep learning and offer higher efficiency and speed for neural network computation and inference.



### AI DATA CENTERS & CLOUD SERVICES

Data centers form the backbone of AI applications, offering the immense computational power and storage capacity needed to process large datasets and train complex models. These physical infrastructures ensure that AI models can operate efficiently and reliably. For developers or companies not wishing to maintain their own data centers, cloud services offer the necessary flexibility and scalability, allowing them to adjust computing and storage capacities as needed without substantial initial investments in physical infrastructure.

### DATA

Data is the core of AI model development and enhancement. This layer involves the collection, organization, and storage of large amounts of raw data required for training and fine-tuning AI models to improve accuracy and efficiency. A challenge, however, is that models could increasingly be trained on their own outputs, leading to a phenomenon where model quality and diversity decline unless regularly fed with new, real-world data. As data volumes continue to grow, it becomes increasingly important to organize and manage this data effectively, as it could otherwise quickly become overwhelming and hinder AI model efficiency.

### BASIC MODELS

These are fundamental AI models used in various fields, such as language processing, image recognition, or audio processing. They serve as a foundation for specific applications and provide a basis that can be further refined and adapted to meet particular needs or industry requirements. Some of these models are available as open-source solutions and can be further developed by the community. Additionally, there are platforms that list all publicly accessible models in a centralized manner. At the same time, many models developed by companies are available for a fee.

### TOOLS

This layer includes software solutions that facilitate the development, deployment, monitoring, and optimization of AI models. It ensures that models are effectively applied and managed in real-world environments and plays a key role in continuous improvement and oversight.

### APPLICATIONS

This layer comprises AI-based software solutions that users can directly engage with. Here, AI becomes tangible, enhancing efficiency, reducing manual labor, and supporting decision-making by integrating its technology directly into daily life and business processes.

### DISTRIBUTION

This layer ensures the provision and distribution of AI applications and models to end users or companies, making developed applications easily accessible from various platforms and locations. For instance, through interfaces like APIs, developers can seamlessly integrate AI functions into their applications, such as automatic translation within an email service.

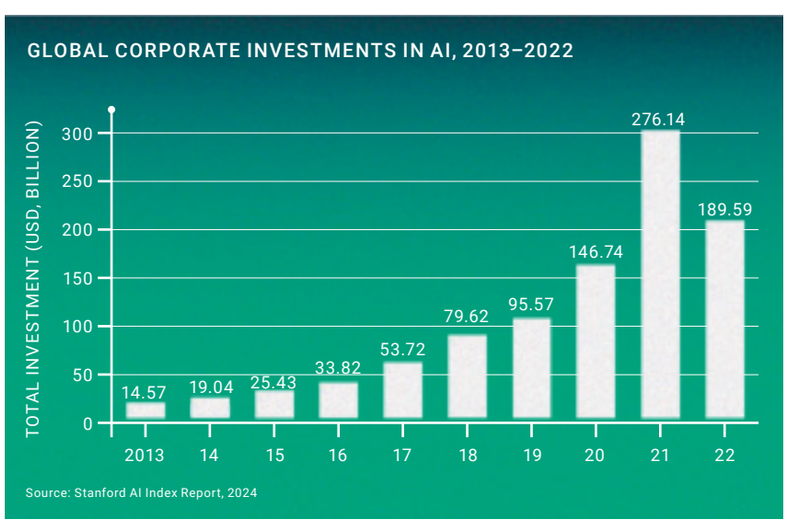
### DEVELOPERS AND USERS

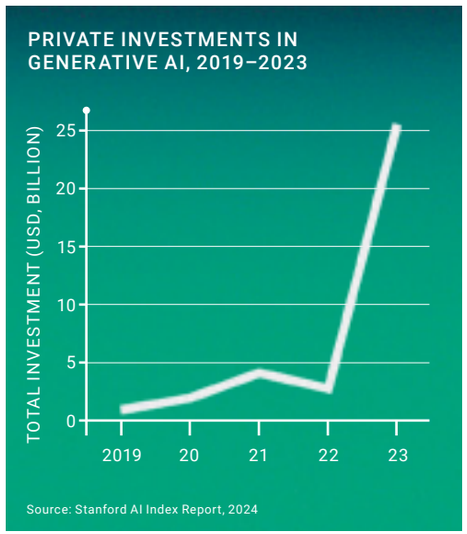
The top layer of the AI tech stack represents the people who create, apply, and continually advance AI technologies. They navigate through the deeper layers of the stack to design innovative applications and increase system efficiency, making this complex infrastructure a source of new ideas that drive technological progress and enhance AI‘s benefits for various life and work areas.

# HIGH EXPECTATIONS FOR ECONOMIC GROWTH AND PRODUCTIVITY

Existing studies that anticipate the future impact of AI generally agree on positive outcomes for economic growth and increased productivity. For instance, projections from Goldman Sachs and J.P. Morgan suggest that generative AI alone could boost global GDP by USD 7 to 10 trillion, which corresponds to growth of up to 10 %. McKinsey estimates annual productivity growth of between USD 2.6 and 4.4 trillion.[9]

Similarly, regional perspectives show comparable results. An IMF study concludes that the UK economy could grow by 16 % due to AI.[10] Austria's Economica Institute predicts a national increase in value creation by 18 %.[11] The Stanford AI Index Report 2024 provides further insights into global investments and the role of major players.[12] This study illustrates the increase in AI investments over recent years, with a decline apparent in 2023.

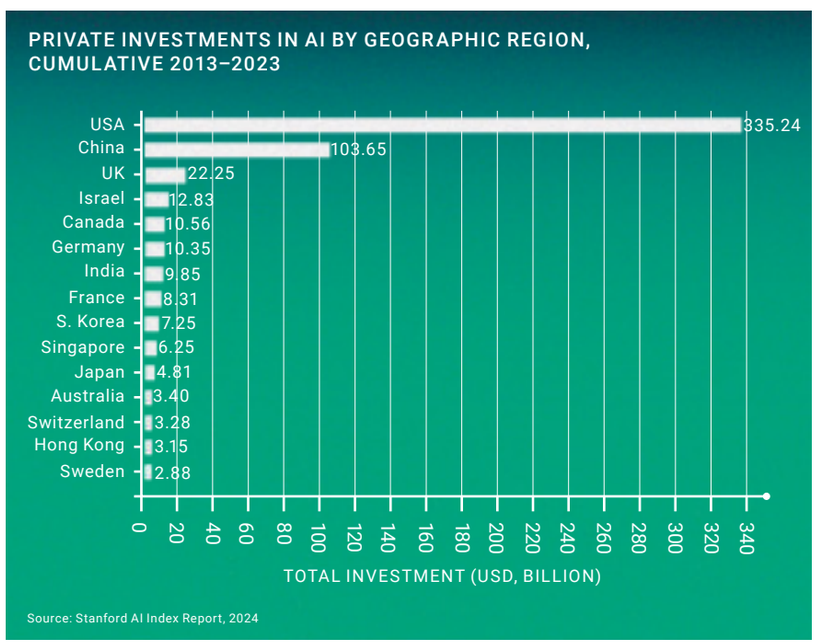



In the field of generative AI, there has been a significant rise in private investments, from under USD 5 billion to over USD 25 billion within one year.

In addition, the Stanford report indicates that from 2013 to 2023, US companies dominated private AI investments, with USD 335,24 billion — three times more than China's USD 103,65 billion, which ranks second. The United Kingdom, in third place, invested around USD 22,25 billion, about 15 times less.

Despite its small size, Switzerland ranks 13th in the list. However, the statistics highlight that due to population size and economic power, the USA and China operate under very different conditions compared to Switzerland. Consequently, it is neither realistic nor advisable for Switzerland to attempt to compete on the same scale.

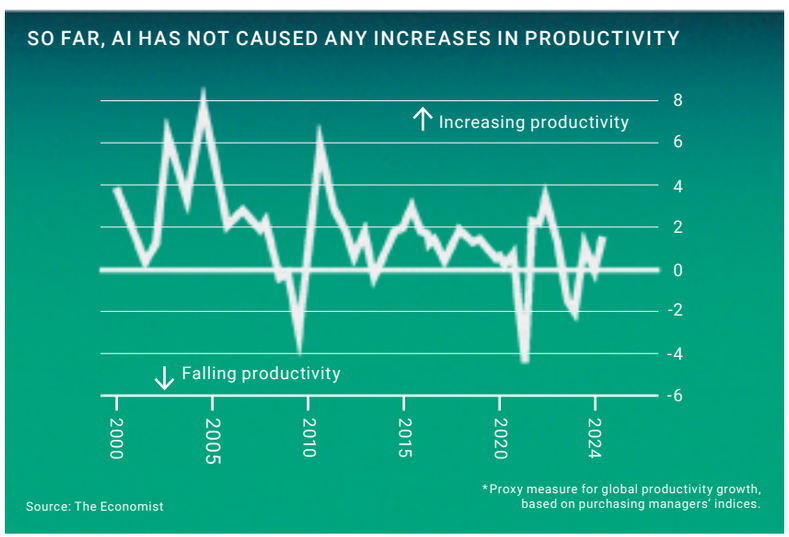



An interesting observation emerges when comparing investments and patents: while the USA leads in financial investments, the situation is reversed regarding patents. China dominates with 61 % of global AI patents issued between 2010 and 2022, while the US holds only 21 %. This discrepancy suggests that the USA prioritizes financial investment, while China secures innovations through patents.

## COOLING OF HIGH EXPECTATIONS

Given the enormous expectations and investments in the AI sector over the past two years, there are increasingly critical voices that view AI's potential with more caution or even see signs of a bubble.[13] Former analysts at Goldman Sachs point to the limits of the AI revolution, constrained by high costs and limited application areas.[14]

Although AI is already in use across various sectors, it has not yet led to a significant increase in global productivity. This indicates that the technology is still in its maturation phase, with its long-term economic impacts yet to become apparent.[15]




„AI is discussed as a revolutionary development; in reality, its progression is more evolutionary. Initially, there is always a lot of excitement, as with self-driving cars, which then wanes in light of the many unresolved implementation challenges."

Prof. Dr. Gudela Grote, ETH

„The great danger is that Generative AI may initially reduce productivity. If we simply continue our existing processes, AI allows us to create a lot more nonsense in less time. It takes time and maturity to overcome the activation energy and extract real value."

Dr. Jochen Decker, SBB

# POTENTIALS BUT ALSO NEW REQUIREMENTS FOR SWISS COMPANIES

Between 2023 and 2024, multiple studies on AI's opportunities, challenges, and acceptance were published in Switzerland. These investigations emphasize AI's economic potential but also highlight deficits and the need for strategic preparations.

An analysis by Strategy& forecasts that generative AI could boost Switzerland's annual GDP growth by 0.5 to 0.8% by 2030, equating to additional growth of CHF 25 to 50 billion.[16] Sectors that intensively collect and utilize data, such as software, pharmaceuticals, and financial services, could see productivity gains of 8 to 15%, while sectors relying on physical labor and manufacturing might benefit less.

„Switzerland, as a country with a high share of knowledge work, is strongly impacted by AI's consequences and especially benefits from a productivity boost."

Christof Zogg, Swisscom

The „AI Readiness Index" by Cisco highlights the pressure companies face: 61% of respondents believe they have a maximum of one year to develop an AI strategy before their business is significantly impacted.[17] According to a survey by Swissmem in collaboration with ETH, however, only 28% of Swiss manufacturing companies have such a strategy.[18] Additionally, the study showed that profitable companies are more willing to invest in AI: 52% of high-profit tech companies consider AI deployment, compared to just 24% of less profitable firms.

AI usage is already high across industries: 82% of Swiss respondents in the latest EY study reported using AI.[19] The primary motives for AI use are efficiency gains, cited by 56% of respondents in the Swissmem study. A Deloitte study confirms similar findings, focusing on efficiency gains and increased creativity through generative AI.[20] Furthermore, 82% of executives in the EY study believe that AI can lead to cost savings and profit increases.

However, risks remain present. According to Deloitte, 65% of respondents see cybersecurity and data protection as the biggest challenges, followed by the adoption of incorrect information. The IMD study adds to these risks, highlighting the dangers of overreliance on AI solutions and algorithmic manipulation.[21]

Moreover, many employees fear job loss: 50% in the Deloitte study and 57% in the EY study expressed such concerns. A study by Avenir Suisse suggests that low-skilled workers may benefit less from AI, while executives emerge as clear winners.[22] In contrast, office workers, particularly those without specialized skills, are vulnerable, with 80% potentially competing with AI. The authors estimate that 490,000 office workers could be affected.

Swissmem emphasizes the lack of internal and external AI specialists and underscores the need for retraining and upskilling programs. At Deloitte, the majority of respondents also consider this essential.

There is uncertainty regarding AI governance. Swissmem indicates that 63% of Swiss technology companies are unaware of applicable AI regulations. Only a few understand the EU AI Act. Opinions on additional regulations are divided: 25% oppose them, 13% favor them, and 35% are uncertain. The IMD survey confirms this uncertainty and highlights the desire for a balanced approach between self-regulation and government policy.

„Many Swiss companies, especially SMEs, are not yet ready to initiate the disruptive changes brought by generative AI. They struggle with the availability of high-quality data, the right organizational structures, and the necessary agility. These hurdles must be overcome before disruptive changes can take place."

Karin Taheny, S-GE

## HOPE AND SKEPTICISM IN SWISS SOCIETY

In the context of AI's potential risks, societal impacts and trust in the technology have increasingly come into focus in recent years. This has contributed to the development of responsible AI concepts aimed at reducing discrimination and misinformation.

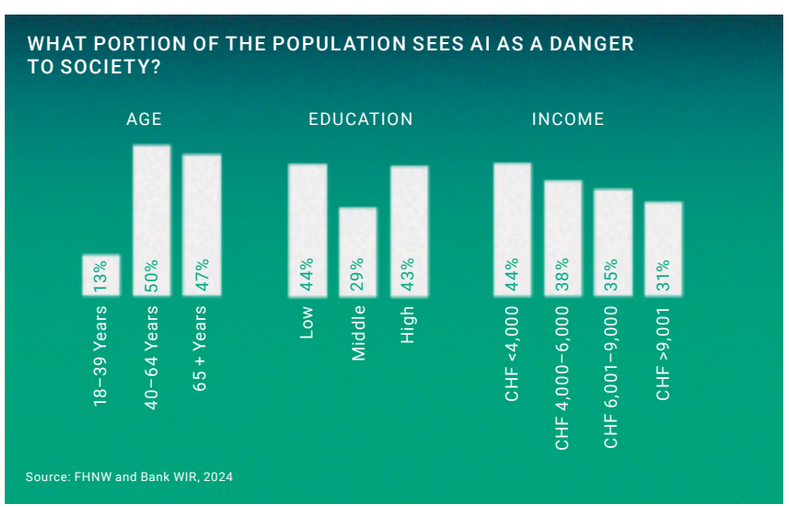
The previously mentioned IMD study shows that around 80 percent of participants view AI as having potential for positive change and are accordingly optimistic. However, there is disagreement regarding potential risks and whether AI will ultimately do more good or harm. The majority of respondents agree that AI will cause profound changes within the next three to five years.

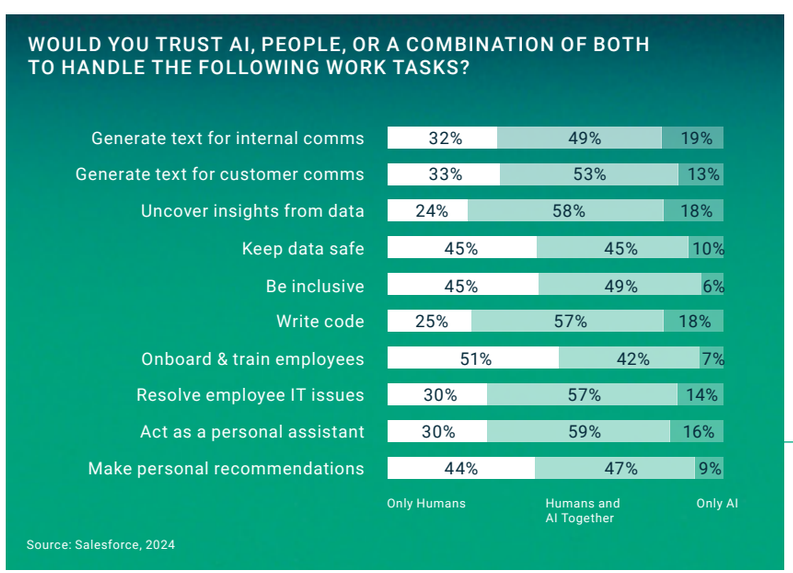
Despite this optimism, significant uncertainty and skepticism remain. According to the Digital-Radar by the University of Applied Sciences and Arts Northwestern Switzerland, which in 2024 identified AI as the most important digital technology topic, 36 percent of participants view AI as a societal threat.[23] Interestingly, there is a clear correlation between skepticism and age: the older the generation, the more critical the attitude toward AI.

The Mobiliar DigitalBarometer results paint an ambivalent picture.[24] Here, negative, neutral, and positive attitudes towards AI are relatively balanced, with a slight inclination toward a supportive stance. Similar correlations are evident, with optimism about AI strongly associated with higher education levels and digital literacy: the higher the educational attainment, the more confident the attitude towards AI. Individuals with basic digital skills are more than twice as likely (41 %) to have a positive attitude towards AI compared to those without such skills.

Trust in AI strongly depends on the application area, with few willing to delegate tasks entirely to AI without human oversight.[25] A hybrid approach, combining human abilities with technology, is preferred and even more popular than purely human solutions. This approach is particularly suitable in areas like data analysis (58 %), code writing (57 %), employee IT support (57 %), and as a personal assistant ( %).

According to the IGEM-Digimonitor, 40 % of the Swiss population use AI tools, with this figure reaching 70 % among 15- to 19-year-olds.[26] Men (46 %) use these tools significantly more than women (34 %). AI is mainly used for answering questions, text creation, translations, image creation, and programming codes. The most popular tool is ChatGPT, used by 37 % of the population between 15 and 75 years old, with over half using it weekly.



When it comes to the benefits of AI use, about a third of respondents in the DigitalBarometer mention positive impacts on the Swiss economy, with similar proportions seeing advancements in ecology and climate protection. Education and social sectors are less frequently cited as beneficiaries. Instead, 59% of respondents respondents fear that AI could influence public debate, followed by a decline in social contact. Comprehensive surveillance and potential job losses rank third.

Regarding public debate, media coverage is also relevant. A study by the Research Center for Public Sphere and Society shows that 61 percent of the Swiss population believes that the quality of journalism deteriorates with increased AI use.[27] Only 29% would read articles fully written by AI.

