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Accelerating innovation with AI in Switzerland

Boosting Switzerland’s competitiveness with AI in science

An Implement Consulting Group study developed for Google and digitalswítzerland

January 2026

Christine Antlanger-Winter

Vorwort

Country Director
Google Schweiz

Künstliche Intelligenz als Motor für Innovation und Wettbewerbsfähigkeit in der Schweiz

Liebe Leserinnen, liebe Leser,

Die Schweiz, insbesondere Zürich, ist ein global anerkannter Motor für Innovation. Mit erstklassigen Universitäten, innovativen Start-ups und wegweisenden KI-Hubs verfügt unser Land über eine hervorragende Basis, um Künstliche Intelligenz für nachhaltiges Wirtschaftswachstum zu nutzen. Dennoch sollten wir unsere Führungsposition im globalen Innovationswettbewerb nicht als selbstverständlich betrachten. Angesichts des steigenden globalen Wettbewerbs ist es entscheidend, dass wir die nächste Welle der technologischen Entwicklung aktiv mitgestalten.

Im letzten Jahr haben wir in unserer Studie *"Das wirtschaftliche Potenzial von KI für die Schweiz"* dargelegt, dass KI das Schweizer BIP jährlich um 11% oder 80 bis 85 Milliarden CHF steigern könnte – ein stärkerer Wachstumseffekt als in den meisten anderen europäischen Ländern. Aufbauend auf diesen Erkenntnissen konzentriert sich die vorliegende Folgestudie auf die KI-Innovationschance für die Schweiz. Sie untersucht, wie KI-Forschung und Entwicklung (F&E) beschleunigen kann.

Unsere Analyse zeigt, dass KI die Forschungs- & Entwicklungsprozesse in der Schweiz signifikant vorantreiben und dadurch bis 2034 zusätzlich rund 15 Milliarden CHF pro Jahr zur Schweizer Wirtschaftsleistung beitragen kann. Um in diesem neuen Zeitalter wettbewerbsfähig zu bleiben und die Vorteile der KI-Ära zu sichern, müssen wir diese Chancen mutig und verantwortungsvoll wahrnehmen und dafür sorgen, dass KI der gesamten Bevölkerung zugute kommt und die Schweiz nicht nur wohlhabend und innovativ, sondern als Gesellschaft auch integrativ und verantwortungsbewusst bleibt.

Christine Antlanger-Winter

Country Director Google Schweiz

Franziska Barmettler

Vorwort

CEO
digitalswitzerland

Die KI-Chance für die Schweiz: Gestalten statt reagieren

Liebe Leserinnen, liebe Leser,

Die zunehmende Bedeutung von Künstlicher Intelligenz für Forschung, Wirtschaft und Gesellschaft macht eine fundierte Einordnung ihrer wirtschaftlichen Wirkung zentral. Die vorliegende Analyse belegt eindrücklich, dass KI Forschung und Entwicklung signifikant beschleunigen und so einen substanziellen Beitrag zur Schweizer Wettbewerbsfähigkeit leisten wird. Um dieses Potenzial voll auszuschöpfen, müssen wir die institutionellen, gesellschaftlichen und wirtschaftlichen Rahmenbedingungen der Schweiz gezielt weiterentwickeln.

Entscheidend dabei ist, dass wir aktiv gestalten, anstatt zu reagieren. Genau hier setzt digitalswitzerland an: Als nationale Plattform bringen wir alle relevanten Akteure aus Wirtschaft, Wissenschaft und Politik zusammen, um diesen Wandel aktiv und verantwortungsvoll zu begleiten. Gemeinsam mit unseren Partnern arbeiten wir an einem AI Action Plan, der auf Schweizer Werten basiert und konkrete Schritte für eine verantwortungsvolle und zugleich wirkungsorientierte Nutzung von KI definiert. Unsere Mitglieder gehen hier voran: Sie machen das Potenzial greifbar und setzen schon heute alltagstaugliche Use-Cases um.

Gleichzeitig gilt es, die Basis für diesen Erfolg zu stärken. Dazu gehören zwingend Investitionen in die Infrastruktur sowie die Förderung der digitalen Kompetenzen (Literacy) in der Bevölkerung. Nur so stellen wir sicher, dass KI der gesamten Gesellschaft und dem Wirtschaftsstandort zugutekommt.

Ich lade Sie ein, die Ergebnisse dieser Studie als Impuls zu nutzen. Sie zeigt auf, wie wir technologischen Fortschritt in konkreten Nutzen für die Schweiz übersetzen

Franziska Barmettler

CEO digitalswitzerland

Vorwort

Die Schweiz, insbesondere der Standort Zürich, ist eine Innovationshochburg mit führenden Hochschulen sowie wegweisenden KI-Labors und Forschungseinrichtungen. Dies schafft eine solide Basis für die Nutzung von KI und fördert nachhaltiges Wachstum. Doch die Führungsposition in puncto Innovation ist kein Selbstläufer. Trotz hoher Arbeitsproduktivität verharrt das Wachstum analog zum europäischen Trend auf stagnierendem Niveau.

KI bietet eine Chance, diesen Stillstand zu durchbrechen, indem sie Innovationen beschleunigt, Unternehmensgründungen begünstigt und die Produktivität steigert. Damit sichert sie die Wettbewerbsfähigkeit der Schweiz im Zeitalter der KI.

Basierend auf der Vorjahresstudie, die das KI-Steigerungspotenzial für das Schweizer BIP in den kommenden zehn Jahren auf jährlich CHF 80 bis 85 Milliarden (plus 11 %) schätzte, beleuchtet die vorliegende Analyse, wie KI die Forschungs- und Entwicklungstätigkeit in der Schweiz beschleunigen kann. Bis 2034 könnten daraus jährliche Wertschöpfungsgewinne von rund CHF 15 Milliarden resultieren. Zudem wird untersucht, wie die Schlüsselbereiche «Produktion von KI» und «Kommerzielle Nutzung von KI» dazu beitragen können, dieses Potenzial zu erschliessen.

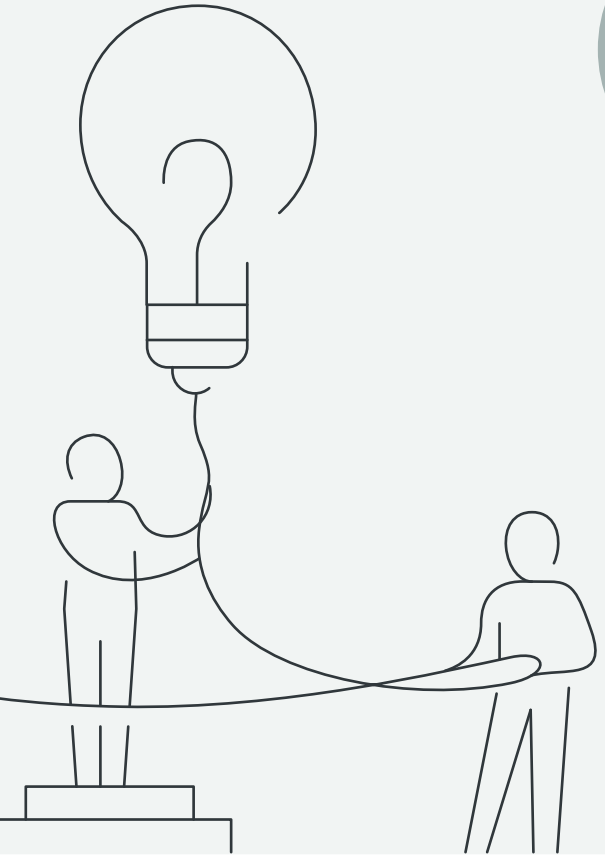
KI in F&D und in der Wissenschaft
Innovationstätigkeit mit KI

KI-Wertschöpfungskette
Produktion von KI

KI-gestützte innovative digitale Unternehmen
Kommerzielle Nutzung von KI

Initiativen zur Überwindung der Innovationslücke
Der Ausblick in die Zukunft

Mit KI-gestützter Innovation die Wettbewerbsfähigkeit der Schweiz stärken



Innovation

ist die Fähigkeit, neues Wissen zur Verbesserung von Produkten bzw. Dienstleistungen einzusetzen.

Die Schweiz kann mithilfe von KI Innovationen beschleunigen, um neue richtungsweisende Technologien zu entwickeln und F&D-Prozesse zu beschleunigen.

Produktivität

ist die Fähigkeit, mit einem bestimmten Arbeits- und Kapitalaufwand grösseren wirtschaftlichen Mehrwert zu schaffen.

Eine schnellere Innovationstätigkeit wird dazu beitragen, das Produktivitätswachstum in der Schweiz zu steigern.

Wettbewerbsfähigkeit

ist die Fähigkeit, sich auf dem Weltmarkt erfolgreich zu behaupten.

Im Zeitalter der KI wird die Wettbewerbsfähigkeit hauptsächlich durch die Produktivität und weniger durch Lohnsenkungen oder Währungsabwertungen bestimmt.

Quellen: Implement Economics, basierend auf dem Draghi-Bericht, OECD (2018), Oslo-Handbuch und WEF.

Die KI-Innovationsmöglichkeiten finden sich in drei Dimensionen

Innovationstätigkeit mit KI

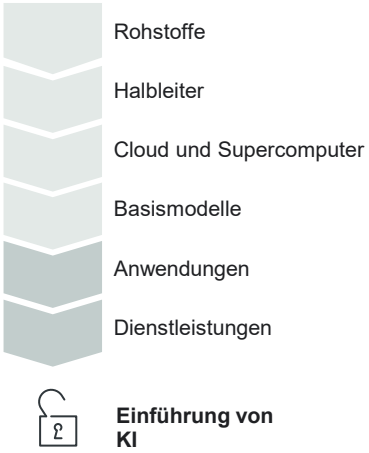
KI in F&D und in der Wissenschaft

KI revolutioniert Innovationsprozesse und bietet der Schweiz damit erhebliche Chancen, wissenschaftliche Entdeckungen zu beschleunigen und die Effizienz in Forschung und Entwicklung zu steigern. Dies wiederum führt zu einer europaweiten Erhöhung der F&D-Investitionen.

Produktion von KI

Die KI-Wertschöpfungskette

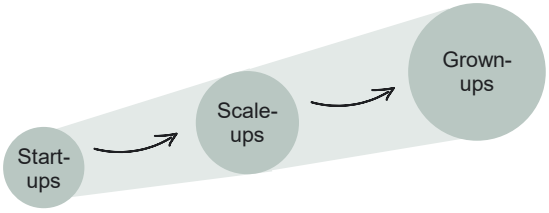
Die Erweiterung der KI-Wertschöpfungskette ist für die Innovationsfähigkeit entscheidend. Die Wertschöpfungskette bezieht sich auf alle industriellen und kommerziellen Aktivitäten zur Entwicklung und Bereitstellung von KI-Lösungen: von der zugrunde liegenden Hardware bis hin zu Dienstleistungen für Endanwender.



Kommerzielle Nutzung von KI

KI-gestützte innovative digitale Unternehmen

Innovative digitale Unternehmen sind entscheidend für die Entwicklung von KI-Anwendungen zur Bewältigung unternehmerischer Herausforderungen und für die Verbreitung von KI-Innovationen in der gesamten Wirtschaft.
Mit ihrem Wachstum leisten sie einen überproportionalen Beitrag zur wirtschaftlichen Wertschöpfung.



Diese drei Dimensionen untersuchen wir in den folgenden Kapiteln

Die KI-gestützte Beschleunigung in Forschung, Entwicklung und Wissenschaft könnte das Schweizer BIP jährlich um CHF 15 Milliarden steigern

KI ist weit mehr als eine Innovation: Als neue Basistechnologie für Innovationen schafft sie durch die Integration in F&D-Prozesse enorme Wachstumsimpulse für die Schweiz und ganz Europa

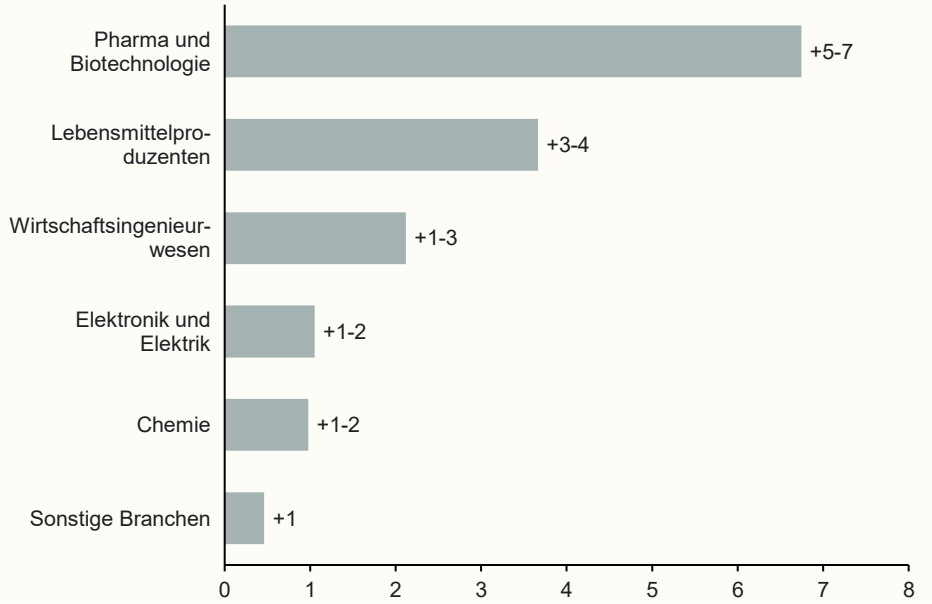
Durch KI kann je nach Wirtschaftszweig die Innovationsqualität verdoppelt und die Effizienz von F&D-Prozessen um 10 bis 20 Prozent gesteigert werden. Dies beweist etwa AlphaFold, ein System, das die Proteinforschung revolutioniert und potenziell bereits Kosten in Millionenhöhe sowie jahrelange Arbeitszeit eingespart hat.

Die forschungsintensiven Branchen der Schweiz, wie beispielsweise die Pharmaindustrie, können massgeblich von der durch KI bewirkten Beschleunigung im F&D-Bereich profitieren. Die KI kann die Arzneimittelforschung grundlegend verändern, wie das Beispiel AlphaMissense von Google DeepMind zeigt: Dieses KI-Modell verbessert die Diagnose seltener genetischer Erkrankungen und unterstützt die Identifizierung neuer krankheitsauslösender Gene.

KI kann die F&D-Effizienz erheblich steigern und bis zum Jahr 2034 potenziell jährlich rund CHF 15 Milliarden zum Schweizer BIP beisteuern. Der gesellschaftliche Gesamtnutzen kann dabei die Innovationsinvestitionen potenziell um das bis zu Siebenfache übersteigen. Google steigert die Forschungsproduktivität durch Hochschulpartnerschaften und durch die Unterstützung von F&D-Organisationen wie etwa Materiom, das mithilfe von Vertex AI Alternativen zu herkömmlichen Kunststoffen schafft.

CHF 15 Milliarden

Jährlicher Beitrag zum BIP der Schweiz bis 2034 durch KI-optimierte F&D-Prozesse
in Mrd. CHF



Hinweis: Die Produktivitätssteigerungen auf Unternehmensebene werden auf der Grundlage der führenden Schweizer Unternehmen (im Hinblick auf die F&D-Ausgaben) unter Einbeziehung der Unternehmensgewinne und der Arbeitslöhne anhand der Branchendurchschnitte von Eurostat geschätzt. Anschliessend werden die so ermittelten Produktivitätssteigerungen auf die relevanten Branchen hochgerechnet, um die gesamte Schweizer Wirtschaft abzubilden. Die Effekte auf Unternehmensebene berücksichtigen jedoch nicht die erheblichen Spillover-Effekte aus F&D-Investitionen. Somit dürften die Gesamteffekte der KI in F&D deutlich grösser sein. Die relevanten Branchen wurden aus McKinsey (2023) und Babina et al. (2021) übernommen. Die Effizienzsteigerungen im Bereich F&D basieren auf den jährlichen F&D-Ausgaben und der Bruttowertschöpfung (BWS) auf Unternehmensebene, wobei die Wertschöpfungseffekte anhand der F&D-Produktivitätselastizitäten berechnet werden, die je nach Technologieintensität der einzelnen Sektoren variieren. Die wirtschaftlichen Effekte werden zunächst auf BWS-Basis ermittelt und anschliessend mit der BWS-zu-BIP-Quote der Schweiz von 2024 in das Bruttoinlandprodukt (BIP) umgerechnet. Das BIP entspricht der Bruttowertschöpfung (BWS) zuzüglich Nettoproduktsteuern. Die Kategorie «Sonstige Branchen» umfasst die Bereiche «Medizinische Geräte und Gesundheitsdienstleistungen», «Technologie-Hardware und -Ausrüstung» sowie «Software- und IT-Dienstleistungen».
Quelle: Implement Economics, basierend auf McKinsey, Eurostat, Kumbhakar et al. (2011), EU-Anzeiger für F&D-Investitionen der Industrie und EU-Innovationsanzeiger.

