30

SOVEREIGN OR DEPENDENT? MORE TECHNOLOGICAL INDEPENDENCE IN DIGITAL COMMUNICATION

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Many countries, including Switzerland, will always have to make compromises. The idea that it will ever be able to build its communication technology and networks completely independently, which meet our modern needs, belongs in the realm of theoretical games and is far from any practice. Or to formulate it even more clearly: all discussions about independent communication infrastructures are totally alien to the market and highly utopian. The regulation of communication technology and its innovation should be kept as small as possible as long as the market

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works. The prevailing approach in Switzerland with ex-post regulation in the telecommunications sector makes sense. It should only be regulated when the market fails and the participants disagree.

Switzerland is lagging behind digitally; it is rumoured again and again. It is forgotten that their communication technology has an extremely high standard in comparison to other countries. Today, Switzerland benefits from a very powerful broadband infrastructure and from competition from its large and small infrastructure and service providers. The mobile infrastructure is also above average in terms of adaptation and use: the service providers are best-in-class, and theirs is not Swiss consumers benefit from price-fixed competition for coverage, quality and innovation.

However, this positive assessment has one weakness: as far as fibre optic networks are concerned, Switzerland is below the OECD average. The reasons for this are the above-average expansion costs in this country, the non-existent national high-broadband strategy and obstacles such as the lack of a nationwide cable channel register. This, coupled with an ongoing investigation into the allowable network architecture, reduces the incentives for the big players to spend more money and move faster with the construction of the fibre infrastructure.

The expansion of the Swiss fibre optic network as the basic infrastructure is extremely important for the communication infrastructure and data use in our country. Not only for the approximately 570,000 e-athletes, for whom even 5G or 6G is not enough. Driven by digitization, there is a continuous surge in innovation in the ICT world. In addition to a top mobile network, this always requires a top broadband network. The market of entrepreneurs, service providers and consumers is shifting to a large extent to central innovative solutions such as SaaS (Software as a Service), which are produced, moved, managed on the internet and hosted and stored in public clouds or in multi-cloud systems. This consolidation is a logical step that is not the first in history: the spinning mill on

the river used to produce the electricity itself. Today it comes from the net.

30.1 Dependence is not the Same as Dependency

So the question cannot be whether Switzerland has a sufficiently good communications infrastructure, but how it uses and develops it. Here our country runs the risk of getting caught not only in legal but also in political leadership. At present, the benefit of the linking and networking potential is weighted much less in the political and public debate than the dependencies that arise in a network by virtue of its existence. This is especially true with regard to cyber security.

But which dependencies are we talking about exactly? The ICT world has never been independent and the extent of its dependencies is complex.

Dependence begins with the hardware and software components. Should Switzerland manufacture the electronic components, the associated drivers and patches itself in the future, and if so, at what price? Is it actually a problem when telecommunications providers such as Ericsson, Juniper or Huawei bind purchased components and supply operating systems and support? Is it the lack of freedom from various service providers, from SaaS, cloud or open source providers and their operating and support models, which is causing the Swiss malaise? Or are there development policy concerns about the extraction of the raw materials right from the start? Is it simply annoying that investments are influenced by foreign states and companies?

30.2 Not only Switzerland, also the USA and China are Making Compromises

No matter what perspective you take and what importance you attach to the different dependencies: Switzerland will always have to make

compromises. The idea that it will ever be able to build its communication technology and networks completely independently, which meet our modern needs, belongs in the realm of theoretical games and is far from any practice. Or to formulate it even more clearly: All discussions about independent communication infrastructures are totally alien to the market and highly utopian.

As far as components are concerned, for example, there are only a few countries that have a substantial industry and therefore dominate the market, mainly the USA and China. And yet every American iPhone contains electronic components from 48 different countries and six continents. It is quite possible that the Americans also regret this fact from a commercial point of view – but from a technical point of view it is not decisive for the match. When it comes to the question of independent technology development, we should therefore place it in a larger context. We should answer what we want to achieve with this autonomy and what we want to protect ourselves from. Against industrial espionage? From state-driven cyber attacks? Before kill switch scenarios?

Personally, I don't believe in these scenarios, just as I consider backdoors to be very unrealistic for the big international market leaders. This shows me my experience in the companies where I have worked or worked for years - at Cisco and at Google. At the same time, I am convinced that this also applies to every other global ICT company: Today, technological development is controlled multinationally and distributed among many heads. The development teams consist of thousands of employees spread across the globe - at Google the head of infrastructure development is Swiss, at Cisco it was an Indian. With the best will in the world, I can neither technically nor practically imagine how such manipulations could be carried out, let alone how the effort involved could be kept secret.