Up until now, studies have revealed the enormous potential of artificial intelligence for the Swiss economy and society. AI not only opens up opportunities for significant increases in productivity and innovation, but also for tangible efficiency gains. Nevertheless, there are serious concerns about these opportunities, particularly with regard to data protection, cyber security and the loss of jobs. Confidence in technology is heavily dependent on factors such as level of education, age and digital skills.

It is striking that the ecological consequences of the use of AI have so far received little attention. There is also a lack of well thought-out and comprehensive guidelines that offer companies a balance between maximizing opportunities and minimizing risks – not only economic, but also social and ecological dimensions must be taken into account. There is also a lack of a clear strategy that could position Switzerland as a leading nation in the field of AI. These open questions and challenges will be examined in more detail in the course of the study.

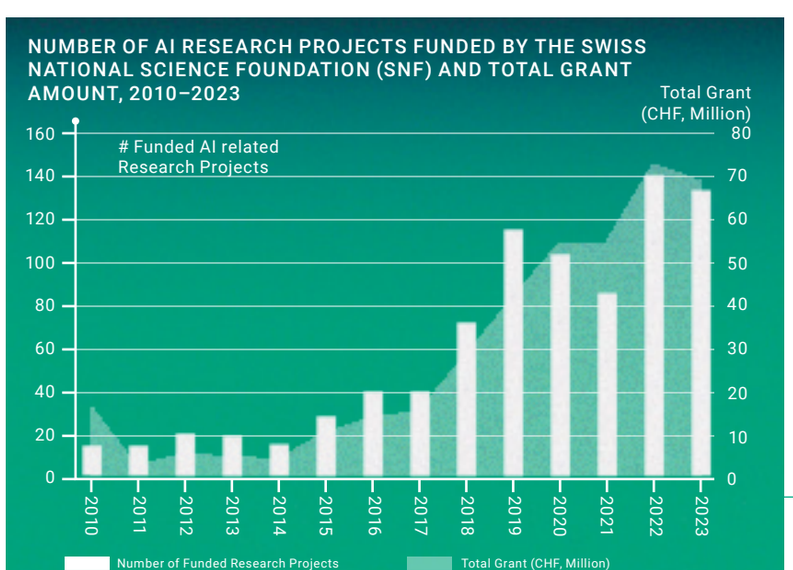
„When certain opportunities that AI promises are extrapolated, the question arises as to how much of a socio-political consensus can continue to exist on this basis. However, we are not at that point yet."

Erich Herzog, Economiesuisse

## BROAD ECOSYSTEM THROUGH INTENSIVE AI RESEARCH AND A DYNAMIC AI STARTUP LANDSCAPE

Switzerland is home to world-leading universities, including ETH Zurich and EPFL Lausanne, which drive cutting-edge research in Artificial Intelligence and the fundamentals of the „technology stack." These research institutions are known to enhance Switzerland's attractiveness as a business location by drawing technology companies and startups that benefit from proximity to these institutions and attract international talent.

An analysis of projects funded by the Swiss National Science Foundation over the past 14 years shows that AI in Switzerland has been actively supported as a priority through funding programs and investments. Since 2018, there has been a marked increase in both the number of funded projects and the amount of funding awarded.



The distribution of research funding by discipline highlights the broad application potential of AI across various fields. The focus on engineering sciences reflects a commitment to fundamental research, while support for experimental medicine targets specific application areas. Notably, interdisciplinary research projects play a central role, emphasizing the necessity and value of collaboration across different fields.

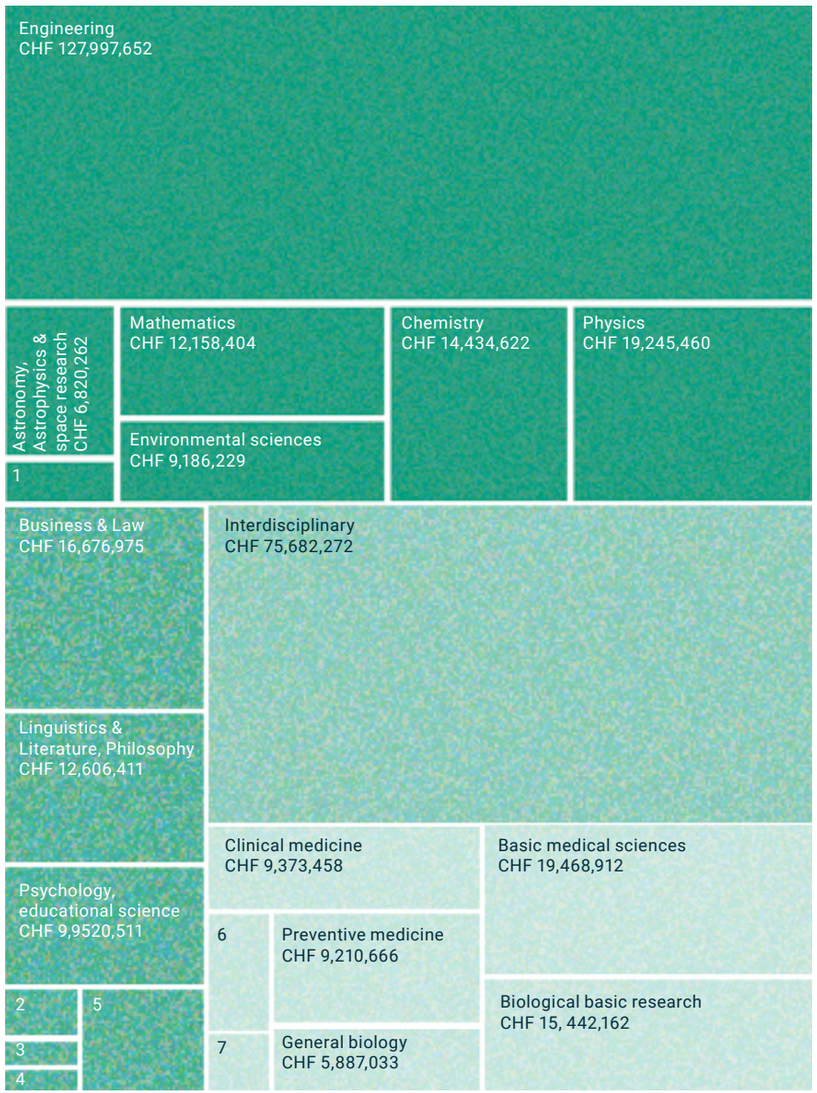
„AI has become indispensable in both fundamental and applied research, from protein folding to material science. However, proprietary models like AlphaFold raise concerns about equitable access. Swiss universities are responding by developing their own AI systems that balance public and private interests to ensure research remains widely accessible."

Dr. Martin Müller, GESDA

„I believe that Switzerland, especially in the startup sector, has great potential for disruptive business models that can also be very successful globally. It's encouraging to see strong state support, such as Innosuisse funding and Impact Hubs."

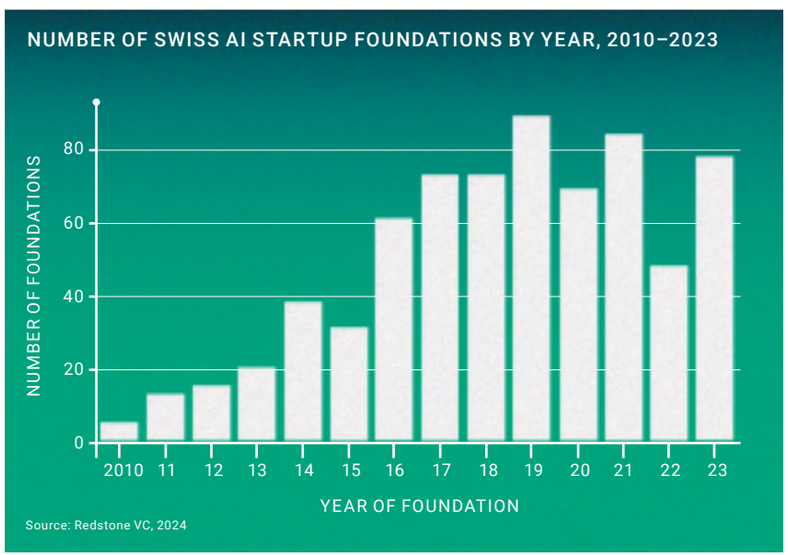
Karin Taheny, S-GE

## DISTRIBUTION OF SNF FUNDING BY DISCIPLINE FOR AI RELATED PROJECTS IN SWITZERLAND, 2010 TO 2023

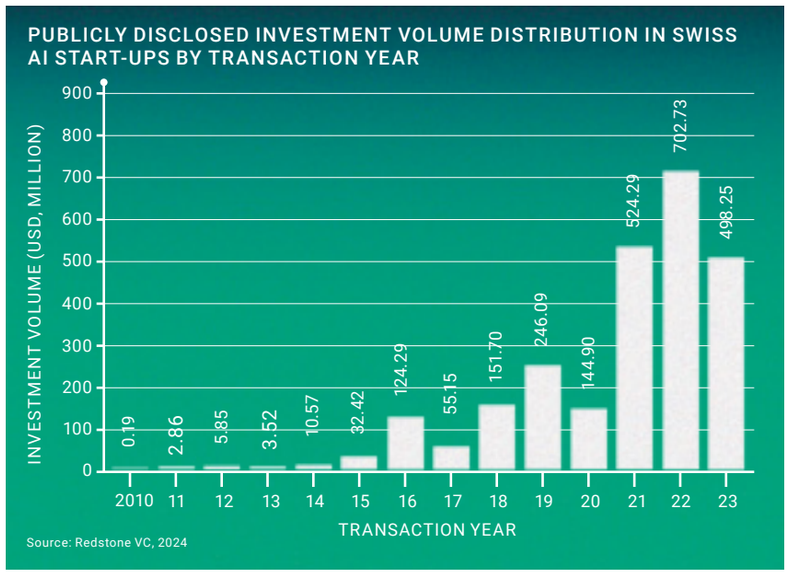



1 Earth sciences, CHF 2,085,353
2 Art history, musicology, theater and film studies, architecture, CHF 1'495'997
3 Ethnology, Social & Human Geography CHF 907'868
4 Theology, history, archaeology, CHF 865'842
5 Sociology, politics, media, health, CHF 5'458'544
6 Experimental medicine, CHF 3'073'278
7 Sociomedicine, CHF 1'658'076

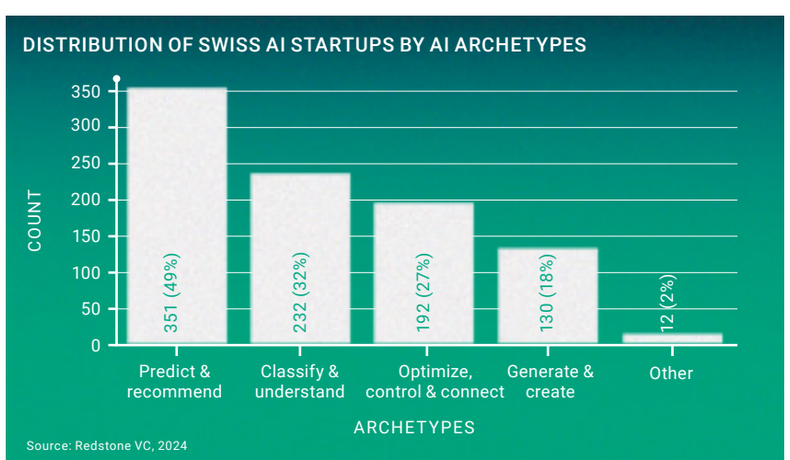
With a growing number of AI startups, Switzerland is increasingly establishing itself as a hub not only for research but also for innovation. Venture capital firm Redstone VC conducted a tailored analysis for this study, providing a comprehensive overview of Switzerland's startup landscape. This analysis shows that AI has been a foundational technology for startups since 2010. After a surge in startups in 2016, the number of new companies has remained consistently high, with a renewed increase in 2023 following the introduction of ChatGPT. Currently, there are over 700 active AI startups in Switzerland.




With a lag relative to startup creation, investments reached their peak in 2022. This trend mirrors the general trend in overall startup investments in Switzerland.[28] Additionally, in 2023, around 20 % of all investments in Swiss startups were directed towards AI startups.[29]




The categorization of AI startups reveals a natural progression along technological maturity levels. Simple prediction and recommendation models, which have been established on the market for some time, are predictably the most widespread among startups. In contrast, technologies focused on content generation and creation, which have gained prominence only recently, are found in significantly fewer startups.



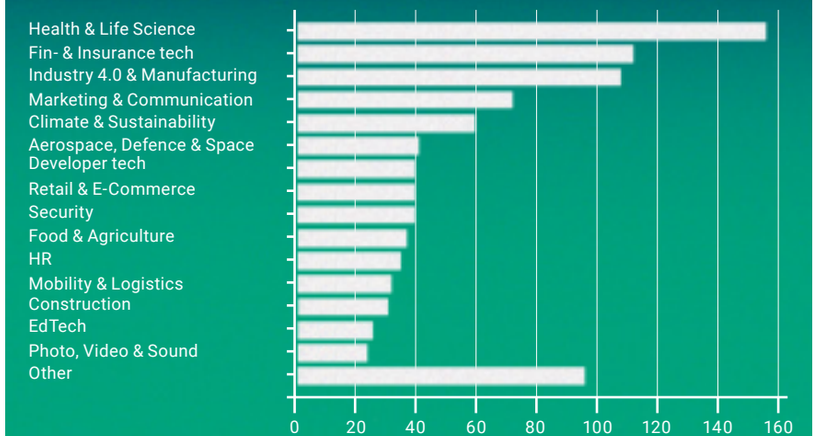
As a country with strong sectors in pharmaceuticals, banking, insurance, and manufacturing, Swiss AI startups also reflect these priorities. The list is clearly led by startups in the „Health & Life Science Tech“ sector.

When focusing specifically on generative AI, the ranking of dominant industries shifts significantly. At the top are tools used in marketing and communication, followed by cross-sectoral solutions („Others“). Likely due to the personalization capabilities and creative potential of generative AI, several startups have also emerged in the education sector (EdTech).

Both research activities and the startup scene in Switzerland have seen remarkable dynamism in recent years. Research projects, new startup formations, and associated funding amounts have rapidly increased in a short period. Whether this trend will continue in the long term remains to be seen.

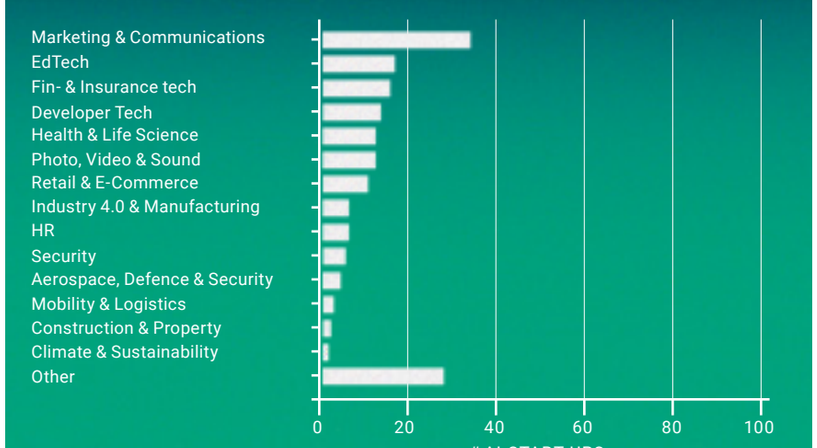
To gain a deeper understanding of the future development and role of AI in Switzerland, the next steps will delve into the distinctive traits that shape Switzerland‘s identity as well as the future framework conditions and challenges that will shape the country.

**DISTRIBUTION OF SWISS AI START-UPS BY INDUSTRY**




Source: Redstone VC, 2024

**DISTRIBUTION OF SWISS START-UPS FOCUSED ON GENERATIVE AI BY INDUSTRY**




Source: Redstone VC, 2024

# N-AI-VIGATE

## FUTURE FRAMEWORK CONDITIONS FOR SWITZERLAND AND AREAS OF APPLICATION FOR LEARNING MACHINES

# LOCATION FACTORS IN SWITZERLAND RELATED TO ARTIFICIAL INTELLIGENCE

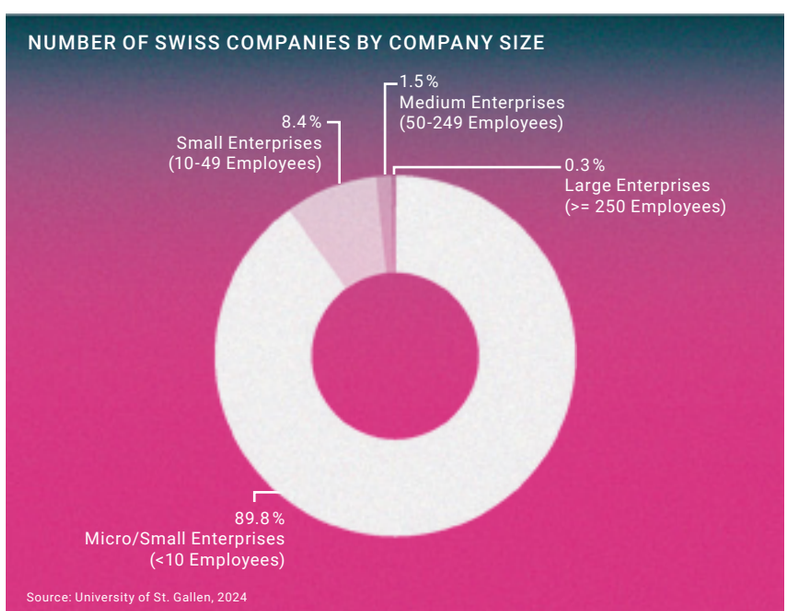
For decades, Switzerland has been characterized by high political and economic stability, a high quality of life, an intact natural environment, and a strong level of trust between the economy and society. One of Switzerland's key traditional strengths is its high level of education and specialized skills, both in academia and in the trades, supported by the dual education system. This system not only forms the basis for academic professions but also ensures high quality in manufacturing and trades.

The stable and high-quality infrastructure, which provides the foundation for efficient public and private transportation, is central to Switzerland's „success model." This infrastructure symbolizes the high quality with which Switzerland positions itself internationally with its services and products.

The preceding analyses of the current state of AI and its potential show that Switzerland has substantial prospects in AI development and application. Universities enhance the country's appeal to well-trained professionals through educational programs directly or indirectly related to AI. Moreover, close cooperation between science and industry allows innovative AI solutions to quickly reach market maturity. With the increasing activity of Swiss AI startups, the foundation for new solutions in Switzerland's diverse industries is also growing.

The impact of AI is likely to vary across sectors. With nearly 75 %, the service sector contributes most significantly to Switzerland's value creation, making the potential influence of generative AI particularly relevant here.[30] The secondary sector, which accounts for about 25 % of GDP, is less dominant and will likely be less affected by generative AI changes. However, data analysis and predictive solutions, as well as machine control through traditional AI, play a substantial role in optimizing efficiency in sectors such as industry and logistics. While the primary sector contributes less to Switzerland's value creation, agriculture is central to the country's self-conception. Automation possibilities in production could help counter the structural shift in agriculture.

