

2022
WHITE PAPER

INNOVATE SWITZERLAND

BUILDING THE PATH
TO A DATA ECONOMY

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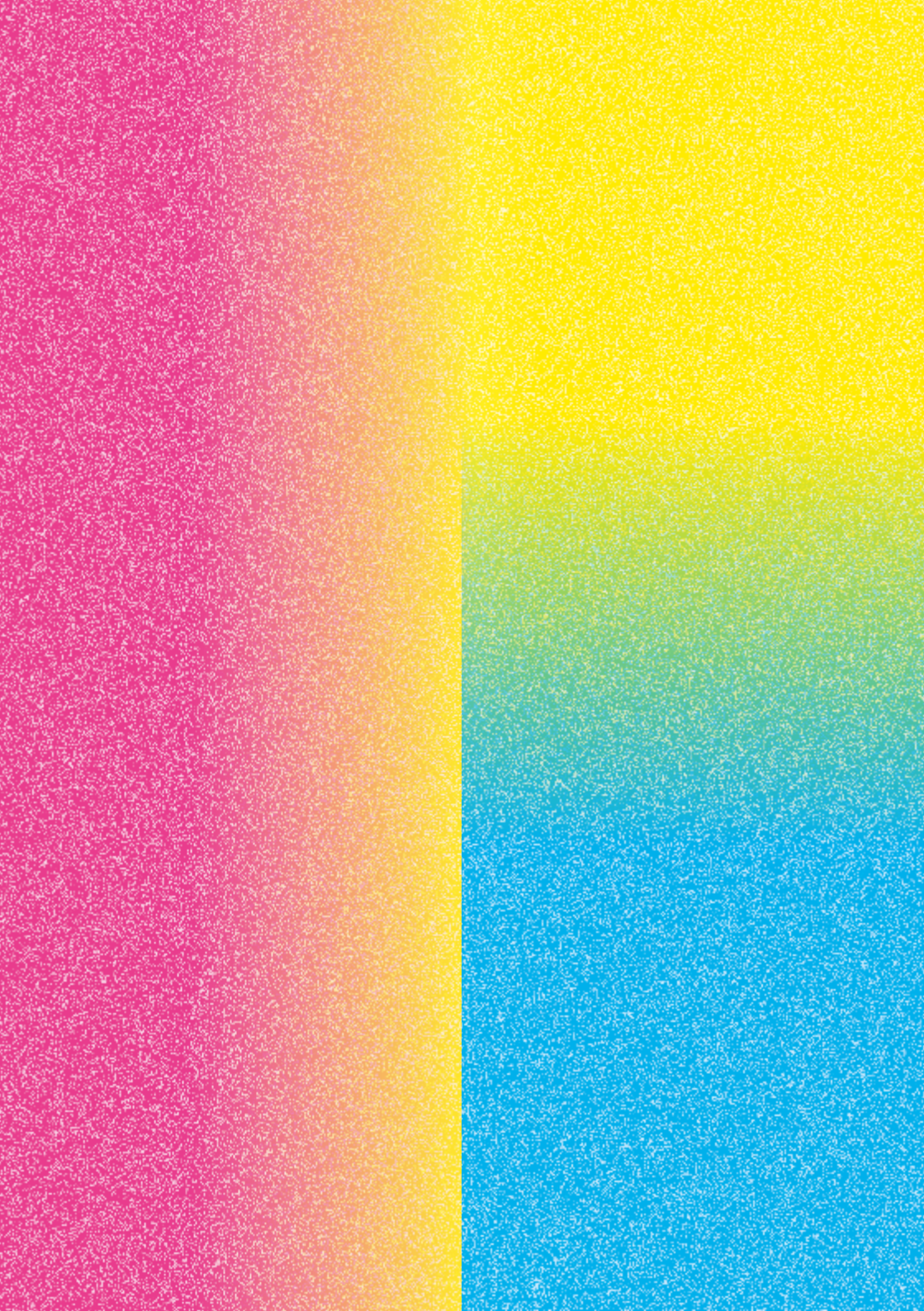
In the coming years, foundations will be laid worldwide for the successful use of digital data. This applies to companies, as well as to the public sector, and the realm of science. The Corona pandemic experience has proven the development and necessity of the data economy, which consistently establishes itself in the public discourse. Data is not only emerging as the basis for individual digital business models: in the future it will form the foundations of the entire economic system. Different strategies and policies can be anticipated on the road to the data economy: democracies, for example, will establish regulations that differ from non-democratic states. And even between western industrialised nations, accents will develop along the role of the state and the weight of liberal convictions, which can be decisive for the attractiveness of locations and innovation framework conditions of individual countries.