30.3 Better and Worse Approaches to More Autonomy

But even if Switzerland is not striving for self-sufficiency, but simply wants more independence, we should ask ourselves in which disciplines can it achieve more autonomy at all. In my opinion, there is scope in self-determined data management (data autonomy), in operation and hosting (operational autonomy) or in software development (software autonomy). However, with regard to this desire for autonomy, we should also ask ourselves what we want to satisfy with it - and at what price.

Are we clinging to the myth of a completely sovereign Switzerland that never existed? Do we want to counteract phobias of digital technology addiction that are rampant on social media and in user forums? Do we have to satisfy partisan or geopolitical ideologies? Is it important to take fears seriously, even if they are based on a great deal of half-knowledge and poor know-how regarding ICT and security in particular?

One option is that we put economic interests or the promotion of the Swiss economy above everything else. However, there is a risk that we ignore the old adage that IT is a scalable business that thrives on mass and size, and that Swiss solutions ultimately have to assert themselves in a global market in order to remain affordable in terms of price.

Another noble goal would be to promote Swiss research and counteract the shortage of skilled workers. However, it should be considered whether international ICT companies are so successful not only because of their market position or market power, or whether the continuous innovation that they offer is not more decisive. As is well known, Swiss customers also go primarily to the cloud because they receive highly innovative, secure, sustainable services there that meet local regulatory requirements, either as on-premises or from a local managed service provider. It is also often forgotten that very large telecommunications providers, so-called telcos, and industrial conglomerates have tried in vain at independent "local" developments. The reasons for failure were

always the same: high prices, little functionality or talent recruitment problems. In Switzerland, despite the good universities, the fact that digitization, the role of the MINT subjects (mathematics, computer science, natural sciences and technology) and the entire start-up culture and the necessary capitalization have been underestimated for a long time makes things even more difficult.

With more self-determination, however, we can also aim for more transparency. Do we want to know on which infrastructure services are built? How and by whom is the infrastructure operated and what operational standards are met? Where is the data located and can we see it? Do we already know how the security processes are designed? Does transparency already exist, or do we just have to demand it more or simply read the data protection requirements more carefully?

Many consumers and companies are already opting for services whose underlying processes, operating models and security concepts they understand well. In terms of transparency, there is probably still room for improvement in many companies. Today by no means everyone receives the appropriate transparency on the above questions from their bank, insurance company, telco provider, doctor, health insurance company or municipal administration.

Finally, there is the regulatory leeway that Switzerland can use to secure more independence. The role of Parliament in policing technology or stopping it from doing evil things is outdated and should be changed. We really need a different understanding of cooperation here. Regulation could join forces with research and play a more active role, especially with regard to questions of security and operational models of telecommunications providers. But beware: the regulation of communication technology and its innovation should be kept as small as possible as long as the market functions. The prevailing approach in Switzerland with ex-post regulation in the telecommunications sector makes sense. It should only be regulated when the market fails and the participants disagree.

There is also definitely potential in the process. For example, ComCom is currently dealing with cases that began almost a decade ago. In general, the following applies to Switzerland: The lengthy procedures for determining a market failure and the many objection and appeal options at every instance level should be reconsidered. They are a real obstacle on the way to Switzerland's digital future. If these processes are accelerated, more control and consequently more self-determination and independence are possible in the fast-moving ICT and telecommunications industry.

30.4 There are More Solutions for Self-determination in Technology Development

At the level of data autonomy, data ownership, key management and data encryption can be adapted to Swiss needs. At the level of operational autonomy, identity management (eID) and end-to-end encryption should be promoted so that everyone can regulate who has access to their data. Compliance and auditing companies must be technically able to verify zero trust concepts and better control the operation and risk management of the networks. In order to prevent locked-in scenarios and to enable risk management with different providers, technologies and operating models, the federal government and the supervisory authorities must ensure that Swiss consumers and companies continue to have the choice between different, independent communication networks in the fixed network and mobile communications.

30.5 Conclusion

In terms of resilience, all of this would give the Swiss enough opportunities to build highly available architectures and use them independently.

One last point remains: the federal government should demand more transparency from its own organisations and from the companies that are driving digitization forward. All companies, whether Swiss or global, should be required to show in a transparency report how they handle customer data and what measures have been implemented to improve security. Transparency creates trust, which could be the basis for even safer, even better communication technology in Switzerland.