Another crucial factor in AI implementation is company size: over 99 % of companies in Switzerland are SMEs (small and medium-sized enterprises) with fewer than 250 employees.[31] These SMEs employ two-thirds of all full-time equivalent workers, covering a wide range of industries from real estate to healthcare, from consulting to agriculture.



The question of how AI will impact small businesses and organizations — and how they can leverage the technology — is of utmost importance for Switzerland. Assessing whether and how a location can use AI in the future requires aligning the technological potential of different types of AI with the needs of various industries and organizations.

## CONSIDERING SWITZERLAND'S "DNA"

To assess Switzerland's future opportunities in AI development and commercialization, it is essential to take a holistic view of strengths and limitations. For international positioning and organizational capability to leverage AI, it is not enough to consider only quantitative factors and technological potential. General factors that characterize a country like Switzerland are equally important. Although Switzerland is considered one of the most innovative countries globally, it does not mean that strategies successful in places like Silicon Valley can be directly applied to Switzerland to carry its „success model" into the 21st century.

For realistic planning, not only traditional strengths but also limiting factors that affect AI's impacts and applications must be taken into account. These fundamental conditions include the country's relatively small size, which, along with its manageable population and strong federal structures, limits scalability for digital solutions. Switzerland's central location in Europe underpins a strong export economy but also entails dependencies, especially on the EU. Therefore, it is not just about building technological competence but deploying it in areas where it can be relevant

## SWISS "DNA" AS A BASIS

↳ **Adaptability, pragmatism, and opportunism**
An established culture of compromise, characterized by concordance, balancing mechanisms, and high legitimacy of decisions through broad consensus. At the same time, there is a tendency toward harmony and reluctance to take clear positions, coupled with inertia due to federalism and a strong focus on the present.

↳ **Openness to the world and local roots**
A high degree of globalization with strong international connections, yet also a strong local and regional identity that can sometimes challenge Switzerland's cohesion.

↳ **Entrepreneurial spirit and innovation strength**
A business-friendly mentality rooted in a long tradition of entrepreneurship, combined with strong innovation capacity and adaptability, supported by a high work ethic and productivity. At the same time, the cohesion between business and society has increasingly come under pressure in recent years.

↳ **Neutrality and Independence**
A strong identification with neutrality and an independent path, while still cooperating with international institutions. The aspiration for independence can, however, lead to greater complexity and administrative hurdles in an increasingly interconnected global economy.

Based on these fundamentals, it's essential to translate relevant trends and changes into a broad understanding of Switzerland's future framework conditions in the AI context.

„In Switzerland, we are particularly slow to respond — especially in terms of regulation and ethical issues. I believe federalism does not contribute to this. In e-government AI development, federalism poses a significant barrier, as it does in regulation."

Dr. Monica Dell'Anna, Swissquote

„Switzerland is a leader in AI research but struggles to scale and commercialize its innovations compared to larger global markets. The country's regulatory flexibility outside the EU framework offers some advantages, but competition with US tech giants remains a tremendous challenge."

Dr. Martin Müller, GESDA

„Switzerland has a digitally savvy population with a strong financial background, which gives it substantial advantages in the AI field."

Yannick Hirt, ODCUS

# FUTURE FRAMEWORK CONDITIONS FOR ARTIFICIAL INTELLIGENCE IN SWITZERLAND

## GROWING INNOVATION PRESSURE – OPPORTUNITIES FOR AI AND CLOUD-BASED SOLUTIONS

The innovation pressure on Swiss companies and the entire economy is expected to increase in the coming years. This is due to various existing and new developments: advancing climate change, resource scarcity, shifting geopolitical power dynamics between autocratic regimes and liberal democracies, increasing labor shortages, and rising societal and regulatory requirements regarding data protection. Furthermore, the growing number of people with chronic illnesses calls for new healthcare solutions. AI-based solutions offer potential here to enhance efficiency, boost productivity, and enable personalized services.

### FUTURE IMPLICATIONS

+ The push to meet climate goals and achieve a circular economy increases the complexity and costs of resource management and reporting. For households, everyday costs for housing, mobility, and food are likely to rise.
+ Declining productivity due to labor shortages triggered by the retirement of the Baby Boomer generation.
+ A growing number of people with chronic illnesses, rising life expectancy, and an increase in lifestyle-related diseases require support in daily life and new solutions through medications or digital therapies.
+ Increasing regulatory complexity in the digital space (e.g., data protection and cybersecurity) forces companies to implement automated solutions to ensure compliance and minimize risks.
+ The shift towards hybrid work models requires flexible, AI-supported tools to enable efficient collaboration across distributed teams.

„The concern is where our pharmaceutical industry will stand in five or ten years if it fails to deploy AI competitively. There's a risk of falling behind and becoming takeover targets. At the same time, I also see the greatest hope in the pharmaceutical industry. If we manage to adapt, Switzerland as a pharma giant could become even more competitive."

Prof. Dr. Marcel Salathé, EPFL

„If you extrapolate the energy needed for a ChatGPT engine, it's enormous. However, that doesn't mean the waste heat remains unused – it could be used for heating houses or supporting other processes, for example."

Dr. Christoph Nabholz, Swiss Re

„The rising water consumption for AI data centers is a real concern, especially in regions where water is scarce. Calculating the environmental footprint should also consider the positive impact of AI technologies."

Yannick Hirt, ODCUS

## MORE POWER, MORE DATA, MORE APPLICATIONS – GROWING DEMAND FOR RESOURCES AND OPEN INTERFACES

The range of application fields for AI in Switzerland's professional and private sectors continues to expand due to increasingly powerful models and access to more data, enabling new use cases. The necessary prerequisites – such as computing power, infrastructure, and specialized professionals – are, however, associated with significant resource expenditure. Future cost predictions vary. On the one hand, scaling may reduce costs over time, and companies investing in AI today anticipate future returns. On the other hand, costs for energy and resources, such as chip manufacturing, are expected to rise due to higher sustainability requirements. Regardless of the scenario, costs will play a central role in AI deployment decisions.

### FUTURE IMPLICATIONS

+ The range of AI applications in Switzerland will expand over the next few years, challenging all organizations to consider whether and where AI can add value.
+ Investments in high-quality data foundations are necessary to achieve productivity gains. Specific AI solutions optimizing individual steps in a value chain require open interfaces (APIs) to existing systems. Without these connections, innovations cannot realize their full value.
+ Scaling AI services could further extend these possibilities. However, infrastructure investments, data preparation, return expectations, costs for skilled professionals, and increasing energy consumption for training large models may drive up prices.
+ Continuous updates and maintenance of AI systems are essential to meet rapidly changing technological and regulatory demands, especially concerning the need for skilled professionals and resources.
+ Implementing and integrating new AI technologies into existing systems and processes often requires extensive training and adjustments, resulting in additional investments in education and adaptation.

„If it's mainly about short-term ROI and where to invest today to improve margins, it's still in the repetitive areas like support centers or standardized processes and analyses. However, there are areas like R&D where ROI could be massive, though it comes with risks that nothing may come of it."

Adrian Ott, EY

„To meet the rising energy demand from AI, we need sustainable energy sources."

Yannick Hirt, ODCUS

„It's notable that everyone now uses AI on their iPhones or at home without realizing how much energy it actually consumes. Every single request leaves a relatively large energy footprint. We need to seriously address this growing consumption and the associated energy use."

Dr. Christoph Nabholz, Swiss Re

„Young generations have no patience for the slow changes in the education system, and they are rightly critical because they see it as outdated. AI will only amplify this criticism, as the more people work with AI, the clearer the contrast with an antiquated education system becomes."

Dr. Monica Dell'Anna, Swissquote

## DEMAND FOR SIMPLICITY AND INDIVIDUALITY – GROWING AWARENESS OF SOCIAL RISKS AND DISINFORMATION

The continuously rising demand for convenience and personalized offerings as part of Switzerland's high standard of living creates opportunities for new solutions, from consumer goods to services. Accordingly, the relevance of AI applications is growing, as is the need for access to quality-assured data and distribution channels. At the same time, awareness of social issues, such as handling critical data, fair access to services, and the risks of disinformation through generative AI, is increasing. This balancing act between the pursuit of individualized, efficient services and the need for security and transparency presents challenges for companies, requiring them to design offerings that meet both simplicity demands and high standards for data protection, transparency, and information security.

### FUTURE IMPLICATIONS

+ Increased demand for comprehensive solutions and personalized offerings across all sectors and life areas, with a high relevance for AI applications.
+ Rapid dissemination of AI-generated content on the internet and social media, as well as products and software.
+ Growing sensitivity among customers, the media, and politicians toward violations of data protection policies, exclusion through algorithmic discrimination, and disinformation or deception via generative text, image, audio, or video creation.
+ Increased need for quality-assured and up-to-date data as a prerequisite for AI utilization. Rising competition for customer interfaces between major digital platforms like social media and global trading companies, and traditional providers from banks and insurers to healthcare and mobility providers.
+ Significant potential for AI to identify existing or new forms of inequality.

„When AI-generated responses replace traditional search engines, it fundamentally changes how people receive information. This raises major questions—about censorship and who controls how information is compiled. What's permissible and what isn't? This question, which already concerns us greatly in social media, will become even more relevant and difficult to answer."

Dr. Monica Dell'Anna, Swissquote

„People have always been experts at misinformation. Now we have systems that can do this too, and we need to think about how to handle it. The phenomenon isn't new, just perhaps larger in scale. I hope that if these systems remain open, they can also be strong tools against misinformation."

Prof. Dr. Marcel Salathé, EPFL

„Personalized content through AI can reinforce existing worldviews and contribute to societal division. It's crucial to develop mechanisms to recognize and mitigate or prevent these potentially dangerous effects."

Claudia Pletscher, fineminds

## COMPLEMENTARITY OF CENTRALIZED AND DECENTRALIZED INFRASTRUCTURE – BALANCING EFFICIENCY AND VULNERABILITY

The current centralized model for AI applications in cloud environments is expanding with complementary decentralized approaches. While scalable cloud solutions provide the foundation to connect data storage with AI-optimized computing power, new opportunities are emerging to utilize AI through locally adaptable open-source solutions. Edge computing solutions enable AI computation independently of cloud solutions, allowing sensitive data to remain on local systems or devices. However, decentralization increases the risk of cyberattacks, as data processing distributed across multiple nodes increases the attack surface and security monitoring complexity. Attackers can target vulnerabilities in decentralized systems, potentially compromising the security and integrity of the entire infrastructure.

### FUTURE IMPLICATIONS

+ Centralized, cloud-based infrastructure will become the standard for accessing advanced AI services for large and small organizations by combining computing power with data storage under high-security requirements.
+ Edge AI enables data processing directly at the data collection point, with lower latency and faster response times, which is especially relevant for time-sensitive applications and real-time analysis. However, the risk of data leaks and manipulation increases with decentralized data processing.
+ Open-source AI models are gaining traction as they allow for customization and cost savings. They are particularly relevant for local or standalone AI solutions that require adjustments.
+ Issues of digital sovereignty are coming to the forefront, requiring a rethink of local storage as a traditional standard. Protecting sensitive information in decentralized networks becomes more challenging.

„Energy consumption is high and likely to increase. At the same time, providers are working hard to develop more efficient and smaller yet effective language models—naturally, in their own interest.“

Christof Zogg, Swisscom

„Competing with big tech companies on models like GPT-4 will be very difficult, but specialized models can succeed in specific application areas like drug discovery, industrial design, and many others.“

Remi Sabonnadiere, Effixis

## SECURITY THROUGH MORE REGULATION – RISK OF INCREASED COMPLEXITY AND ADMINISTRATIVE BURDEN

Various regulatory approaches are emerging worldwide to secure stable and safe frameworks for AI development and use. These approaches range from horizontal to vertical concepts, with cross-sectoral and sector-specific regulations, respectively. For legislators, judicial systems, and market players, the requirements will continue to grow, bringing both increased security and higher costs for compliance.

### FUTURE IMPLICATIONS

+ Increasingly varied AI regulations across different economic areas aim to protect against misuse and secure stable market foundations. Strict regulations may hinder innovation by slowing the deployment of new AI technologies.
+ Increased complexity and bureaucracy, especially for small or international organizations, with the risk that AI adoption is hampered or prevented due to associated costs.
+ Resolving intellectual property issues related to generative AI will become a central challenge for economies and organizations.
+ Growing importance of compliance management and governance structures within companies to meet expanding legal requirements and minimize liability risks. AI also offers an opportunity to optimize handling various regulatory requirements with significant efficiency gains, especially in highly regulated markets like financial services or healthcare.

„Switzerland is a traditional safe haven, particularly in legal matters, data protection, and regulation. There is a trustworthy approach to data here. On this basis, piloting is possible because there is a secure fallback environment, allowing for calculated risks that wouldn't be feasible elsewhere. This, combined with the strong economy, the capital, and the expertise we have here."

Dr. Jochen Decker, SBB

„Industries with the highest potential for AI adoption, such as pharma or banking, are also the most heavily regulated sectors."

Christof Zogg, Swisscom

„AI presents a significant opportunity if approached cautiously. The regulatory efforts in Europe can contribute to the development of sustainable and robust use cases, more so than in the USA."

Prof. Dr. Gudela Grote, ETH

## BOOST FOR SCALABLE PLATFORMS, ALIGNMENT OF OFFERINGS

Scalable business models and organizations with established processes and quality-assured databases increasingly benefit from AI-driven automation. This enables efficient, large-scale delivery of personalized services and products. Competition for customer data and interfaces intensifies, as AI systems rely on large datasets to deliver customized solutions. Concurrently, there could be a convergence of generative AI-based standard solutions, intensifying price competition. Specialized niche providers can stand out with innovative AI applications, increasing the innovation pressure on all market participants.

### FUTURE IMPLICATIONS

+ Growing dominance of globally scalable digital platforms offering expanded solutions through more powerful AI, such as end-to-end solutions for automated campaigns.
+ Increased demand for interoperable AI systems that enable seamless integration between various platforms and technologies to meet global market demands.
+ Rising investments in AI security solutions to mitigate the growing risks of cyberattacks and data misuse in increasingly interconnected and decentralized AI environments.
+ Heightened competition for AI talent and specialists, as companies need to invest in specialized expertise to develop and deliver innovative and competitive AI solutions.

„Models will spread from small use cases to encompass entire companies. In ten years, we'll probably look back on today as we do on the era of fax machines."

Adrian Ott, EY

„With generative AI, the focus of competencies has shifted from data science towards software engineering, as fine-tuning and system integration are at least as important as training one's own model in AI-as-a-Service."

Chrisof Zogg, Swisscom

# FUTURE CHALLENGES FOR SWITZERLAND AS A REALITY TEST FOR ARTIFICIAL INTELLIGENCE

Considering the extensive demographic, societal, environmental, political, and especially technological changes, Switzerland faces several fundamental challenges that will shape businesses, society, and the environment today and in the years to come. To create long-term added value through AI that advances not only the immediate business models of companies but also Switzerland's economy, society, and environment, it is crucial to identify which of these challenges AI can potentially address.

„Generative AI leads to democratization, as the entry barrier into AI becomes much smaller. At the same time, the tools are so powerful that anyone can have a strong personal assistant if they choose. However, those who lack access to this technology or reject it are competing against someone equipped not only as a person but also with two to three machines in their pocket. This creates a power imbalance."

Dr. Jochen Decker, SBB

## OVERVIEW OF SWITZERLAND'S FUTURE CHALLENGES

- **Rising cost of living for the population and increased costs for businesses** (e.g., food, mobility, energy)
- **Managing the impacts of climate change** (e.g., heatwaves, floods)
- **Labor shortages in key areas** (e.g., medicine, building technology, IT)
- **Ensuring a stable energy supply**
- **Growth and innovation pressures** (e.g., industry, construction, media)
- **Expansion of research excellence** (e.g., pharmaceuticals, deep tech)
- **Securing and improving educational quality** (e.g., primary schools, continuing education)
- **Promoting youth participation** (e.g., in politics, business development, and society)
- **Addressing demographic changes** (e.g., increasing life expectancy, migration)
- **Enhancing location attractiveness** (e.g., quality of life, social interaction, solidarity)

## SPECIFIC AI APPLICATION AREAS FOR THE ECONOMY, SOCIETY, AND ENVIRONMENT

A broad spectrum of different AI use cases relevant not only for companies but also for everyday life and the environment was analyzed during the initial research phase. These have been consolidated into more general application areas.

The following illustrations highlight specific application areas for various types of AI that can add value in relation to Switzerland's key challenges, as well as specific requirements. While the list is by no means exhaustive, it provides insights into areas where AI can deliver added value today and in the future.

# AREAS OF APPLICATION FOR AI IN THE ECONOMY

## GENERAL APPLICATIONS

**Document Processing**
Creation of controlling reports based on financial or sustainability indicators.

**Content Generation & Translation**
Creation of content and instant translation into the four national languages of Switzerland.

**Authentication & Authorization**
Dynamic adaptation of authentication processes based on user behavior and context for security and convenience.

## FINANCE & HR

**HR and Recruitment**
Assistance in identifying unconscious biases during the recruitment process.

**Accounting & Invoicing**
Creation and categorization of invoices, as well as capturing payments and sending reminders.

**Fraud**
Real-time identification of cyber risks to quickly detect anomalies and reduce errors, proactively preventing fraudulent activities.

## LEGAL & COMPLIANCE

**Contract Management**
Analysis of contract drafts, highlighting potential risks, and suggesting improvements.

**Regulatory Adaptions**
Revision of business processes according to new regulations with action recommendations for compliance adjustments.

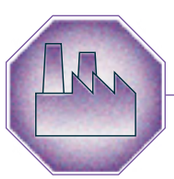
**Quality Control**
Checking for impurities and dosage errors in pharmaceutical production with immediate correction suggestions.

## IT

**Programming**
Writing code in the desired programming language based on specifications and identifying as well as fixing bugs.

**Data Processing**
Data cleaning and filling missing values with appropriate estimated values based on historical data and patterns.

**Synthetic Data**
Simulating building systems with digital twins to develop more energy-efficient solutions, such as heating and cooling systems.



## R&D & INNOVATION

**Generative Chemistry**
Creating new chemical structures in drug discovery.

**Innovative Medicines**
Testing the probability of success of new medicines through prediction of possible results in clinical trials.

**Product Testing**
Simulation of weather impacts on building materials to test durability and efficiency before actual construction phase.