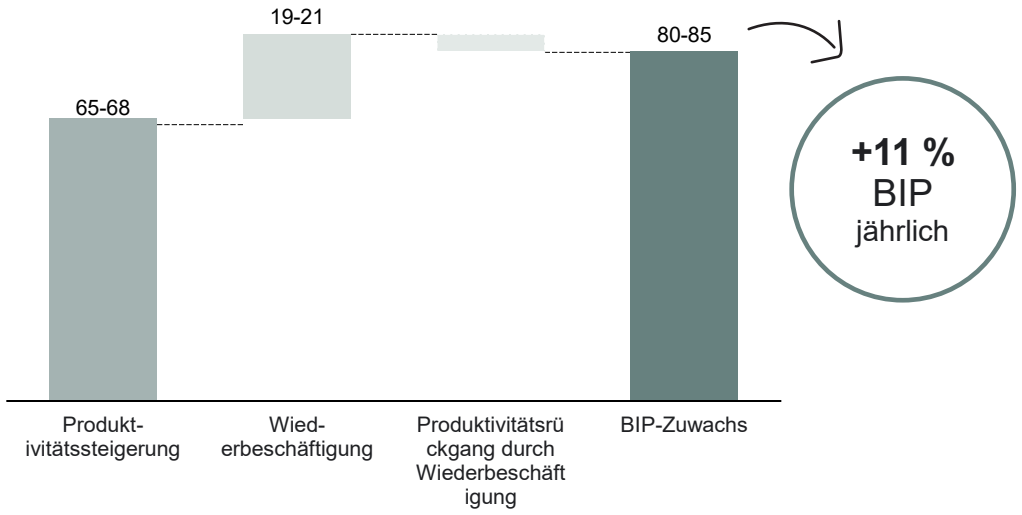
Die Schweiz verfügt über beste Voraussetzungen, um das wirtschaftliche Potenzial generativer KI zu nutzen

Generative KI kann das langfristige Wirtschaftswachstum der Schweiz beflügeln …

Generative KI kann das langfristige Wirtschaftswachstum der Schweiz beflügeln, sodass die derzeitigen langfristigen BIP-Prognosen übertroffen werden. Führende Banken erhöhen aufgrund der neuen Erwartungen an die generative KI bereits ab 2028 die Wachstumsprognosen.

International betrachtet bleibt die Schweiz in puncto Innovation führend und liegt in zahlreichen globalen Indizes an der Spitze.

Generative KI stellt für die Schweiz eine bedeutende Wachstumschance dar, durch die bei flächendeckender Akzeptanz das nationale BIP im Spitzenjahr um bis zu 11 Prozent jährlich gesteigert werden kann.



… und die Schweiz ist dafür hervorragend gerüstet.

Die Schweiz ist…

#1 beim **Global Innovation Index** zum 14. Mal in Folge

#1 beim **Europäischen Innovationsanzeiger**

#1 beim **Global Talent Competitiveness Index**

#1 beim **World Talent Ranking**

Hinweis: Abbildung rechts: Die Schätzung basiert auf Berechnungen, die in Verbindung mit «Das wirtschaftliche Potential von KI für die Schweiz» durchgeführt wurden. Die BIP-Angaben beziehen sich auf den Wert von 2022.
Quelle: Implement Economics, basierend auf Eurostat, O*Net, Briggs und Kodnani (2023a), WIPO, INSEAD, Europäischer Innovationsanzeiger, IMD, OECD und Grossregion Zürich.

KI kann Menschen dabei unterstützen, Aufgaben schneller und besser zu lösen – und mit generativer KI sind Maschinen nun in der Lage, Sprache, Töne und Bilder zu verstehen und damit zu interagieren

Künstliche Intelligenz (KI)

- KI ist ein Oberbegriff für Technologien, die es Computern ermöglichen, menschenähnliches Verhalten nachzuahmen, einschliesslich regelbasierter Programme.

Machine Learning (ML)

- ML ist ein Teilbereich der KI, bei dem Maschinen nicht explizit programmiert werden müssen. Sie nutzen Algorithmen, um Muster in Daten zu erkennen und daraus zu lernen. Sie wenden diese Erkenntnisse an und lernen, sich selbst zu verbessern, um immer bessere Entscheidungen treffen zu können.

Deep Learning (DL)

- DL ist ein Teilbereich des ML, bei dem Computer auf eine dem menschlichen Gehirn nachempfundene Weise lernen. Beim Deep Learning bauen Maschinen immer komplexere Wissensschichten auf.
- Diese KI-Modelle werden in der Regel mit spezifischen Datensätzen trainiert und innerhalb eines bestimmten Bereichs oder einer bestimmten Branche eingesetzt.

Zu den Fähigkeiten zählen:

Prognosen und Vorhersagen

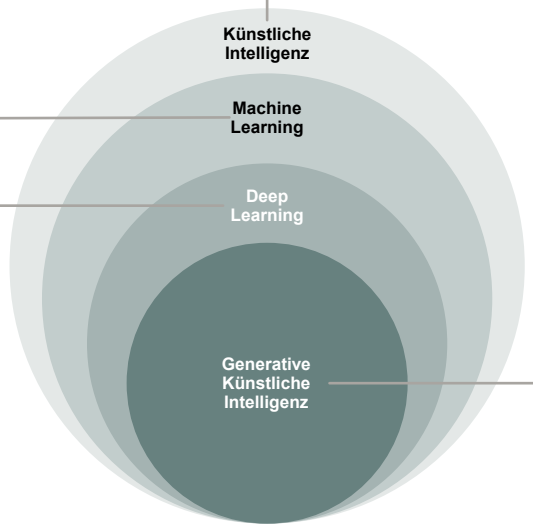
Neben der Wettervorhersage werden ähnliche Vorhersagemodelle auch bei der Lagerbestandsverwaltung eingesetzt.

Kategorisierung und Erkennung

Neben der Spam-Filterung von E-Mails kann KI auch zur Kategorisierung und Erkennung von Mustern in Gesetzgebungsdokumenten eingesetzt werden.

Optimierung

Im Bereich der Optimierung unterstützt KI nicht nur die Navigation per GPS, sondern spielt auch eine entscheidende Rolle bei der Steigerung der Energieeffizienz in Rechenzentren.



Generative KI

- Generative KI ist eine neue Form der KI, die im Jahr 2022 der Öffentlichkeit zugänglich gemacht wurde. Sie kann Text, Programmcode, Bilder, Töne und Videos verstehen und daraus neue Inhalte generieren bzw. synthetisieren.
- Generative KI-Modelle werden mithilfe von riesigen allgemeinen Datensätzen trainiert und erlangen dadurch ein allgemeines Verständnis von Text, Grafiken und Bildern, Programmcode und Tönen.
- Generative KI kann generell in fast allen Bereichen und Branchen eingesetzt werden.

Zu den neuen Fähigkeiten zählen:

Erstellung völlig neuer Bilder

Ein Beispiel ist die Generierung eines Bildes von einem noch nicht existierenden Produkt auf der Grundlage von Benutzereingaben in natürlicher Sprache.

Interaktion mit Sprache und Ton

Dazu zählt beispielsweise die Übertragung einer Arztnotiz in einen strukturierten Text oder die schriftliche Nachbereitung eines Telefongesprächs mit einem Kunden.

Analysieren und Überarbeiten von Text und Programmcode

Beispielsweise können Texte übersetzt und an eine andere Zielgruppe angepasst werden, oder Programmcode kann in andere Programmiersprachen übersetzt werden.

Recherchieren und Analysieren von Daten

Beispielsweise kann im Internet nach relevanten Informationen gesucht werden, und es können aus umfangreichen Datensätzen entsprechende Schlussfolgerungen gezogen werden.

Hinweis: Ein Algorithmus ist eine detaillierte Reihe von Anweisungen, die Computer befolgen, um eine Aufgabe auszuführen bzw. ein Problem zu lösen.
Quelle: Implement Economics, basierend auf Interviews mit Expertinnen und Experten.

Preface

Switzerland, and especially Zurich, is an innovation powerhouse, home to top universities and pioneering AI labs and research institutions. This provides a strong starting point for leveraging AI for sustainable economic growth. However, maintaining Switzerland's position at the forefront of innovation should not be taken for granted. Despite high levels of labour productivity, economic growth has been sluggish for years, mirroring a wider continental stagnation.

AI offers an opportunity to overcome this challenge. By accelerating innovation, fostering new businesses, and increasing productivity, it can ensure Switzerland remains competitive in the AI era.

Building on last year's report—which estimated that AI could boost Switzerland's GDP by 11%, CHF 80-85 billion annually, within a decade—this analysis examines how AI can accelerate research and development in Switzerland, potentially contributing around CHF 15 billion annually by 2034. We also explore how the key areas of 'Producing AI' and 'Commercialising AI' can help unlock this potential.

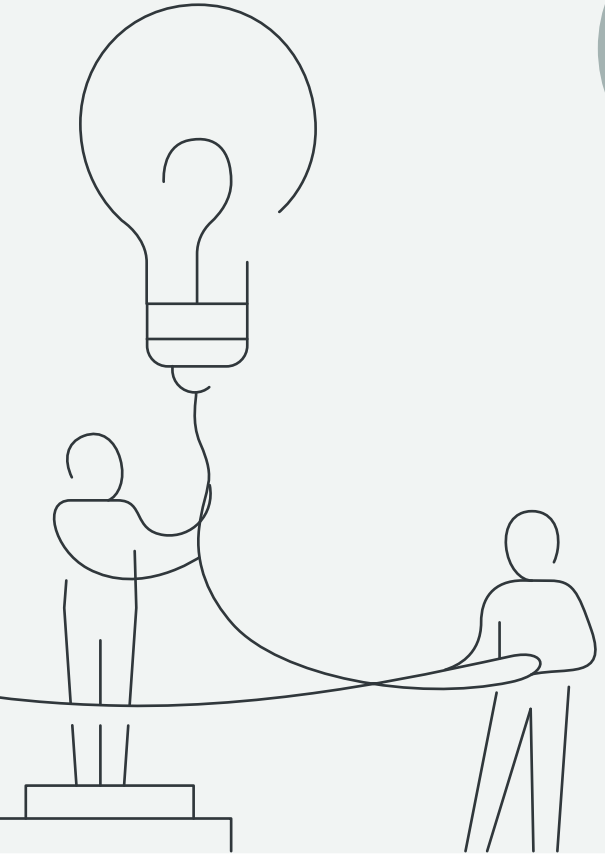
AI in R&D and science
Inventing with AI

AI value chain
Producing AI

AI-powered innovative digital businesses
Commercialising AI

Initiatives to close the innovation gap
The way forward

Boosting Switzerland's competitiveness with AI-powered innovation



Innovation

is the ability to apply new knowledge to improve products or services.

Switzerland can accelerate innovation with AI to develop new breakthrough technologies and speed up R&D processes.

Productivity

is the ability to produce more economic value with a given amount of labour and capital.

Faster innovation will help raise Switzerland's productivity growth.

Competitiveness

is the ability to successfully compete in a global marketplace.

Competitiveness in the AI era will mainly be driven by productivity and less by depressing wages or devaluing currencies.

Sources: Implement Economics based on Draghi report, OECD (2018), The Oslo Manual, and WEF.

The AI innovation opportunity has three dimensions

Inventing with AI

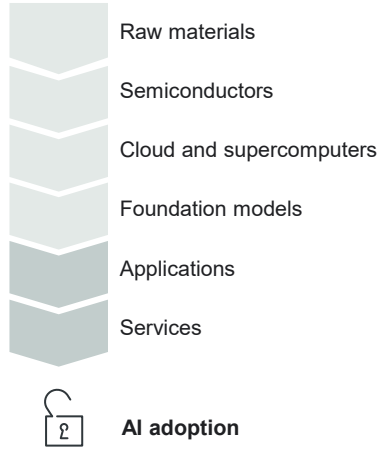
AI in R&D and science

AI enables a new way of inventing, offering Switzerland significant opportunities to accelerate scientific discoveries and enhance R&D efficiency, thereby boosting R&D investments across the continent.

Producing AI

The AI value chain

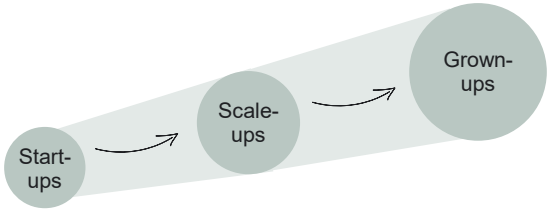
Expanding the AI value chain is crucial for innovation. The value chain refers to the industrial and commercial activities required to create and deliver AI solutions, from foundational hardware to end-user services.



Commercialising AI

AI-powered innovative digital businesses

Innovative digital businesses are pivotal in creating AI applications that address business challenges and diffusing AI innovations across the economy. As they scale, they make an outsized contribution to the economy.



We explore these three dimensions in the following chapters

Accelerating R&D and scientific discovery with AI can add CHF 15 billion to Swiss GDP annually

AI is not just an invention—it is a new way to invent, offering major economic potential for Europe and Switzerland through R&D integration

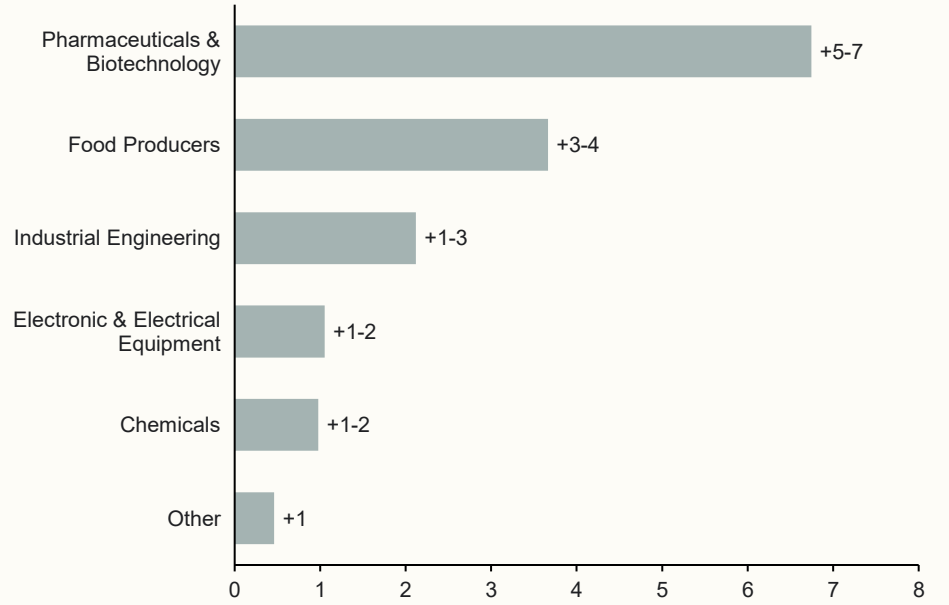
AI can double innovation quality and boost R&D process efficiency by 10-20%, varying by domain. This is demonstrated by AlphaFold, which has revolutionised protein research and potentially already saved millions of dollars and years of research time.

Switzerland's R&D intensive industries, such as pharma, can benefit from AI's R&D boost. AI can transform drug discovery, as illustrated by Google DeepMind's AlphaMissense, which improves the diagnosis of rare genetic disorders and aids in identifying new disease-causing genes.

AI can significantly enhance R&D efficiency, potentially adding around CHF 15 billion annually to Swiss GDP by 2034. The wider social returns could be up to seven times larger than the innovation investment. Google boosts research productivity through university partnerships and by supporting R&D organisations such as Materiom, which applies Vertex AI to create alternatives to conventional plastics.

