



SWISS AI REPORT

BEYOND THE HYPE -
ON THE USE OF ARTIFICIAL
INTELLIGENCE IN SWISS COMPANIES

Executive Summary	4
Introduction	7
Methodology	8
Part I: Insights into the use of AI in Swiss companies	11
Part II: Top 3 AI use cases	23
Outlook for business and policy	28
Contributors	30
Partner	31
Impressum	32

For the Swiss AI Report, 92 companies were surveyed on their current and future use of Artificial Intelligence. The report includes systematic analyses in the key areas for dealing with AI: technology & data, workforce, business, strategy, and governance.

CHALLENGES

OPPORTUNITIES

Selected results

For **31%** unstructured data is the biggest hurdle

TECHNOLOGY & DATA

35% build AI solutions in-house

39% are currently looking for data scientists

WORKFORCE

46% offer AI training programmes for employees

28% have a dedicated budget for AI projects

BUSINESS

32% plan to increase their budgets by more than 100% next year

1.2% mention energy consumption as a relevant risk

STRATEGY

80% have an AI strategy in place

3.4% see ethical issues as hurdles

GOVERNANCE

71% use synergies with universities

OUTLOOK FOR BUSINESS & POLICY

The past few years have been crucial for the maturation of Artificial Intelligence (AI)* technology: after decades of disparate development spurts, AI applications have now grown beyond sandboxes and speculative scenarios, and are now enterprise ready. Only the findings from practical use and operational framework conditions remain at a low level of transparency, and Switzerland as a hub for the development of AI applications remains underexposed in analyses. The Swiss AI Report sheds light on this blind spot and provides insights into the real use of AI in Swiss companies – beyond the hype.

To obtain the most objective, detailed and differentiated view possible of the current use of AI technology in the Swiss economy, 92 companies from various sectors were surveyed.

The analysis of the survey brought to light success factors, potentials, limitations, and the future fields of activity for Swiss companies to benefit from the use of AI technology.

* Swiss AI Report definition of Artificial Intelligence (AI): AI can automate decisions that otherwise require human intervention. More precisely, AI is a collective term for computer systems – encompassing fields such as Machine Learning, Artificial Neural Networks, Natural Language Processing, or Computer Vision – that for a given set of human-defined objectives, make predictions, recommendations, or decisions influencing real or virtual environments.

Insight I:
AI HAS CLIMBED
TO STRATEGIC
RELEVANCE

– Almost 80% of the companies surveyed already have an independent or rudimentary AI strategy - and 12% plan to align themselves strategically within the AI context.

Insight II:
MONEY?
DEFINITELY
MAYBE!

– Only less than a third of companies surveyed have a dedicated budget for AI development or implementation - among SMEs, the figure is as low as 9%. For the next three years however, 32% of the companies plan to increase their budgets by more than 100% and only 12% do not intend to make any adjustments.

Insight III:
LEARN FIRST,
THEN BUY

– Most of the Swiss companies surveyed stated that they either develop their AI applications entirely in-house (35%) or at least develop a higher percentage of applications than purchase (31%). There is a crucial reason for the high proportion of in-house development: Building a deep understanding of new technology lays a foundation for competent use, external inputs can be implemented at a later stage.

Insight IV:
SHEDDING LIGHT ON
DATA DARKNESS

– More than 84% of companies use AI

technology to gain new insights from data sets and to make better predictions, voice and image recognition applications following at 60%. In comparison to the level of autonomy of a self-driving car, 56% of companies describe their use of AI at level 1: humans are still in the driver's seat.

Insight V:
TWEAKING THE
PRESENT, SPOTTING
THE FUTURE

– 65.5% of companies surveyed want to increase the efficiency of processes using AI technology. For start-ups, creating real innovation that doesn't just tweak the status quo is at the top of the list with 66.7%.

Insight VI:
AVOIDING "BULLSHIT
IN, BULLSHIT OUT"
HAS TOP PRIORITY

– 33.7% of companies surveyed cite data heterogeneity as the first biggest hurdle, and with 18.2%, bias - i.e., prejudice - in the training of algorithms as the second. However, companies are less concerned with avoiding discrimination through bias than with reducing inaccurate output that has a direct impact on value creation.

Insight VII:
NO ONE SHOULD BE
LEFT BEHIND

– The importance of AI as a technology with widespread impact is already firmly established in Swiss companies: 46% of the companies surveyed already offer wide-ranging training programmes and 40% are in the planning and design stage. In addition to building up

expert knowledge, the aim is to provide broad access for as many employees as possible to strengthen the future role of AI in companies.

Insight VIII:
SEEKING AND
FINDING TALENTS

– The necessary positions have been filled at both strategic and management levels – the foundation has been laid. Across the board, the greatest demand is currently for data scientists (38.6%), machine learning engineers (30.7%) and data engineers (27.3%).

Insight IX:
BUSINESS AND LAW
TRUMP SOCIETY AND
THE ENVIRONMENT

– 45.3% of companies surveyed labeled incorrect results as the greatest risk to the successful use of AI applications. Only 1.2% of the companies mention energy consumption as a relevant risk, even though the growing demand for energy might become a decisive factor of its success in the years to come.

Insight X:
CONNECTED TO
CUTTING-EDGE
SHAPERS

– 71% of companies surveyed are already in an exchange or cooperation with research institutions. This means companies make intensive use of proximity to renowned universities in order to proactively shape the successful further development of AI applications.



On 21 April 2021, the EU Commission presented a draft for a uniform regulation of AI technologies.¹ The draft did three things: at the highest political level, it mapped in entirety the complexity of the development and deployment of AI applications - from the demands for a stable basic infrastructure, the need for extraordinary research, to a stable legal framework. It was also noted that Europe needs to ensure strategic leadership in promoting AI excellence. And perhaps most effectively: the current AI summer is not only another high point for basic research, but with the technological strides of the last 20 years, AI applications have reached market maturity and are waiting in the wings to unfold their impact.

The debates around the consequences of new basic technology - for the economy, but above all for society - were characterised by great announcements and great concern. What united all these debates was their theoretical and mostly speculative nature. Many companies are still faced with unresolved questions:

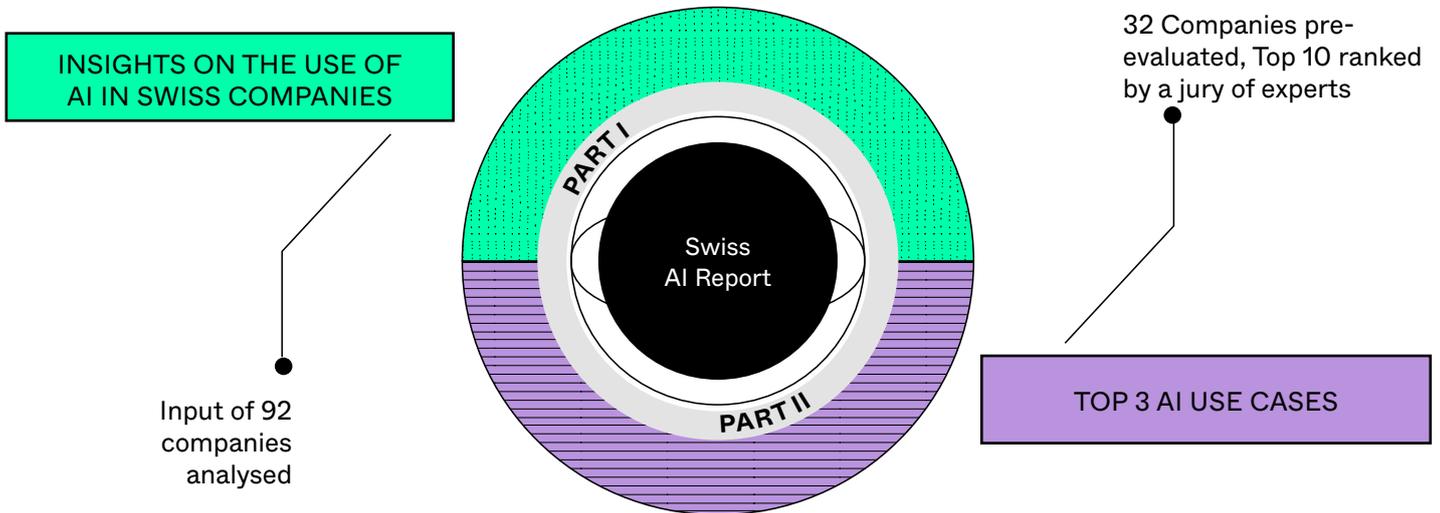
How important will AI be for my business? What happens if I miss the boat? Am I the only one who has not yet recognised the full potential? And what are the central activity zones that need to be considered for successful implementation?

The Swiss AI Report intends to lift the veil of ignorance on the actual use of AI technologies in Swiss companies as best as possible. It is not about how many companies propagate the use or development of AI systems on their website, rather an understanding of how Swiss companies actually deploy or evolve AI. The Swiss AI Report is a reality check beyond the hype.