## PRODUCTION

**Predictive Maintenance**
Early detection of quality deviations or defects in production processes.

**Process Optimization**
Reducing cycle times and lowering energy consumption.

**Risk Analysis**
Identifying dangerous working conditions and initiating necessary precautions.

## LOGISTICS & DISTRIBUTION

**Inventory Forecasting**
Automatic reordering of materials to keep stock levels optimized and avoid shortages.

**Warehouse Layout Optimization**
Optimizing warehouse layouts for better order picking.

**Virtual Assistance for Drivers**
Supporting drivers with tasks such as route guidance.

## MARKETING

**Optimized Advertising Budget**
Identifying the best advertising contact points and optimizing budget allocation.

**Search Engine Optimization**
Suggestions for improving search engine performance.

**Micro-segmentation of Customers**
Personalized email campaigns with automatically generated content and images.

## SALES & CUSTOMER CARE

**Lead Generation**
Identifying and assessing potential customers.

**Personalized Sales Approach**
Tailored emails, sales presentations, and offers.

**Customer Communication**
Automated, individually tailored response emails to customer inquiries, such as complaints, and questions.

# AREAS OF APPLICATION FOR AI IN SOCIETY

## HEALTH

**Preventive Health Analysis**
Early detection of heart attack signs for secondary prevention through wearables.

**Diagnostic Systems**
Automated second opinions, including suggestions for alternative treatments or therapies.

**Health Consulting**
Virtual symptom checker with corresponding action recommendations for patients.

## RELATIONSHIPS & FAMILY

**Matchmaker**
Targeted matchmaking in online dating based on behavioral data, shared interests, and personality analyses.

**Virtual Relationship Partner**
Social and emotional interactions with a virtual AI avatar for individuals who feel excluded from society.

**Household Management**
Stress reduction through automated shopping lists, meal and household plans, and smart home devices.

## CONSUMPTION

**New Entertainment Options**
Video games generate content like missions or character dialogues dynamically and in real-time, instead of being manually pre-written.

**Shopping Assistant**
Product recommendations based on preferences and intolerances to meet individual dietary needs.

**Consumer Protection**
Real-time verification of products for safety risks and recalls to protect consumers from unsafe goods and services.

## WEALTH

**Financial Consulting**
Cost-effective, comprehensive financial planning that includes tax optimization and customized investments.

**Security**
Cameras detect unauthorized activities around the home and inform the owner in real-time, enabling immediate response.

**Fraud Detection**
Analysis of credit card transaction patterns in real-time to detect unusual activities early and instantly block fraudulent transactions.

## EDUCATION

**Translation of Learning Content**
Program translates learning materials into native languages, including dialects, to improve access to knowledge and understanding of complex topics.

**Feedback**
Evaluation of written assignments and exams, providing detailed feedback to speed up learning success and identify individual weaknesses.

**Personalized Learning Plans**
Dynamic learning plans for students, employees, or job seekers, based on abilities and knowledge levels, and continuously adapting to optimize the learning process.

## CAREER

**Career Counseling**
Support for career orientation through analyses of skills, interests, and market trends, offering personalized career paths and job recommendations.

**Interview Training**
Optimization of application documents and cover letters, along with support tools for interview preparation.

**Job Recommendations**
Uploading one's CV and entering preferences leads to tailored job recommendations and provides the likelihood of success for applications.

## RETIREMENT

**Physical and Mental Assistance**
Service robots for the elderly, not only aiding with mobility but also fostering social interaction through conversations or games, reducing loneliness and improving well-being.

**Retirement Planning**
Evaluation of financial data and life goals to develop a retirement strategy that aligns with individual needs and desired lifestyle in retirement.

**Smart Implants**
Sensors monitor health and provide feedback, facilitating medical assistance, e.g., artificial hip joints, glucose sensors.

# AREAS OF APPLICATION FOR AI FOR THE ENVIRONMENT

## CLIMATE MODELING

**Early Warning Systems**
Historical weather data enables precise forecasts for extreme weather events like storms and improves early warnings.

**Climate Scenario Simulation**
$CO_2$ emission pathways are modeled to predict future changes in temperature and precipitation at regional levels.

**Satellite Data Analysis**
Real-time analysis of satellite data supports monitoring of events like deforestation in tropical areas or ice melt in polar regions.

## CLIMATE ECONOMY

**Emission Trading**
Algorithms optimize the buying and selling of emission rights through dynamic threshold values to reduce risks and increase efficiency.

**Greenwashing Detection**
Text analysis identifies misleading statements and exaggerated claims in publications to detect greenwashing risks.

**Risk Management**
Analysis of data such as satellite images and financial reports of an organization to detect potential environmental and social risks.

## EDUCATION & BEHAVIOR CHANGE

**Environmental Education**
Students explore virtual reality ecosystems like rainforests and coral reefs to understand the impact of human activities.

**Sustainable Consumption**
Analysis of consumer behavior based on online shopping history to offer alternative, sustainable product recommendations.

**Behavior Analysis**
Consumption data, such as electricity and water usage, helps promote environmentally friendly behavior and provides suggestions for improvement.

## INNOVATION

**Nuclear Fusion**
Development of new methods for energy production through simulations, enabling researchers to better control plasma in reactors.

**Material Science**
Materials like lithium conductors are developed faster by predicting properties and identifying optimal structures.

**Plant Breeding**
Analysis of genetic sequences and images helps identify plants with desired traits to optimize yields and suggest optimal crossbreeding.

## MITIGATION

**Aviation**
Data collection on atmospheric conditions is used to steer aircraft, avoid contrails, and reduce aviation's climate impact.

**Emission Reductions**
Accurate supply and demand forecasts reduce the need for battery storage and standby power, allowing efficient grid balancing.

**Emission Removal**
Support for reforestation projects by monitoring carbon sequestration and land-use dynamics in forest and agricultural ecosystems.

## ADAPTATION & RESILIENCE

**Crisis Management**
Real-time data on wildfires aids crisis managers in optimally deploying resources and evacuating endangered areas efficiently.

**Infrastructure Resilience**
Enhancing the resilience of critical infrastructures like bridges and water supply systems with the aid of sensors and data.

**Precision Agriculture**
Drones and sensors monitor soil quality and water supply, helping farmers make climate-adapted adjustments and reduce crop losses.

# FOREC-AI-ST

## OUTLOOK ON THE EFFECTIVE INFLUENCE OF AI IN SWITZERLAND

# RESULTS OF THE QUANTITATIVE SURVEY OF SWISS ORGANIZATIONS ON THE INFLUENCE OF AI

To assess the potential impact of AI on Switzerland, opinions were gathered from over 100 representatives from Swiss organizations through a quantitative survey. Additionally, perspectives from 20 experts were collected through in-depth qualitative interviews, providing complementary insights into future developments, opportunities, and challenges for Switzerland's economy, society, and environment.

The goal of the quantitative survey was to gain a broad, practice-based perspective on the influence of AI in Switzerland, supplementing the in-depth assessments from experts.

The results provide a foundation for medium- to long-term strategic planning in dealing with different forms of AI and offer guidance for responsible use of the technology. The findings build on existing studies and offer insights into how the projected potentials might be realized in reality. Further hypotheses suggest no clear perspective on the „impact" of AI. Instead, this forms the basis for independent and differentiated positioning – aligned with the organization's „DNA" – to leverage Switzerland's strengths and opportunities.

## KEY POINTS FROM THE QUANTITATIVE SURVEY OF SWISS ORGANIZATIONS ON THE FUTURE "IMPACT" OF ARTIFICIAL INTELLIGENCE IN SWITZERLAND

A total of 111 individuals participated in the survey. The distribution of participants is skewed towards ICT, financial services, professional services, and healthcare, which together make up 57 % of respondents.

The vast majority of respondents (93 %) are from the business sector, while the remaining participants are professors from the ETH AI Center. Among the business respondents, 35 % are members of executive boards and/or management boards, while 22 % are senior managers within their organizations. Aside from C-level executives, 28 % of respondents work primarily in innovation, transformation, or IT departments.

Regarding company sizes, 59 % of responses came from large companies with over 250 employees, 28 % from small companies with fewer than 50 employees, and 13 % from medium-sized companies with 50 to 250 employees.

## AI PROMISES NEAR-TERM PRODUCTIVITY GAINS, THOUGH EXPERTS DIFFER ON THE SPEED AND DEPTH OF THE "IMPACT"

When asked when productivity gains from AI would become apparent, 47% of respondents expected it to occur within the next two years. Another 41% anticipated that productivity improvements would be noticeable within the next five years, while only 13% thought it might take up to ten years. No respondents believed that such gains would only emerge after more than ten years. Therefore, most participants are convinced that Switzerland will benefit from AI-driven productivity gains in the very near future. This optimistic view implies that Swiss companies have already begun implementing AI technologies or are planning to do so shortly to achieve efficiency gains.

However, many experts envision an evolutionary rather than disruptive implementation of the technology. Productivity gains depend not primarily on the technology itself but on the actual value it brings to the organization. This value varies by industry. In „asset-intensive" industries and sectors like financial services, adoption may be gradual and take more time. In general, many large and small organizations currently lack processes and data that facilitate a swift and beneficial AI rollout. A holistic view must also consider the financial, infrastructural, and human resources needed to effectively leverage the technology, which can pose substantial challenges for small organizations that often lack the necessary resources or expertise.

Complementing existing studies, the experts emphasize that for AI to play a sustainable role, not only businesses but also the broader population must benefit – including less tech-savvy groups. This tension is also evident in the ongoing discussion about maintaining non-digital channels, which will likely also be relevant to AI use and require broad societal debate.

„Technologically speaking, AI is certainly enormously disruptive. The question is how quickly these disruptive technologies can be integrated into the daily processes of institutions that operate on different cycles."

Prof. Dr. Marcel Salathé, EPFL

„There's a lot of economic calculation behind the AI hype on one side and media-driven scaremongering on the other, which is aimed at generating clicks. Scandalization and outrage are also part of the business model here. These factors fuel each other. If we look at it soberly, I see AI development as more of an evolution than a revolution."

Dr. Sarah Genner, Digitalization Expert

„The added value of AI only becomes evident when it helps companies effectively fulfill their value proposition."

Dr. Raphael Reischuk, Zühlke

„The main issue lies in the system's adaptability. I'm firmly convinced that AI will help us enormously in the long term. But the challenge lies in the transition period—until we learn how to use AI meaningfully in areas like education, we'll face considerable difficulties. This is compounded by the usual adoption challenges of new technologies. In an aging society, this is especially relevant."

Dr. Monica Dell'Anna, Swissquote

„AI has significant potential to improve production processes. However, even advanced Swiss manufacturers often lack the necessary data infrastructure, which limits their readiness to adopt AI."

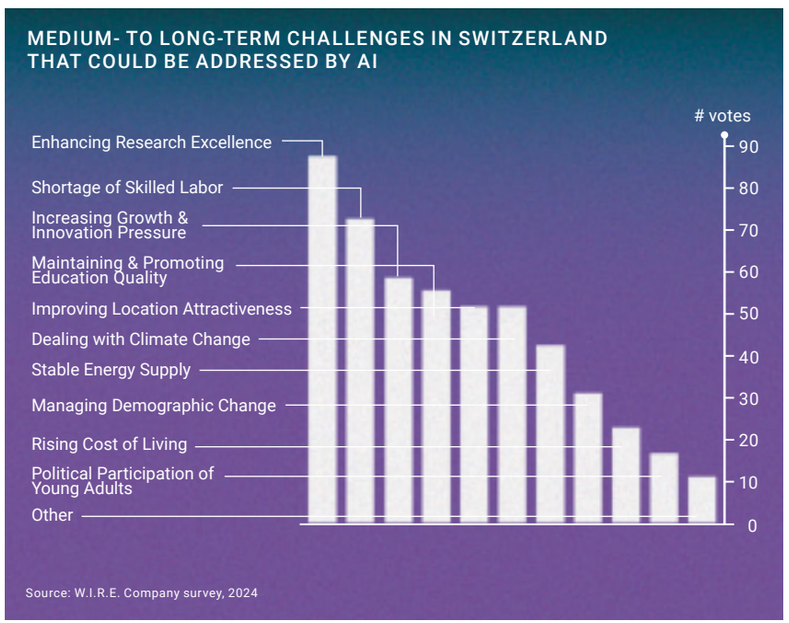
Prof. Dr. Torbjörn Netland, ETH

„Generative AI has the potential to transform the financial industry by enabling a wide range of new use cases. But we still need to figure out where it can be applied meaningfully."

Dr. August Benz, Swiss Bankers Association

## HIGH RELEVANCE OF AI FOR ADDRESSING SWITZERLAND'S KEY FUTURE CHALLENGES

For AI to provide long-term benefits for Switzerland, it must contribute to addressing future demands. From the perspective of organizations, the technology can make such a contribution in the majority of identified challenges.




At the forefront is the expansion of research excellence, suggesting that Switzerland could further strengthen and develop its research capabilities through AI. AI is also expected to play a substantial role in mitigating labor and skills shortages. This aligns with the results of expert interviews, which emphasize that while AI may not fully resolve the skills shortage, it could significantly reduce its negative impacts.

Another challenge AI could help address is the pressure for growth and innovation, potentially by making processes more efficient or developing new, customized, or predictive solutions. Furthermore, AI could help maintain and improve Switzerland's educational quality, support in managing climate change risks, or even mitigate them. Overall, this contributes to enhancing location attractiveness and, consequently, Switzerland's international positioning.

In general, the frequently recurring fear of job losses seems to be shifting into a new narrative where AI becomes central to compensating for the shortage of skilled workers. The expert perspective adds to the quantitative survey by highlighting that AI does not necessarily replace existing jobs or tasks but rather helps current professionals become more efficient. Particularly regarding the labor market, it is essential to consider broader societal dimensions and translate these into opportunities, for example, by using potential reductions in workload to benefit the entire population fairly. A specific benefit is seen in the healthcare system, where AI could reduce inefficiencies and redundancies or handle administrative tasks and documentation largely automatically.

The potential for efficiency gains applies not only to the economy but especially to public administration. With streamlined processes and clean data, bureaucracy could become significantly more efficient, which would not only increase economic performance but also strengthen location attractiveness for corporations – and especially for startups and SMEs.

„Skilled workers are irreplaceable. However, AI should be used to automate repetitive tasks, thereby increasing the productivity and efficiency of existing professionals in companies."

Claudia Pletscher, fineminds

„The fear that AI will take over our jobs is now off the table, but this topic will likely resurface in waves as systems continue to evolve."

Prof. Dr. Gudela Grote, ETH

„AI is a tool to relieve skilled workers from routine jobs, allowing them to focus more on true game changers. Even a less experienced professional, with a strong assistant, can reach the level of a fully trained specialist. Moreover, AI offers the possibility to capture implicit knowledge in a structured way and make it usable for the company."

Dr. Jochen Decker, SBB

„AI has the potential to revolutionize healthcare in Switzerland by improving access to medical advice and advanced diagnostics. However, patient safety remains a key concern, especially as AI becomes increasingly integrated into personalized medicine through the analysis of individual health data."

Dr. Martin Müller, GESDA

„Regarding task distribution between doctors and nurses, AI systems could provide support, enabling nurses to make or assist in more complex decisions independently. This would make their roles more interesting, which could help retain nursing staff in the profession longer."

Prof. Dr. Gudela Grote, ETH

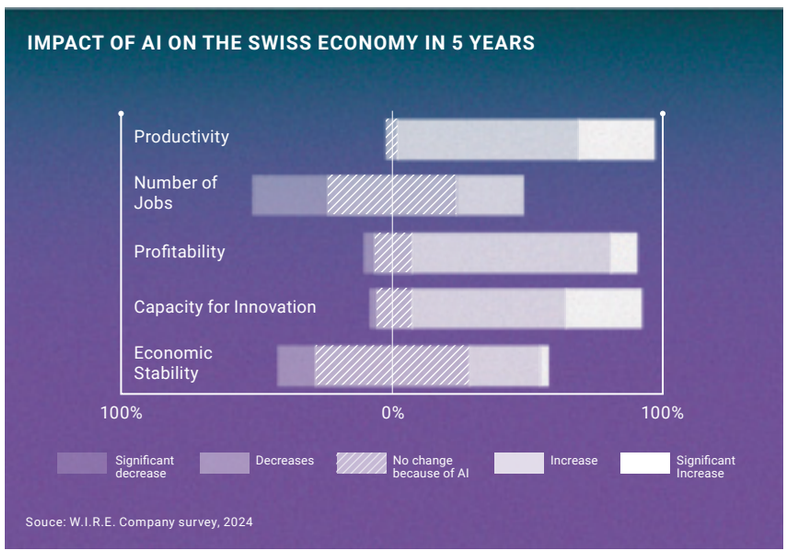
## POTENTIAL FOR ECONOMIC GROWTH AND PRODUCTIVITY, DIVERGING VIEWS ON THE LABOR MARKET

From the perspective of surveyed organizations, economic productivity is expected to increase due to AI within the next five years: 68% anticipate an increase, with 27% expecting a significant increase. Only a minority of 5% foresee no change, and no respondents believe productivity will decrease. This outlook contrasts with the fact that measurable productivity gains have yet to be observed. Some experts even noted in qualitative interviews that the introduction of generative AI could initially lead to time and productivity losses until suitable use cases are identified and processes are optimized.

The existing assumption that AI can enhance companies' innovation capabilities is generally confirmed: 86% of respondents believe that AI can significantly boost organizational innovation. In terms of profitability, the majority (73%) expect an increase, although only 9% foresee a strong increase. Compared to productivity, 13.5% anticipate no change in profitability, and 3.6% expect a decline, likely reflecting additional costs and investments that could reduce profitability.

Regarding job numbers, divergent expectations are evident. While about half (49%) anticipate no change, the remaining respondents are almost evenly split: 24% expect an increase in jobs, while 27% predict a decrease. This result can be interpreted within a historical context: during industrialization and the introduction of computers, widespread job losses were feared but did not materialize, or were offset by the creation of new jobs. Naturally, AI's impact cannot be evaluated solely by past events, but it is likely that diverse tasks, especially in services, could be outsourced, and that developing, implementing, and maintaining AI solutions will require a growing number of skilled workers.

Regarding economic stability as a key success factor for the Swiss economy, a positive effect is expected: 57% of respondents foresee no change due to AI, 14% anticipate a decrease, and 29% expect an increase in economic stability. This result suggests that Switzerland will likely adapt to AI evolutionarily rather than through a „hard" disruption, which would undoubtedly involve turbulence in affected sectors.