CHF 15 billion

Annual contribution to Switzerland's GDP by 2034 from AI's boost to R&D process
CHF billion



Note: Firm-level productivity gains are estimated based on the leading Swiss companies (in terms of R&D expenditure) using company profits and labour remuneration from the sectoral averages through Eurostat. Productivity gains are then applied to relevant sector aggregates to reflect the entire Swiss economy. Firm-level effects do not take into account the large spillover effects from R&D investments. Thus, the aggregate effects from AI in R&D are likely significantly larger. Relevant sectors are drawn from McKinsey (2023) and Babina et al. (2021). R&D efficiency gains are based on annual R&D spending and firm-level GVA, with value added effects calculated using R&D-to-productivity elasticities that vary by each sector's tech intensity. Economic effects are calculated on a Gross Value Added (GVA) basis and then converted to Gross Domestic Product (GDP) using the Swiss GVA-to-GDP ratio from 2024. GDP equals GVA when adding net product taxes. 'Other' consists of 'Health Care Equipment & Services', 'Technology Hardware & Equipment' as well as 'Software & Computer Services'.
Source: Implement Economics based on McKinsey, Eurostat, Kumbhakar et al. (2011), EU industrial R&D investment scoreboard, and EU innovation scoreboard.

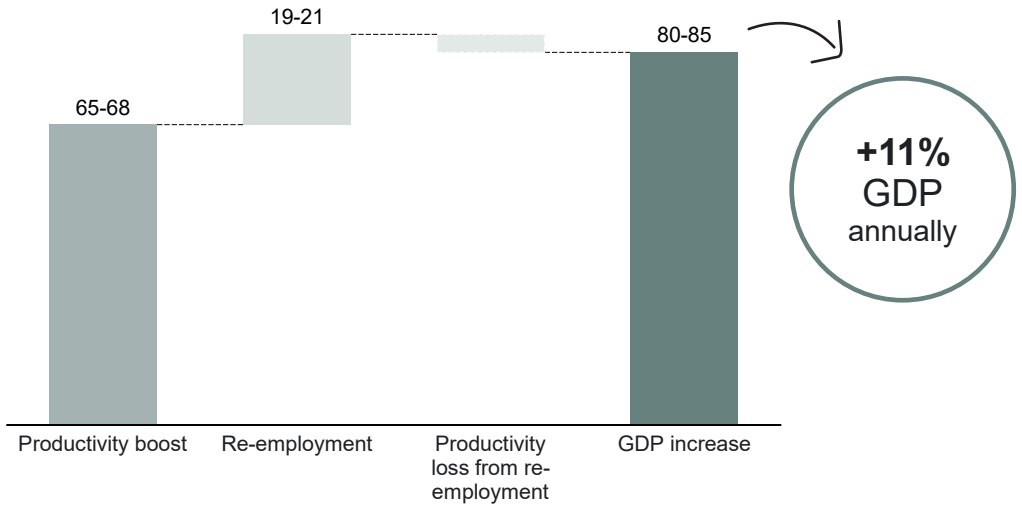
Switzerland is well-positioned to realise the economic potential of generative AI

Generative AI can F&Dl Switzerland's long-term economic growth… ⟶ …and Switzerland is uniquely equipped to capture it.

Generative AI can boost future economic growth in Switzerland, exceeding current long-term GDP forecasts. Leading banks are raising growth forecasts from as early as 2028, due to the new expectations for generative AI.

Switzerland continues to perform exceptionally in innovation through a global lens, topping multiple global indices.

Generative AI poses a significant growth opportunity for Switzerland, potentially increasing national GDP by up to 11% annually in the peak year if widespread adoption is achieved.



Switzerland is…

#1 In the **Global Innovation Index** for the 14th consecutive year

#1 In the **European Innovation Scoreboard**

#1 In the **Global Talent Competitiveness Index**

#1 In the **World Talent Ranking**

Note: Right figure: The estimate is based on calculations performed in conjunction with The economic opportunity of generative AI in Switzerland. GDP is in 2022 levels.
Source: Implement Economics based on Eurostat, O*Net, Briggs and Kodnani (2023a), WIPO, INSEAD, European Innovation Scoreboard, IMD, the OECD and Greater Zurich Area.

AI can help humans solve tasks faster and better – and with generative AI, machines can now understand and interact in language, sound, and images

Artificial Intelligence (AI)

- AI is a general term for anything that allows computers to carry out human-like behaviours, including rule-based programmes.

Machine Learning (ML)

- ML is a subset of AI, where machines do not need to be explicitly programmed. They use algorithms to identify and learn patterns in data, apply that learning, and improve themselves to make better and better decisions.

Deep Learning (DL)

- DL is a subset of ML, where computers learn in a way that mimics the human brain. In deep learning, machines build layers of knowledge that are increasingly complex.
- These AI models are typically trained on specific datasets and used within a given field or industry.

Capabilities include:

Forecasting and prediction

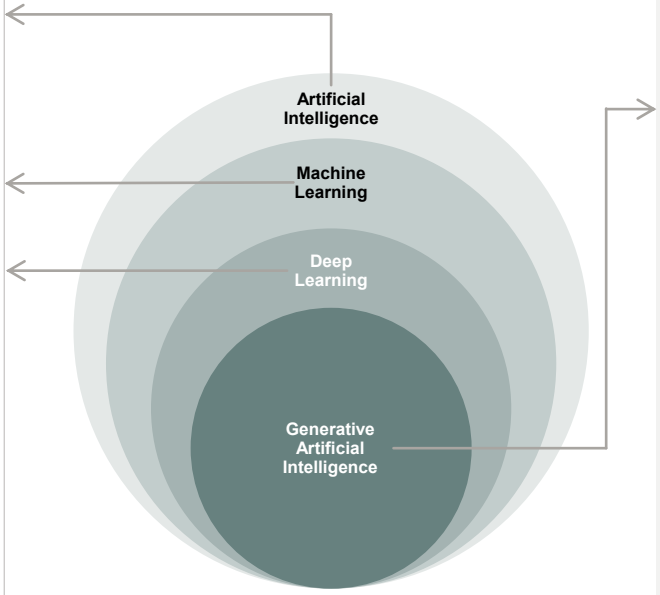
In addition to weather forecasting, similar predictive models are employed in managing warehouse inventories.

Categorisation and recognition

Beyond email spam filtering, AI can be utilised to categorise and recognise patterns in legislative documents.

Optimisation

When it comes to optimisation, AI not only aids navigation via GPS, but also plays a crucial role in enhancing the efficiency of energy consumption in data centres.



Generative AI

- Generative AI is a new form of AI made publicly available in 2022. It can understand text, code, images, sound, and video and can use it to generate or synthesise new content.
- Generative AI models are trained on huge general data sets to gain a general comprehension of text, visuals, code, and sound.
- Generative AI can be used generally across almost any field or industry.

New capabilities include:

Create new unique images

For example, generating an image of a product that does not yet exist, based on user input in natural language.

Interact with voice and sound

For example, translating a doctor's memo into a structured text, or following up with a customer in writing based on a phone conversation.

Analyse and revise text and code

For example, translating text and adapt it to a different target group, or translating code between programming languages.

Do research and analyse data

For example, searching the web for relevant information and synthesising conclusions from large datasets.

Note: An algorithm is a detailed set of instructions that a computer follows to carry out a task or solve a problem.
Source: Implement Economics based on expert interviews.

Part 1

Inventing with AI

AI is not just an invention, but a new way to invent — offering major economic potential for Switzerland through R&D integration

Scientific breakthroughs enabled by AI could help solve societal challenges and create entirely new industries.

OECD on AI Principles

R&D spending is delivering less innovation than previously as ideas are getting harder to find

Economic growth arises from people creating ideas.

These ideas are typically developed through research and development (R&D) — a process that has driven technological and economic progress for decades.

Even though R&D spending has increased, it is leading to fewer breakthroughs.

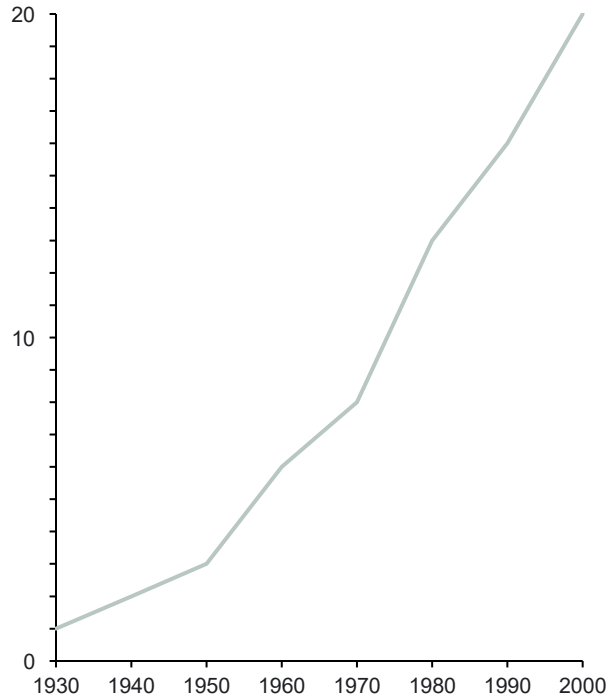
The biopharmaceutical industry provides an example, as drug discovery has become slower and more expensive over time—a phenomenon known as **Eroom's Law.**

While the number of researchers has been rising since 1930, Stanford researchers found that each novel innovation has been harder and more costly to find than in the past. In other words, R&D productivity has declined. OECD studies and Eurostat data confirm this trend in Europe.

More broadly, this once-reliable engine of economic growth has been yielding lower returns.

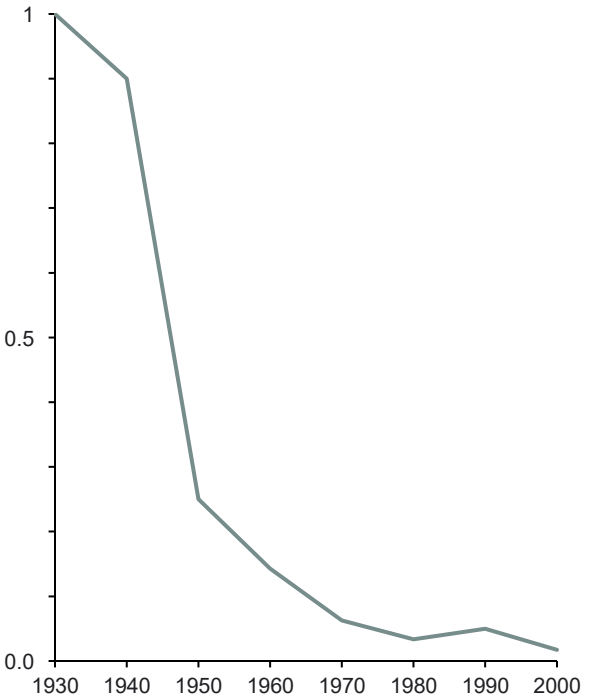
More and more researchers…

Effective number of researchers, US
Index (1930 = 1)



… are producing less and less innovations per dollar spent

Research productivity, US
Index (1930 = 1)



Note: Research productivity is the ratio of idea output, measured as TFP growth, to the effective number of researchers. Research productivity and the number of researchers have been normalised to the value of 1 in 1930.
Source: Implement Economics based on the OECD (2023), the EU Industrial R&D Investment Scoreboard, Bloom et al. (2020), and European Federation of Pharmaceutical Industries and Associations (EFPIA).

AI can reignite R&D productivity in Switzerland

Applying AI technologies to the innovation process can lead to scientific breakthroughs and increase innovation productivity. Every stage in the innovation cycle can benefit from AI's capabilities.

The innovation cycle…	Discover	Develop	Test	Implement
How AI can help…				
*More **efficient** R&D…*	• Patent landscape analysis • Analysing and summarising scientific literature	• Predicting and optimising drug candidates	• Simulating experiments • Predictive quality control • Automated anomaly control	• Intelligent manufacturing • Personalised service deployment • Adaptive operational systems
*More **disruptive** R&D…*	• Identifying novel biological or chemical pathways • Suggesting new research hypotheses	• Designing entirely new molecular structures • Creating breakthrough drug modalities	• Revealing unexpected interactions or effects • Suggesting alternative experimental approaches	• Developing self-optimising production systems • Creating entirely new business and delivery models

Note: There are numerous frameworks for innovation cycles across all of R&D and science. The illustration above is inspired by the stage gate model developed by S. Edgett and R. Cooper and the innovation process at Oslo University and Stanford University.
Source: Implement Economics based on Stage Gate, Oslo University and Stanford University

Besides increasing efficiency, AI can increase the quality of innovation

AI can significantly boost the quality and disruptive potential of innovations.

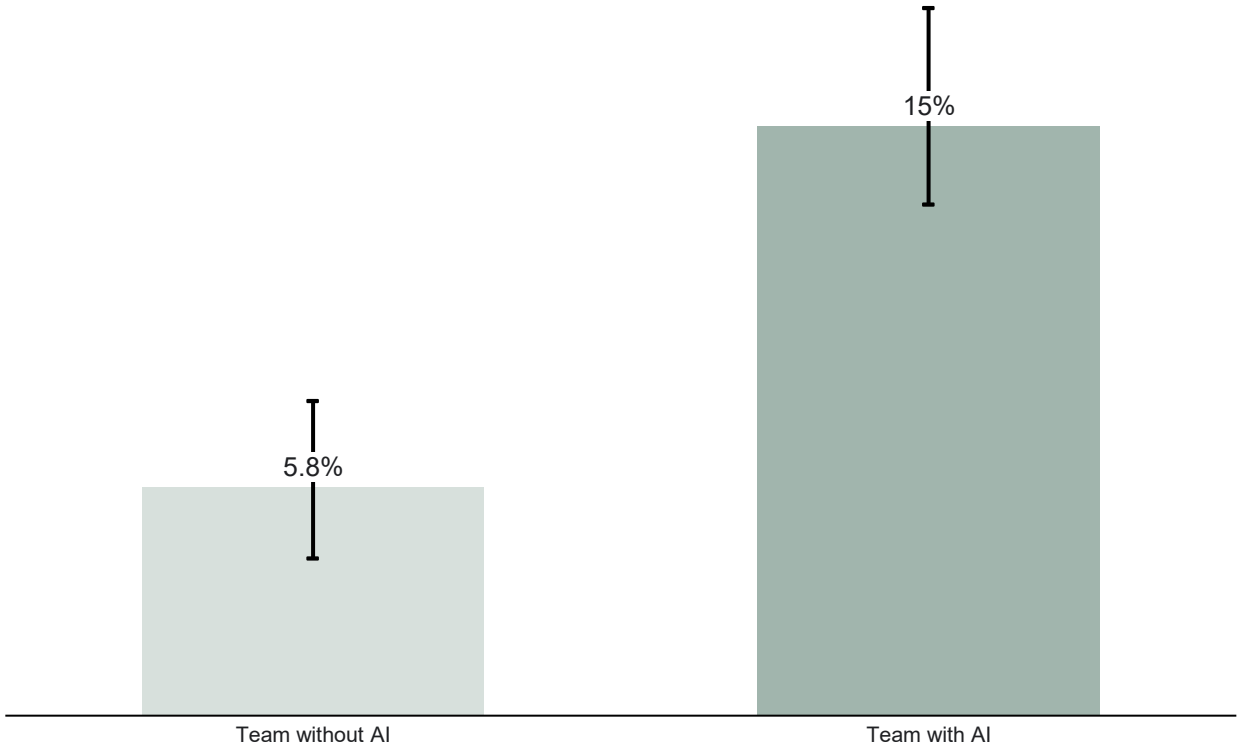
A recent study shows that teams using AI were three times more likely to develop top-decile solutions compared to those without AI (15% vs. 5.8%). This suggests that AI not only improves efficiency but also increases the likelihood of breakthrough, high-impact outcomes.

Another recent study on patent quality shows similar results, finding that patent citing AI publications are about twice as likely to be influential (cited ~2x more) and novel.

The following page assesses the potential economic impact of AI on R&D using published studies — though this likely understates AI's role as a catalyst for a new era of invention.

