

Questions and answers about the competitiveness of cable network technology

1. **Question:** Compared to fibre optic technology, cable network technology is sometimes described as a 'technology of the past', the suggestion being that (older) cable technology is inferior to (newer) fibre optic technology. Is this true?

Answer: No, it is not. Cable network technology is a hybrid network technology. Its networks comprise 95% fibre optic cables and, for the last mile leading to properties or homes, 5% high-performance coaxial cables. Used in conjunction with the current DOCSIS 3.1 transmission standard, this network technology allows bandwidths of more than 1 Gigabit/s. And the introduction of the very latest DOCSIS 4.0 transmission standard will even enable bandwidths well in excess of 10 Gigabit/s. Consequently, both now and in the future cable networks will be able to keep up with fibre optic networks. Incidentally, Swisscom also relies heavily on hybrid network technologies.

2. **Question:** It is sometimes claimed that the leading Swiss – and international – telecom operators consistently rely on fibre optic technology. Is this true?

Answer: No, it is not. Since it is very expensive to install fibre optic networks all the way into people's homes (fibre to the home = FTTH), virtually all telecom operators (including Swisscom) use FTTH and hybrid network technologies. These technologies are available in a very wide variety of forms, including fibre to the cabinet (FTTC), fibre to the street (FTTS) and fibre to the building (FTTB). For the last section up to the property, the existing copper cable (in the case of Swisscom) or the existing coaxial cable (in the case of cable networks) is used. Accordingly, the major telecom operators are investing in the further development of hybrid network technologies. For example, Liberty Global is one of the biggest backers of the new DOCSIS 4.0 standard, which will enable future cable networks to achieve bandwidths of more than 10 Gigabit/s.

3. **Question:** The existing Swisscom telephone network and the cable networks of providers like UPC, Quickline and Netplus have a similar hybrid network architecture comprising glass fibre and copper cables. Is Swisscom's network as powerful as cable networks?

Answer: No, cable networks are many times more powerful than Swisscom's existing telephone network. Why? Because Swisscom and cable network operators use different cables to provide last mile access to people's homes. The copper cables comprising the last mile of Swisscom's network are highly prone to failure, which severely limits their performance. The longer the section of copper cable, the weaker its performance. By contrast, the coaxial cables used by cable operators are much more powerful and far less prone to failure over longer distances. In conjunction with the current DOCSIS 3.1 transmission standard, cable networks can sustainably deliver the bandwidth to meet customer demand.

4. **Question:** Will the construction of fibre optic networks in Switzerland make cable networks superfluous in the medium to long term?

Answer: No. Since the construction of fibre optic networks all the way into people's homes (FTTH) is very expensive, the supply of broadband Internet and other telecom services in Switzerland will be ensured in the long term by a mix of different network technologies. Alongside FTTH, these include hybrid fixed network technologies (made of glass fibres and copper cables) and mobile phone technologies.

5. **Question:** Will a cable strategy be sufficient in the long term?

Answer: Cable operators in Switzerland are not pursuing a 'cable strategy', but rather a fixed network strategy whereby networks are continuously expanded as needs arise. Naturally, this also includes FTTH projects involving glass fibres. Most SUISSEDIGITAL members, for example, are consistently installing FTTH in new buildings and/or continuously expanding their existing network with a view to providing FTTH access. Such a gradual network expansion strategy is demand-oriented, efficient and successful in the long term.

6. **Question:** Cable networks in Switzerland have been losing TV connections for years. Is the cable network industry on the decline?

Answer: No. Ever since the liberalisation of the Swiss telecommunications market in 1998, cable networks have been holding their own brilliantly against a powerful former telecom monopolist and a host of new competitors. For a long time, they have been producing stable operating cash flows, maintaining competitive infrastructure and exerting high pressure on prices. It was the cable networks that invented flat-rate Internet access in Switzerland, and they still have average growth potential of 40% in the domain of broadband Internet for existing TV customers. There is also significant growth potential in the business customer segment, including the provision of services for other telecom service providers. The networks run by cable operators take them directly into their customers' homes. This makes them independent in the fixed network sector, not reliant on prior services rendered by Swisscom. Falling numbers in the TV sector are due to the fact that until about 10 years ago there were no serious alternatives for good, modern TV reception. Therefore, these numbers are dropping from a very high level, with the fall comparable to the steady decline in Swisscom's fixed-line telephony customers.