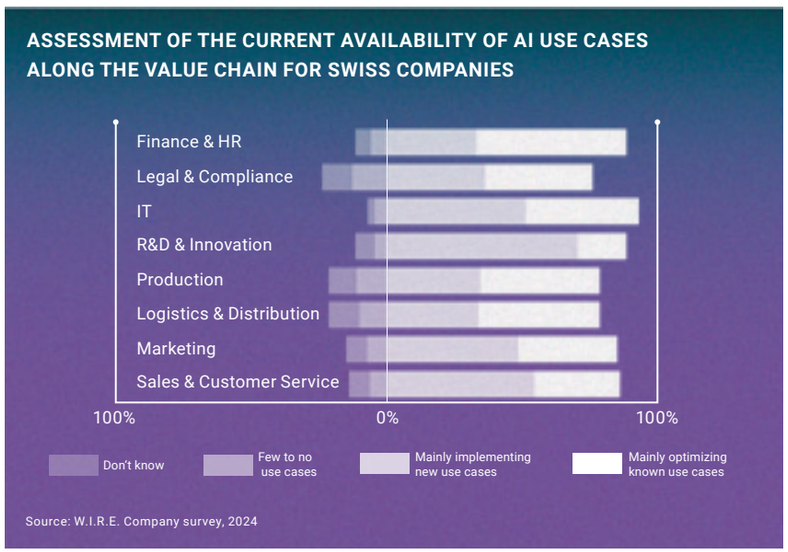


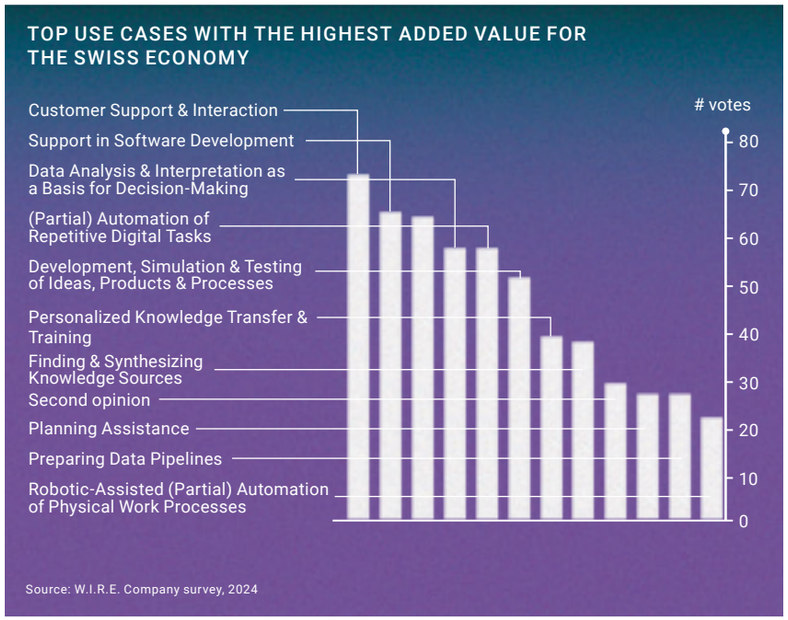

## THE IMPACT OF AI ON BUSINESS METRICS LIKE PRODUCTIVITY AND PROFITABILITY SIGNIFICANTLY DEPENDS ON SPECIFIC USE CASES

Organizations were asked about their current implementation of AI use cases across the value chain, revealing that nearly every department offers a wide range of potential applications for AI technologies. Consequently, a majority of surveyed organizations have already identified concrete use cases.

In areas like R&D, innovation, IT, marketing, and sales or customer service, the focus is primarily on new use cases. In contrast, organizations concentrate on optimizing existing AI solutions in finance, HR, legal and compliance, production, logistics, and distribution. This also shows that AI is not new but has been in use for quite some time.

These observations align with expert views that highlight the high potential for generative AI in the initial stages of the value chain. However, they also point out that in security-critical areas like production or legal affairs, acceptance of probabilistic models in generative AI is lower. Reliability and safety are paramount in these sectors – requirements that generative AI does not always meet adequately.






„AI will significantly boost efficiency in the financial industry, whether through faster programming, fraud prevention, or improving risk management. In investment advice, human advisors remain indispensable, but AI can already provide valuable support."

Dr. August Benz, Swiss Bankers Association

## WIDE RANGE OF AI APPLICATIONS RELEVANT TO THE SWISS ECONOMY

When asked about the AI application areas with the greatest potential for the Swiss economy, a broad spectrum of possibilities emerged. The highest potential was assigned to the (partial) automation of repetitive tasks, support for software development, for example through programming, troubleshooting and documentation, as well as data analysis and interpretation. This indicates the future role of AI as a „work tool" that operates in the background to increase efficiency and support human tasks.

More important than individual application areas is the view that AI is seen as a significant asset for the Swiss economy in all surveyed application areas. From building essential data foundations – particularly crucial in healthcare and real estate – to the early detection of developments, which will become increasingly relevant for insurance, especially concerning climate risks, and to finding knowledge sources, a central prerequisite for research and science. Personalized knowledge transfer is also seen as an opportunity, crucial for personalized customer interactions, media, and, ultimately, the foundation of democracy.

Expert assessments underscore the specific value for selected industries, such as finance and consulting. However, the broad spectrum of potential applications is particularly valued as an opportunity for SMEs, which have often been overlooked in the attention given to the startup or tech sectors. The focus is not necessarily on highly complex applications but on simpler ones, from translation to outsourcing administrative tasks, like accounting or order processing, which can be used without significant resource investments.

„Many forms of AI today aren't that complex, but they significantly ease our workday and improve processes. It's often about routine tasks where the system doesn't have to be truly intelligent but instead simplifies and automates tasks. These use cases happen in the background, in small steps, and rarely make headlines."

Prof. Dr. Gudela Grote, ETH

„The machine can translate so well that you can save 80 to 90 percent of the work. Any SME can use this. In Switzerland, this is especially advantageous, as many companies work with four languages."

Dr. Monica Dell'Anna, Swissquote

„AI systems can either provide precise or long-term forecasts, but rarely both. While high-precision, hyper-local weather forecasts are limited to hours or days, longer-term shocks like drier or wetter years are only partially predictable. This has direct implications for insurance companies, which must adapt their business models."

Prof. Dr. Christian Schaffner, ETH

„AI's more immediate impact is in smaller applications that are largely independent of political debates, such as optimizing photovoltaic systems. With weather data, solar modules can be adjusted more efficiently, which could bring economies of scale, especially in larger PV farms."

Prof. Dr. Christian Schaffner, ETH

## POSITIVE, BUT ALSO CRITICAL IMPACTS OF AI ON SOCIETY

There are differing perspectives on AI's societal impacts: Regarding people's decision-making abilities, 47 % of respondents believe that this ability will increase due to AI. The remaining 53 % expect either no change or negative effects. A nuanced analysis of potential influencing factors on decision-making ability shows that it is partly about the quality of available information and partly about the ability to use it. AI will certainly simplify and enrich decision-making bases; however, especially with generative AI, these may be flawed. Additionally, a high density of information does not necessarily bring more clarity and may instead lead to further overwhelm.

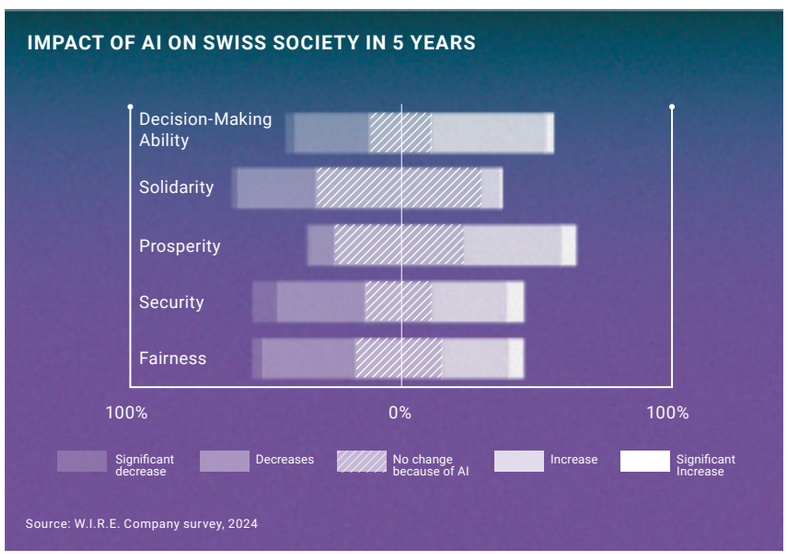
In terms of societal foundations, at least half or even the majority of respondents expect no change from AI in prosperity (48 %) and solidarity (61 %). However, opinions diverge significantly in both cases. Regarding prosperity, 41 % expect an increase, where prosperity is understood not solely in financial terms but as a result of high quality of life, access to work, education, healthcare, freedom of choice, and a comfortable lifestyle. Conversely, 32 % of respondents believe that societal solidarity will decrease due to AI. Both developments have arguments: Economic growth may lead to increased prosperity, but these opportunities may not be equally accessible to all groups. Improved understanding and knowledge about other groups could foster a stronger sense of community, while personalized content might pressure solidarity.

AI is viewed by some experts as a tool for democratization, which can promote fairness – for instance, in recruitment, where human decisions can be biased. However, the risks of algorithm-based discrimination due to poor data quality or insufficient data are well-known and widely documented.[32] Accordingly, opinions vary: 38 % of respondents believe that AI could reduce fairness. Experts note that AI can negatively affect decision-making abilities and social interaction, potentially hindering human connection.

Regarding societal safety, which encompasses both physical and digital realms, 42 % foresee a decline, while 33 % believe AI will positively impact human safety. Here too, arguments vary: On the one hand, AI can detect anomalies – such as weather hazards or phishing attacks – that would be hard to identify without this technology. On the other hand, AI itself creates new

vulnerabilities and can be used for cyberattacks and manipulation. Safety also includes access to essential services like education, healthcare, or basic financial services, where AI can lower access barriers, particularly benefiting people with low education or income.

Whether AI ultimately increases or decreases safety remains to be seen and depends – according to experts – on several factors, such as the development of robust security mechanisms, guidelines for responsible AI use, and the creation of global frameworks.




## LACK OF GUIDELINES FOR RESPONSIBLE AI USE – POTENTIAL POLARIZATION BETWEEN CORPORATIONS AND SMEs

From the perspective of organizations, appropriate guidelines and structures for AI are still lacking in Switzerland. The survey shows that 72% rate the maturity level as low, 24% as medium, and only 4% as high. These figures indicate that Switzerland still has considerable work to do in developing internal company guidelines for responsible AI use. Experts from the interviews support this view and emphasize that Swiss companies should act proactively: they could anticipate lengthy political processes and incorporate responsible approaches into their corporate policies long before official regulations take effect.

Furthermore, a different picture is likely to emerge between corporations and small or medium-sized enterprises, as the latter often lack the resources and competencies to build and implement the necessary frameworks.

„There needs to be a balance between innovative initiatives and responsible use of resources. A fine touch is needed here, but it is not yet well-established in many companies."

Karin Taheny, S-GE

„AI could negatively affect social skills if we rely too much on virtual assistants and less on human interaction."

Yannick Hirt, ODCUS

„AI brings risks like fraud through deepfakes or loss of expertise among employees. At the same time, AI can foster inclusion, for example, by making e-banking more accessible to visually impaired individuals. The right balance between human and machine is crucial."

Dr. August Benz, Swiss Bankers Association

„Personalized content through AI can reinforce existing world views and contribute to the division of society. It is crucial that mechanisms are developed to recognize and then mitigate or prevent these potentially dangerous effects..“

Claudia Pletscher, fineminds

## GENERALLY POSITIVE ENVIRONMENTAL IMPACTS – HIGH ENERGY CONSUMPTION VS. OPTIMIZED RESOURCE USE

A clear majority of 79% expect energy consumption to increase significantly over the next five years due to AI. Experts consistently cite this as a key future challenge, as a substantial increase in electricity consumption is anticipated across the entire AI architecture. Without a shift from conventional to $CO_2$-neutral energy sources, increased AI use could exacerbate climate burdens.

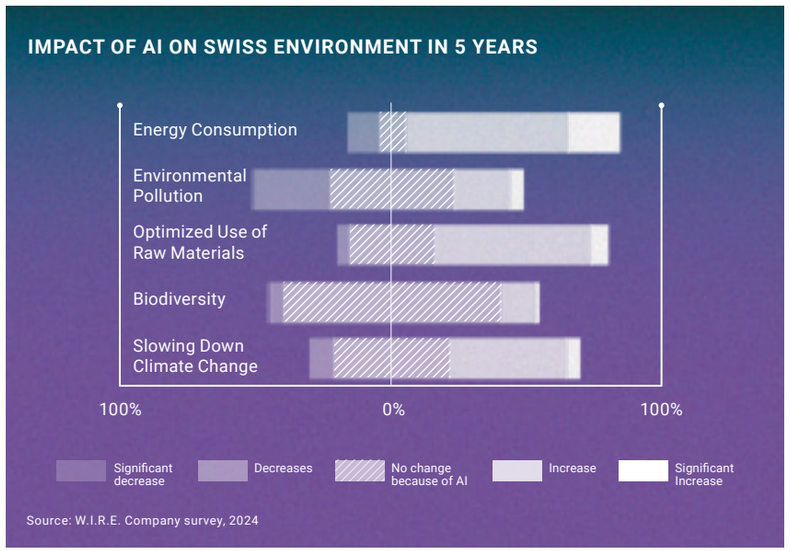
On the other hand, respondents also see potential in AI's optimization algorithms for more efficient resource use. In the short term, AI may negatively affect the ecological balance due to increased energy consumption and infrastructure demands. However, in the long run, AI could contribute to more sustainable development, provided appropriate measures are taken to reduce energy consumption and promote recycling and the circular economy. In the survey, 48% agree that AI could help slow down climate change.

Developments in Swiss biodiversity do not seem directly associated with AI; 81% see no changes due to AI use, though 14% believe it could increase biodiversity. According to experts, the demand for transparency regarding environmental changes will continue to rise, necessitating credibility to counter „greenwashing.“ Here, Switzerland could play a role in monitoring environmental risks and positioning itself internationally. Transparency about organizational and individual „footprints“ is commonly seen as a prerequisite for transitioning to an ecologically sustainable society. AI could contribute significantly through awareness and behavior-change recommendations.

Experts anticipate a marked increase in the demand for transparency regarding environmental changes, particularly given the risks and








reputational damage associated with „greenwashing,“ which requires a high degree of credibility. In this context, Switzerland could play a role in monitoring environmental risks and positioning itself internationally. Transparency regarding both organizational and individual „footprints“ is generally regarded as a key prerequisite for transitioning to an ecologically sustainable society. AI could contribute significantly to raising awareness and promoting behavioral changes through transparency or behavioral recommendations.

„AI can contribute to automated energy system management, but societal and political barriers slow progress. In the short term, a significant AI impact at the operational level, where the most potential lies, is unlikely.“

Prof. Dr. Christian Schaffner, ETH

„AI can enhance Switzerland's capabilities in climate modeling and biodiversity monitoring, but also raises important questions about energy consumption. Developing energy-efficient AI solutions will be key to aligning innovation with sustainable practices.“

Dr. Martin Müller, GESDA

„The full ecological impact of AI should be comprehensively measured, including positive sustainability effects."

Yannick Hirt, ODCUS

„Energy demand will continue to rise with technological advancements. At the same time, I'm optimistic about AI's impact—it can significantly optimize resources, production, and energy systems management, for example, through smart solutions or smart grids. AI can also positively influence consumer behavior. One main problem is that people are uncertain about concrete actions to protect the environment—such as reducing flights or eating vegetarian. AI can promote behavior-changing approaches leading to more conscious and intelligent consumption."

Dr. Monica Dell'Anna, Swissquote

„Everyone uses AI on their iPhone or at home without realizing how much energy it consumes. Each request leaves a relatively large energy footprint. With this growing consumption and the associated energy demand, serious consideration is required."

Dr. Christoph Nabholz, Swiss Re

## AI CAN COMPENSATE FOR 2,500 MISSING IT SPECIALISTS AND TAKE OVER THE ADMINISTRATIVE WORK OF 12,000 MEDICAL AND NURSING POSITIONS

Considering Switzerland's key challenges, AI's potential influence can be roughly estimated through projections. However, reaching these goals depends significantly on specific requirements and competencies.

### USE-CASE #1 – SKILLED LABOR SHORTAGE OF IT DEVELOPERS

If AI copilots can enable coding and documentation tasks to be completed in half the time, 9.5% of the additional demand for 26,500 developers projected by 2030 could be offset. This requires targeted skill-building for problem-solving with AI tools and quality control over the outputs.

**Calculation**

+ By 2030, ICT-Berufsbildung Schweiz forecasts an additional need for 26,500 employees in software development.[33]
+ The additional workload, distributed across various development tasks, would need to be compensated using AI copilots.
+ The latest empirical study by McKinsey indicates that code generation and documentation can be completed in roughly half the time.
+ Various studies and analyses, however, suggest that developers spend less than one hour a day on actual coding. Time invested in code documentation is similarly limited.
+ This implies that effective coding currently only occupies 10% of a workweek, while the remaining 90% involves other tasks like code documentation.
+ Time for code documentation represents about 9% of the workweek.
+ Coding: 10% of the additional workload of 26,500 FTEs = 2,650 FTEs
  AI impact = Twice as fast = 50% = 1,325 FTEs
+ Documentation: 9% of the additional workload = 2,385 FTEs
  AI impact = Twice as fast = 50% = 1,192.5 FTEs
+ Total savings = (1,325 FTEs + 1,192.5 FTEs) / 26,500 FTEs = 9.5%
+ This would mean that the approximately 51,300 employees in software development today could benefit from a potential workload reduction of more than 200,000 hours.

**Context**

+ Although generative AI is already capable of a great deal, current research shows that AI tools are only as effective as the skills of the people who use them.
+ The efficiency of AI copilots noticeably decreases with complex tasks and inexperienced developers, while faulty code often requires additional effort.
+ A 2023 study found that common AI assistants at that time only generated correct code in 31.1 % to 65.2 % of cases. It is expected that the error rate of AI copilots will improve over time.[34]
+ The previously mentioned McKinsey study indicates that while AI can increase development speed, it is less effective for complex tasks and inexperienced developers. The time savings shrank to less than 10 % for tasks that developers rated as highly complex.
+ A similar result was observed with developers with less than one year of experience; in some cases, junior developers took up to 10 % longer with tools than without them.
+ When working with code, the actual input is not the difficult part. The bottleneck is the effort required to understand, review, and integrate existing code into the system.
+ To ensure long-term quality and efficiency, organizations need to invest in targeted training so that developers can learn to use AI tools optimally – not only for problem-solving but also for understanding and optimizing the underlying code structures. Automated quality controls in the development process and continuous code inspections remain essential.

## USE-CASE #2 – SECURITY OF SUPPLY IN MEDICINE & NURSING

If generative AI could reduce the daily documentation workload in medicine and nursing by just one hour per day, this would free up the equivalent labor of over 3,000 doctors and 9,000 nurses. However, it is unrealistic to assume that all saved time could be directly reallocated to patient care.