¹ <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0206>

Methodology

Building the Swiss AI Report

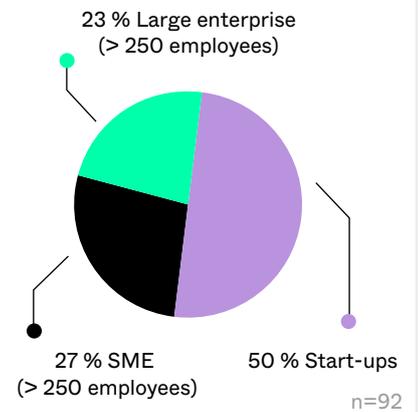


- To obtain the most objective, detailed and differentiated view possible of the current use of AI technology in Swiss companies, 100 companies from various sectors were surveyed (data from 92 companies matched the criteria for evaluation). 50% of the companies were start-ups, 28% had less than 250 employees, and 23% were large companies with more than 250 employees. The exact detail of the survey required respondents to submit verified background information. The criteria for thematic expertise was people who:
 - HAVE BUDGET RESPONSIBILITY FOR AI INVESTMENTS
 - DEVELOP AI STRATEGIES
 - COORDINATE AI IMPLEMENTATIONS
 - ARE DECISION-MAKERS AROUND AI TECHNOLOGY

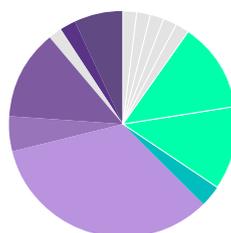
With 31 questions from the areas of technology & data, workforce, business, strategy, and governance, all relevant dimensions of the subject could be analysed. The 10 most conclusive findings are summarised in this report.

In addition to the precise parameters of the status quo, a second focus was trained on the future of AI use in Switzerland. The goal was to identify those arenas where the approach would determine the successful implementation of the new generation of basic technology. In addition to the detailed questionnaire, the companies were invited to submit use cases demonstrating the actual use of AI from their practical experience. 1/3 of the companies surveyed handed in such AI use cases. These were assessed by a jury of six business and AI experts. The top rated use cases are portrayed in detail in the second part of the report.

Sizes of the companies surveyed

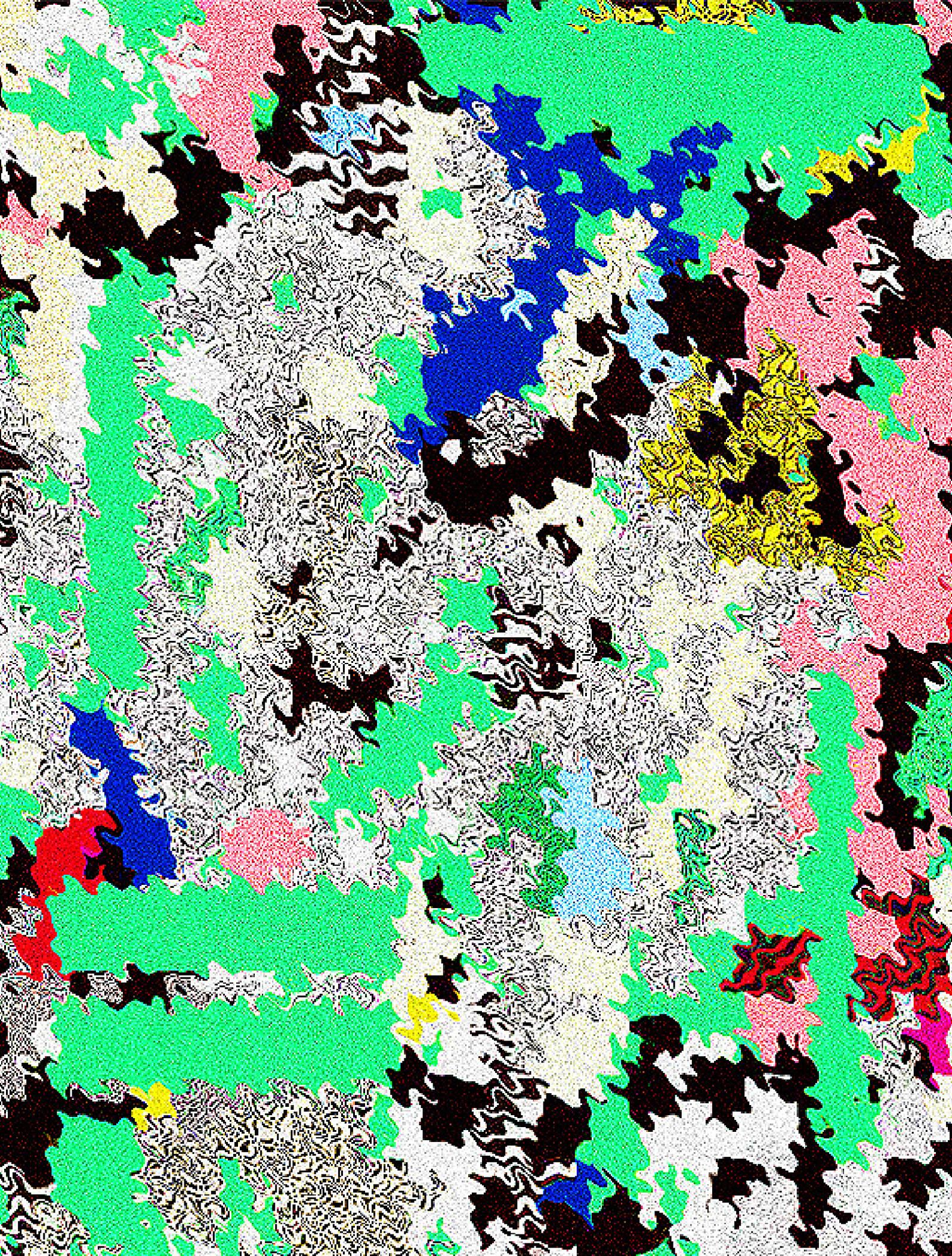


Surveyed companies by industry



- 2 % Academia & Research
- 2 % Aerospace
- 2 % Agriculture
- 2 % Chemicals
- 2 % Consulting
- 13 % Financial Services
- 12 % Healthcare
- 3 % Human Resources
- 34 % ICT
- 5 % Insurance
- 13 % Manufacturing & Engineering
- 2 % Market Research
- Others 8 %

n=92

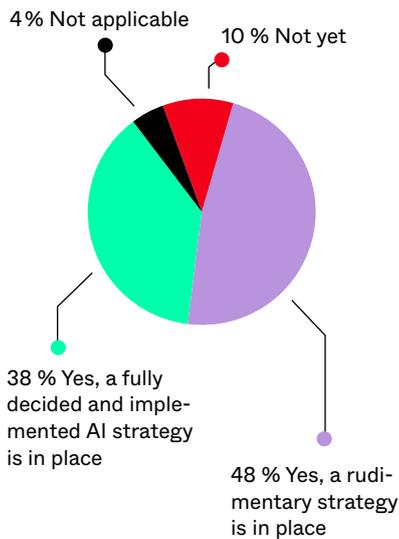


Part I

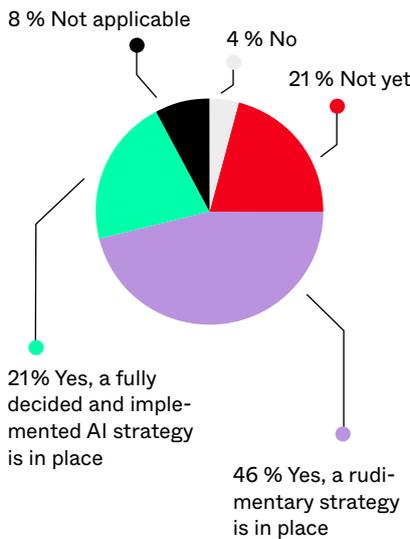
Insights into the use of AI in Swiss companies

Is there an AI strategy in place at your company?