> *AI breaks down functional silos. Professionals using AI produced balanced solutions, regardless of their professional background.*
>
> Dell'Acqua et al. (2025)

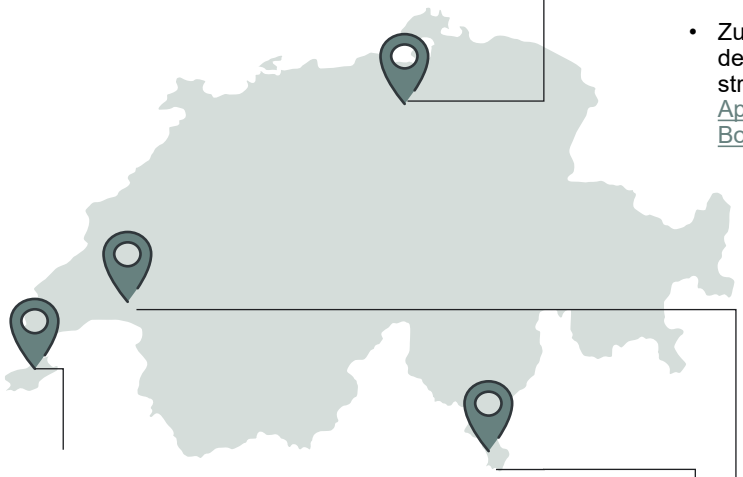
Probability of being rated top 10% quality
%



Note: Treatment group estimates are relative to a single person working without AI (control group). Estimates on time reduction are significant at the 5% level. Individuals *with* AI were 16% faster than the control group. Research was conducted in an experimental setting where innovation teams were allocated assistance by AI technologies using randomisation. The set-up allows for causal interpretations of estimated effects.
Source: Implement Economics based on Dell'Acqua et al. (2025) and Bergeaud (2025, *not yet published*).

Switzerland has several prominent AI innovation hubs

Swiss innovation hubs are characterised by public, private, and academic corporations and a strong sectoral focus.



Zurich

- Zurich is a leader in AI research and development in Europe, bolstered by the strong presence of ETH Zurich, Google, Apple's AI Lab and the establishment of The Boston Dynamics AI Institute in the city.

Geneva

- Geneva, hosting organisations like CERN, ISO, and ITU, significantly influences the global AI landscape with its research and policy development in AI standards and communication technology.

Lausanne

- Lausanne stands out in robotics and AI-driven healthcare research, anchored by EPFL and the establishment of Google DeepMind's Isomorphic Labs.

Lugano

- The Swiss Supercomputing Centre in Lugano is ranked as the top supercomputing facility in Europe, playing a pivotal role in advancing computational research and AI capabilities.

- Switzerland is benefiting from an innovation-friendly regulatory environment and has been ranked #1 in the Global Innovation Index for 14 consecutive years.
- Switzerland leads in AI research and development in Europe, with the highest number of AI companies per capita. It also hosts two of the world's leading supercomputers at the Swiss National Supercomputing Centre (CSCS), positioning it as a frontrunner in Europe for large-language-model research.
- Furthermore, Switzerland's finance and pharmaceutical sectors, known for their global competitiveness, are poised to adopt AI swiftly, accelerating the country's AI benefits relative to other European nations.
- To stay ahead in the global arena, Switzerland must continue its efforts in AI innovation, leveraging its robust infrastructure and innovation ecosystem to unlock the full potential of AI.

Source: Implement Economics based on WIPO (2019) , WIPO (2023), SGE (2022) and NZZ (2023)

Case | AlphaFold has revolutionised molecular research, accelerating breakthroughs in biology

The challenge

Proteins underpin every biological process, in every living thing. Made from long chains of amino acids, each has a unique complex 3D structure. But figuring out just one of these can take several years and hundreds of thousands of dollars.

The solution

AlphaFold solved this problem, with the ability to predict protein structures in minutes, to a remarkable degree of accuracy. That's helping researchers understand what individual proteins do and how they interact with other molecules.

The impact

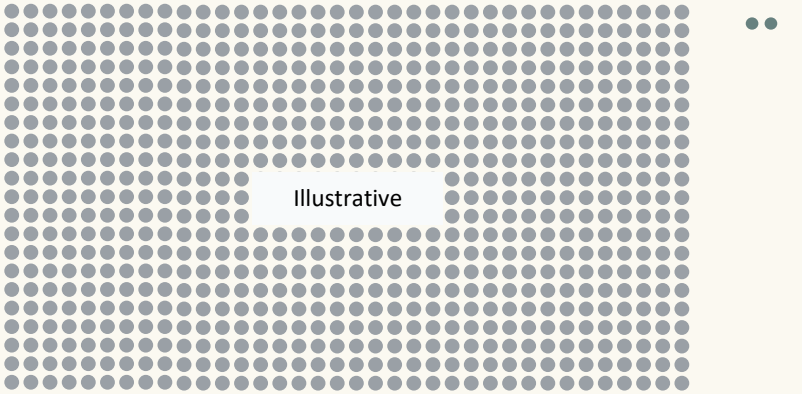
AlphaFold has predicted over 200 million protein structures – nearly all catalogued proteins known to science. The AlphaFold Protein Structure Database makes this data freely available. So far, it has over two million users in 190 countries. That means it has already potentially saved millions of dollars and millions of years in research time. Launched in 2024, AlphaFold 3 further advances the model, now also allowing it to predict the structures of DNA, RNA, ligands, and chemical modifications, while also improving protein interaction predictions by at least 50%.

Protein mapping before and after AlphaFold

Number of days

Number of days used to map one protein…

Before **After**



Researchers are using AlphaFold in nearly every field of biology…

Various case studies on the use of AlphaFold…

- Understanding the faulty proteins linked to cancer and autism
- Using AI to spot osteoporosis earlier
- Racing against drug-resistant bacteria
- Paving the way for potential Parkinson's treatments
- Stopping malaria in its tracks

Source: Implement Economics based on Google's AlphaFold.

AI is accelerating drug discovery—delivering more molecules, faster, and with higher clinical success

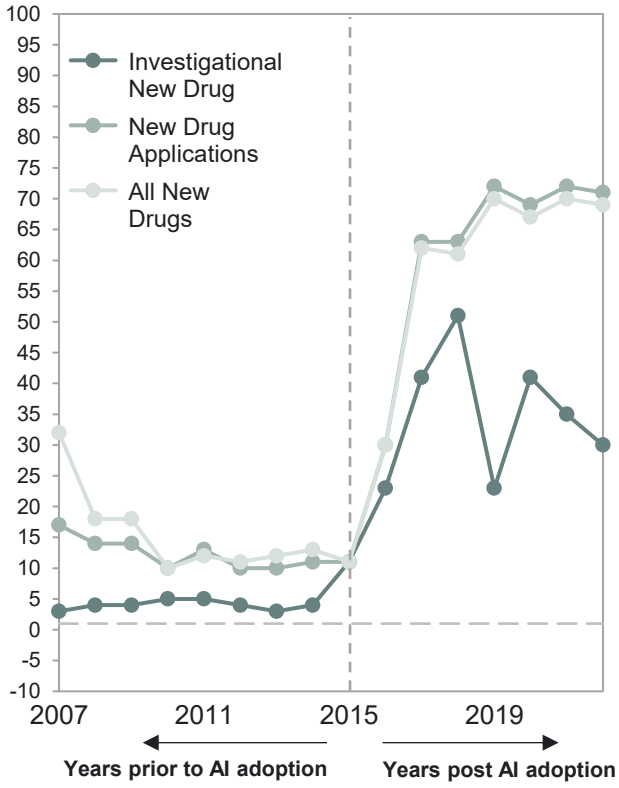
The Swiss pharmaceutical industry continues to expand, employing nearly 47,900 full-time equivalents in 2024. Over the past decade, its real economic output has more than tripled, driving over 40% of Switzerland's overall economic growth. In 2022, the sector accounted for 9.8% of national gross value added (GVA), and in 2023, it represented 38.5% of all Swiss exports.

At the same time, technological change is reshaping the global landscape. A recent study found that Chinese-listed companies applying artificial intelligence (AI) to drug discovery have significantly increased their production. Worldwide, the number of AI-discovered molecules entering clinical trials is rising rapidly, underscoring the transformative potential of AI for the biopharmaceutical sector.

> *What took us months and years to do, AlphaFold was able to do in a weekend.*
>
> Professor John McGeehan, Former Director for the Centre for Enzyme Innovation (CEI)

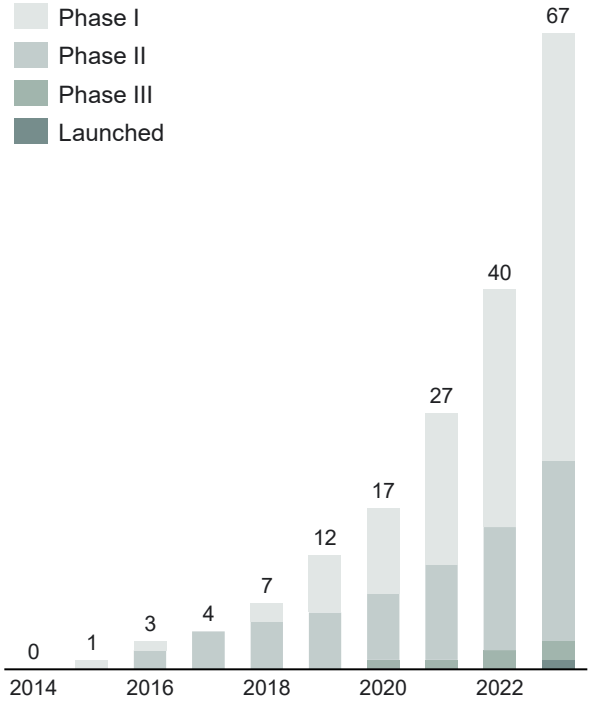
AI adoption increases the share of innovative drugs…

Share of innovative drugs by application type among Chinese firms
%



…and AI-discovered molecules are increasingly reaching clinical success

AI-discovered molecules by clinical phase in a sample of global biotech companies
No. of AI-discovered molecules in clinical trials



Notes: Labour productivity is measured as apparent labour productivity as defined by Eurostat. Left figure uses Chinese listed firms to investigate the role of AI in drug discovery and the impact of AI adoption on new drug R&D productivity. Right figure study is conducted using publicly available data from a compendium of >100 AI-native Biotech companies. These companies are headquartered in the United States, Europe, China, Japan and Israel among others (see here for supplementary data).
Sources: Implement Economics based on Eurostat, Wu et al. (2025), Google, Interpharma, Swiss Federal Statistics Office, and Jayatunga et al. (2024)

Case | AI has accelerated disease and treatment understanding through classification of all 71 million possible human genetic mutations

The challenge

Uncovering the root causes of disease is one of the greatest challenges in human genetics.

The solution

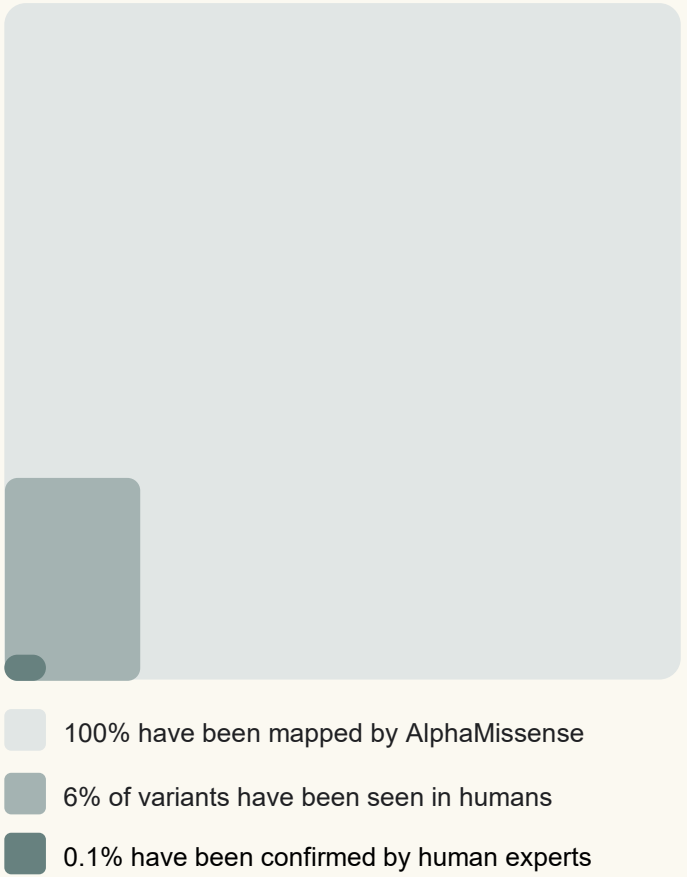
AlphaMissense applies AI to this vast biological challenge — determining whether genetic mutations are harmful or benign. By modelling both structure and protein language, the system has classified all 71 million possible human missense variants. Of these, only 6% have ever been observed in humans, and just 0.1% have been verified by experts.

The impact

AlphaMissense outperforms other computational methods in predicting missense variant effects, enhancing the diagnosis of rare genetic disorders and helping discover new disease-causing genes.

All possible 71 million human missense variants mapped by AlphaMissense

Share of mapped variants



Source: Implement Economics based on Google DeepMind, OECD Frascati Manual (2015), Besiroglu et al. (2023), and OECD AI Principles.

Generative AI can boost R&D efficiency by 10-20%, varying by domain and measure

AI has the potential to improve the R&D process by compressing research timelines, revealing previously undetectable patterns in complex European datasets, and empowering Europe's scientists to lead on global grand challenges.

Studies show significant productivity gains from scientific AI, translating into R&D efficiency gains corresponding to 10-15% of overall R&D costs.

72% of 21,000 people in a global Ipsos and Google survey expect AI to have a positive impact on science

Estimated productivity effects from AI in R&D

Study	Estimated effect	Interpretation
Babina et al. (2021)	+18-20%	Increase in sales due to AI adoption through product innovation
Wu et al. (2025)	+13-17%	Increase in innovation output per ¥1B of R&D expenditure
Dell'Acqua et al. (2025)	+13%	Shorter time-to-solution for innovation teams allowed to use AI
McKinsey (2023)	+10-15%	Productivity delivered as percentage of overall R&D costs

Source: Implement Economics based on Google, Babina et al. (2021), Wu et al. (2025), McKinsey (2023), and Dell'Acqua et al. (2025).

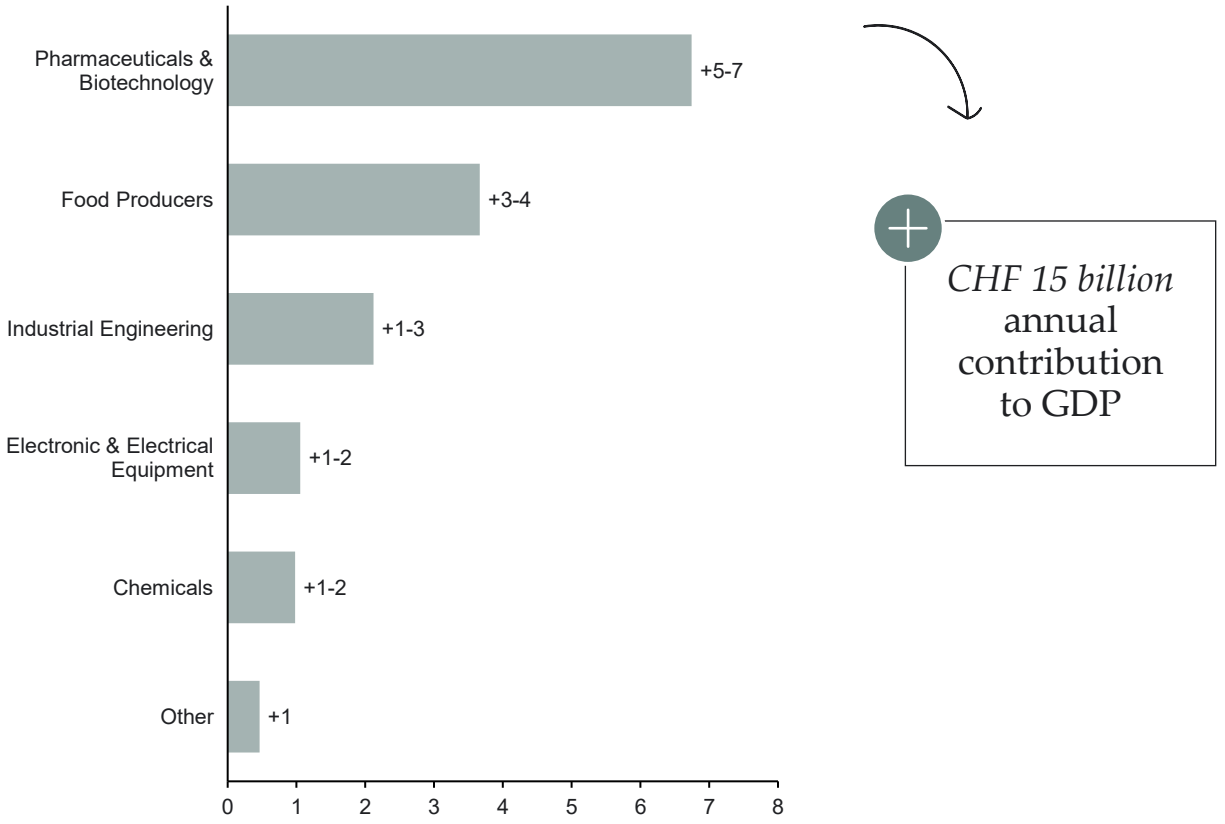
AI can significantly increase the efficiency of R&D processes potentially adding CHF 15 billion to Swiss GDP annually

If AI can improve the efficiency of knowledge-based R&D investments by 10–15% — as several studies suggest, particularly in sectors with intensive research processes such as pharmaceuticals, chemicals, and advanced manufacturing — Switzerland could achieve substantial economic gains. We estimate that widespread AI adoption in R&D across these sectors could add around **CHF 15 billion annually** to Swiss GDP by 2034**.**

Importantly, this estimate only captures private gains at the firm level and does not account for the substantial positive spillover effects on the broader economy, which are exceptionally large for early-stage technologies due to imitation and recombination benefits.