**Calculation**

+ The administrative burden on Swiss physicians and nursing staff exacerbates issues related to the security and quality of care.
+ An article published by Medinside presented an estimate for Switzerland, concluding that reducing daily paperwork in medicine and nursing by just one hour would free up the equivalent work capacity of over 3,000 doctors and 9,000 nursing professionals.[35]
+ A widely noted study conducted by the University Hospitals of Basel and Uppsala, the Karolinska Institute, and Danderyd Hospital (in Sweden) found that ChatGPT-4 could produce orthopedic discharge documents ten times faster than humans, while maintaining comparable quality.[36]
+ Assuming a weekly workload of 50 hours and documentation taking up one-quarter of a workday for physicians and nursing staff, ChatGPT-4 could theoretically reduce documentation time for both by approximately 2 hours and 15 minutes – effectively doubling the one-hour savings target.

**Context**

+ The calculated time savings could be lower in practice, as AI results need to be reviewed and, if necessary, corrected.
+ Additionally, it is unrealistic to assume that all saved time can be directly redirected to patient care or nursing.
+ Nevertheless, it would not be an exaggeration to assume that generative AI has the potential to reduce documentation time in medicine and nursing by up to one hour per day.

**CONCLUSION ON THE MID-TERM „IMPACT“ OF AI ON ECONOMY, SOCIETY, AND ENVIRONMENT**

↳ AI can strengthen Switzerland‘s success model – especially if it provides clear benefits for SMEs and society. The economic benefits of AI should be assessed in connection with its societal and environmental impacts.

↳ The influence of AI should be evaluated differently depending on the type of AI and the specific sector. Simplified assumptions or reliance on general forecasts risk dispersion or misinvestment.

↳ While AI is currently focused on corporations and startups, SMEs are particularly crucial to Switzerland‘s economy as they contribute significantly to societal and political stability.

„SMEs could benefit the most from adopting AI by gaining significant competitive advantages and boosting productivity.“

Remi Sabonnadiere, Effixis

„It is essential to ensure strong tech companies establish themselves in Switzerland, and to foster corresponding talent domestically. We cannot afford to be complacent and let others innovate only to later rely on developments from America. Quality of life and political stability are great assets in this regard.“

Adrian Ott, EY

„Small companies can implement AI-driven changes faster than large corporations, which are often slowed down by extensive processes.“

Remi Sabonnadiere, Effixis

„AI‘s potential is often limited by the high costs of hardware and skilled personnel, making resources more of an obstacle than technology itself. Transparent and responsible AI development is essential for addressing issues like bias and copyright, with data playing a central role in ensuring ethical progress.“

Dr. Martin Müller, GESDA

# THESES ON THE LONG-TERM IMPACT OF AI

Based on the findings from the quantitative survey of organizations and in-depth expert interviews focused on the mid-term impact of AI, combined with insights from existing and new studies, forward-looking assessments, and arguments from the expert discussions, nine theses can be formulated regarding the long-term developments and influences of AI. These provide food for thought, inspiration, and critical pointers that could be relevant for strategic planning in dealing with AI over the next decades.

## I THE RISE OF THE «AI-VERSE»

While current media coverage and many studies mainly focus on generative AI applications, there will eventually be a broad spectrum of AI applications that either subtly influence or actively engage with the economy and society.

Central, globally scalable, cloud-based solutions will work alongside decentralized, localized applications. However, it is certain that today's prevalent image of AI as an abstract, futuristic technology – often portrayed by clichéd visuals of robots or connected brains – will bear little resemblance to reality.

Instead, AI will often function as an „invisible hand",[37] working behind the scenes to make decisions, optimize platforms personally, or provide orientation and design suggestions. The range of applications will span from daily text optimization to cutting-edge research. Above all, sustainable benefits from AI will require tools and solutions that can be easily installed and customized to meet specific needs in various industries, from small craft businesses to specialized design agencies.

This diversity of applications reflects the diversity of the Swiss economy, especially with a focus on providing value for small organizations.

## II FROM «DISRUPTION» TO EVOLUTION

Contrary to the highly publicized narrative of immediate and total disruption across all economic sectors and aspects of daily life due to generative AI, the integration of AI into most industries and everyday activities will take time and be characterized by an „evolutionary" adaptation.

Beneficial use of AI requires defining processes, preparing high-quality and current data, and establishing interfaces that enable specific applications to integrate into existing value chains. In addition to technical foundations, regulatory frameworks must also be developed to ensure the safe use of technology. This is particularly challenging in highly regulated sectors like healthcare and finance, as well as within Switzerland's political system, where these frameworks cannot be established in a short space of time.

„Human creativity, combined with plausibility, will be a key skill for the future-oriented and value-generating use of AI."
Dr. Raphael Reischuk, Zühlke

Furthermore, building competencies and cultivating an organizational or societal culture that maximizes AI's opportunities and mitigates risks will require an iterative adaptation and learning process. The competitiveness of Switzerland and the public's trust in the technology will ultimately hinge on the quality of AI-driven services, not on the speed of adaptation. The widespread motto „move fast, break things," which emphasizes rapid market exposure at the expense of potential collateral damage, may prove counterproductive in many AI applications, leading to a loss of trust instead. Ultimately, the aim should be to involve the entire population in embracing AI as a key technology.

Switzerland, drawing on its „DNA" of pragmatic and gradual adaptation, can leverage a learning and iterative strategy to optimize AI's value, minimize societal risks, and engage the public in the forthcoming transformation process.

## III RETHINKING INTELLECTUAL PROPERTY

The dependency on training data will lead to intense competition for high-quality data that not only complies with legal requirements but also ensures the protection of existing intellectual property rights. In this context, it is clear that various entities – ranging from individual companies to conglomerates, and even states or entire economic regions – will compete to secure access to essential training, customer, or market data.

While existing legal frameworks can handle specific patentable designs or brand attributes, applications involving cultural products present enforcement challenges. Current lawsuits in the USA by authors or actors, who seek to protect their content or voices, are seen as a benchmark for the future of AI. Legal scholars have labeled the question of what robots are allowed to learn as one of the most crucial issues of the 21st century.[38] Synthetic data can sometimes help, but it is unlikely to resolve the fundamental challenge.[39]

Indeed, there is a growing need for a comprehensive societal debate on how to handle intellectual property rights and the degree of freedom in their variation and recombination, which are fundamental to innovation. Boundaries will need to be set regarding what can be patented, as claims on intellectual property may not be limited to human creations but could extend to machine-generated solutions. For example, an algorithm already generated all theoretically possible melodies back in 2020.[40] Similarly, supercomputers could potentially generate vast variations of therapeutic molecules or product logos and attempt to patent them – a scenario that would be impractical to enforce.

„The perfection that could emerge here is not always desirable. We are imperfect beings."

Erich Herzog, Economiesuisse

Switzerland could position itself with a pragmatic and reasoned approach to these issues, one that already shapes its handling of international AI regulations. This approach would aim to protect genuine innovations while also preserving creative freedom and allowing for unregulated gray areas.

## IV SMALL WILL BE BEAUTIFUL

The capabilities of AI are likely to expand in the coming years through larger models trained on ever-more extensive datasets, potentially leading to new solutions of higher quality. Optimistic studies suggest that these models could increase in size by a factor of 10,000 by 2030.[41] However, this growth will also require significantly more energy and computational power. The success of such models will depend on numerous additional factors, including not only direct technological feasibility but also societal and political considerations regarding new energy sources and how organizations collaborate to provide such „supermodels." Open questions remain regarding the correlation between model size and output quality.[42]

In parallel with this trend, smaller, more specialized, and „open-source"-based AI models are emerging as a viable alternative, requiring fewer data, computational resources, and energy.[43] Such solutions could enable countries or companies that lack vast datasets to use AI beneficially, making it accessible to a broader user base and adaptable to the specific needs of niche providers.

Switzerland has the potential to play a key role in developing and implementing small AI models, especially if it focuses on maximizing the value of AI for small and medium-sized enterprises (SMEs). The country's small size and federal structure, which naturally counteracts large-scale scalability, could be leveraged as a strength. This approach would rely on sharing results to optimize quality.

„Focusing solely on optimization and efficiency, without regard for quality, will not work."

Erich Herzog, Economiesuisse

## V FROM DESIGN TO SELECTION

The widespread availability of generative AI is leading to an increase in automatically generated solutions wherever the technology is applicable. For the first time in human history, this essentially overcomes the natural law of dealing with scarcity.

It is expected that more AI-generated texts, images, music, or videos will be found online or on social media. The same will apply to software, product designs, or renderings of interiors and even building complexes.

The ability to generate seemingly endless solutions requires a redesign of innovation processes, with altered tasks and responsibilities where humans may no longer hold creative responsibility but instead select from a multitude of solutions. This focus on selection will be essential not only from an innovation perspective but also in terms of organizational efficiency and effectiveness. Without the skills to define use cases and establish selection criteria regarding quality or utility, there is a risk of distraction and misinvestment. This applies to private users of AI solutions as well.

Switzerland can apply its humility and pragmatism to dealing with AI by focusing on solutions that bring effective benefits rather than being sidetracked by the promise of even more options.

## VI THE HIDDEN LONGTAIL OF AI

Large, scalable, platform-based business models have long dominated official future perspectives for digital innovation. In the startup world, the focus is often on companies that can achieve rapid growth and become „unicorns," opening up global market potential to maximize investment returns. Through increasingly comprehensive automation, AI could further enhance this model. There has even been talk of one-person unicorns as the next milestone, where an individual could generate a billion in revenue with the help of AI.

„Explainability and transparency in decision-making through AI are essential for responsible use, especially in sensitive areas like healthcare and justice."

Remi Sabonnadiere, Effixis

Regardless of the feasibility of such projects – or their societal impact – AI also presents an alternative growth scenario that does not focus on maximum scaling but rather on value creation through smallness and niches. Analogous to Chris Anderson's „long tail theory," which in 2006 highlighted the enormous opportunities of niche markets accessible through digital distribution channels, AI's value creation could increasingly come from numerous small or micro-optimizations rather than just the big players. The cumulative contribution from these small improvements could yield a significant increase in productivity, even if they do not show up in official statistics.

Such a niche economy aligns with the core principles of the Swiss economy, where resilience and innovation capacity are widely supported by countless small businesses. This positioning offers not only an opportunity for SMEs but also for strengthening startups. Success here will depend on the ability to generate value through direct sales or integration into existing ecosystems via defined interfaces.

## VII THE REGULATOR'S DILEMMA

AI can help implement complex regulatory requirements across sectors like healthcare and finance by translating country-specific or product-specific criteria into specific regulations, thus reducing administrative effort. This potential extends to public administration, where internal processes can be automated to increase efficiency and reduce personnel needs, positively impacting the responsible use of taxpayer money.

At the same time, the deployment of AI is accompanied by increasing international and diverse regulatory demands, which aim to control the technology's risks and ensure that all players operate under fair rules. However, implementing these requirements may lead to significantly increased administrative burdens and risks expanding bureaucracy, potentially undermining AI's benefits and innovation potential. This challenge is particularly acute for SMEs, which may struggle with the associated burden, while larger corporations might be better equipped to meet reporting and compliance requirements.

„At what point will trust in digital media diminish due to excessive manipulation possibilities? Will we see a revival of human relationships, good journalism, and printed books?"

Erich Herzog, Economiesuisse

Furthermore, AI solutions based on neural networks present a fundamental challenge regarding transparency: since the reasoning behind these systems' outputs is often not traceable – even developers might not understand how a result was derived – such algorithms' use in critical fields, like credit approval or medical recommendations, might be limited due to concerns about fairness and transparency. This could necessitate either partial use or the addition of human oversight.

Switzerland can smartly navigate these regulatory implications by adopting a forward-looking, yet restrained, regulatory approach that focuses not only on upholding basic safety standards but also on enabling large and especially small organizations to leverage AI.

## VIII REVERSE SOCIETAL IMPACT

The widespread use of AI agents will lead not only to potential economic growth and productivity gains but also to implicit changes in societal norms on multiple levels. The systematic outsourcing of core tasks – from writing, summarizing, or translating texts to structuring knowledge and using AI for brainstorming – could result in a gradual loss of skills if these activities are no longer practiced. This is not just about immediate abilities but also about the underlying thought patterns. Searching or „prompting" through keywords is based on predefined expectations and may diminish the ability to adapt to unexpected solutions or those that do not fit into existing frameworks.

This process reverses the dynamic, where instead of humans shaping algorithms, algorithms start to shape humans. The long-term impact of AI could lead to „algorithmic thinking," which reduces openness to new ideas and weakens imagination and intuition as important factors for innovation. This is significant because people are often expected

to act as the controlling authority, reviewing or refining the quality of AI solutions. This ability, however, could be undermined if such tasks are not regularly practiced.

„A dependency on AI can lead to disappointment. Realistic goals and conscious expectation management are essential."
Dr. Raphael Reischuk, Zühlke

The widespread use of AI could also alter how people perceive quality. Traditionally, product development has aimed to optimize quality over time through improvements. However, AI solutions, despite their ability to personalize, are based on existing data sources and their statistical utilization, which can lead to homogenization of output. For instance, music recommendations might continually offer similar results based on existing knowledge, videos used in advertising may tend to stereotype target groups, or product designs might reproduce variations of learned templates. While these new foundations enable more output at lower costs, they could potentially lower quality standards in some cases. A recent study already indicates that consumers no longer automatically associate AI with higher quality.[44]

Switzerland can strengthen its existing reputation as a high-quality country through critical thinking and by actively maintaining competencies that are relevant for quality assessment of AI.

## IX BOT-BOT NORMALCY

With the ability to use AI for increased convenience, more bot-bot interactions – where AI agents autonomously interact with each other – will occur. This will create new opportunities for individuals and businesses alike, enabling personalized shopping or using AI for price negotiations with suppliers. While this enhances efficiency by allowing more tasks to be completed in parallel, it also poses the risk of widespread detachment, where humans fall „out of the loop" and are no longer involved in decisions. This might be fine when buying toilet paper, but it could lead to a loss of touch with reality and a diminished connection to one's surroundings. Not only does human interaction decrease, but emotional attachment to products that are no longer personally chosen also lessens. This could have adverse effects on solidarity and ecological sustainability.

As bot-bot interactions become the new norm, they also introduce new cybersecurity risks, especially when bots are used in critical systems or possess competencies that could pose financial or other risks to their users. Control points and user skills are essential to retain oversight and prevent the loss of control over decisions.



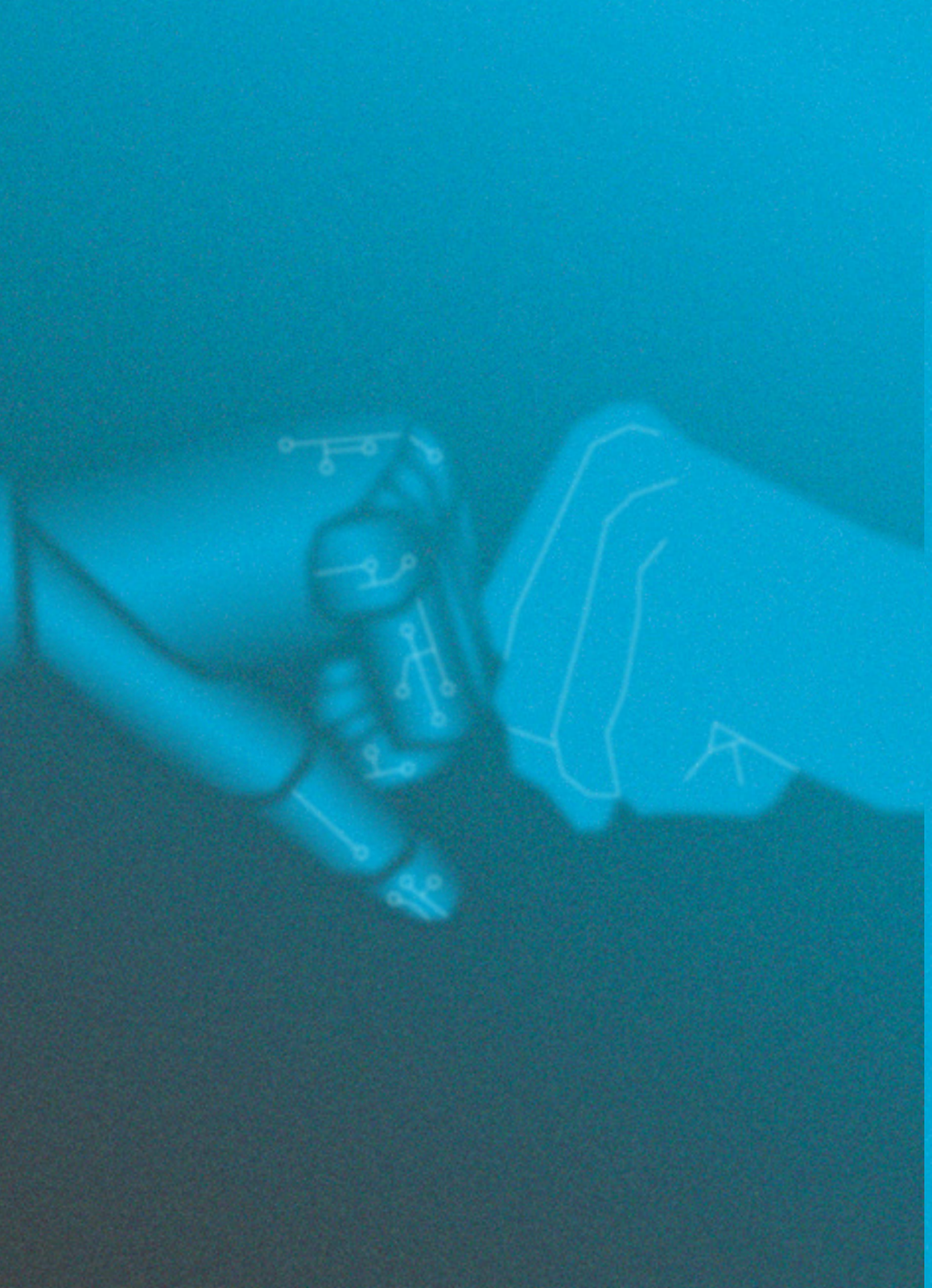


Switzerland can contribute to an intelligent bot-bot ecosystem by fostering hybrid or human interfaces to keep people „in the loop," strengthening a hybrid service quality where bots and humans are used complementarily.