7. **Question:** Over the next few years, a potentially very-high-performance 5G mobile communications network will be built in Switzerland. Won't that make fixed network infrastructure redundant?

Answer: No. Here are three reasons why the introduction of 5G technology will not make fixed network infrastructure redundant. First, it will take a long time for 5G to achieve reasonable coverage. Even in the long run, full nationwide 5G coverage seems an unrealistic prospect. This is also evident with 4G, because seven years after the start of that technology's expansion some areas still have no access to it. Secondly, fixed networks will continue to be needed in the future to transfer mobile communications because 5G antennas all need to be connected to fixed network infrastructure. Thirdly, mobile communications are not the best solution everywhere. For example, in building interiors fixed network Internet is demonstrably superior. Why? Because external and internal walls obstruct mobile signals, which can lead to interference and lower performance. The same will apply to 5G. Consequently, anyone reliant on high-performance

broadband Internet at home or in their office will continue to need a fixed network connection in the future. 5G and fixed network technology *complement each other* because they both have strengths where the other technology is weak.

8. **Question:** Is it true, as is sometimes claimed, that cable technology is inferior to the 5G mobile network standard?

Answer: No. Cable network technology is in no way inferior to 5G. On the contrary, for indoor users of apps that require high performance, high speeds and great stability (e.g. for competitive online gaming, 4K video streaming and cloud solutions), a fixed network outperforms a mobile network solution. Why? Because external and internal walls obstruct mobile signals, which can lead to interference and lower performance. 5G and fixed network technology complement each other because they both have strengths where the other technology is weak.

9. **Question:** Does the introduction of the 5G mobile network standard pose a threat to the cable network industry?

Answer: No. 5G and fixed network technology complement each other because they both have strengths where the other technology is weak. 5G will provide unprecedented performance levels for mobile apps used on the move. For apps designed for use indoors (e.g. in homes or offices), a high-performance cable network connection remains the best choice. Why? Because external and internal walls obstruct mobile signals, which can lead to interference and lower performance. It is also worth noting that 5G will generate fresh business opportunities for the cable network industry. For example, cable network operators could play a greater future role in transferring data from 5G antennas. Consequently, rather than posing a threat to the cable network industry, 5G technology presents it with an opportunity.

10. **Question:** Younger consumers in particular are increasingly shying away from using a conventional Internet connection at home and are instead surfing online via a mobile hotspot. Isn't this trend bound to hit SUISSEDIGITAL's members hard?

Answer: No. Although there is no denying that today much wireless surfing is going on in people's homes, the question here is which access point is used when doing this. For users of apps that require high performance, high speeds and great stability (e.g. for competitive online gaming, 4K video streaming and cloud solutions), access points based on a fixed network outperform mobile hotspots. Why? Because external and internal walls obstruct mobile signals, which can lead to interference and lower performance. Therefore, any modern household will continue to need a high-performance fixed Internet connection in the future. Young people above all, who are often keen online gamers, probably weigh up very carefully whether or not to dispense with a fixed Internet connection. So there are reasons to question whether more and more households are indeed dispensing with a fixed Internet connection, which is as intrinsic to a modern household as a power and water connection. This will remain the case in the future.

11. **Question:** China, which has 1.3 billion inhabitants, has three mobile operators, as does Switzerland. The market for Internet service providers and cable operators is even more fragmented. Isn't there a need for massive consolidation?

Answer: Switzerland's development of telecom infrastructure is world class. The fragmented, federalist structure of the cable network industry has always played a role in ensuring this. Although the consolidation process is likely to continue, due to globally active over-the-top pro-

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viders such as Netflix, Amazon, YouTube and Facebook, Switzerland, as a multilingual, federal country, will continue to offer niches for smaller cable operators with a clear cooperation strategy, solid local roots and excellent after-sales service. Many SUISSEDIGITAL members successfully occupy such niches, which is an exceptional achievement, given the fierce competition.

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