> *[…] since product development involves lengthy experimentation with uncertain benefits, the ability of AI algorithms to quickly learn from large datasets can […] make the process of learning about promising projects more efficient.*
>
> Babina et al. (2024)

Contribution to Switzerland's GDP by 2034 from AI's boost to R&D process
CHF billion



Note: Firm-level productivity gains are estimated based on the leading Swiss companies (in terms of R&D expenditure) using company profits and labour remuneration from the sectoral averages through Eurostat. Productivity gains are applied to relevant sector aggregates to reflect the entire Swiss economy. Firm-level effects do not take into account the large spillover effects from R&D investments. Thus, the aggregate effects from AI in R&D are likely significantly larger. Relevant sectors are drawn from McKinsey (2023) and Babina et al. (2021). R&D efficiency gains are based on annual R&D spending and firm-level GVA, with value added effects calculated using R&D-to-productivity elasticities that vary by each sector's tech intensity. Economic effects are calculated on a GVA basis and then converted to GDP using the Swiss GVA-to-GDP ratio from 2024. GDP equals GVA when adding net product taxes. 'Other' consists of 'Health Care Equipment & Services', 'Technology Hardware & Equipment' as well as 'Software & Computer Services'.
Source: Implement Economics based on McKinsey, Eurostat, Kumbhakar et al. (2011), EU industrial R&D investment scoreboard, and EU innovation scoreboard.

The wider social return from these R&D productivity enhancements is many multiples of the innovation investment

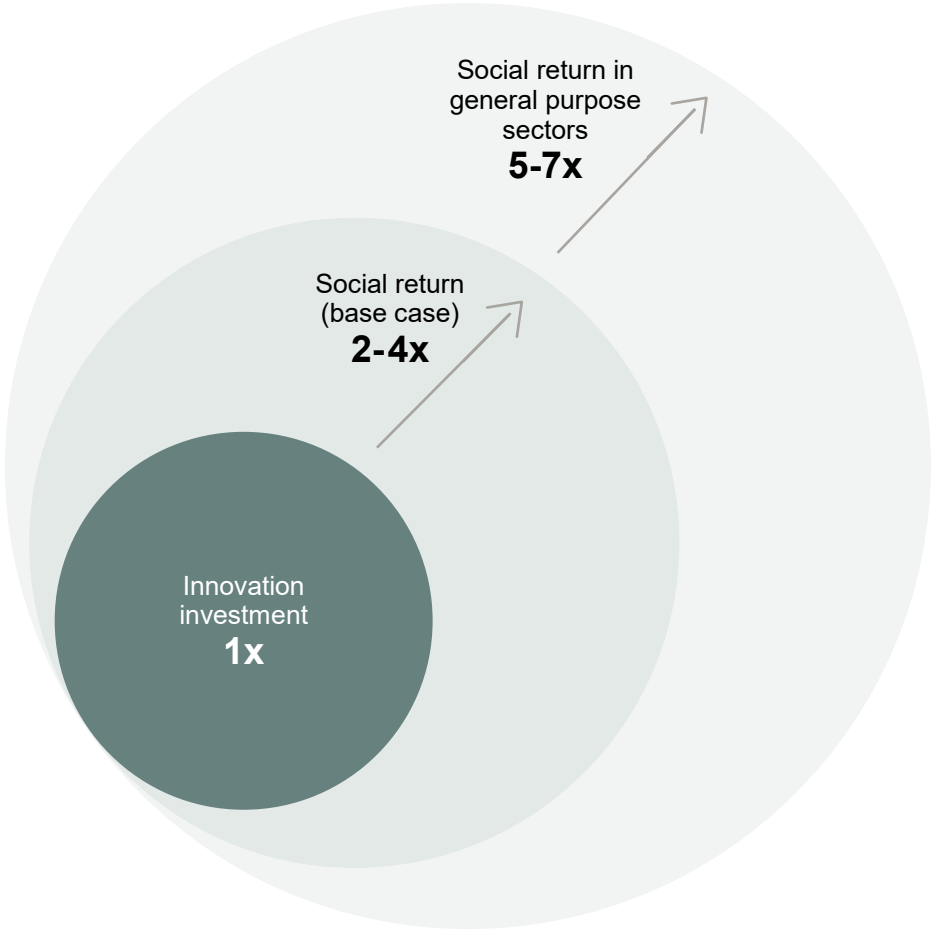
Private firms can only capture part of the financial returns from R&D investments, as innovation generates **large spillover effects** to other firms, sectors, and society at large.

Empirical studies consistently estimate that the social return from R&D is at least double the innovation investment, and may reach five to seven times in sectors characterised by general-purpose technologies.

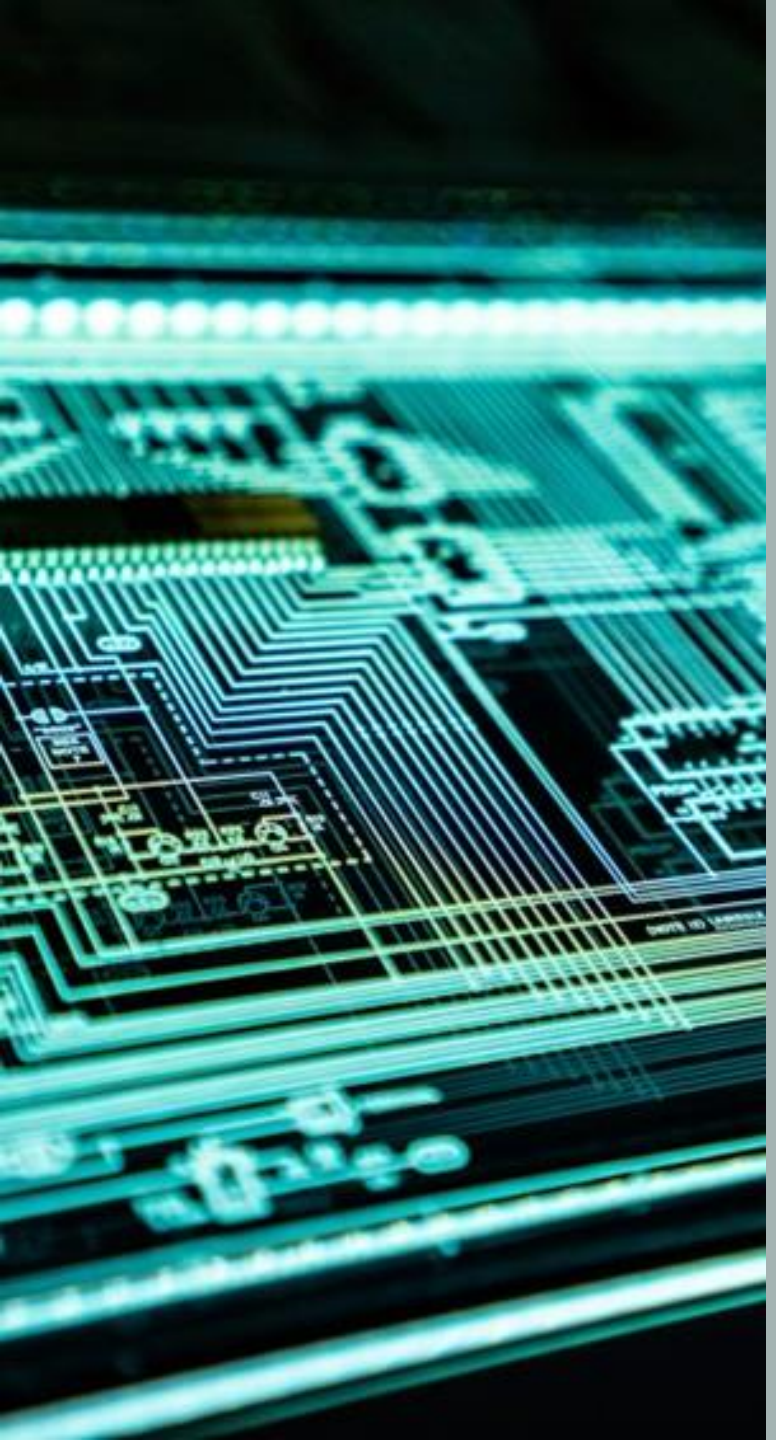
This suggests that the broader economic impact **of AI-induced R&D efficiency could be two to seven times larger than the direct firm level gains identified in this report**.

> *Even under conservative assumptions, it is difficult to find an average return below $4 per $1 spent.*
>
> Jones & Summers (2020)

Estimated social return on innovation investment



Note: Empirical studies estimate social returns on R&D investments to range from around x2 at the lower bound to up to x32 at the upper bound, depending on the social discount rate applied. Discount rates vary across countries, from 3.5% in the U.K. to 7% in the U.S., with the latter implying a return of 13.3 per unit of R&D investment. Returns are especially high for general-purpose technologies, which generate cross-sector spillovers. Against this backdrop, a return of x7 can be considered a conservative estimate.
Source: Implement Economics based on Jones & Summers (2020), and other studies that find similar results, including Bloom, Schankerman & Van Reenen (2013), Hall, Mairesse & Mohnen (2010), Bresnahan et al. (1995), Brynjolfsson et al. (2019), and IMF (2021).



Part 2

Producing AI

To capitalise on AI innovation, Swiss businesses require robust AI infrastructure and access to leading models. Expanding the entire value chain is essential to harness the AI opportunity.

In Switzerland, we have the infrastructure and some of the world's best talent: we can lead technological development in key areas of societal importance and align it with Swiss values

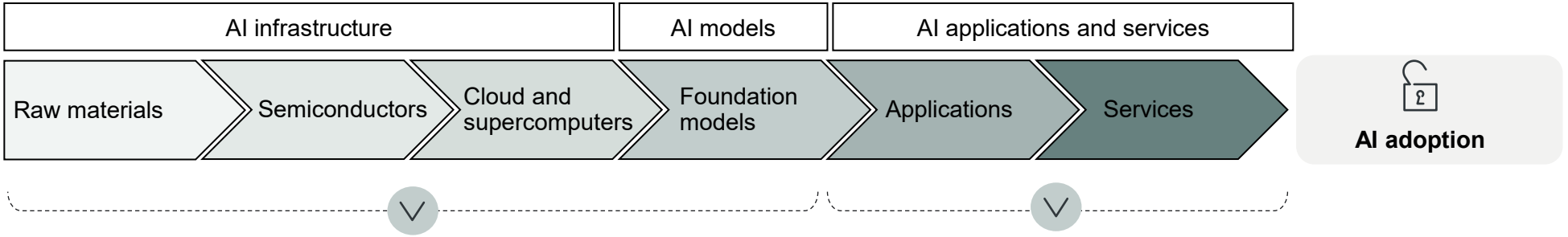
Antoine Bosselut
École Polytechnique Fédérale de Lausanne (EPFL)

Switzerland must build on its strengths and seize opportunities along the AI value chain to enable and support AI innovation

The AI value chain

The AI value chain represents the complete life cycle of AI, from infrastructure and models (technical bedrock) to AI applications and services (diffusion channel).

To seize the AI innovation opportunity, Swiss businesses need a strong AI infrastructure, such as data centres, and access to use and build on the best AI models. The entire AI value chain will need to be expanded to capture the AI opportunities.



AI's technical bedrock

The AI supply chain is globally integrated, and no region or country has the capacity to be self-sufficient or independent. Innovation knows no borders and ground-breaking innovations often result from global research collaboration.

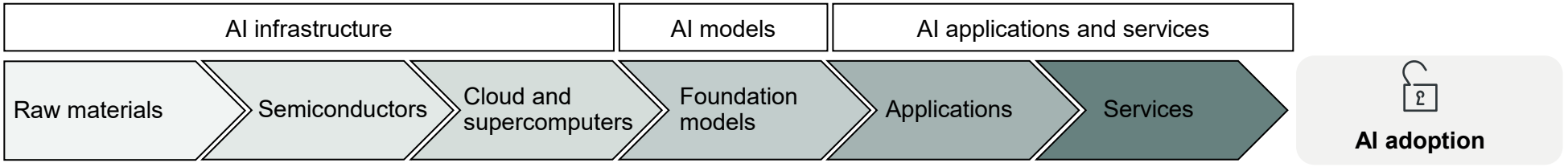
AI's diffusion channel

Broad AI adoption requires building and rooting the technology into the specific context, often best done by local businesses close to the integration problem.

Google contributes to AI innovation in Switzerland across the value chain

Examples of Google contributions along the AI value chain

Google Switzerland has around 5,000 employees and is one of Google's largest R&D engineering sites outside of the United States. Google Cloud has launched **13 cloud regions** in Europe since 2015 including one low-CO_2 in Switzerland, helping European businesses run mission-critical services with reduced latency, meet local data-residency rules, enact digital transformation and stay in control of their data.



Data centres and connection – Google has built 7 data centres and developed 13 cloud regions in Europe including one low CO_2 region in Zurich, and built multiple crucial subsea cables connecting Europe to the world – all in partnership with European companies like Orange, T-Systems, and TIM.

Vertex AI – Google Cloud's all-in-one platform helps Swiss businesses build and deploy AI-powered applications easily.

Cloud TPUs – Google's specialised chips have significantly contributed to the computational advancement that has accelerated large-scale AI.

Gemini – Google's cutting-edge foundation model is F&DIling innovation at scale, and the Gemini app now has over 650 million active users.

Google Cloud Consulting – Google's unified services portfolio brings together AI strategy, custom model development, integration support, and training.

Source: Implement Economics based on Google.

The global AI market is set for massive growth, with the biggest growth opportunity for the EU and Switzerland being in AI applications and services

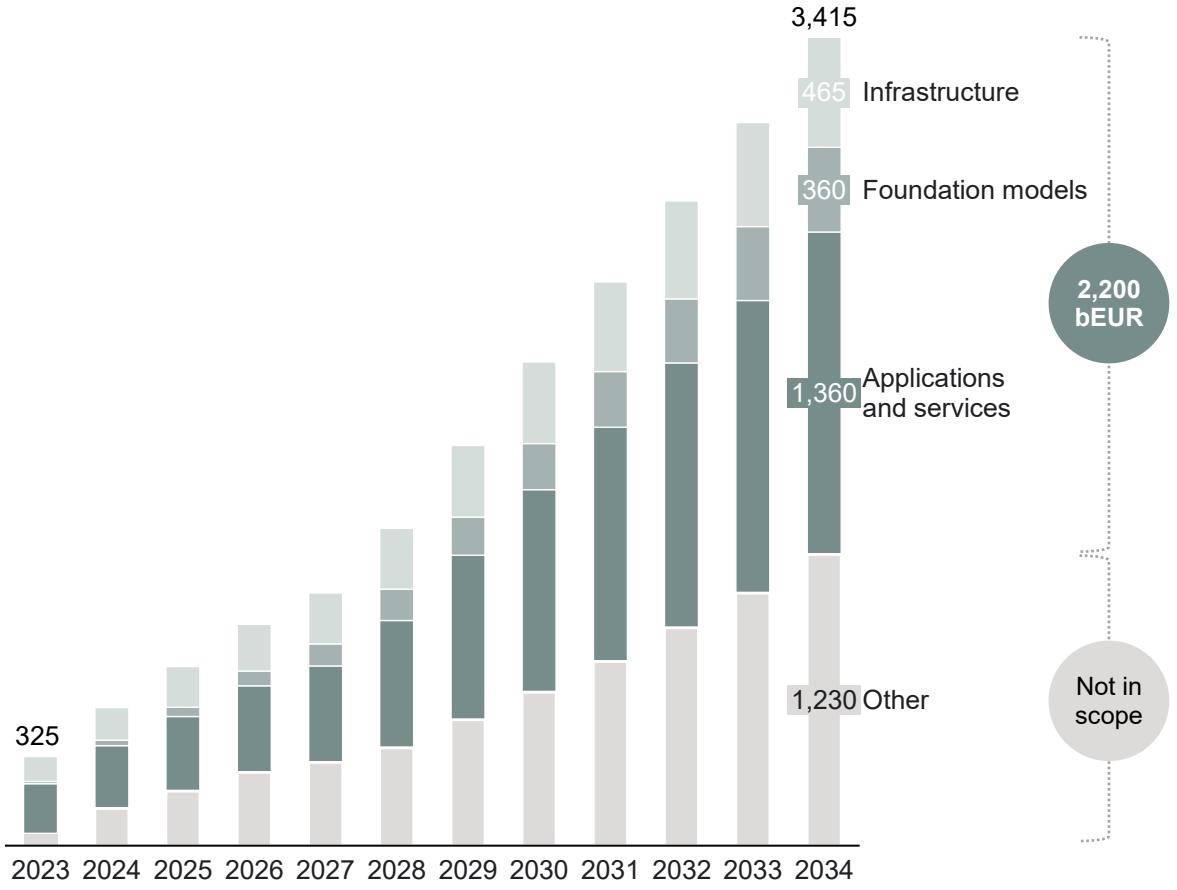
The global AI market is projected to grow 25% annually and reach around EUR 3.4 trillion by 2034. Some forecasts go even further. The UN estimates AI revenues to reach EUR 4.2 trillion in 2033. Most revenue today comes from non-generative AI systems (85% of the total), while generative AI's share is expected to be lifted to nearly half of the total AI market by 2034.