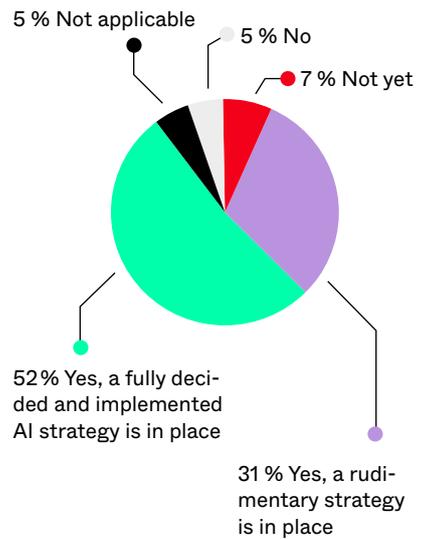
→ LARGE COMPANIES n=21



→ SME n=25



→ START-UPS n=46



**INSIGHT I.
AI HAS CLIMBED
TO STRATEGIC
RELEVANCE**

• The use of AI technologies has reached strategic relevance in Swiss companies. It is no longer just an exploratory field of activity. Rather, almost 80% of the companies surveyed already have an independent or rudimentary AI strategy - and 12% are planning to align themselves strategically in the AI context. This makes it clear: **AI technology and its applications have a business relevance with a weighting that will be more strongly defined in the future, and more importantly, coordinated alongside corporate strategy.**

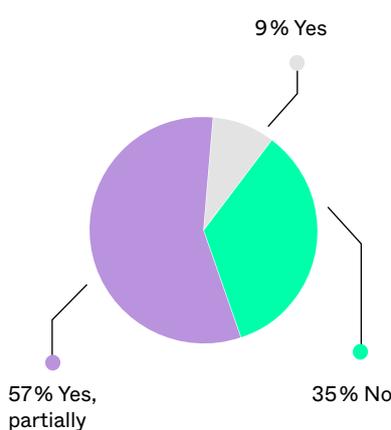
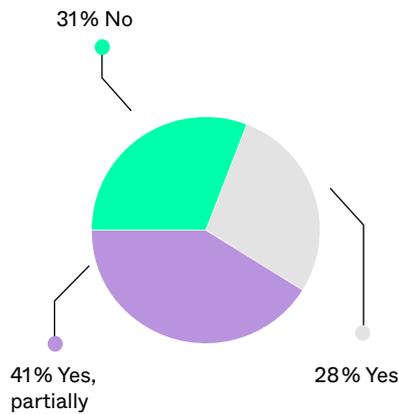
For large companies, the strategic handling of AI technology is most pronounced. Start-ups also have this focus - although the young companies surveyed use AI as a basic technology, and the strategic relevance is therefore inconsequential. For SMEs, on the other hand, the strategic approach is not yet widespread, which also allows conclusions to be drawn about a higher level of uncertainty regarding future involvement and the concrete potential of AI technologies for small and medium-sized companies.

Almost 80% of the companies surveyed have an independent or rudimentary AI strategy.

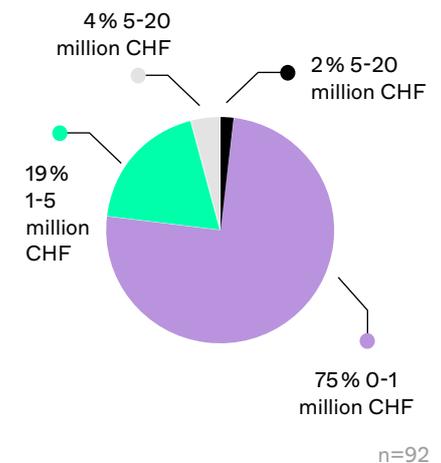
Is there a clearly defined budget for AI content and projects?

↳ ALL COMPANIES SURVEYED N=92

↳ SME N=46



How much will the company increase its investments in AI in the next 3 years?



**INSIGHT II.
MONEY?
DEFINITELY
MAYBE!**

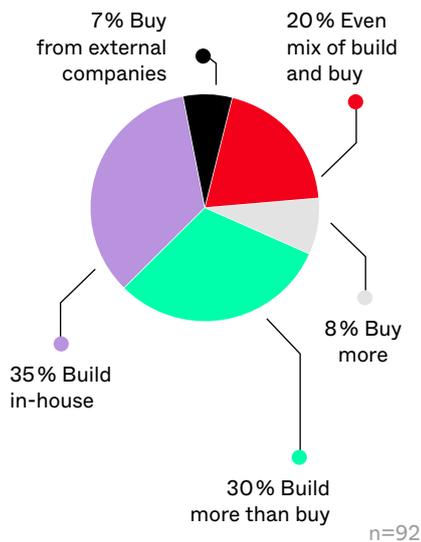
• In 2010 - about 4 years before interest in Artificial Intelligence began to peak - Andrew McAfee and Erik Brynjolfsson wrote about the relevance of investment in becoming a data-driven company² for the Harvard Business Review: "You can't manage what you don't measure". Today - 12 years later - **the need for investment is more evident than ever, for companies wishing to benefit from the potential of current and future AI applications.** Even though the use of AI technologies has often reached strategic relevance,

the resources for practical implementation in Swiss companies are low. Less than a third of the companies surveyed have a dedicated budget for AI content - among SMEs, the figure is as low as 9%. The total budgets are scant: just under 75% of the companies spend less than CHF 1 million per year on AI development. For the next three years, however, 32% of the companies plan to increase their budgets by more than 100% and only 12% do not intend to make any adjustments.

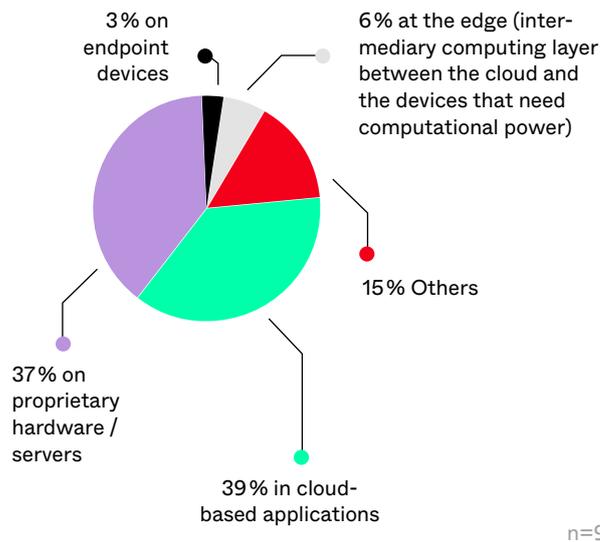
Although the use of AI technologies has often reached strategic relevance, the resources for practical implementation in Swiss companies are scant.

²<https://hbr.org/2021/02/why-is-it-so-hard-to-become-a-data-driven-company>

How does your company get its AI systems and technologies?



Where are AI technologies trained or deployed?



INSIGHT III. LEARN FIRST, THEN BUY

Global investment in AI start-ups is growing at an accelerated pace. Whereas in 2012 the figure was USD 3 billion, by 2020 USD 75 billion had already been invested through venture capital³. **The range of application-specific AI solutions is correspondingly large. Companies are increasingly asking themselves two key questions: make or buy? And where should the algorithms be trained or executed?** Most of the Swiss companies surveyed stated that they either develop their AI applications completely themselves (35%), or at least develop more in proportion to what they purchase (30%). This corresponds with the

statistic that shows 37% of the companies running the applications on their own servers. There are two reasons for the high ratio of in-house development in Swiss companies: 1. About half the companies surveyed are start-ups, and the majority of these develop AI applications that are ultimately to be used by other companies. 2. Learning and experimenting is a crucial step for a company to become proficient in using AI technology. It is likely that in the next phase, the purchase of external solutions will increase for pragmatic reasons.

A sign of groundwork: The internal development of AI solutions cultivates sovereignty.

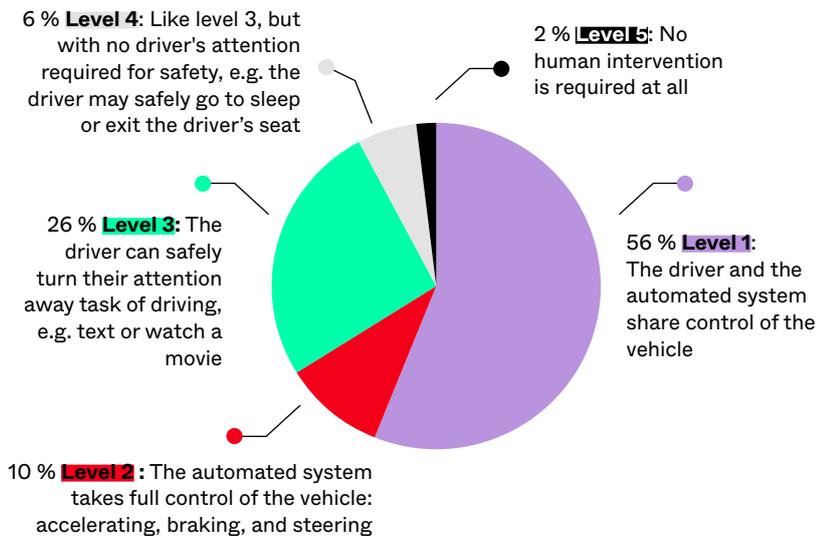
³https://www.oecd-ilibrary.org/science-and-technology/venture-capital-investments-in-artificial-intelligence_f97beae7-en

INSIGHT IV. SHEDDING LIGHT ON DATA DARKNESS

AI applications, with their capacity for machine learning and pattern recognition, have potential as impactful enabling technologies. Their scope of application is correspondingly broad: **From the interpretation of sensory data to a better understanding of complex data sets, and the automated analysis and generation of natural language to the control of robotic applications.** Swiss companies are already using AI technologies to create better products and services in all fields, and to optimise internal processes. However, strategic

management decisions are still made by almost half of the companies without the support of AI systems. Accordingly, the companies still rate the autonomy level of their systems very low. 56% of the companies use AI as a support tool - this equates to level 1 on the autonomy scale of autonomous vehicles: humans are still in the driver's seat. But the autonomy of automated AI systems is already relevant: 28% of companies say they implement AI systems in such a way that the "driver" can basically sit back as well.