Switzerland, therefore, faces a great opportunity today: in translating its traditional legal security, and general attractiveness to innovative companies from analog to digital. If all actors work responsibly and keep societal interests in focus, sustainable conditions and stable frameworks can be created today. However, current debates are often selective and dependent on spontaneous emphasis: Sometimes the resilience of digital infrastructure dominates the discourse, followed by ethical issues surrounding artificial intelligence, and then by Switzerland's independence from foreign cloud providers. To discuss these questions, a community is being launched as part of

the “Innovate Switzerland” platform. The network brings together thought leaders from the field to collectively, systematically, and continuously accompany and support Switzerland in the development of the data economy. The project covers the entire breadth of change: from legal requirements to the transformation of the educational landscape. This bottom-up approach is indispensable for integrating organisations from the field and their concrete experiences in shaping the future framework conditions. The community enables specific market signals and acute calls for action to penetrate the discussion at significant velocity, stimulating a continuous adaptation of solutions.

The Think Tank W.I.R.E. was requested by Microsoft Switzerland to develop a content baseline for the community’s work. This white paper is based on the research of the think tank, and takes into account findings from discussions with experts practicing in the field. It thus provides a holistic and practice-oriented description of the relevant topic areas for Switzerland on its path to the data economy. It serves as a working paper for the community and provides key points for a comprehensive discussion of the central fields of action: technological infrastructure, perspectives of value creation, and the social embedding of the upcoming transformation.

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RAIL NETWORK AND RAIL OPERATIONS

For all its virtuality, digitalisation has already left deep grooves in the veneer of the present. Not only do physical devices for the use of digital applications shape people's daily routines, but they are also increasingly an essential component of an infrastructure that is digitally controlled and networked.

The next phase of digitalisation will be less visible than the previous one, but its impact on all areas of life will be much greater: the systematic collection, storage, processing, and transfer of data that will accompany private and professional life will change it profoundly. Business models, services, and products will emerge with potentials ranging from increased efficiency, genuine personalisation, and better decisions in creating improved quality. The secure storage and efficient processing of large amounts of data will become the innovation platform of the 21st century.

Switzerland – like other countries – is dependent on defining clear rules for all necessary steps in dealing with data, so that innovative power, economic strength, and social well-being are maintained. This also involves dealing with infrastructure (such as sensors, servers, data centers) – and as with many previous transformations, the hardware is only the groundwork.

Despite all the limitations of historical comparisons, a brief look at the success story of the railway in the 19th century is exemplary for the upcoming debates around the data economy. This innovation also triggered a surge in development that helped Switzerland to grow in prosperity and emerge as an international player. The role of basic technologies was and is evident: rails, stations, bridges, and tunnels are undoubtedly the foundation of industrial transport. But without trains and trained train drivers, the most solid rails are ineffective. Equally, there is a need for competent organisations to look after and develop the entire railway system.

This simple insight is fundamental and emblematic for developing a strategic approach in shaping future framework conditions in Switzerland around the use of data and the cloud as a basic digital infrastructure. It is not enough to discuss the locations of data centers: expertise is needed in the use of these frameworks, so that efficient and secure utilisation of the data is guaranteed.

In addition, the goal of the coming months and years must be to sharpen the blurred concepts of sustainability and ethics in the context of data. The necessary debates must be freed from reflexes and structured along concrete challenges.