The global AI market related to the AI value chain revolves around three core segments: infrastructure, foundation models, and applications and services. Together, these three segments are projected to generate EUR 2.2 trillion in revenue globally by 2034. Over time, the focus will shift from infrastructure and training to inference and applications as computing becomes more efficient and models become more capable.

These projections point to a broad set of potential openings for Europe to lead in AI solutions. Among these, applications and services represent the largest by far, growing to almost EUR 1.4 trillion, or 60% of the total market.

Switzerland should ensure its ecosystem fully supports the benefits of AI adoption and innovation to capture the economic opportunities across the AI value chain.

Forecast global AI revenue
EUR billion



Note: The forecasted global revenue in the AI value chain excludes revenues from devices, digital ads and gaming (around EUR 1,200 billion in 2034). Foundation models relate only to generative AI. Gen AI estimates from Bloomberg are extended from 2032 to 2034 while non-Gen AI estimates are extended from 2030 to 2034.
Source: Implement Economics based on Bloomberg, FTI delta and United Nations.

Case | SWISS uses Google Cloud to make air travel more sustainable and improve operational quality

Our OPSD platform is already helping us save money, optimise operations, and fly more sustainably. By opening it up to our partners, we can share these benefits with everyone while improving the passenger experience.

Christian Most,
Head of Project Operations Decision Support Suite, Lufthansa Group

The challenge

SWISS needed a joint data repository that combined crew, passenger, rotation, and technical information to optimise flight operations with automated decision support.

The solution

With Google Cloud, SWISS built the Operations Decision Support Suite (OPSD), a modular data platform that replicates operations in near real time in BigQuery and uses Google Cloud AI and ML to evaluate scenarios and suggest optimal actions that controllers can execute in two clicks.

The impact

In the first 14 weeks, the rotation optimisation feature generated more than one million Swiss francs in savings, and the system now optimises around 50% of flights in the SWISS network. OPSD decreases the carbon footprint by reducing F&DI consumption, elevates the passenger experience by avoiding misconnections, and simplifies decision-making for controllers through automated support that frees up time for more value-adding tasks.

Source: Implement Economics based on Google Cloud.

Case | 3000x faster heat demand predictions for Swiss energy

The challenge

A Swiss energy and water utility company struggled with inaccurate, manual forecasts for district heating, which led to imprecise electricity production scheduling. These poor predictions caused operational inefficiencies and resulted in costly balancing fees due to the over- or under-production of electricity.

The solution

Unit8 deployed an automated advanced forecasting model for precise time series forecasting and anomaly detection. The solution was integrated directly into the client's DevOps environment to ensure scalability, code decoupling, and reproducibility across their infrastructure.

The impact

The new model delivers predictions 3000x faster than the previous solution and reduced the forecasting error (MAPE) from 15.8% to 5.7%. This leap in accuracy enables precise production planning and significant cost reductions in power plant operations.

Source: Implement Economics based on Unit8.

The AI infrastructure value chain is globally integrated and interdependent, requiring global cooperation and partnerships

The WTO emphasises that international trade, partnerships and cooperation are vital for AI development worldwide, as all countries are interdependent in some part of the value chain.

In the advanced chip ecosystem, firms occupy highly specialised roles: NVIDIA, Intel and AMD dominate chip design; ASML holds a unique position in chip manufacturing equipment; and TSMC carries out most fabrication of the most advanced AI chips.

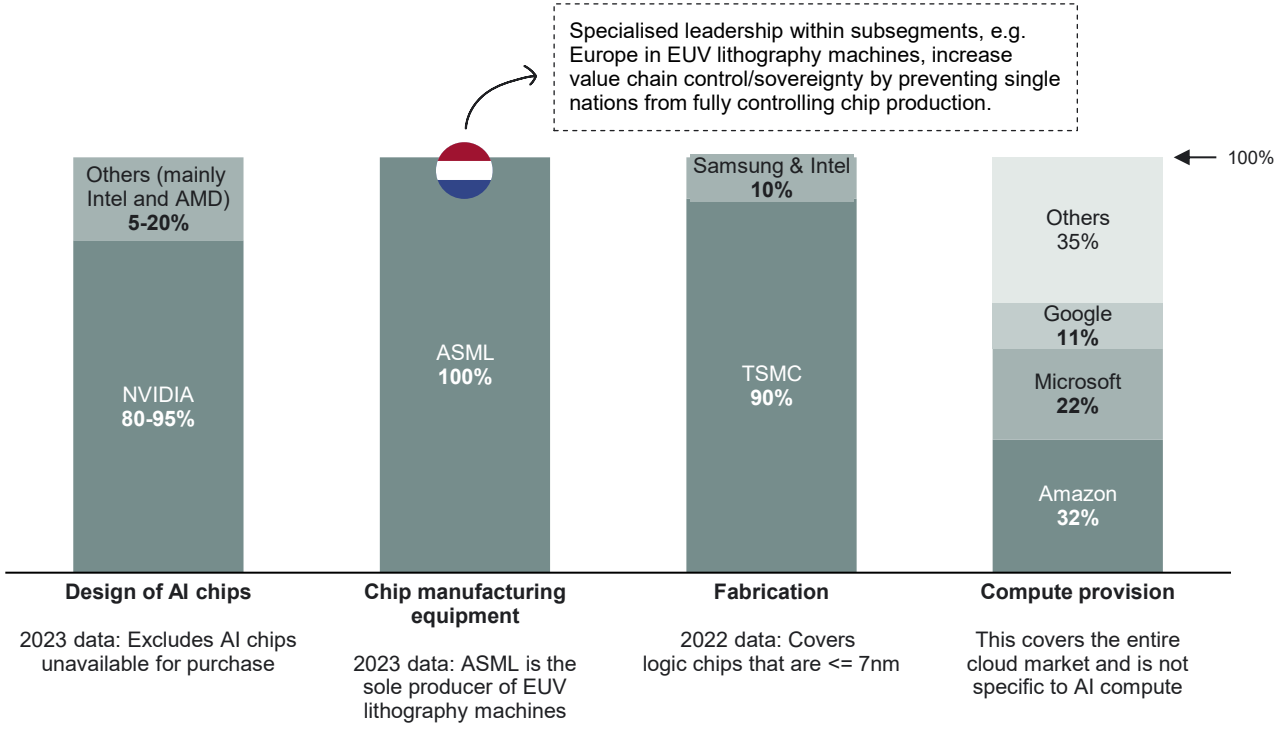
The cloud market is more dispersed, yet remains heavily centred on three US hyperscalers, many of which operate data centres in Europe and partner with European firms to provide sovereign cloud infrastructure and solutions.

Recognising this intricate global dependency, Europe's strategic approach, reflected in the EU Chips Act and Chips Act 2.0 discussions, aims for resilience through diversification, not isolation.

This underscores the advantages integration and trust-based international collaboration over industrial autonomy, highlighting the value of openness and global networking as recognised in the Swiss government's Digital Strategy.

Global share of leading companies in the AI infrastructure subsegment
%

> *The rise of AI is likely to require an increased international trade in goods and services related to that value chain.*
>
> **World Trade Organisation** in *Trading with intelligence* (2024)



Source: Implement Economics based on World Trade Organisation (WTO), Ipnest, Gartner, and Sastry et al. (2024).

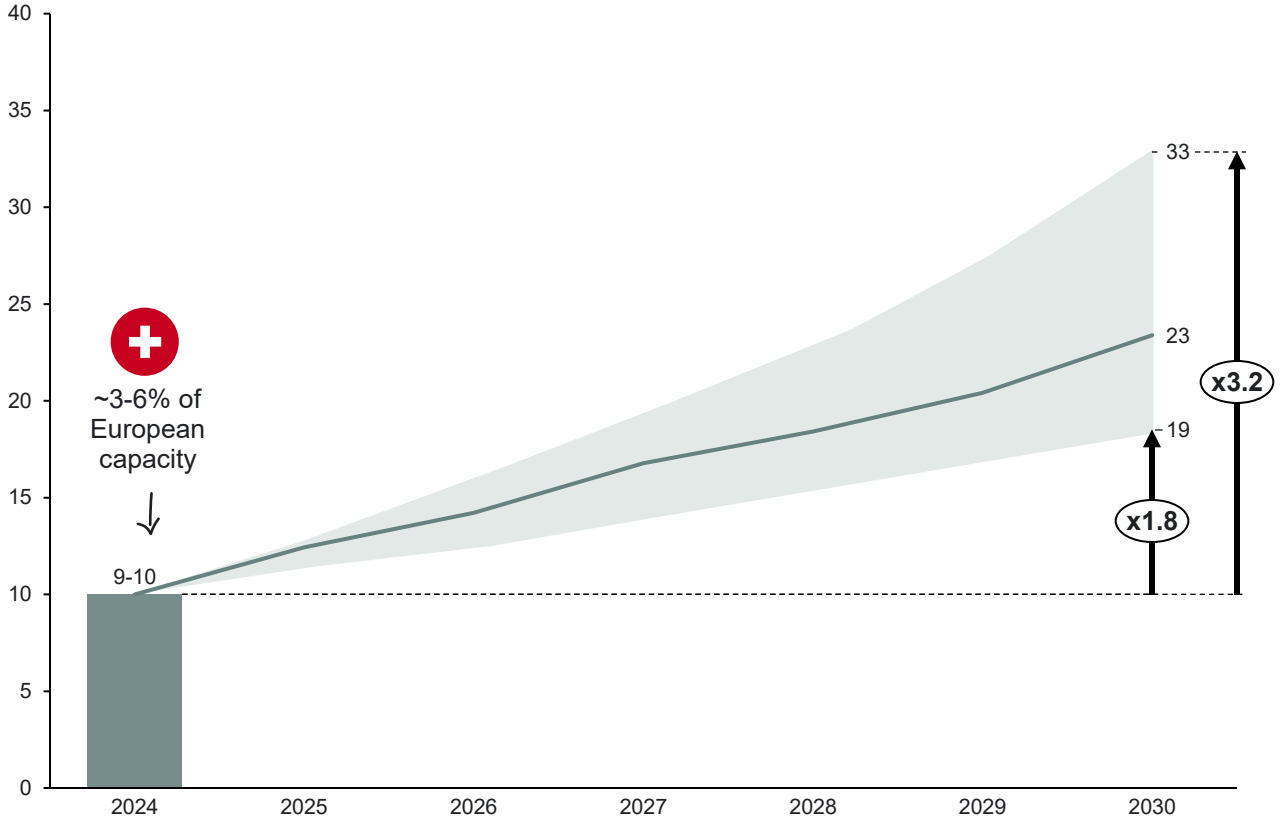
Switzerland together with the EU needs 2-3 times more cloud capacity to meet future AI demand, and this is best achieved in an open market

Europe currently hosts about 10 GW of data-centre capacity (~18% of global total). Forecasters project European data centre capacity should double or triple towards 2030 to meet future demand. Not all new capacity is expected to be used for AI. By 2030, 25-30% of European data centre capacity is expected to be consumed by AI compared to less than 5% today.

Switzerland represents roughly 3-6% of European data-centre capacity, with Zurich acting as a key AI and cloud hub and hosting approximately 133 MW of co-location capacity. Recent announcements of USD 400 million in new cloud-infrastructure investments underline Switzerland's attractiveness as a data-centre location.

However, Switzerland currently lacks explicit strategic targets or a national roadmap for data-centre capacity expansion. As demand accelerates, establishing indicative build-out objectives and clearer planning frameworks, while preserving open competition and market-driven investment, would help ensure timely, efficient, and cost-effective capacity growth.

European data centre capacity
GW



Note: There is uncertainty around the precise amount of installed data centre capacity in Switzerland and Europe in 2024. European estimates range between 8.5 and 10 GW and Swiss capacity ranges 300-600 MW.
Source: Implement Economics based on Draghi, the European Commission, Statista, EIA, CBRE, ICIS, Mordor Intelligence, Goldman Sachs, IDC, Financial Times, and McKinsey.

Swiss innovators want to have the choice to leverage the best AI models for innovation

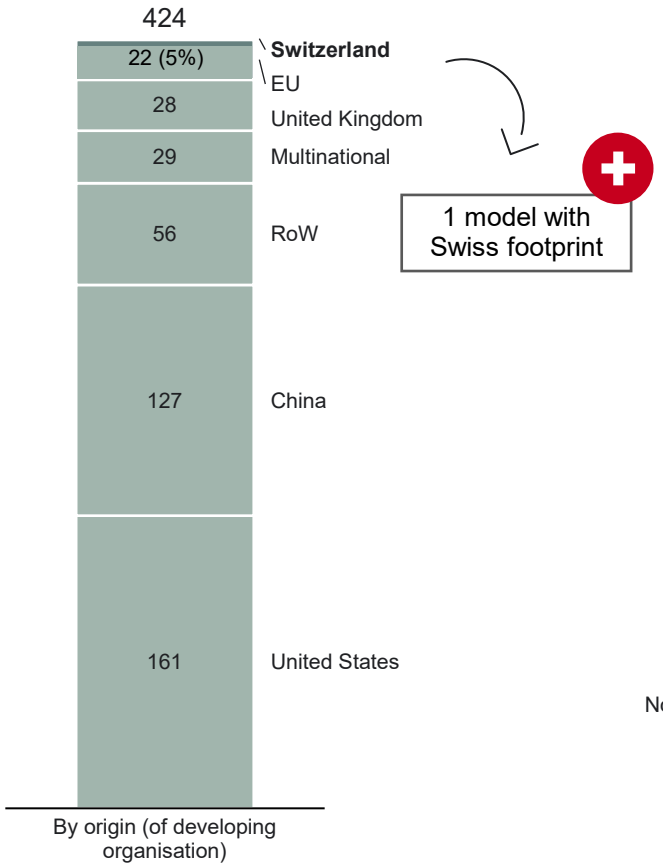
Foundation models are the technological bedrock of the AI innovation opportunity. Foundation models are AI systems trained on massive datasets. Some excel at language tasks, others at vision or code. They are built by various suppliers, such as France's Mistral AI and LightOn, and Germany's Aleph Alpha, and most recently Switzerland's Apertus which has extensive multilingual capability, with 40% of its training data from non-English sources and support for 1,811 languages.

Of the more than 400 large-scale AI models available globally, only 22 models originated from Europe (5% of the global total).

Innovators need access to the global pool of AI models for their innovation. In 2024, 68% of foundation models were available either through an API or with open weights, making them accessible for a wide range of uses.