Compared to the automation levels of autonomous cars, how would you rate the use of AI technology in your company?



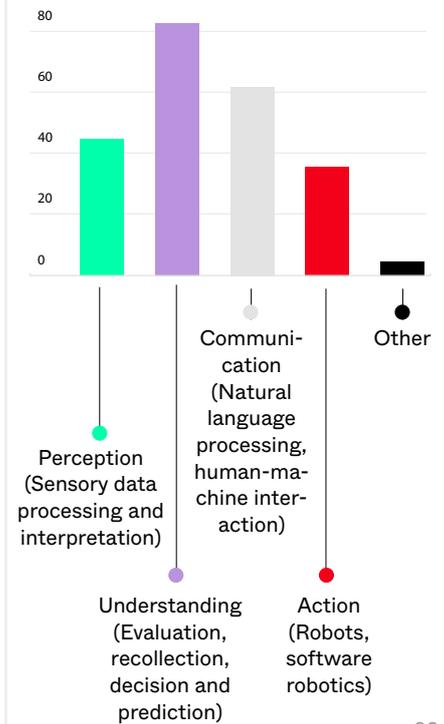
Does AI support your company in taking business decisions?

22% yes, 30.8% yes, partially, 47.3% no

n=92

In which areas does your company use AI technology?

(multiple answers possible)



Strategic management decisions are still made by almost half of the companies surveyed without the support of AI systems.

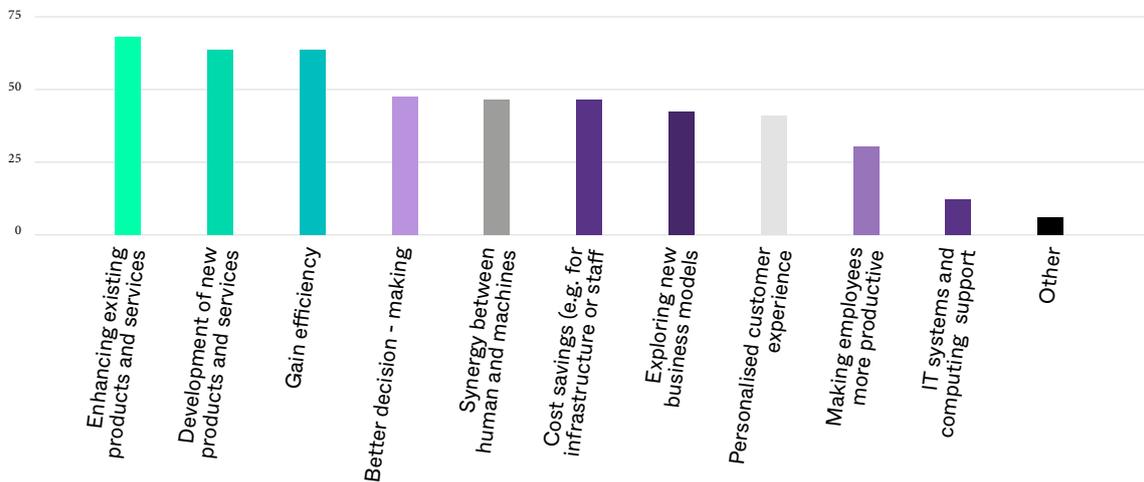
INSIGHT V. TWEAKING THE PRESENT, SPOTTING THE FUTURE

- When an algorithm can recognise patterns in large amounts of data and constantly improve itself, this rightly triggers the imagination. A wide range of innovations can be envisioned from image and speech recognition alone. In the current use of self-learning algorithms, however, the focus for companies is on the present and its optimisation. **65.5% of the companies surveyed want to increase the efficiency of processes using AI technology - for large companies, this goal is even the top priority at 90.5%.** Accordingly, 67.8%

of all companies also pinpoint the optimisation of existing products and services as their primary goal. Nevertheless, the development of new products and services has by no means disappeared from expectation management - it merely ranks behind short-term expectations. 62.1% of companies want to exploit the potential of AI technology in the form of new products and services. For start-ups, creating real innovation that doesn't just tweak the status quo is at the top of the list with 66.7%.

Which benefits does the company want to achieve with AI?

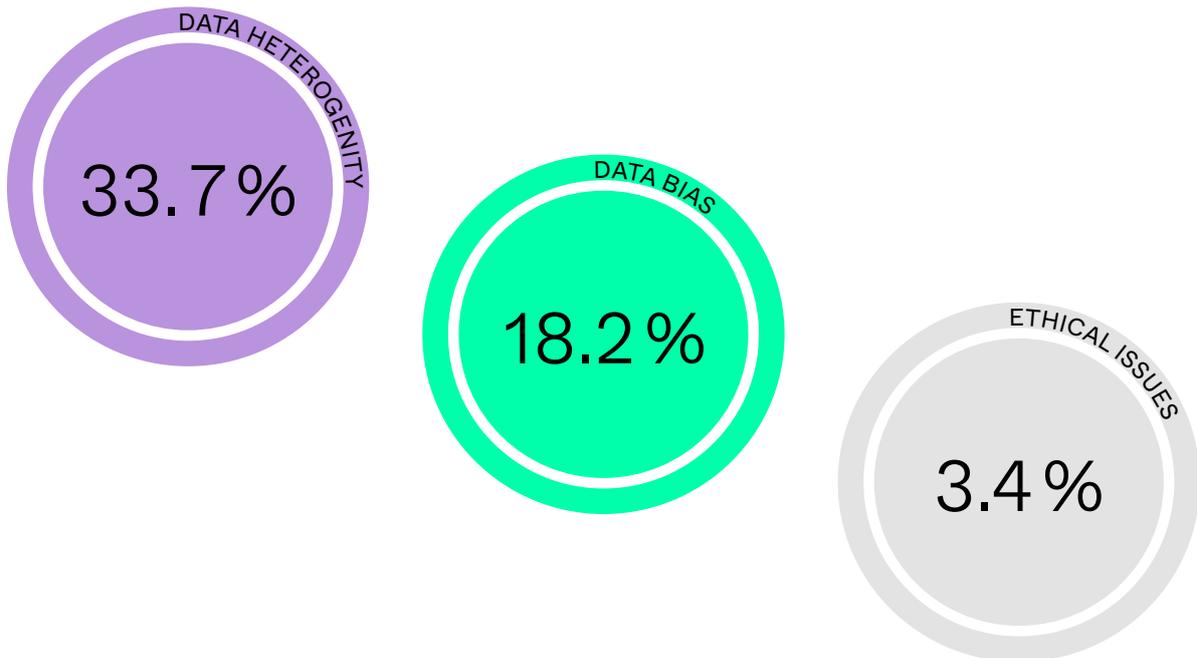
(multiple answers possible)



n=92

In the current use of self-learning algorithms, the focus for companies is on the present and its optimisation.

What do you see as the biggest hurdles to successful use of AI solutions?



n=92

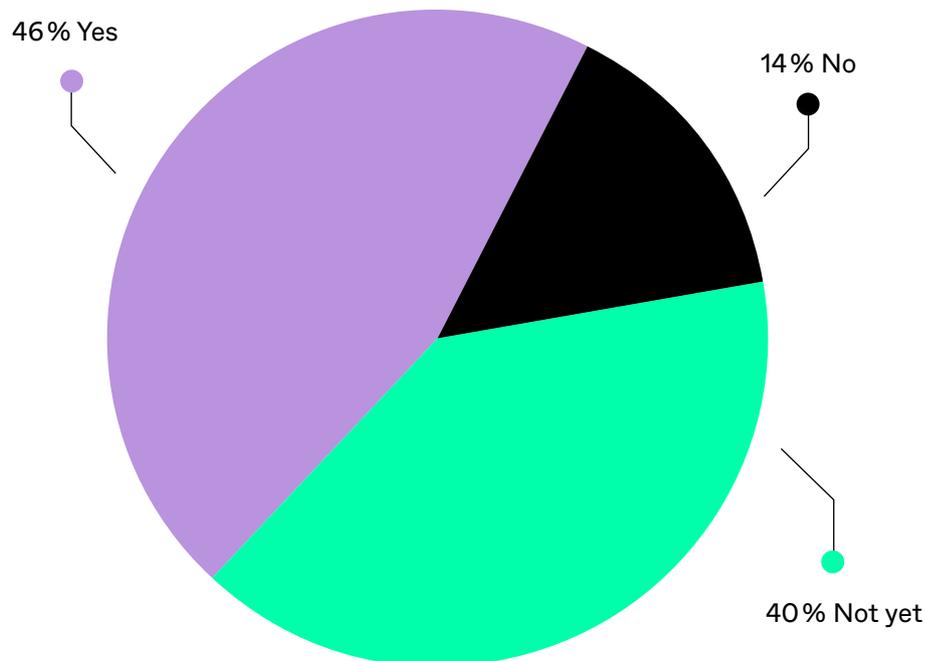
INSIGHT VI. AVOIDING "BULLSHIT IN, BULLSHIT OUT" HAS TOP PRIORITY

- A running system requires two things: a functioning machine and high-quality fuel. The fuel for AI applications is a structured and sufficiently large database. Without this foundation, even the best machine will not produce satisfactory results. And it is precisely in the quality of available data that Swiss companies see their greatest challenge in the use of AI applications. 33.7% of the companies surveyed cite data heterogeneity

as the biggest hurdle and 18.2%, bias - i.e., prejudice - in the training of algorithms as the second biggest hurdle. Although ethical issues are closely linked to the bias of automated decision-making, they are not currently perceived as a critical challenge to success - **only 3.4% of the companies surveyed cited ethical issues as a key factor**. Bias is thus perceived primarily as a technological problem, and less a moral one.