„We've always had to assess the credibility of a source, which is still relatively straightforward with Google. But with ChatGPT and other language models, there's a fascination with both the eloquence and confidence with which these machines assert things that can be completely false. Therefore, one must also learn to gauge when it's just confidently expressed ignorance and when it might actually be close enough to serve as inspiration."
Dr. Sarah Genner, Digitalization Expert

„Switzerland can continue to expand its strengths in niche markets and stand out through responsible AI usage."
Yannick Hirt, ODCUS

„While large companies are already seeing productivity gains from using AI, smaller firms could also benefit, especially from specialized niche solutions if they prefer not to share their data."
Dr. August Benz, Swiss Bankers Association



# AI-MPACT

## SUSTAINABLE FIELDS OF DESIGN FOR ORGANIZATIONS AND SWITZERLAND

# FOUNDATIONS FOR RESPONSIBLE SHAPING OF ECONOMY, SOCIETY, AND ENVIRONMENT

The pace of changes surrounding AI, which has shaped the world since the launch of ChatGPT, is expected to continue in the coming years. While the intense media coverage around the initially promised opportunities and perceived threats has somewhat subsided, paving the way for a more objective debate, organizations, decision-makers, and designers still face the challenge of navigating the vast array of offerings and forecasts.

Switzerland's success model must be further developed in the context of the future conditions of the coming AI era, especially with a specific focus on small organizations and the population. It is essential to define concrete areas for action that establish the foundation for a sustainable future by creating the prerequisites for making critical decisions, fostering self-efficacy, and taking responsibility towards society and the environment. This way, Switzerland's success model can be adapted for the 21st century.

Switzerland's „DNA," based on stability, cooperation, pragmatism, and technological neutrality, can ensure that the diverse landscape of businesses and organizations, as well as the population, can benefit from AI. Simultaneously, Switzerland can position itself internationally as a research hub and a center of expertise for responsible innovation by consistently integrating social and environmental impacts „by design" into products and services.

However, this requires guidelines: The foundation lies in proactive planning and anticipating future frameworks. The state has a duty to create conditions that promote responsible AI innovation. The goal is not to increase the regulatory burden but to establish clear boundaries and create freedom that allows organizations to bring innovations to market promptly.

Businesses face the task of balancing early engagement with a focus on relevant AI projects, but more importantly, developing independent and differentiating strategies instead of unreflectively imitating Silicon Valley's „moonshot" innovation principles. Rather than „move fast and break things," Switzerland's approach could be „move clever and build things." This not only aligns with the principle of fostering innovation step-by-step while linking market success with societal progress but also lays the foundation for stability and resilience, which ultimately emphasizes the core value Switzerland will need in the future: trust.

Switzerland requires both a backward and forward perspective on courageous, independent solutions, strengthening collaboration between corporations, start-ups, and SMEs, and partnerships with academia, government, NGOs, and think tanks.

From the expert interviews conducted for this study and our analyses, six areas for action can be identified.

## I SYSTEMATIC EARLY DETECTION AS A BASIS FOR FOCUSING ON KEY CHALLENGES AND IMPLEMENTATION IN „REAL LIFE LABS“

Companies – and Switzerland as a whole – require systematic early detection mechanisms to navigate the rapid changes in the AI landscape, providing decision-making foundations that help maximize value regarding future challenges. Attempting to monitor all trends and hypes in real time risks creating distractions and making poor decisions. In addition to intelligent analysis and evaluation of new developments and trends, Swiss organizations can stand out by deploying their resources selectively. This approach not only enhances profitability but also strengthens trust among customers and society.

↳ Switzerland can distinguish itself as a location by adopting forward-thinking yet pragmatic AI solutions, positioning itself as a testing ground or „Real Life Lab“ where ideas are brought to market straightforwardly and practically, in collaboration with customers and the public. The added value for users may lie in access to new products, financial participation, or a sense of identity, as the public actively participates in and assesses the development of innovative offerings.

**Long-term positioning:** Switzerland as a forward-looking location that translates relevant developments into concrete solutions early on, while involving the public in the process.

“Despite the potential of generative AI, its implementation in Swiss industry is challenging. The complexity of real business challenges that AI needs to solve, combined with the lack of stable and reliable generative AI solutions, represents a significant obstacle to broader implementation.”

Prof. Dr. Torbjörn Netland, ETH

## II BUILDING A ROBUST AI INFRASTRUCTURE AND DATA FOUNDATION AS A PREREQUISITE FOR TRUST

Organizations need a stable and resilient technological foundation for storing and processing data using AI. This can be achieved through access to comprehensive cloud solutions and decentralized, open-source options, which promote innovation based on the varying needs of organizations.

Access to high-quality, current data is also crucial. Organizations need to expand customer interfaces or connect to existing data spaces to acquire this. Using data that can be translated into concrete benefits is essential, as indiscriminate collection of unstructured data without a clear strategy poses high risks, including hidden costs from unsystematic collection, storage, and thoughtless use, as well as from IP or privacy violations and erroneous results.

↳ Switzerland must establish conditions that enable organizations to access certified solutions that meet regulatory requirements while allowing for new solutions to emerge. Regarding the full potential of the „tech stack,” Switzerland has opportunities across various levels of the AI value chain – from access to sufficient climate-neutral energy to solutions that prepare data for AI and enable forward-looking applications. Opportunities range from deep-tech solutions for the next generation of AI to simple, „low-tech” solutions usable by small businesses or individuals in everyday life. Switzerland can benefit commercially from diverse solutions, including open-source applications, as well as through the adaptation and maintenance of sustainable business models. To foster this ecosystem, research funding should span from foundational to applied projects, extending beyond just generative AI.

**Long-term positioning:** Switzerland as a leading location for secure and stable AI infrastructure and a trusted use of digital technology.

## III CLARIFYING FUNDAMENTAL QUESTIONS AND DEFINING A SOCIAL FOUNDATION

Alongside building a solid technical infrastructure, organizations – and Switzerland as a location – face the challenge of addressing societal issues related to data protection, discrimination, and disinformation. While some risks are already largely covered by existing Swiss legislation, there are unresolved questions, such as handling intellectual property and tolerating possible error rates in AI applications, which cannot be entirely eliminated. Beyond these specific issues, it is crucial to create a narrative for AI's role that alleviates fears about the perceived loss of human relevance in the workforce and fosters a public stance supportive of shaping the future actively.

↳ Switzerland can engage in a broad dialogue with businesses, science, the public, and policymakers to explore the opportunities, limits, and desirable ways to interact with AI. These findings can help guide the gradual, transparent integration of AI into daily life while emphasizing its benefits over fears and reservations. Proactively addressing future challenges also offers companies a chance to position themselves as trustworthy actors by addressing concerns and incorporating them into product development.

**Long-term positioning:** Switzerland as a leader in responsible AI use, where humans are integrated as control and guidance instances „by design."

"The ethical use of AI requires awareness of biases and active measures to mitigate them, rather than expecting inherent systemic neutrality."

Remi Sabonnadiere, Effixis

## IV IMPLEMENTING INNOVATION WITH AI REQUIRES REAL-WORLD APPLICATION

For sustainable AI implementation, there needs to be a connection with real-world challenges. While developing „greenfield" solutions outside business contexts often results in appealing concepts, they risk lacking practical relevance. To increase market success, AI projects should be conceived and executed in close collaboration with line managers, customers, and tech experts. A forward-looking early detection process and integration into organizational strategy and culture are crucial.

What applies to organizations also extends to the location: this study shows that AI can not only address future challenges but may also become a fundamental requirement. Therefore, the overarching contribution of AI should not be measured against abstract forecasts but rather on the concrete added value it can provide in meeting future demands, short-, medium-, and long-term.

↳ Switzerland's federal structure, with its extensive SME landscape, digital affinity, and strong practical guidance, makes it an ideal location for pragmatic AI solution development, initially addressing specific challenges in daily private and professional life. Successes from these initial approaches can then scale into larger projects that contribute to Switzerland's long-term success through iterative implementation.

**Long-term positioning:** Switzerland as a place where new ideas can be pragmatically and straightforwardly brought to market.

"It's about using AI where it truly adds value. The number of use cases is steadily increasing, and compared to five years ago, generative AI has brought many more examples of meaningful applications."

Dr. August Benz, Swiss Bankers Association

## V STRENGTHENING AI SKILLS THROUGH HOLISTIC UPSKILLING

Organizations face the challenge of building skills for planning and implementing AI projects, both at an individual and institutional level. This involves not only technical skills but also the ability to assess AI applications' broader impact on business models, customer interactions, social responsibility, and environmental sustainability. Moreover, it's essential to develop skills that complement AI, such as interpersonal dialogue and creative thinking.

↳ Switzerland can leverage its dual education system by building a comprehensive skill set in AI, combining technical expertise with critical thinking and empathy. Integrating these skills across educational levels makes AI engagement and design a core competency crucial for the coming decades.

**Long-term positioning:** Switzerland as a country characterized by mastering the interfaces between humans and machines.

"To effectively leverage AI, companies must focus on the specific problems they want to solve rather than relying solely on general AI models and solutions."

Prof. Dr. Torbjörn Netland, ETH

## VI ENHANCING AI UTILITY THROUGH CRITICAL EVALUATION AND ATTITUDE

Organizations need to critically evaluate AI's actual benefits to translate its varied solutions into tangible value and avoid misinvestments. This encompasses not only economic impacts but also the effects on society and the environment. Beyond assessing individual applications, organizations can also develop a values-based stance on responsible AI use that aligns with their organizational culture.

↳ Switzerland can harness AI's value by focusing on real challenges – drawing on its deep-rooted pragmatism, critical stance on politically driven industrial policy, strong ties between business and society, intact natural environment, and circular economy competencies.

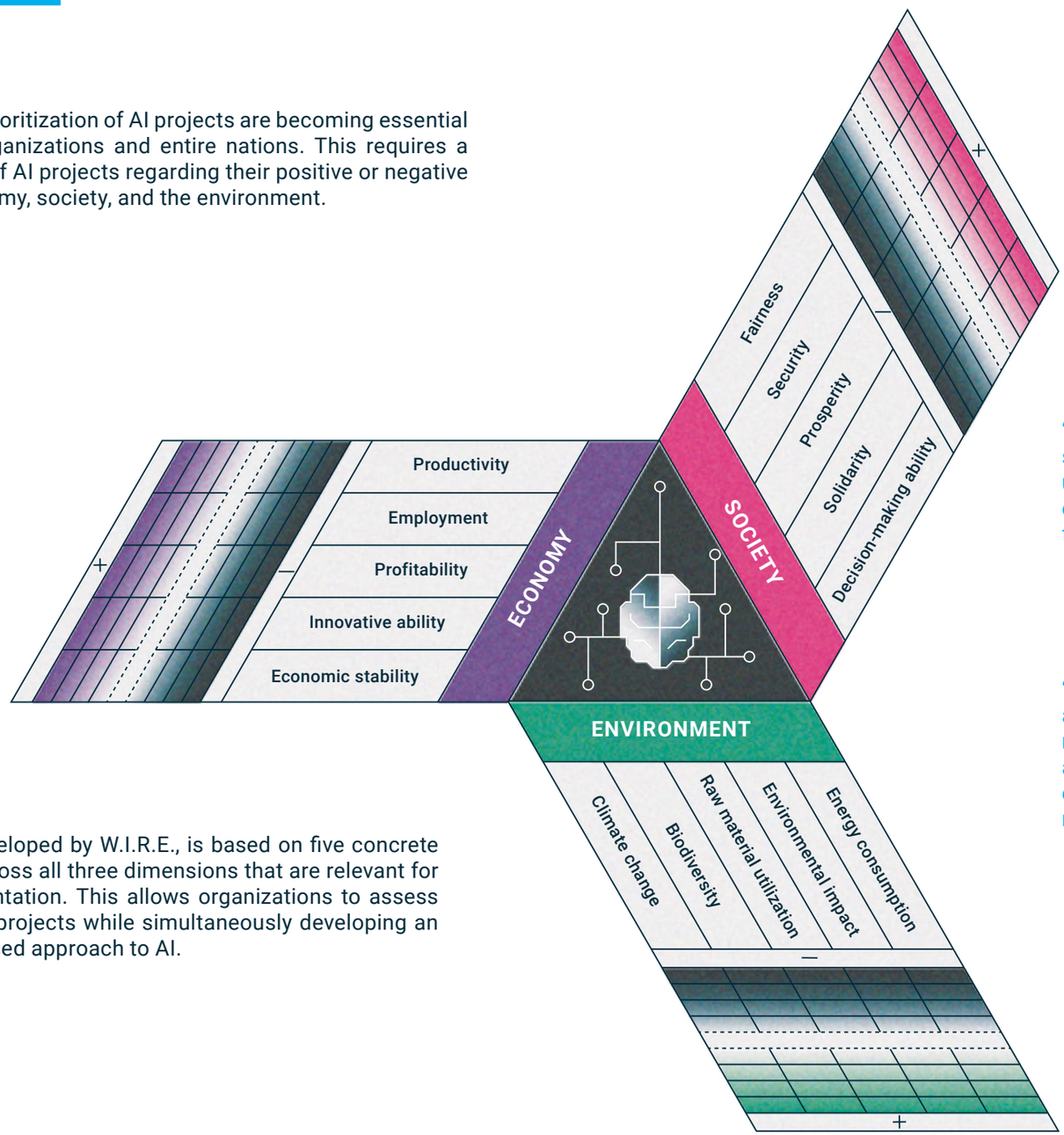
**Long-term positioning:** Switzerland as a location where AI projects yield a high return on investment while maximizing AI's sustainable benefits.

"Beyond learning new skills, we need to rethink and reshape educational systems to better prepare workers for an AI-driven future."

Prof. Dr. Torbjörn Netland, ETH

# AI COMPASS

The evaluation and prioritization of AI projects are becoming essential competencies for organizations and entire nations. This requires a holistic assessment of AI projects regarding their positive or negative impacts on the economy, society, and the environment.




The AI Compass, developed by W.I.R.E., is based on five concrete evaluation criteria across all three dimensions that are relevant for sustainable implementation. This allows organizations to assess individual innovation projects while simultaneously developing an overarching value-based approach to AI.

"Everything AI achieves must ultimately serve humanity. Therefore, a multidimensional understanding of added value is needed, encompassing not only economic factors like efficiency."

Dr. Raphael Reischuk, Zühlke

"The key is to use AI where it genuinely adds value, not just for its own sake. The number of use cases is steadily increasing, and compared to five years ago, many more examples of meaningful applications are now available, thanks to generative AI."

Dr. August Benz, Swiss Bankers Association

## VII COURAGE FOR DIFFERENTIATION

The growing potential of AI requires organizations to clarify where and how the technology can optimize their business model – whether by improving operational excellence or contributing to innovation. Given the broad usage of AI, however, it is crucial to focus on differentiating positions. This could mean enhancing unique selling points through scaling, launching personalized offers via generative AI, or pursuing countertrends by setting themselves apart through human rather than artificial intelligence.

↳ For Switzerland, as a small country, the question of a unique position in the international landscape is as relevant as it is for individual companies. While the primary role of the state is to provide an optimal platform for various solutions to grow while ensuring fair market conditions, establishing a distinctive narrative can significantly enhance the country's appeal to large corporations and talented individuals alike. This can be achieved by fostering courage and differentiation through tax incentives, support structures, and a meaningful identity.

**Long-term positioning:** Switzerland as a small country that places independence at the center of its approach to artificial intelligence, thereby promoting courage and differentiation through „human intelligence" over the long term.

„Switzerland is a traditional safe haven, especially in terms of legal matters, data protection, and regulation. Here, data is handled with trustworthiness. This allows for piloting initiatives in a secure environment where risks can be taken that might not be feasible elsewhere. Coupled with the strong economy, financial resources, and expertise we have here, Switzerland is ‚large enough to matter, small enough to win."

Jochen Decker, CIO

„One of the greatest technical challenges remains the variability of renewable energy, which challenges the stability of the power grid. To address this, we need to provide energy more flexibly and optimize the flow of energy through intelligent control systems. However, these require a solid data base, which is currently only limitedly available in Switzerland.“

Prof. Dr. Christian Schaffner, ETH

„The lack of real-world datasets continues to be a significant obstacle to progress in robotics. For Switzerland, the development of energy-efficient AI and neuromorphic computing technology will be crucial to overcoming these limitations and enabling machines to better perceive and interpret their environment with minimal energy consumption.“

Dr. Martin Müller, GESDA

„In the societal dimension, the federal government plays a central role in promoting topics around artificial intelligence. At the same time, it is essential that the education system at the cantonal and municipal levels also takes a proactive stance to secure the AI skills of the next generation.“

Claudia Pletscher, fineminds

„The education system in Switzerland must increasingly foster critical thinking and media literacy to enable children and young adults to deal with digital media and their potential manipulations.“

Erich Herzog, Economiesuisse





„In the age of AI, critical thinking is paramount when it comes to the skills required of people. It is about reflecting on how the tools should be used and critically questioning the generated content. This requires a solid knowledge of the respective field to be able to evaluate the results with the necessary distance.“

Prof. Dr. Gudela Grote, ETH

„What fuels the discussion around AI is the topic of Artificial General Intelligence, which would ultimately be the truly disruptive element. However, looking at other powerful technologies that could harm the Earth, such as military drones or nuclear energy, it becomes clear that the negative use of such technologies can be prevented through societal action.“

Prof. Dr. Gudela Grote, ETH

„The only thing left for us as humans is to remain adaptive and responsive, with fundamental academic skills such as analytical thinking, flexibility, and soft skills. This becomes even more important as the specific technical knowledge one learns during studies becomes obsolete more quickly the faster technological development progresses.“

Dr. Jochen Decker, SBB

„Switzerland has the potential to develop, test, and export new energy systems, particularly in conjunction with machine learning and artificial intelligence. This combination could strengthen the country‘s innovative power in the energy transition.“

Prof. Dr. Christian Schaffner, ETH

1 Goldman Sachs. (2023, 1. August). AI investment forecast to approach $200 billion globally by 2025. Goldman Sachs. https://www.goldmansachs.com/insights/articles/ai-investment-forecast-to-approach-200-billion-globally-by-2025

2 Roser, M. (2024, 29. January). The brief history of artificial intelligence: the world has changed fast — what might be next? Our World in Data. https://ourworldindata.org/brief-history-of-ai

3 The Economist. (2024, 19. August). Artificial intelligence is losing hype. for some, that is proof the tech will in time succeed. Are they right? The Economist. https://www.economist.com/finance-and-economics/2024/08/19/artificial-intelligence-is-losing-hype

4 Tie, Y. C., Birks, M. & Francis, K. (2019). Grounded theory research: A design framework for novice researchers. SAGE Open Medicine, 7, 205031211882292. https://doi.org/10.1177/2050312118822927

5 Vgl. Fulterer, R. & Geiser, E. (2023, 14. November). Deep Learning & KI: Unterschiede und Funktionen einfach erklärt. Neue Zürcher Zeitung. https://www.nzz.ch/technologie/kuenstliche-intelligenz-ki-deep-learning-einfach-erklaert-ld.1632034; Microsoft. (o. D.). Was ist künstliche Intelligenz? https://azure.microsoft.com/de-de/resources/cloud-computing-dictionary/what-is-artificial-intelligence#autonome-fahrzeuge; Künstliche Intelligenz (KI) und maschinelles Lernen - Fraunhofer IKS. (o. D.). Fraunhofer-Institut für Kognitive Systeme IKS. https://www.iks.fraunhofer.de/de/themen/kuenstliche-intelligenz.html; Klingler, N. (2024, 19. Juni). The 3 Types of Artificial Intelligence: ANI, AGI, and ASI. viso.ai. https://viso.ai/deep-learning/artificial-intelligence-types/; Databricks. (o. D.). Was ist Generative KI? https://www.databricks.com/de/discover/generative-ai

6 Johner, C. (2022, 1. February). Interpretierbarkeit von KI: Blick in die Blackbox des maschinellen Lernens. Johner Institut. https://www.johner-institut.de/blog/regulatory-affairs/interpretierbarkeit-ki/

7 OECD. (o. D.). AI Principles Overview. https://oecd.ai/en/ai-principles

8 Vgl. Schroders. (2023, 27. July). Die KI-Revolution: Wer profitiert bereits von generativer KI? https://www.schroders.com/de-de/de/institutionelle/insights/die-ki-revolution-wer-profitiert-bereits-von-generativer-ki/; Ben-Zur, L. (2023, 3. March). Winning in the Generative AI Stack: Analyzing Layers and Players, Including the Rise of E2E AI Applications. LinkedIn. https://www.linkedin.com/pulse/winning-generative-ai-stack-analyzing-layers-players-rise-ben-zur/; Rana, R. (2024, 15. February). Understanding Generative AI: a tech stack breakdown. Orion Innovation. https://www.orioninc.com/blog/understanding-generative-ai-a-tech-stack-breakdown/

9 Vgl. Goldman Sachs. (2023, 5. April). Generative AI could raise global GDP by 7%. Goldman Sachs. https://www.goldmansachs.com/insights/articles/generative-ai-could-raise-global-gdp-by-7-percent; J.P. Morgan Research. (2024, 14. February). The Rise of Generative AI. J.P. Morgan. https://www.jpmorgan.com/insights/global-research/artificial-intelligence/generative-ai; Chui, M. & Yee, L. (2023, 18. July). AI could increase corporate profits by $4.4 trillion a year, according to new research. McKinsey & Company. https://www.mckinsey.com/mgi/overview/in-the-news/ai-could-increase-corporate-profits-by-4-trillion-a-year-according-to-new-research

10 Williams, S. (2024, 25. April). IMF predicts AI could boost UK economic growth by 16%. CFOtech UK. https://cfotech.co.uk/story/imf-predicts-ai-could-boost-uk-economic-growth-by-16#:~:text=The%20International%20Monetary%20Fund%20(IMF,on%20enhancing%20productivity%20and%20output.