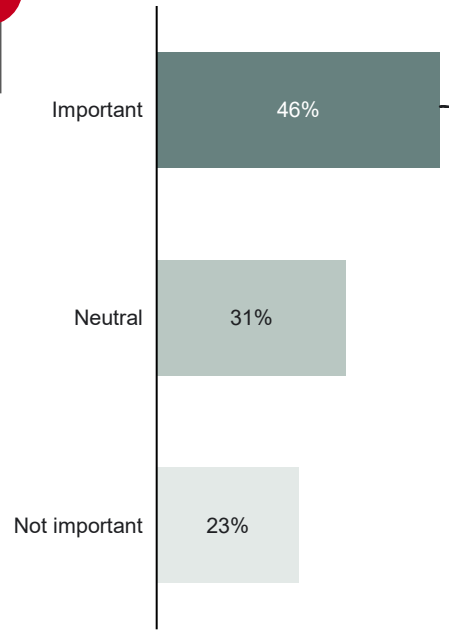
A recent survey shows that access to the global pool of AI models is important for EU innovators. Nearly half of European start-ups and scaleups (46%) say that access to AI models from outside Europe is important to their business.

Large AI models by origin
Number of models



Perceived importance to European businesses of AI built outside of Europe
% of respondents

"To what extent is access to cutting-edge AI technologies built by companies outside of Europe important to your business?"



58%
…of respondents who consider access to non-European AI models important, report sourcing them from North America.

Note: Large-scale AI systems built since 2017 as of 2025Q1.
Source: Implement Economics based on Epoch AI, Dealroom, Hugging Face and Notion Capital survey (2024).

New foundation models are being launched in a highly competitive market

The AI model market is expanding, with firms developing capabilities across text, image, audio, video, and specialised domains such as protein and DNA sequencing. Releases are frequent: the Stanford AI Index reports 61 notable models launched in 2024, with model size continuing to grow.

Training costs can be high—GPT-4 reportedly exceeded USD 100 million—but DeepSeek claims to have trained its R1 model for USD 5.6 million with comparable performance. Building new generalist foundation models involves substantial financial and computational barriers, with significant sunk investment. Europe's advantage lies instead in specialised, fine-tuned models for narrower applications, as shown by Swiss firms such as EthonAI (manufacturing) and SOPHiA GENETICS (precision medicine).

The OECD has assessed competition risks in foundation models, examining barriers to data access and economies of scale. It finds these risks largely speculative and sees no evidence they are constraining competition, indicating the market remains open to entry and innovation.

Examples of generative AI models shows that there are many options available for each modality

	Text	Image	Audio or music	3-D	Video	Protein structures / DNA sequences
OpenAI	GPT-4.1	GPT Image 1	Jukebox	Point-E	Sora	
Google/ DeepMind	Gemini 3	Imagen	MusicLM	DreamFusion	Veo 3.1	AlphaFold2
Meta	LLaMA 2	Make-A-Scene	AudioGen	Builder Bot	Make-A-Video	ESMFold
Microsoft		NUWA-Infinity	VALL-E	NUWA-Infinity	NUWA-Infinity	BioEmu-1
Stability AI	StableLM	Stable Diffusion XL	Dance Diffusion			LibreFold
Amazon	Amazon Titan		Deep Composer			
Apple				GAUDI		
NVIDIA	MT-NLG	Edify		Edify	Edify	MegaMol BART
Cohere	Command R					
Anthropic	Claude 3 Sonnet					
AI21 Labs	Jurassic-X					
Mistral	Mistral Large 2	Pixtral Large				
Aleph Alpha	Luminous	Luminous				

Note: Closed-source models keep their code private, require formal approval processes for access and often an NDA; closed-source models available through APIs maintain private code but allow use via API under licencing agreements; and open-source models publish their code for public use, sharing and modification, sometimes with non-commercial restrictions.
Source: Implement Economics based on Stanford University (2025), OECD, Wired, McKinsey, and the listed companies' official documentation.

AI applications and services turn technology into practical solutions, and Switzerland is well-positioned to capture more market growth

AI applications and services, or vertical AI, transform AI technologies into sector-specific solutions that drive productivity through industry-specific or company-specific applications.

This area is where we estimate Europe's and Switzerland's greatest opportunities within the value chain, and it is also the fastest-growing segment of the market.

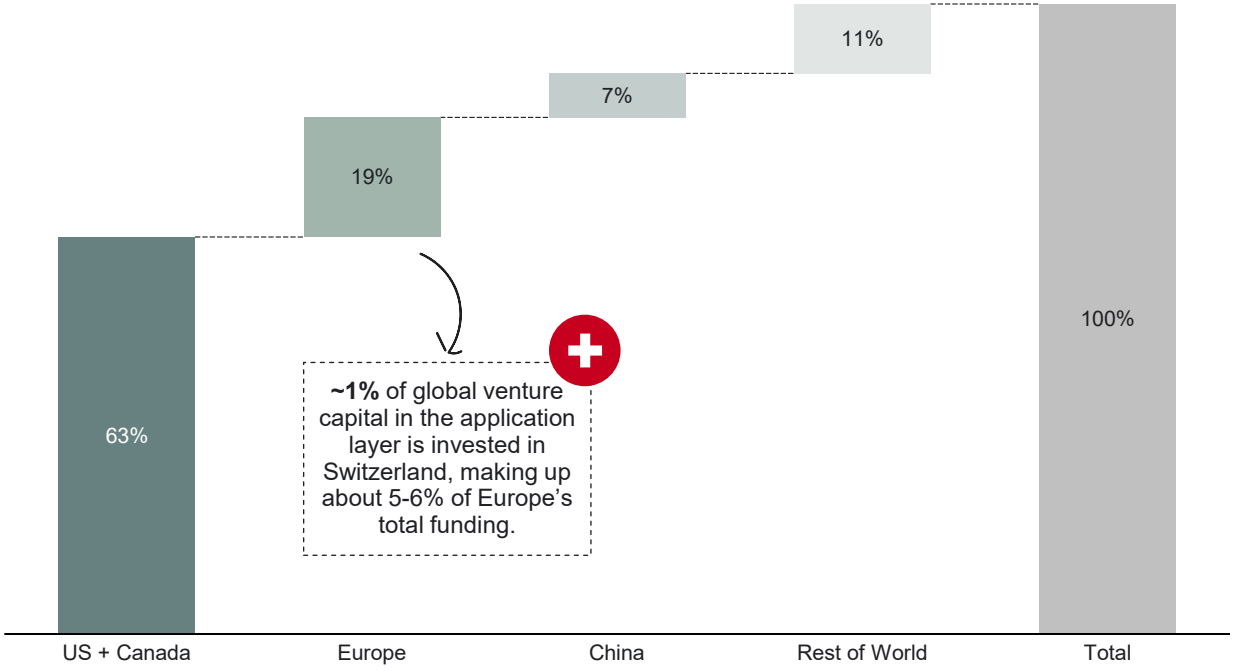
Europe and Switzerland's industrial expertise and domain knowledge, particularly in engineering, finance, pharmaceuticals, and luxury goods, offer significant opportunities for AI application and service development.

Europe attracts 19% of global AI application funding, signalling European strength and momentum in this part of the value chain. On a per capita basis, Switzerland ranks 1st in Europe by Deep Tech funding (where the leading segment is AI/ML) and third globally, just behind Israel and the US.

Innovative digital businesses with specialised capabilities and close market proximity are key to customising these applications into real-world adoption and innovation. By tailoring solutions to specific needs and processes, they are key to realising Europe's collective AI potential.

Global venture capital funding share in AI applications layer by region, 2023-2024
%

> *Switzerland stands at the forefront of global AI innovation, leading with the highest AI patents per capita and one of the most dynamic startup ecosystems.*
>
> **Chris Keller** in *Swiss Deep Tech Report 2025*



Source: Implement Economics based on Dealroom.

Case | Unlocking corporate intelligence with agentic AI

The challenge

A mid-to-large manufacturing company faced a critical "knowledge bottleneck" where decades of technical data were trapped in thousands of scattered legacy files. Technical teams spent up to 30% of their time searching for information, leading to prolonged downtime and a heavy reliance on a few senior experts.

The solution

Var Group deployed an Agentic AI solution using Retrieval-Augmented Generation (RAG) to process and understand the company's entire technical archive. The company built a Virtual Technical Assistant that allows technicians to ask complex questions in natural language and receive immediate, synthesized answers with citations to original sources.

The impact

Information retrieval time dropped from hours to seconds, effectively making senior expert knowledge accessible to the entire workforce. The client achieved a drastic reduction in new hire onboarding time and a measurable improvement in the "First Time Fix Rate" for maintenance operations.

Source: Implement Economics based on VAR Group.

Part 3

Commercialising AI

Switzerland needs to foster new innovative digital businesses to drive the innovation and diffusion of AI

[…] productivity growth is the result of a combination of two forces: disruptive innovation brought about by new, dynamic start-ups challenging incumbents; and efficiency gains in mature traditional industries applying these innovations.

The EU Commission in A Competitiveness Compass for the EU

AI is becoming a core building block of modern startup business models

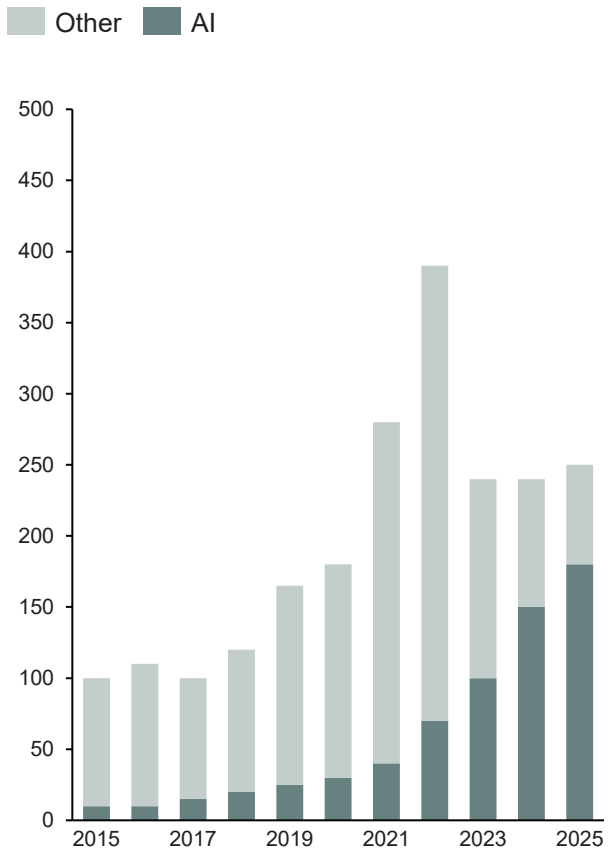
Startups are increasingly founded on AI technologies, reflecting both the growing entrepreneurial confidence in AI and its expanding role in driving innovation. Data from Y Combinator, a leading global startup accelerator, show a rapid rise in AI-based startups in recent years.

This global trend is visible in Europe, where **79% of innovative digital businesses (IDBs) are already using generative AI, going beyond adoption to adapt and develop it for business needs.** IDBs are defined as young firms with scalable business models and high growth potential that are either digital at their core or heavily enabled by technology. Classified as startups (2–50 employees), scaleups (51–500), or grownups (500+), they act as early adopters, active experimenters, and key contributors to the AI ecosystem.

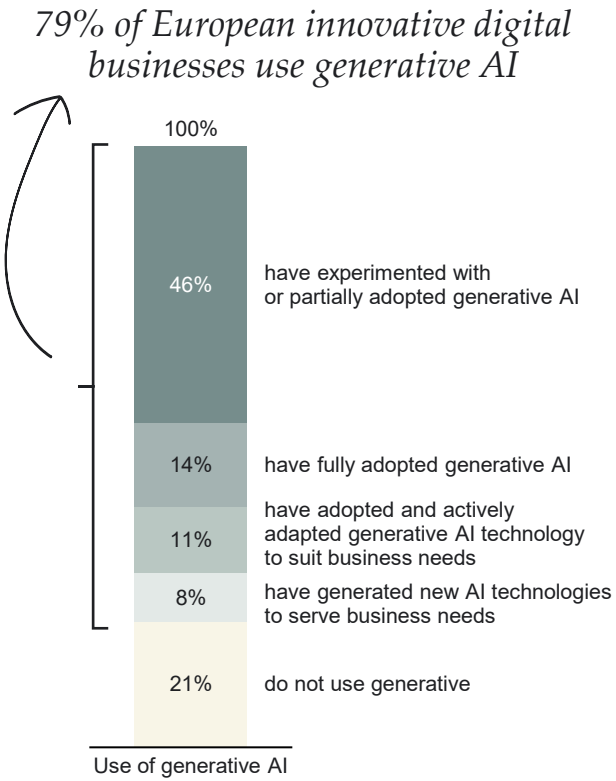
Successful AI startups outperform competitors by combining technical AI expertise with deep sector knowledge (e.g., healthcare, manufacturing), as found in a recent AI report co-funded by the EU.

As such, Switzerland's IDBs play a critical role in advancing AI development and diffusion.

Startups in Y Combinator by field globally
Count



Use of generative AI in European IDBs
% of respondents



Note: Y Combinator is an accelerator programme providing a public list of all YC-backed companies. Y Combinator data includes all startups accepted into its accelerator programme, encompassing both U.S. and international companies, with approximately 70% based in the U.S. No. of startups are reviewed as per winter in the year noted on the x-axis. Notion Capital survey data includes respondents from France, UK, Germany, Denmark, Poland, Spain, Netherlands, Sweden, Finland, Norway, Belgium, Ireland, Lithuania, and Estonia, N=866.
Source: Implement Economics based on Notion Capital, Y Combinator, JPMorgan and Eloundou et al. (2024).

Case | Advanced graph RAG for a Swiss watchmaker

The challenge

A renowned Swiss watchmaker faced a massive challenge with a 100-fold increase in data volume, consisting of highly technical documents with domain-specific terminology. This information overload made locating correct data difficult and increased the risk of retrieval errors, forcing employees to rely on time-consuming consultations with multiple colleagues.

The solution

Unit8 implemented an Advanced (Graph) RAG solution that combines dynamic query generation with entity-based retrieval to navigate complex technical relationships. The system uses AI agents and a user-guiding interface to enrich context with structured data, prioritizing the most relevant results through custom reranking.

The impact

The solution successfully maintained high-quality, low-hallucination answers despite the massive data explosion, saving employees tens of minutes per complex inquiry. By replacing manual research with instant AI retrieval, the company significantly boosted efficiency in preserving and accessing its unique technical heritage.

Source: Implement Economics based on Unit8.

Innovative digital businesses play a central role in developing applications that tackle business challenges

To unlock the full potential of AI, Switzerland needs application layer solutions that meet real needs across both the public and private sectors.

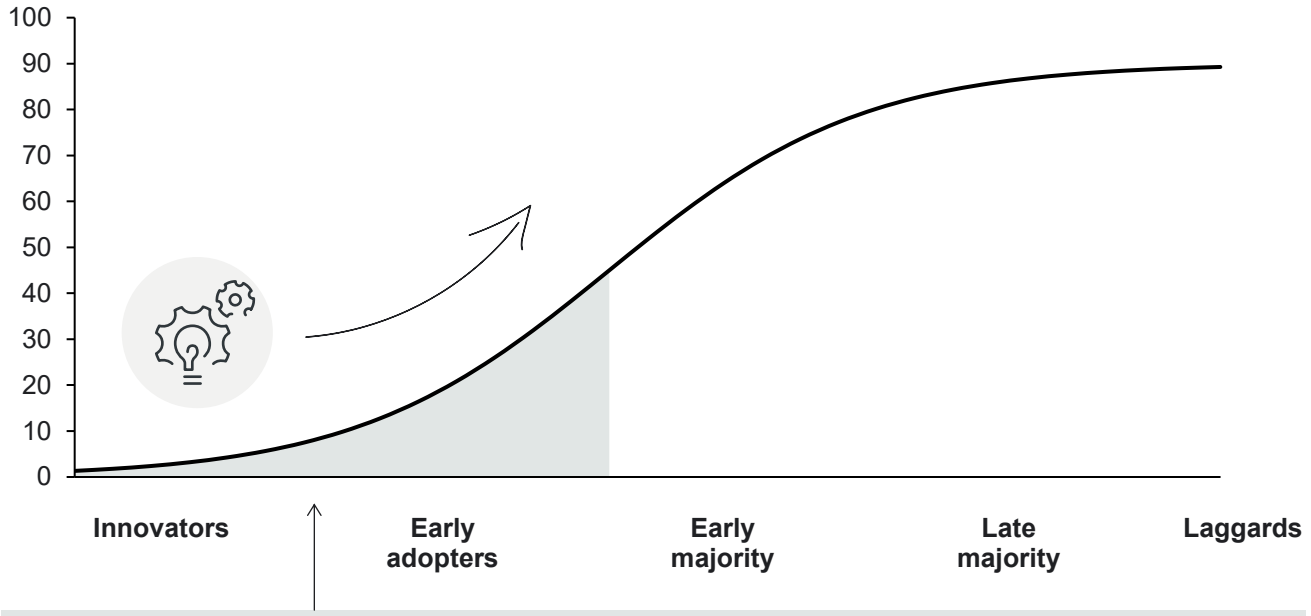
While companies of all sizes and types can tap into this rapidly growing opportunity, innovative digital businesses are particularly important because they can:

- Develop new AI tools and applications
- Enable businesses across all sectors to adapt to and benefit from AI
- Inspire smart AI usage and demonstrate AI's value by being early adopters and innovators
- Create competitive pressure on slower adopters

These firms amplify the opportunity by sparking broader uptake of AI applications throughout the economy.