Concerns about ethical misjudgements do not play a major role in the present.

Does the company offer internal or external training in AI technologies for employees?



n=92

INSIGHT VII. NO ONE SHOULD BE LEFT BEHIND

- The attention of companies and the public on the subject of AI has led to hype in recent years. The discussion is often polarising and rarely fact-based along all its facets - disruption potential, consequences for the labour market, regulation and much more. This makes it even more important for companies to prepare their staff in all areas for interaction with the new technology generation and to actively involve them. **The companies surveyed in Switzerland have recognised the relevance of internal communication & training,** and are already positioned

accordingly: Only 14% stated that they do not provide any further training and information, with start-ups accounting for the largest number (19%). In contrast, 46% already do so, and 40% are planning such programmes. The wide range of possible applications and implications also results in a wide range of formats and content: with introductory events on data science and machine learning, AI courses for product developers, conferences and video trainings, companies are well prepared to embrace the long term integration of AI technology.

Almost half of all companies have already introduced internal or external AI training programmes and 40% are in the process of doing so.

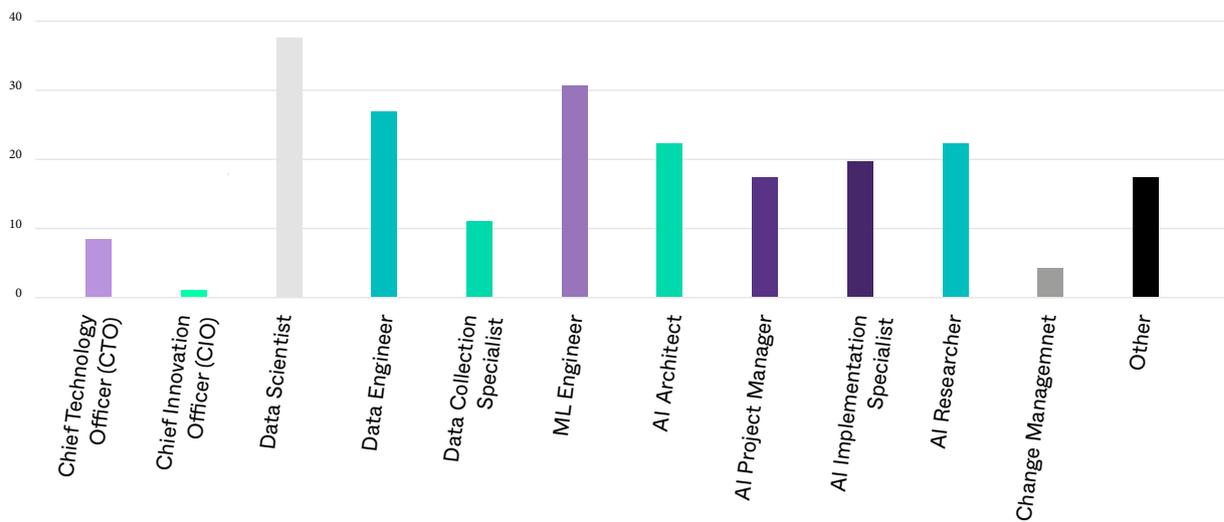
INSIGHT VIII. SEEKING AND FINDING TALENTS

- With the growing need for top-tier employees for internal development and the effective use of AI solutions, the race for tech talent is intensifying. **Switzerland as a business hub is dynamically positioned amidst the so-called "war for AI talents"**. While the high density of leading universities - first and foremost ETH and EPFL - for the training of experts in various fields of computer science, confronts a stagnating interest in education among the population, there is also the growing local presence of international digital companies. These recruit young talents early during the course of their education, with the incentive of very high salaries. This presents local SMEs, in particular, with recruitment challenges. Across

the board, in companies of all sizes, the greatest demand is currently for data scientists (38.6%), machine learning engineers (30.7%) and data engineers (27.3%).

According to the respondents, most of the necessary positions have been filled at both strategic and management levels – the foundation has been laid. The profiles tended to differ according to the size of the company, allowing further conclusions to be drawn about development levels and specific fields of activity: SMEs increasingly search for AI researchers (28%), and are still establishing internal frameworks; while large companies are clearly dependent on data scientists for the implementation of concrete projects (57.1%).

Which job profiles dedicated to AI projects are you currently seeking for your company?

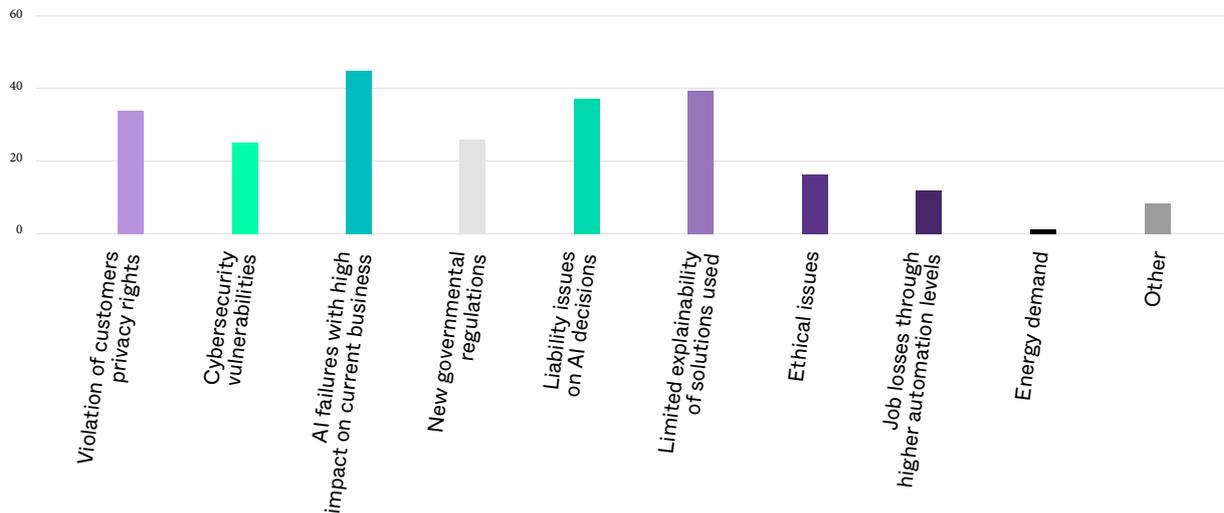


n=92

Data scientists, Machine Learning Engineers, and AI Researchers are the positions primarily needed in the future.

What risks does your company consider to be most critical to the use of AI?

(three answers possible)



n=92

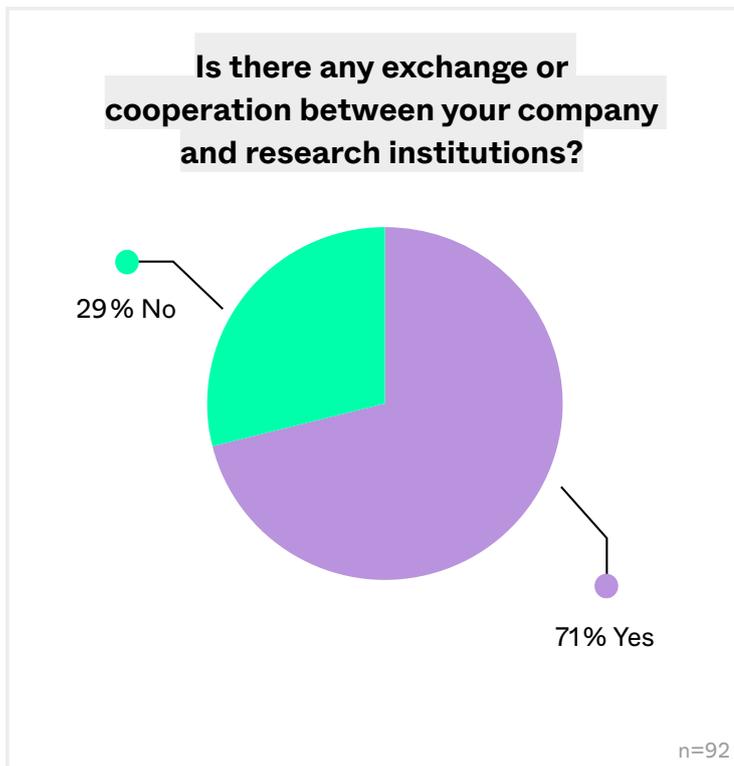
INSIGHT IX. BUSINESS AND LAW TRUMP SOCIETY AND THE ENVIRONMENT

- The potential of AI technology (increased efficiency, better service quality, more personalisation, higher security, new creativity and increased productivity) is accompanied by just as many challenges. Bias, lack of transparency, user uncertainty, and ambiguous responsibilities are just a cross-section of theoretical issues arising. In practice, companies are mainly concerned about risks that have a direct and short-term influence on the business: **43.8% of the companies surveyed labeled incorrect results as the greatest risk hindering the successful use of AI applications. Accordingly, liability for the errors of AI systems is also ranked second 37.2%.** In contrast, the prospect of possible job losses due to the widespread use of AI

technology, which has long been a topic of societal debate, is of little relevance from a company perspective (12.8%). As with job losses, possible discriminatory decisions in society and politics are at the centre of current regulatory approaches. 17.4% of the companies find this issue of comparatively little importance in terms of possible risks. Most surprisingly is the assessment of the high energy consumption in the training and use of AI applications. Only 1.2% of the companies mention energy consumption as a relevant risk, even though in the context of stricter climate protection measures, the growing demand for energy through the use of AI will become a decisive factor of its success in the years to come.⁴