11 Microsoft. (2024, 17. June). Österreichs Wachstumspotenzial: 18 Prozent mehr Wertschöpfung durch Künstliche Intelligenz. https://news.microsoft.com/de-at/osterreichs-wachstumspotenzial-18-prozent-mehr-wertschopfung-durch-kunstliche-intelligenz/

12 Stanford University. (2024). Artificial Intelligence Index Report 2024. AI Index Report Stanford. https://aiindex.stanford.edu/report/

13 The Economist. (2024a, July 2). What happened to the artificial-intelligence revolution? The Economist. https://www.economist.com/finance-and-economics/2024/07/02/what-happened-to-the-artificial-intelligence-revolution

14 Wittenstein, J. (2024, 18. July). Goldman's Top Stock Analyst Is Waiting for AI Bubble to Burst. Bloomberg. https://www.bloomberg.com/news/articles/2024-07-18/goldman-s-top-stock-analyst-is-waiting-for-ai-bubble-to-burst

15 The Economist. (2024b, August 19). Artificial intelligence is losing hype. The Economist. https://www.economist.com/finance-and-economics/2024/08/19/artificial-intelligence-is-losing-hype

16 Strategy&. (2024). Embracing the genAI opportunity: How Switzerland can seize the vast potential of Generative Artificial Intelligence. A guide towards GenAI-driven economic transformation.

17 Cisco. (2023). Cisco AI Readiness Index. Intentions Outpacing Abilities. Switzerland. https://www.cisco.com/c/dam/m/en_us/solutions/ai/readiness-index/documents/cisco-ai-readiness-index-switzerland.pdf

18 Von Dzengelevski, O., Bickel, M., Zhang, Q. & Netland, T. (2024). The state of AI in the Swiss tech industry: Results from a survey by ETH Zurich in cooperation with Swissmem and Next Industries [Report]. https://www.research-collection.ethz.ch/bitstream/handle/20.500.11850/678173/AI_in_Swiss_Tech_Industry_20240625_ETHZurich.pdf?sequence=2&isAllowed=y

19 Ott, A. & Spichiger, R. (2024). EY European AI Barometer 2024. https://www.ey.com/en_ch/forms/2024/ey-eropean-ai-barometer

20 Deloitte. (2010). Generative AI's fast and furious entry into Switzerland: Usage and attitudes of the Swiss workforce towards generative AI. https://www2.deloitte.com/content/dam/Deloitte/ch/Documents/technology/deloitte-ch-en-generative-ai.pdf

21 Joshi, A., Toms, S., Corbaz, A., Rajman, M., Castle, D., Avagyan, K., IMD, digitalswitzerland & EPFL. (2024). Charting the Future: Switzerland's Path to Generative AI Leadership in 2024 and Beyond. https://www.imd.org/research-knowledge/innovation/reports/charting-the-future-switzerlands-path-to-generative-ai-leadership-in-2024-and-beyond/

22 Schnell, P. & Salvi, M. (2024, 24. September). Zukunftssichere Berufe? Wie KI den Schweizer Arbeitsmarkt beeinflusst. Avenir Suisse. https://www.avenir-suisse.ch/zukunftssichere-berufe-wie-ki-den-schweizer-arbeitsmarkt-beeinflusst/

23 Peter, M. K., Maier, K. L., Lindeque, J. P., Mändli Lerch, K., Rozumowski, Anna. V. & Strohm, V. (2024). Digital-Radar Schweiz: Monitor Bank WIR 2024. https://digital-radar-schweiz.ch/wp-content/uploads/2024/05/Digital-Radar-Schweiz-2024-Monitor-Bank-WIR.pdf

24 Stiftung Risiko-Dialog. (2024). Mobiliar #Digital Barometer 2024: Die Stimme der Schweizer Bevölkerung. https://www.risiko-dialog.ch/wp-content/uploads/2024/05/rgb_de_digitalbarometer_2024.pdf

25 Maron, H. J. (2024, 13. August). Schweizer Arbeitnehmende und KI: Trau, schau, wem. https://www.inside-it.ch/schweizer-arbeitnehmende-und-ki-trau%2C-schau%2C-wem-20240813

26 Interessengemeinschaft elektronische Medien (IGEM) & Wemf AG. (2024). IGEM Digimonitor 2024: Die repräsentive Studie zur digitalen Schweiz. https://wemf.ch/media/wemf.ch/media/igem-digimonitor_factsheet_2024_pdf.pdf?redirect=true

27 Vogler, D. V., Eisenegger, M., Fürst, S., Udris, L., Ryffel, Q., Rivière, M. & Schäfer, M. S. (2023). Jahrbuch Qualität der Medien Studie 1 / 2023: Künstliche Intelligenz in der journa listischen Nachrichtenproduktion. Forschungszentrum Öffentlichkeit und Gesellschaft (fög).

28 startupticker.ch, Swiss Private Equity & Corporate Finance Association (SECA) & startup.ch. (2024). Swiss Venture Capital Report 2024. https://www.startupticker.ch/assets/files/attachments/VCReport_2024_web.pdf

29 Im Jahr 2023 wurden 498,25 Mio. CHF von Schweizer KI-Start-ups eingesammelt, was etwa 19,25 % der gesamten 2.588 Mio. CHF darstellt (vgl. Swiss Venture Capital Report, S. 7).

30 Bundesamt für Statistik. (o. D.). Wirtschaftssektor und -abschnitt. https://www.bfs.admin.ch/bfs/de/home/statistiken/arbeit-erwerb/erwerbstaetigkeit-arbeitszeit/merkmale-arbeitskraefte/wirtschaftsabschnitt.html

31 Graf, A., Fust, A., Fueglistaller, U., Züger, T. & Brunner, C. (2024, März). Schweizer KMU: Eine Analyse der aktuellsten Zahlen Ausgabe 2024. KMU-HSG. https://kmu.unisg.ch/fileadmin/user_upload/HSG_ROOT/Institut_KMU/Forschung/KMU_in_Zahlen/2024_OBT_KMU_in_Zahlen/2024_KMU_in_Zahlen_OBT_KMU_Studie_2024.pdf

32 UNESCO, IRCAI. (2024). Challenging Systematic Prejudices: An investigation into gender bias in large language models. https://unesdoc.unesco.org/ark:/48223/pf0000388971

33 Braun-Dubler, N. & IWSB – Institut für Wirtschaftsstudien Basel. (2022). ICT-Fachkräftesituation: Bedarfsprognose 2030. In ICT-Berufsbildung Schweiz, ICT-Berufsbildung Schweiz. https://www.ict-berufsbildung.ch/resources/IWSB-ICT-Bildungsbedarf-2030-rev01.pdf

34 Yetiştiren, B., Özsoy, I., Ayerdem, M. & Tüzün, E. (2023, 22. October). Evaluating the Code Quality of AI-Assisted Code Generation Tools: An Empirical Study on GitHub Copilot, Amazon CodeWhisperer, and ChatGPT. https://arxiv.org/pdf/2304.10778

35 Poehner, R. (2024, 19. August). Verschwendetes Potenzial: der Preis der Bürokratie in den Spitälern. https://www.medinside.ch/verschwendetes-potenzial-buerokratie-in-spitaeler-aerzte-pflege-stellen-fte-20240815

36 Rosenberg, G. S., Magnéli, M., Barle, N., Kontakis, M. G., Müller, A. M., Wittauer, M., Gordon, M. & Brodén, C. (2024). ChatGPT-4 generates orthopedic discharge documents faster than humans maintaining comparable quality: a pilot study of 6 cases. Acta Orthopaedica, 95, 152–156. https://doi.org/10.2340/17453674.2024.40182

37 Hesse, D., Sigrist, S. & W.I.R.E. (2021). Invisible Hands: Wie Algorithmen die Gesellschaft von morgen ermächtigen und entmündigen (1. Aufl.). NZZ Libero.

38 The Economist. (2023, 15. March). A battle royal is brewing over copyright and AI. The Economist. https://www.economist.com/business/2023/03/15/a-battle-royal-is-brewing-over-copyright-and-ai

39 Kristensen, G., Dunning, A. L., Shen, G., Buckland, P., Keustermans, J.-F. & Anciaux, A. (2024, 5. February). Training AI models on Synthetic Data: No silver bullet for IP infringement risk in the context of training AI systems. Cleary Gottlieb. https://www.clearygottlieb.com/news-and-insights/publication-listing/training-ai-models-on-synthetic-data-no-silver-bullet-for-ip-infringement-risk-in-the-context-of-training-ai-systems

40 Chojecki, P. (2021, 13. December). Musicians Generate Every Possible Melody and Make it Public. Medium. https://medium.com/data-science-rush/musicians-generate-every-possible-melody-and-make-it-public-df408e2f751b

41 Dorrier, J. (2024, 23. September). AI Models Scaled Up 10,000x Are Possible by 2030, Report Says. Singularity Hub. https://singularityhub.com/2024/08/29/ai-models-scaled-up-10000x-are-possible-by-2030-report-says/

42 Jones, N. (2024). Bigger AI chatbots more inclined to spew nonsense — and people don't always realize. Nature. https://doi.org/10.1038/d41586-024-03137-3

43 Heikkilä, M. (2024, 26. September). A tiny new open-source AI model performs as well as powerful big ones. MIT Technology Review. https://www.technologyreview.com/2024/09/25/1104465/a-tiny-new-open-source-ai-model-performs-as-well-as-powerful-big-ones/

44 Chayka, K. (2024, 20. March). The tyranny of the algorithm: why every coffee shop looks the same. The Guardian. https://www.theguardian.com/news/2024/jan/16/the-tyranny-of-the-algorithm-why-every-coffee-shop-looks-the-same

45 Rogelberg, S. (2024, 12. August). 'Why do I need AI in my coffee maker?' AI-labeled products can scare away customers, study finds. Fortune. https://fortune.com/2024/08/12/ai-products-artificial-intelligence-genai-drscaring-away-customers-management-journal-study/

**RICCARDO MERLUZZI**
Riccardo Merluzzi supports organizations in long-term strategic planning by identifying and translating strategically relevant developments and trends at the intersection of business, science, and society. He combines interdisciplinarity with over four years of cross-industry consulting experience. In addition to strategy and innovation development, he is responsible for multi-stakeholder projects with a focus on the healthcare system.

**ISABEL HOFFET**
Isabel Hoffet is a Project Manager and Researcher at W.I.R.E. As part of strategic projects, she analyzes the impact of trends and technologies on business, science, and society. She has an academic background in political science and data science and worked on digital innovation projects, with a focus on the healthcare and pharmaceutical industries, prior to her role at W.I.R.E.

**DR. STEPHAN SIGRIST**
Stephan Sigrist is the founder and head of the think tank W.I.R.E. For many years, he has been analyzing developments across business, science, and society with a particular focus on the impact of digitalization in life sciences, financial services, media, infrastructure, and mobility. He is the editor of the book series ABSTRAKT, the author of numerous publications, and a keynote speaker at international conferences. Through W.I.R.E., he assists decision-makers in the early identification of overarching developments and their translation into long-term strategies and innovation projects.

### THINK TANK W.I.R.E.

W.I.R.E. is a leading interdisciplinary think tank that has been exploring global developments in business, science, and society for around ten years. The Swiss think tank focuses on the early identification of new trends and their translation into strategic roadmaps and fields of action for companies and public institutions.
Positioned at the intersection of science and practice, W.I.R.E. is distinguished by its critical thinking and political neutrality. Its thematic focus areas include the digital economy, social innovation, and fostering future resilience. The think tank provides its expertise to the public, businesses, and government bodies across sectors—from life sciences and financial services to media, food, and industry.
W.I.R.E.'s approach to knowledge dissemination is both two-dimensional and three-dimensional, characterized by a blend of content and form, with a high emphasis on aesthetics and design. The think tank maintains an international network of experts, thought leaders, and decision-makers.

*www.thewire.ch*

### INNOVATE SWITZERLAND

Innovate Switzerland is a cross-industry network and community of thought leaders laying the foundation for impactful and sustainable innovations in the digital age. It focuses on well-founded, practice-oriented thought leadership content that supports decision-makers in business, politics, and society.

Central to its mission is the belief that responsible use of cloud and AI technologies, combined with a multi-stakeholder approach, can secure the success of the data-driven economy in Switzerland over the long term. It aims to develop sustainable solutions that consider the perspectives and needs of all involved stakeholders.

*www.innovate-switzerland.ch*

### ETH AI CENTER

The ETH AI Center is the interdisciplinary center for artificial intelligence at ETH Zurich. As a hub for the rapidly growing AI ecosystem in the Greater Zurich Area, it promotes scientific excellence, innovation, and entrepreneurship. The focus is on developing trustworthy, fair, and inclusive AI systems that benefit society. By trustworthy AI, we mean systems that are reliable, respect privacy, and are free from bias.

Since its founding in the fall of 2020, the center has launched numerous initiatives with national and international partners. The Swiss AI Initiative, for example, consolidates Swiss research expertise and leverages the Alps supercomputer's exceptional computing power to advance the country in AI. The Swiss Call for Trust & Transparency in AI contributes to the international dialogue on AI regulation. The AI House Davos provides a neutral platform on the sidelines of the World Economic Forum, promoting international exchange across all stakeholder groups and fostering the development of safe and trustworthy AI.

*www.ai.ethz.ch*

### REDSTONE VC

Redstone is a leading European venture capital firm specializing in sectors with significant future potential. For over ten years, Redstone has followed a targeted strategy, deploying specialized teams for each sector to build deep expertise and strong networks. The firm focuses on key areas poised to positively impact our future—from sustainable technologies and advanced deep-tech solutions to social impact.

At the core of Redstone's work is its proprietary analysis and data platform, SOFIA. This platform uses cutting-edge technologies to support key decisions throughout the venture capital process. With SOFIA, Redstone can better understand markets, make informed, data-driven decisions, and identify groundbreaking startups that drive innovation in critical areas.

In addition to capital, Redstone acts as a strategic partner, providing founders with access to a broad network of industry experts and valuable advice. Collaboration on equal footing is an essential part of Redstone's corporate culture, fostering long-term partnerships with founders, investors, and industry leaders. The firm is committed to creating real value through sustainable investments.

*redstone.vc*

## IMPRINT

**Publisher**
Think Tank W.I.R.E.
Hallwylstrasse 22
8004 Zurich
Switzerland

**Concept**
Think Tank W.I.R.E.

**Content**
Ricccardo Merluzzi
Isabel Hoffet
Dr. Stephan Sigrist

**Review Board**
Tine Petric, Microsoft
Stefan Pabst, W.I.R.E.

**Layout & Illustration**
Lisa Robertson

**Proof-reading**
Stefan Pabst, W.I.R.E



**Contact**
info@thewire.ch
+41 43 243 90 56

This study was corrected and translated into English using ChatGPT.

Commissioned by Microsoft Switzerland as part of the Innovate Switzerland Community

**ARTIFICIAL INTELLIGENCE IS BECOMING AN IMPORTANT PREREQUISITE FOR STRENGTHENING SWITZERLAND'S SUCCESS MODEL IN THE 21ST CENTURY.**

The GENERATE AIMPACT study shows the impact of AI on the economy, society and the environment in Switzerland. Based on a comprehensive quantitative and qualitative survey of Swiss experts and decision-makers, it shows how organizations can position themselves in the coming age of artificial intelligence and how the Swiss success model can be translated into the 21st century through the intelligent use of AI. The focus is on the opportunities for SMEs - and the inclusion of society and the environment in the development of sustainable innovation. In addition to building a stable infrastructure in terms of computing power and quality-checked data, it is also important to clarify future societal issues and translate them into a legal framework that combines freedom and security. The focus is also on the ability to select from the growing variety of AI-based solutions that offer long-term benefits. On the one hand, this requires the development of new skills in dealing with the technology and, on the other, the courage to differentiate based on Switzerland's traditional and future strengths.

W.I.R.E.
WEB FOR INTERDISCIPLINARY RESEARCH AND EXPERTISE
THINK TANK FOR BUSINESS, SCIENCE AND SOCIETY
www.thewire.ch

ETH AI CENTER
www.ai.ethz.ch

INNOVATE SWITZERLAND
www.innovate-switzerland.ch

Microsoft
www.microsoft.com