“Innovate Switzerland” wants to underline the cross-sectoral relevance of this field with a holistic debate that consistently contemplates the perspectives of business, politics, and society – beyond arbitrariness and media attention. This is intended to create a discussion space with an assertion towards in-depth content paired with pragmatism, identifying the relevant issues in a data-based economy with its finger on the pulse of practice: developing concrete proposals for a broad discourse.

FIELDS OF ACTION
FOR A POLICY
WITH REGULATORY
FORESIGHT

HOLISTIC DATA STRATEGY FOR SWITZERLAND



Interoperability of data and systems



Open access to market-relevant data



**Technological and cultural
cybersecurity**



**Individual and institutional data
competencies**



Responsible innovation funding



Forward-looking regulation



**Broad access to the international
data processing market**



**Digital sovereignty with transparency
and control**

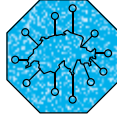


**Climate-neutral and circular
use of data**



Pragmatic ethics

**SOCIETY'S TRUST
IN THE DATA ECONOMY**

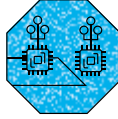


Holistic data strategy for Switzerland

Development of integral cornerstones and measures to successfully position globally competitive data handling

Data will contribute significantly to the future creation of value for the economy and society. Therefore, attractive economic policy framework conditions for the collection, storage, and use of data in Switzerland are essential for securing prosperity and future innovations. This involves not only regulations for the domestic market, but also guidelines for the Swiss role in a globalised data economy. To do justice to the complexity and multifaceted nature of data handling, a holistic Swiss data strategy that aims to achieve the greatest possible legal certainty is needed. At the same time, however, it should also guarantee secure footing for political responsibility and leadership roles; technological standards and infrastructures; competence development and assurance.

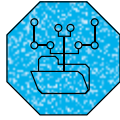
The data strategy must meet high standards of orientation, bindingness, flexibility, and originality to ensure that Switzerland gains greater leverage as a haven for the use of data on the global scene.



Interoperability of data and systems

Overall definition of standards for formats and protocols for efficient collection and processing of data

Although it is now a commonplace that the quality of data is crucial to its successful use, shortfalls in compatibility and authentication of the data collected and stored pose a hindrance to competent processing. This is true within economic sectors and beyond. In addition, the international fragmentation of standards makes exchange and sharing difficult. Experience has shown that the market does not possess the self-regulating effect to achieve a higher degree of uniformity. Therefore, an overarching definition of standards for formats and protocols in coordination with existing sectoral specifications is needed to simplify the processing and sharing of data, and to reduce opportunity costs. Ultimately, it is a matter of developing data spaces with clear specifications that make it possible for individual organisations to handle data without restrictions, especially within a network.

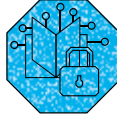


Open access to market-relevant data

Clarify data sharing and prevent market imbalances in data access for SMEs and start-ups

The potential of data for innovation and value creation is primarily derived not from its ownership, but rather its equitable access, efficient use, and systematic re-use. Today, scarcity of data is one of the limiting factors in the way of paving Switzerland's path into the data economy. Existing regulatory requirements are motivated by the need to protect public and individual welfare, and yet, in their existing form, often act as a barrier to organisations developing data-based services. It is organisations' fear of losing competitive advantage by passing on data to other market participants that retards value-creation. Consequently, a data use law that includes both generally applicable and sector-specific guidelines is needed to grant the necessary freedoms for the common good, the economy and research through data sharing. It is necessary to align the rights and obligations of data holders and users transparently, and clearly with the specific requirements for the data-types in question. This concerns the relationships of all relevant groups: "government-to-business", "business-to-business", "business-to-government" and "government-to-government".

A special focus should be honed on fair conditions for SMEs and start-ups for data access and data use. This should counteract market imbalances in favour of a small number of international players.



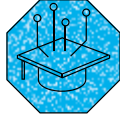
Technological and cultural cybersecurity

Mechanisms and capabilities to protect data and connected services

Threats from cyberattacks will increase as the creation of value through data advances, thereby becoming a risk for economic and individual damage. This also pertains to Switzerland's critical infrastructure with its emphasis on a well-functioning society. With the expanding networking of intelligent infrastructure, growing data transfer, and increasingly decentralised processing of data on end devices, the need to define continuously updated standards to prevent attacks is growing. The highest standards for cybersecurity are subsequently paramount for the acceptance and success of data-based solutions.