Only 1.2% of the companies mention energy consumption as a relevant risk for the success of AI initiatives.

⁴<https://www.forbes.com/sites/forbestechcouncil/2021/02/05/we-need-to-talk-about-an-energy-label-for-ai/>



INSIGHT X. CONNECTED TO CUTTING - EDGE SHAPERS

- AI still sounds like future - and although the technology has already taken off, it is noteworthy that its practical implementation is only just gaining momentum, and empirical evidence of its true potential is now at hand. Furthermore, AI as a field of research opens up a wide range of questions that will shape a new generation of scientists. This is where Switzerland's distinct status as a research hub comes into play. With its world-renowned

universities, interdisciplinary research collectives, and networks from politics, science, business and society, **Switzerland possesses a unique landscape for the necessary research steps that will bring AI into the future:** These include the further autonomisation of the technology, making it independent from expert supervision during training, the handling of bias through training data, higher traceability of decision-making, and much more. Entrepreneurs who want to be both users and shapers of the next generation of AI technology, can either expand their own research, or focus on networking with external research institutions. Swiss companies have widely adopted the USP of the Swiss research offering: 71% of the companies surveyed are already in an exchange or cooperation with research institutions. **This means that Swiss companies are already taking advantage of the synergies between practice, basic research, and application-oriented research.** However, even at a high level, there are imbalances factored by company size: Companies with more than 250 employees have the largest share of research cooperations at 86%. For SMEs, the share is only 63%.

Swiss companies have widely adopted the USP of the Swiss research landscape.



Part II

32 use cases were evaluated by the expert jury according to the following criteria: applicability, grade of innovation, added value, and transferability.

Top 3 AI use cases

Jury Members



Lonneke van der Plas

Prof. Dr.
Idiap Research Institute

Lonneke van der Plas is head of the Computation, Cognition and Language group at the Idiap research institute, and Associate Professor in affiliation with the University of Malta. She has led several research projects under H2020, Erasmus+, and the German Research Foundation, and was a visiting fellow at the University of Zurich, the University of Melbourne, and Shanghai Jiao Tong University. Her research interests revolve around multilingual NLP and computational creativity.

–
www.idiap.ch



Nadja Braun Binder

Prof. Dr. iur.
University of Basel, Faculty of Law

Nadja Braun Binder received her doctorate from the University of Bern and her habilitation from the German University of Administrative Sciences Speyer. In 2017, she was invited to the University of Zurich, where she became Assistant Professor of Public Law. Since 2019, she has been a Professor of Public Law at the University of Basel. Her research interests include issues around digitalization and administration.

–
www.ius.unibas.ch



Benjamin Grewe

Prof. Dr. Inst. of Neuroinformatics
at UZH and ETH Zurich

Benjamin Grewe is Professor of Neural Learning and Intelligent Systems at the Institute of Neuroinformatics at UZH and ETH Zurich. His research combines experimental and computational neuroscience. His highly interdisciplinary lab therefore integrates international researchers from neuroscience and theoretical machine learning. Benjamin Grewe is also a core faculty member of the newly founded AI Center at ETH Zurich.

–
www.ini.uzh.ch



Thierry Bücheler

Dr.
Oracle for EMEA

Thierry Bücheler manages “Business Value & Strategy”, EMEA’s Key Cloud Business management consulting team. In this role, he coordinates Big Data, Analytics, and IoT practice for the region across Lines of Business. Before joining Oracle, he was an Engagement Manager at McKinsey & Company in Europe, North America and Africa, as well as a visiting researcher at NEC Tokyo. Other prior experiences include working in IT and strategy for two Swiss banks. He holds a PhD in Computer Science / Artificial Intelligence from University of Zurich and an M.Sc. in Computer Science from ETH Zurich.

–
www.linkedin.com/in/thierrybuecheler/



Damian Borth

Prof. Dr.
University of St.Gallen

Prof. Dr. Damian Borth is director of the Institute of Computer Science at the University of St.Gallen, where he holds a full professorship in Artificial Intelligence and Machine Learning (AIML). Previously, Damian was the founding director of the Deep Learning Competence Center at the German Research Center for Artificial Intelligence (DFKI) in Kaiserslautern, where he was also PI of the NVIDIA AI Lab at DFKI. Damian’s research focuses on machine learning for trustworthy utilization of AI through explainability and accountability of deep neural networks. Currently, Damian serves as board member of the German Data Science Society.

–
www.ics.unisg.ch/chair-aiml-borth/



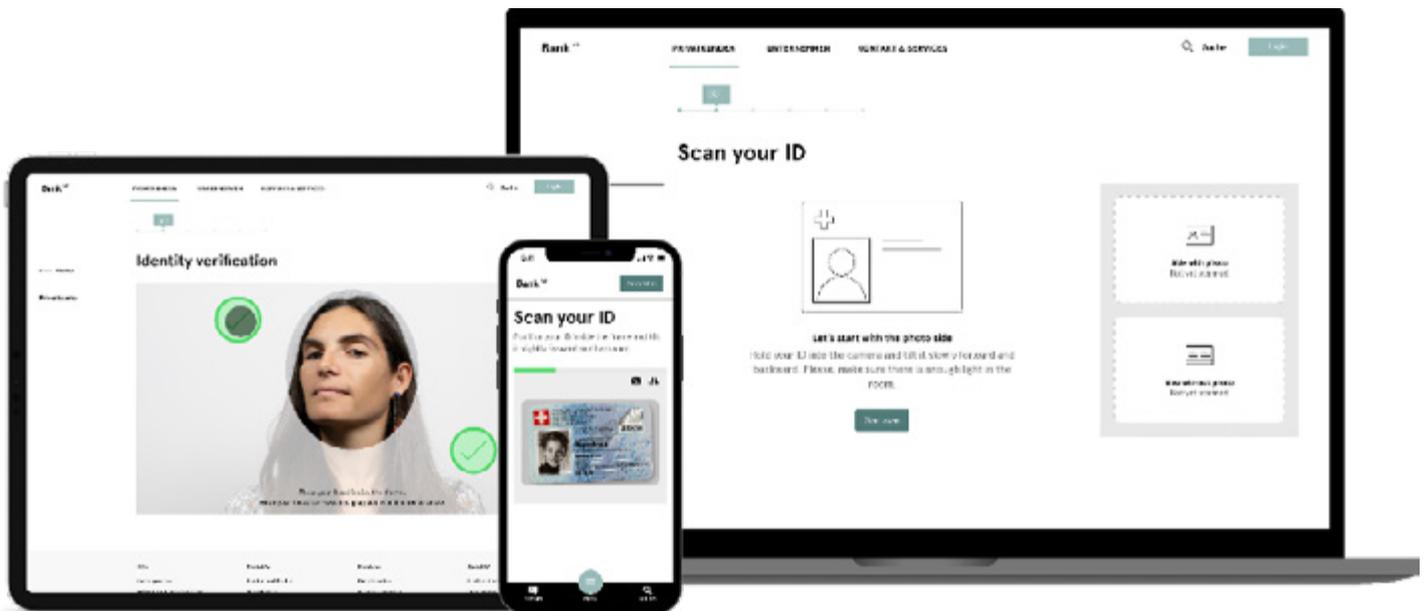
Stephanie Züllig

Entrepreneur, Board Member
Multiple Board Member

Stephanie Züllig builds bridges in the digital age. With her own company she leads people in digital transformation and develops new business models by using AI. At Siemens, she has over 17 years of international experience as CFO and CEO in large plant engineering and in the smart infrastructure sector, where she transformed digital products and services by using technologies and algorithms such as artificial intelligence. Stephanie is a Member of the Board of Directors of a total of six Swiss companies, e.g. the Swiss Securitas Group.