30% of Google's code is generated by AI, increasing speed, improving productivity and quality at the same time

Diffusion of AI technologies in Switzerland
%



Yokoy
…developed an expense management platform that uses Google AI to automate invoice, expense, and card management.

Restor
…combines satellite imagery with AI-driven analysis to deliver real-time ecological insights to protect biodiversity.

Cerrion
…transforms factory CCTV into intelligent vision systems that detect anomalies in real time to boost efficiency and safety.

Note: The figure shows generative AI adoption expressed as a share of economy-wide firms exposed to AI automation.
Source: Implement Economics based on Bruegel (2021) and Google.

Switzerland leads OECD in growing and scaling innovative digital businesses

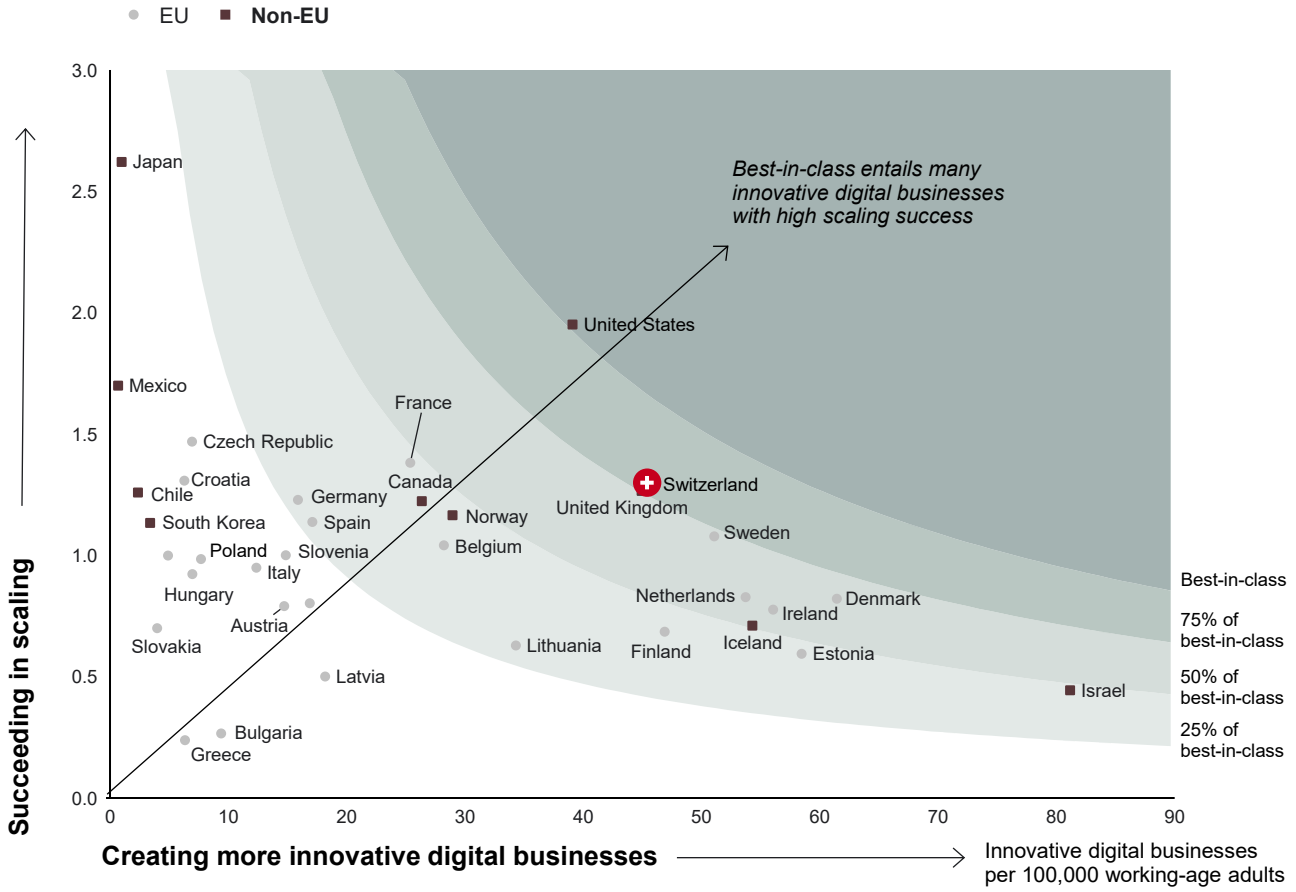
Innovative digital businesses act as AI accelerators, transforming AI models into real-world solutions. Switzerland stands out as an OECD leader in scaling success and nurturing such businesses, making it a role model for peers.

This vibrant ecosystem is not only central to the diffusion of AI across the economy, but also to Switzerland's broader economic prosperity.

Policymakers should not take this position for granted: sustaining Switzerland's entrepreneurial edge is essential for securing its future growth and competitiveness.

> Switzerland stands at the forefront of global AI innovation, leading with the highest AI patents per capita and one of the most dynamic startup ecosystems.
>
> **Chris Keller**
> in Swiss Deep Tech Report 2025

Share of grownups[1]
% of total number of innovative digital businesses

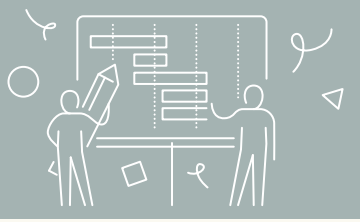


Note: 1) Grownups are defined as established innovative digital businesses that have successfully scaled and employ more than 500 people.
Source: Implement Economics based on Dealroom (2024), and Deep Tech Nation Switzerland.

Case | Google is a launchpad for entrepreneurs in Switzerland

More than 115 startups have been founded by former Google employees in Switzerland, resulting in the creation of around 1,750 jobs.

Prominent examples include:



Businesses rooted in Google

Daedalean

Based in Zürich, Daedalean is pushing the boundaries of aviation with AI-enhanced avionics that can eventually enable autonomous flight. Its systems bring “Situational Intelligence” into the cockpit, aiming to support pilots and raise safety standards across the industry.

Cradle

Cradle is an AI-driven biotech platform that accelerates protein engineering, making it easier and faster to design high-performing proteins across pharmaceuticals, food, agriculture, and materials. Founded by Google-trained scientists in 2021, it has already raised more than 90 million USD in funding.

DeepJudge

DeepJudge is tackling the challenge of knowledge management in the legal field. By combining its Precision AI Search with a deep understanding of context, the startup’s platform helps lawyers unlock insights hidden in large document collections, reducing the time needed to build cases or answer complex queries.

Source: Implement Economics based on Google, Daedalean, Cradle and DeepJudge.

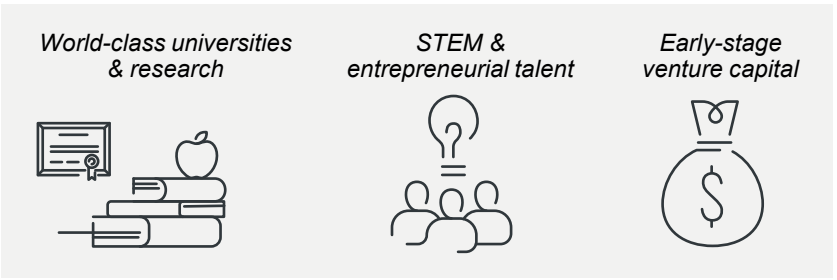
Switzerland's strong startup ecosystem translates into higher productivity through innovative digital businesses

Switzerland's startup ecosystem is built on strong fundamentals: world-class research, high-quality institutions, and access to early-stage capital. Leading universities such as ETH Zurich and EPFL anchor the ecosystem, supplying cutting-edge research and dense STEM talent.

Institutional stability, strong rule of law, and robust IP protection reduce uncertainty for founders and investors, while active early-stage venture capital supports experimentation and technology-intensive business models.

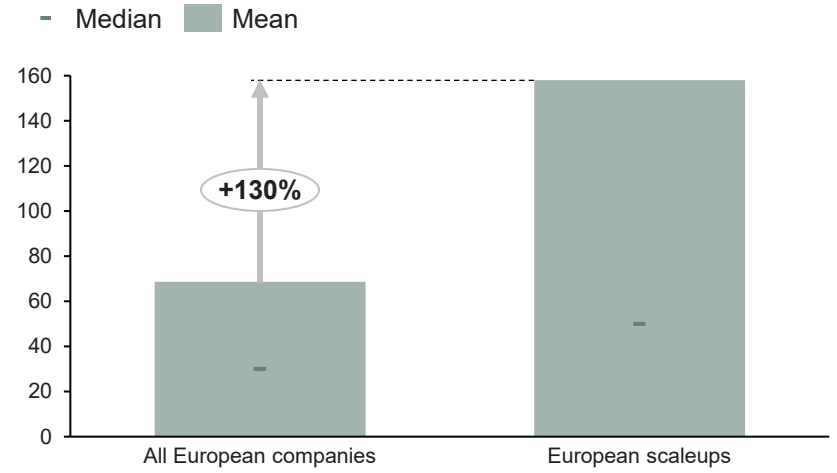
Together, these factors create a high-trust environment that enables innovative digital businesses to scale—and contribute disproportionately to productivity and value creation.

Factors of a thriving startup ecosystem



Switzerland has strong conditions for a thriving ecosystem for innovative digital businesses

Labour productivity in the EU: Scaleups vs. other companies
Value added per employee, thousand EUR



…who play an outsized contribution to the economy

Notes: The EIB study relies on deal-level data from PitchBook and follows cohorts of European companies that reached scale-up status between 2013 and 2023. The economic potential shown on page 68 of this report uses Dealroom data and defines scaling success based on company size by employment count. Both PitchBook and Dealroom data identify the same group of high-growth firms.
Source: Implement Economics based on WIPO, European Innovation Scoreboard, EIB and The AI innovation opportunity in Sweden, Denmark, Finland, Norway, Lithuania, Belgium, the Netherlands, and Ireland.

Case | Autonomous 24/7 support and ticketing system

The challenge

A service-oriented enterprise struggled with an overwhelming volume of repetitive Level 1 inquiries, resulting in slow response times and employee burnout. The lack of true 24/7 coverage created a permanent overnight backlog that negatively impacted customer satisfaction.

The solution

VAR Group implemented an Intelligent Ticketing Automation system that integrates directly with the company's ERP and CRM to analyze the intent and sentiment of every request. The AI autonomously resolves routine inquiries by performing database checks, while complex issues are summarized and routed to the best-suited human agent.

The impact

The system now handles approximately 60% of incoming volume autonomously, eliminating the backlog within weeks and ensuring instant 24/7 responses. This shift reduced the cost-per-ticket by over 40% and allowed human agents to focus on high-value problem solving.

Source: Implement Economics based on VAR Group.

Part 4

The way forward

How to provide proper framework conditions for good use cases to scale and close the innovation gap in Switzerland

The regulation of AI will be based on three objectives: reinforcing Switzerland as a centre of innovation, safeguarding fundamental rights (including economic freedom), and increasing public trust in AI.

The Federal Council of Switzerland on AI Regulation

To realise the CHF 15 billion potential, Switzerland should focus on five pillars for enabling AI innovation

Switzerland already has strong fundamentals for AI innovation. Continued progress depends on predictable, innovation-friendly framework conditions that allow AI use cases to scale responsibly across sectors.

Encourage AI investments	Develop infrastructures	Cultivate AI talents	Accelerate the research to industry pipeline	Implement a supportive regulatory framework
Support scientific research start-ups with grants and joint public procurement. Require that contracts over CHF 5 million include an AI innovation component. **Reduce administrative and regulatory friction for AI startups and scale-ups** to improve investment attractiveness and time-to-market. Introduce an "AI-first where appropriate" procurement pathway: challenge tenders, sandboxed pilots, and pre-commercial procurement-paired with controls and evaluation metrics-so the **state creates early reference customers** for Swiss AI firms. Further coordinate the adoption of AI to digitally transform public administration in Switzerland.	**Expand data centres capacity and modernise electricity grids** to ensure a reliable and clean energy supply. Keep supporting and developing innovative initiatives such as the **SwissChips Initiative** to maintain Switzerland's scientific edge. **Keep Switzerland at the forefront** of a joint European effort to scale shared data centres, pooling resources across countries to benefit from large scale effects. **Expand interoperable data spaces** and scale privacy-preserving access mechanisms so firms can build application-layer AI without compromising rights and trust objectives.	Move **beyond general "skills"** language to measurable targets (e.g. SME adoption rates, no. of audited high-risk deployments). **Encourage Public-private partnerships to enhance skills development** and ensure that AI tools meet real-world scientific needs. Further promote the educational foundation for supporting digital development.	Further support the Swiss Financial Innovation Desk (FIND) **facilitating dialogue between stakeholder groups** such as financial institutions, consumers, vendors, innovative start-ups, global technology firms, academia and operators. Establish a **dedicated AI subsidy scheme** disbursed only to projects that demonstrate formal collaboration with at least one Swiss or European university or public lab. Fund more **industry-academia translational programmes** (testbeds, shared datasets, validation environments) in priority verticals.	Deliver the planned AI bill for consultation by end-2026 on schedule, with **clear scope to reduce uncertainty and enable the AI potential** for firms and investors. **Align national frameworks** with international standards (EU AI Act) and principles (OECD AI Principles) to reduce fragmentation, compliance burden and allowing for cross-border scaling. Complement regulation with **guidance, sandboxes, and best-practice tools** to support responsible AI adoption. Ensure that horizontal AI regulation integrates smoothly with existing sector-specific rules (e.g., healthcare, mobility, finance), **avoiding duplicative compliance** while preserving safety.

Source: Implement Economics based on documents in links above.

About this report

This report has been developed by Implement Economics, the Economics Practice of Implement Consulting Group, and Implement's Digital Transformation Practice. The research has been commissioned by Google and digitalswitzerland to explore the opportunities for Switzerland to accelerate innovation, productivity, and competitiveness with AI.

Google offers leading cloud and AI technologies and is among the pioneers in the recent AI breakthrough. Its AI leadership approach covers the full AI stack: infrastructure and computing, research, models, and products that are both deployed in Google's own services and offered to partners and businesses through its cloud platforms. By combining products, expertise, and models, Google provides tools and infrastructure that can support business transformation and improve operations at scale.

Innovation and cross-border collaboration based on state-of-the-art technology are essential for Swiss businesses to stay competitive in the AI era. This report includes the authors' assessments of Google's contributions to the Swiss innovation ecosystem through investment and partnerships, and highlights the impact of bringing global technological advancements to businesses and researchers across the continent.

The authors of the report are Bodil Emilie Hovmand, Sissel M. Andersen, Anders Thor Lundberg, Alexander Jagd Oure, and Martin H. Thelle. Martin H. Thelle is a senior partner in Implement's Economics Practice, while the other authors are economists in the same practice, all based in Copenhagen.

Disclaimer

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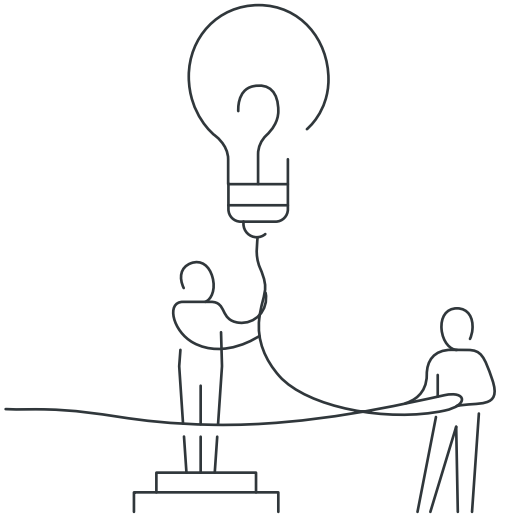
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