When formulating and defining dynamically adaptable certifications, encryption for example, attention must be paid to the fact that data use and value creation will take place in ecosystems and collaborations in the future. For this, regulations that reconcile confidentiality and integrity with maximum availability for all actors must be developed.

In addition to the technological dimensions of digital security, individuals cannot be neglected as a decisive building block of the system. To guarantee comprehensive protection in the long term, people must be able to act in accordance with new security risks. There is a need for continuous sensitisation and knowledge transfer for responsible handling of private and business data.



Individual and institutional data competencies

Build and ensure a workforce with knowledge and data know-how

The availability of a skilled workforce to handle data is a limiting factor for innovation in organisations. Global competition in the market for data specialists will continue to intensify due to growing demand and will play a decisive role in determining the ascendancy of countries within the data economy. The current deficits in Switzerland span university graduates specialised in data science to hybrid profiles with basic understanding of data and industry-specific experience. Finally, a solid level of basic data knowledge is essential throughout society to ensure trust and inventiveness.

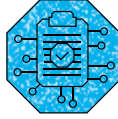


Responsible innovation funding

Further develop funding apparatus for early adopter organisations within the data economy

New opportunities for data use are developing at a high rate. The commitment to implementing innovative approaches is often associated with large investments and risks. This pursuit of risky and explorative approaches will be key for Switzerland to enable breakthroughs and to ensure its attractiveness as a location for innovation. The country therefore needs a funding apparatus that takes the risks that private and institutional investors will not. At the interface between basic research and application, for example, where the pace of existing institutions is currently insufficient, funding apparatuses can specifically promote value creation, and thus also attract the next generation of data specialists. The dynamism of these future funding structures should be geared less towards one-off start-up activities, and instead prioritise promising approaches with long-term responsibilities and consider projects with regards to their cross-sectoral and societal added value.

SMEs should receive special attention, not only because of their great importance for Switzerland, but also because they are tenuously pitted against large companies, especially in the race for new employees with data skills.

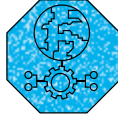


Forward-looking regulation

Further develop existing legislative processes that support foresight and keep pace with technological innovation

In addition to the amount of data collected, the technological possibilities for fostering data resource usability will also increase in the coming years. In many cases, these will be applications whose modes of operation cannot be predicted today, so by default, precise legal frameworks will be created retroactively. For organisations, this necessarily creates windows of opportunity burdened with legal uncertainty, making innovation and evolution from the status quo more difficult.

The value of broadly supported and carefully negotiated guidelines characterises the resilience of the Swiss legal framework. Without giving up these distinguishing qualities, there is a need to develop policy processes responsive to new data-based solutions. It is also important to create opportunities for organisations to try out new application options for the use of data, and to be able to assess the concrete potentials without moving outside the existing guidelines.



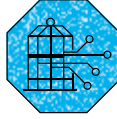
Broad access to the international data processing market

Foundations for a clear approach to foreign legislation

In cross-border economic activities, Switzerland faces the challenge of acting in accordance with EU law or the requirements of third-party countries. The market for storing and processing data is highly internationalised and therefore requires a target-oriented integration of Switzerland's interests.

The rules and standards for the emerging data economy are currently being negotiated at the European level. Switzerland must play an active role here if it does not want to lose access to Europe's promising data spaces. This is important not only from a commercial perspective, but also for continued competitive science and research in Switzerland.

It also needs binding agreements with other countries to enable cross-border data transfer quickly when domestic providers cannot offer the specific services needed by Swiss organisations. Switzerland can build on its historically grown role in the international community as a zone for balancing interests and cooperation, thus positioning itself for global agreements on data guidelines.