–
www.stephanie-zuellig.com

I. ti&m Onboarding Suite A FULLY AUTONOMOUS ONBOARDING



- One of several protocols every bank customer is confronted with is the process of onboarding. Onsite visits to the bank with official documents, for a long time, were the only way to verify user identity and eligibility to open a bank account. With the advances in Artificial Intelligence, and adoption of regulations, a new iteration of fully autonomous onboarding has become possible.

The autonomous onboarding solution developed by ti&m consists of the following steps:

- * Step 1: Verify identity document
- * Step 2: Live biometric identification
- * Step 3: Verify Address
- * Step 4: Sign contract digitally
- * Step 5: Transaction

ti&m uses AI models based on neural networks to automate the tasks in the steps above: ti&m employ

computer vision to recognize identification documents and compare portraits of the prospect, as well as NLU/NLP (Natural Language Processing/ Natural Language Understanding) to understand the documents. The ti&m onboarding is successfully used by many Swiss banks.

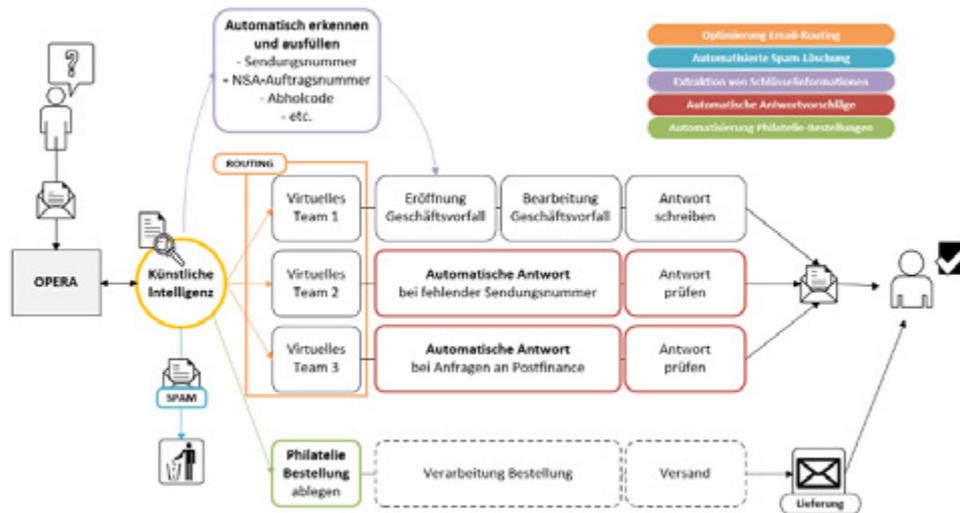
This case is remarkable as the solution overcomes classic hurdles in computer vision such as the large variety of devices (mainly cameras and smartphones), and variables in the environment, that make fully autonomous onboarding a challenge (light situation, user interaction). Moreover, as counterfeit technologies such as deep fakes advance, ti&m constantly improves and extends AI security models to detect such falsifications and prevent fraudulent users from onboarding.

Company: ti&m
Industry: FinTech
Further reading:
www.ti8m.com/products/onboarding

ti&m

II. Email Automation (EMA)

EXTRACTING STRUCTURE AND INFORMATION FROM UNSTRUCTURED TEXT DATA (SUCH AS E-MAILS)



• The customer service of Swiss Post faced a high volume of inbound emails of customer enquiries. The emails were manually screened and processed for resolution by the customer care agents. Using state of the art ML (Machine Learning) and NLP (Natural Language Processing) methods, a multi-dimensional classification was developed capable to predict for every inbound email various information: product, issue, process, language, service line and virtual team. The solution involves an unsupervised NER (named entity extraction) that recognizes and extracts various business entities such as national and international shipment identifiers, notification identifiers, email addresses, zip codes, billing numbers, etc. These entities are used to extract additional information from the transactional systems such as the Track&Trace systems for letters and parcels. Moreover, a back-office application has been built to allow the business users to correct the labelling and manage various aspects related to models training and performance evaluations. It also allows the business users to introduce new dimensions and thus offer the possibility to extend the solution to

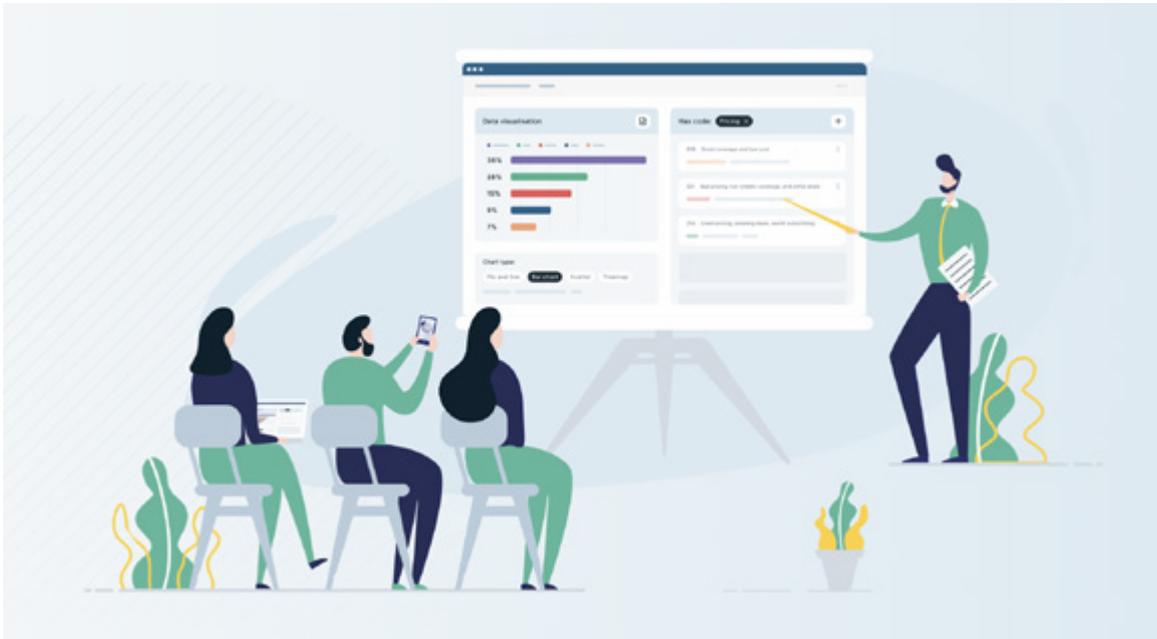
extract and predict new information using the same set of training data. The EMA solution is live since September 2020, and it is used in the following ways:

1. **Routing:** using the predictive skills, emails are routed to different customer services or teams.
2. **Orders:** for specific products, the customer orders are identified, and an automated purchase order is generated.
3. **Automation:** in combination with Robotic Process Automation (RPA), specific emails with high confidence level predictions are identified and automated responses are generated that are reviewed by the customer care agents.
4. **Spam filtering:** filters spam emails as well as the notification absences or forwarding that don't require agents' action.
5. **Automated case opening:** for every new inbound email with high prediction confidence, a ticket case is created with all the information extracted by EMA.
6. **Recommendation:** for cases where confidence is below 90% the predicted EMA information is provided as suggestions to the agents.

Company: SWISS POST LTD

Industry: Customer Intelligence and Customer Service

III. Coop/Caplena CUSTOMER FEEDBACK ANALYSIS



- Coop, Switzerland's largest retailer, is working with LINK, a marketing and social research institute, to understand customer behavior and feedback in their approximately 2,300 stores. In order to maintain and improve their in-store experience, Coop captures feedback from more than 50,000 customers per quarter. Coop needed a tool which allowed them to quickly and cost-effectively analyse 50,000 verbatims per quarter, while still making sure the output was as interpretable and accurate as that of data fully analysed by humans. LINK Institute used its existing coding team to manually analyse a few responses to nudge the AI into coding the responses in a similar fashion.

Caplena, a young tech start-up supporting market researchers, globally built a large transformer-based neural network, pretrained on terabytes of text from public and private sources, and specifically fine-tuned with millions of open-ended survey responses for the best possible accuracy in four languages

(German, French, English, Italian). It is thus able to deliver an analysis that is comparable to that of a human, while only requiring a few labeled data points (responses).

Within two weeks, from start to finish, LINK & Coop with the support of Caplena were able to complete the entire project of analysing the quarterly feedback. In the end, Coop could barely distinguish between human and automated analysis. Key trends such as an increase in customer satisfaction with the store atmosphere were identified. The increase from 5% to 9% was so significant that Coop was able to gauge the implementation of their new store design as a complete success.

Effectively translating the ever-increasing amount of feedback into actionable insights is a major challenge for many companies. Caplena has proven the importance of their neural network, a toolkit which enables customer-centric companies to benefit from the new possibilities of digitization and AI.

Company: CAPLENA

Industry: Retail

Field of use: Customer Feedback Analysis

Further reading: <https://caplena.com/en/case-studies/link/>



Caplena

Outlook for business and policy

Global surveys regularly confirm Switzerland's consistent success as an innovation leader, and its institutions of higher education are proven to grant the highest level of education in the computer sciences.^{5,6} This allows for confidence, but rarely gives decision-makers the relevant insights and ideas for specific action. The Swiss AI Report

is the first high-resolution study of selected companies proactively working on the use and development of AI applications. **These findings will enable recommendations for companies as well as policy-makers, to support Switzerland's development as a lead player in the global arena.**

■ Outlook for business

USE AI AS A TOOL, NOT A CRYSTAL BALL

Without a precise understanding of the inherent laws of a system, the use of AI can become a real risk.⁷ Identifying the appropriate high-impact business potential requires a realistic and continuous assessment of available AI systems.

COLLABORATE TO ANTICIPATE RISING COSTS

Progress in AI is tied to an exponential increase in the underlying computing power.⁸ The costs to train and develop AI solutions may rise accordingly. A focus on open-source approaches as well as building alliances may prevent exclusion.

CHOOSE WISELY BETWEEN INITIATIVE AND RESTRAINT

For SMEs in particular, the human and financial investments required to start developing AI applications is a high-risk decision. A variety of mature and customisable AI applications could become available in the near future. When it comes to process optimisation, a careful balance of initiative and restraint is especially advisable.

ENCOURAGE EMPLOYEES TO INVEST IN THEMSELVES

The higher education system will not be able to meet future demand for ICT professionals. Efficient training of experienced staff can mitigate the challenge of HR and ensure sovereignty.

■ Outlook for policy

ACT LIKE A PREDICTIVE SYSTEM

Regulated spaces usually emerge from market generated frameworks and statistics. It is not uncommon for unwieldy adaptation processes to follow. Proactive assurance of legal certainty, and the provision of living labs in Switzerland, can become a locational advantage in global competition.

ENSURE INTER-CONNECTIVITY WITH INTERNATIONAL MARKETS

Switzerland's attractiveness as a location for the development of subsequent generations of AI applications cannot develop its full potential without international connections. A stable international integration is essential to continue to attract market-shaping digital companies and top-tier talents.

SET UP EDUCATION FOR DIGITAL NORMALITY

Measures to increase interest in STEM subjects among young people bear little fruit.⁹ It is now time to promote computational thinking in education on a broad scale, and encourage children to explore the new creative spaces that digital applications open up.

DEMOCRATISE ACCESS TO BASIC AI COMMODITIES

To unlock the potential of Artificial Intelligence, access to high computing power and storage capacity is needed. Policymakers can ensure that basic AI infrastructure is open not only to large technology corporations, but also to modest research institutes, the administration, start-ups, and non-governmental organisations.

⁵https://www.wipo.int/edocs/pubdocs/en/wipo_pub_gii_2021.pdf

⁶<https://www.timeshighereducation.com/student/best-universities/best-universities-computer-science-degrees>

⁷<https://www.geekwire.com/2021/ibuying-algorithms-failed-zillow-says-business-worlds-love-affair-ai/>

⁸<https://openai.com/blog/ai-and-compute/>

⁹<https://www.nzz.ch/bildung/schweizer-gymnasien-keine-mint-welle-bei-maturanden-ld.1655166?reduced=true>

1PLUSX AG	CAPLENA AG	ECOROBOTIX SA	INTERAX	NOVAMET SÀRL	TARGENS
-	-	-	BIOTECH AG	-	SUISSE SA
ACCENTURE	CARLSBERG	EMERALD RATING	-	OERLIKON GROUP	-
-	SUPPLY	-	INVENTX AG	-	THE TAO OF
ACRONIS	COMPANY AG	ESKENAZI SA	-	PAIXON GMBH	EXCELLENCE
-	-	-	IPQUANTS AG	-	-
AI RETAILER	CASALE SA	EVRYTHNG	-	PI LIGHTING	THE TRIP
SYSTEMS	-	-	JAYWALKER	-	BOUTIQUE
-	CENTREDOC	EXPERTFLOW	DIGITAL AG	PICTERRA	-
ALMER	-	-	-	-	TI8M AG
TECHNOLOGIES	COLORIX SA	EXPLORIS	KASKO2GO AG	PICTUREPARK	-
-	-	HEALTH AG	-	-	UBS GLOBAL
ARGYOU AG	CREDIT	-	KETL	RHYNO	WEALTH
-	SUISSE AG	F. HOFFMANN-	-	SOLUTIONS GMBH	MANAGEMENT
AVA-X GMBH	-	LA ROCHE AG	KLINIK SANKT	-	-
-	CREDIT SUISSE	-	MORITZ AG	SANDSIV AG	URBAN BLUE
BBV SOFTWARE	GROUP	FIXPOSITION AG	-	-	GMBH
SERVICES AG	-	-	KWIQLY GMBH	SANITAS	-
-	CROSS-ING AG	FLUENCE	-	-	VESTUN
BECKHOFF	-	WORLD LTD	LATTICEFLOW	SCHWEIZER	-
AUTOMATION AG	CSS	-	-	INSTITUT FÜR	VIMA LINK SA
-	VERSICHERUNG	FORTEAN	LGT CAPITAL	MANAGEMENT-	-
BERATICS	-	GMBH	PARTNERS	ERNEUERUNG	VINCI ENERGIES
-	DAEDALEAN	-	-	GMBH	SCHWEIZ AG
BLUECALLOM AG	-	GLARNER	LIFELIKE SA	-	-
-	DAYTON	KANTONALBANK	-	SCHWEIZERISCHE	VIRTIDO
BMT	THERAPEUTICS	-	LOGICFLOW AG	POST AG	-
CONSULTING AG	-	GOOGLE	-	-	VP BANK AG
-	DOTPHOTON	SWITZERLAND	LYNUS AG	SIT AUTONOMOUS	-
BRAINELEM	-	GMBH	-	-	WECONNECTAI
-	DURRER	-	MAXON	SUSTEMA AG	-
BSI BUSINESS	SPEZIAL-	HAEMOKINESIS	-	-	X28 AG
SYSTEMS	MASCHINEN AG	-	NANOCORP AG	SUVA	-
INTEGRATION	-	HOURSEC	-	-	-
AG	DYNAMIC	-	NETGUARDIANS SA	SYNTHETICUS	-
-	DEVICES AG	IBM	-	GMBH	-
CALYPS SA	-	-	NOSTIC	-	-
-	E. BLUM & CO. AG	IMSD SÀRL	SOLUTIONS AG	TALENT4GIG AG	-

SWISS AI REPORT
MADE POSSIBLE BY



SWISS AI REPORT
SUPPORTED BY



THINK TANK W.I.R.E.

W.I.R.E. is an independent think tank that curates the shaping of the future at the intersections of science and practice. Systematic early recognition of relevant developments are translated them into longterm strategies and fields of action for private and public organizations and their decision-makers. As an interdisciplinary platform, W.I.R.E. has distinguished itself through a comprehensive understanding of the economy and society, using this knowledge as a basis to develop long-term decision-making, ideas, and new approaches to solutions. The thematic expertise of W.I.R.E. focuses on the wider consequences of digital transformation, and on linking market and societal innovation in sectors ranging from health and financial services to real estate and media. W.I.R.E.'s competence includes a multidimensional information architecture as the underpinnings for bespoke multimedia publications, event formats, exhibitions, and keynotes. In the tradition of alchemy, the think tank develops tangible concepts in the form of "real-life labs" or prototypes for the 21st century. Besides an international network of thought leaders and decision-makers, W.I.R.E. also benefits from its numerous partnerships with leading companies, universities, and designers.

www.thewire.ch

MINDFIRE

Mindfire brings great minds together to create human-level AI for humankind. More precisely, Mindfire invites and unites a robust network of global talent to collaboratively solve some of the world's most complex challenges in their Lab-42. Their international, multidisciplinary community of talented individuals spans fields ranging from computer science to mathematics, physics, neuroscience, robotics, and beyond. Established in 2017, the Mindfire Foundation is a non-profit organisation based in Switzerland, the cradle of international concord and home to many of the world's leading scientific, environmental, and economic organisations. Mindfire reflects the Swiss values of responsibility and trust, building on Switzerland's proven track record as a hub for ground-breaking science, technology, and philanthropy.

www.mindfire.global

© 2022 W.I.R.E. and Mindfire
www.thewire.ch
www.mindfire.global

Concept: W.I.R.E. and Mindfire
Content: Stefan Pabst,
Dr. Stephan Sigrist, Dr. Daniela Suter
Publication: 2022
Layout: W.I.R.E.
Illustration: W.I.R.E.

This work is protected by copyright. All rights reserved, in particular, those of translation, reprinting, presentation, excerpting illustrations and tables, radio transmission, microfilming or duplication by other means and storage in data processing systems, whether in whole or in part. Reproduction of this work or parts of this work, even in individual cases, is only permitted within the limits of the legal provisions of the Copyright Act in the currently valid version, and is always subject to remuneration. Violations are subject to the penal provisions of copyright law.

Swiss AI Report is part
of the AiCon initiative

AiCon
2022

ai-con.ch