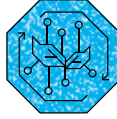


Digital sovereignty with transparency and control

Negotiating actionable rights and duties of the state, organisations, and individuals for self-determined action in the data economy

The success of Swiss companies in the global economy increasingly depends on their ability to drive data-based value creation, and to tap new revenue streams from digital products and services. Cloud platforms have become central to this by enabling digital innovation and data exchange efficiently, securely and with the necessary scalability. The global character of these infrastructures inevitably leads to a tension between the possibility of using the cloud as an innovation platform and at the same time breaching the territorially defined sovereignty of a single state. To resolve this, a modernisation of the concept of sovereignty is requisite. In the data context, self-determined action and decision-making requires ensuring the necessary competences of all actors, as well as the existence of the decisive key technologies and legal framework conditions. Informed self-determination is the essence of digital sovereignty, which must be respected and observed by all market participants.

Switzerland can lead the way here with a differentiated and value-based approach that builds on state-of-the-art technology to reap the benefits of the digital economy and open markets, while meeting the legitimate demands of transparency and control.

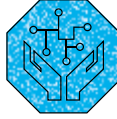


Climate-neutral and circular use of data

Alignment of national sustainability goals with the strategic cornerstones for developing a digital economy

Within the framework of its climate policy, Switzerland has clearly advocated limiting greenhouse gas emissions to protect the environment. The use of digital technologies has a two-fold significance in achieving climate protection goals: on the one hand, they provide the opportunities for efficiency improvements for the sustainable use of energy and resources; on the other hand, they themselves rely on energy. The evaluation of large amounts of data and the use of artificial intelligence applications in particular are energy intensive. To avoid conflicts of objectives between climate protection and innovation location attractiveness, transparent and comprehensible climate target specifications, as well as energy monitoring of data handling should be developed.

Like social standards in value creation, the use of data must also be regulated across systems regarding its ecological footprint in order to do justice to its cross-sectoral relevance. The transformation to a climate-neutral and data-based economy can only succeed if both developments are tackled together as they are inseparable.



Pragmatic ethics

*Protection against bias, discrimination, manipulation,
or other misuse of data*

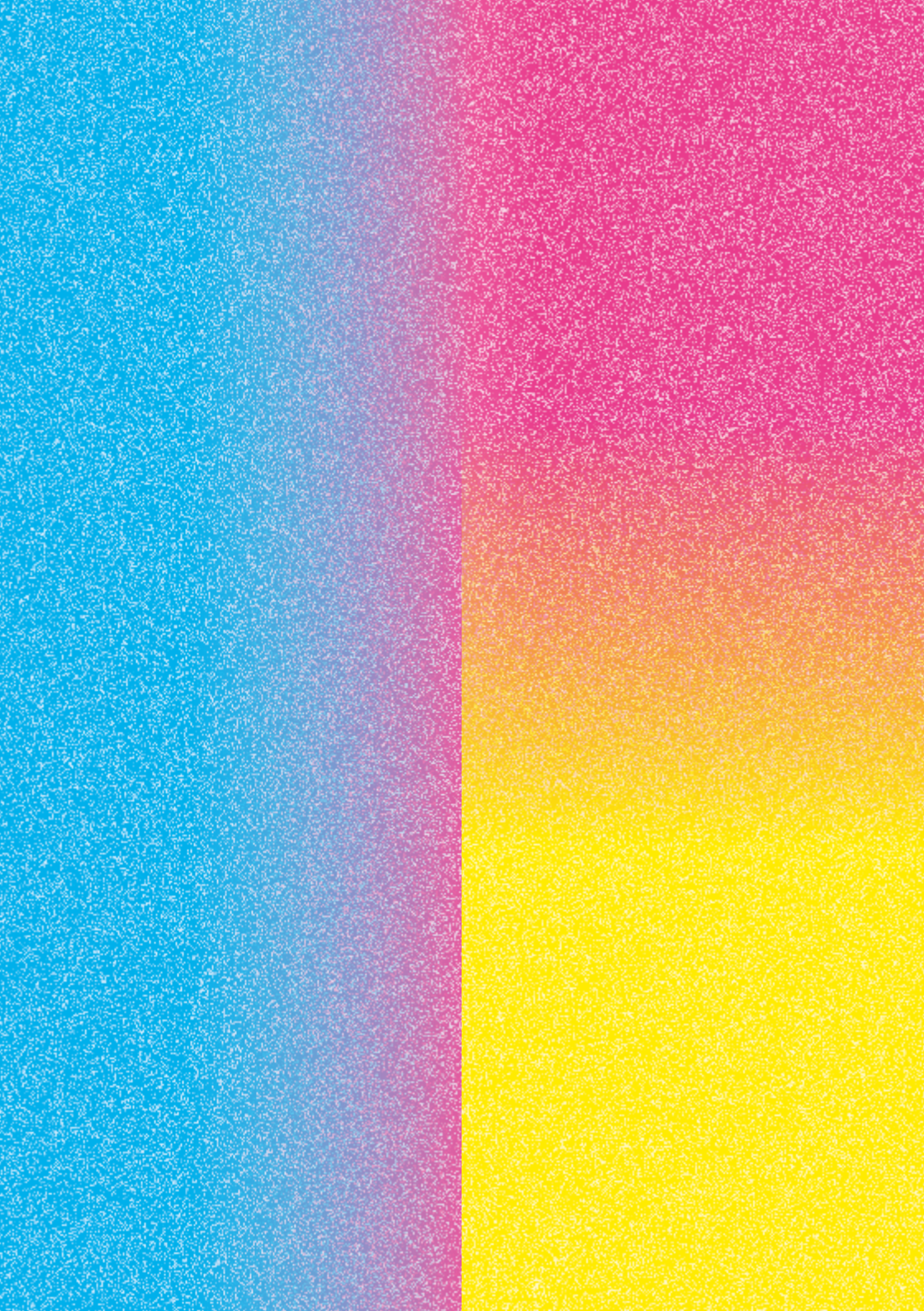
In addition to the potential for personalisation and increased efficiency, the automated processing of data also carries risks of negative consequences for individuals and society. Incomprehensible decision-making paths play a role in this, as does the reproduction and escalation of undesirable inequality in machine learning algorithms. For organisations to make the necessary investments in infrastructure, know-how and applications for the next generation of automated processes; and for Switzerland to become an attractive data innovation hub: a guiding framework is required to translate Switzerland's core ethical values into regulatory requirements in algorithmic decision-making. This will also lay the groundwork for engaging citizens in a differentiated debate about securing individual rights, and for better weighing the risks and added values artificially intelligent software systems present.



Society's trust in the data economy

Building and securing the trust of an enlightened and informed society for the use of data

Legal certainty, technological infrastructure, and savvy players are the cornerstones of further cultivation of the Swiss economy in the age of data. The trust of each individual and of society as a whole remain the indispensable prerequisite. With each prospect of new value creation and potential innovation, concerns and questions regarding individual and organisational risks also arise. There is a high level of sensitivity, especially when it comes to the collection and analysis of personal information. The concrete advantages are often less present than concerns about surveillance and heteronomy. It is important to take these fears seriously, and to address the issues with continuous communication measures by all competent actors. Companies and the public sector have just as much of an obligation in this regard. With transparency and openness, knowledge can be communicated so that society can engage in a reasonable discourse on the desirability of data-driven services.



OUTLOOK

Switzerland is already on the road to the data economy. Which turns, guard rails, and signals create the best conditions for the future must now be determined – carefully, but also with the necessary speed and confidence. The central fields of action are outlined in this white paper. For all the challenges, the path should be approached as a space of opportunity, with rewards – not as a minefield rife with damage control. The data economy will weave itself into today’s economy as a foundation. In the process, it will change the existing and enable the new.

“Innovate Switzerland” brings together those players aware of their responsibility and the importance of a comprehensive perspective on the tasks ahead. Their work will also be aligned with the changing framework conditions – with the aim of bringing the needs of the market, politics, and society into harmony. What is at stake is nothing less than the rail network of the future and its deployment – geared towards individual and societal well-being.

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