

VERTICAL SEPARATION: THE EASY WAY

Marking 21 years since its own country code (+423) was assigned and its regulator the Amt für Kommunikation was founded, **RAINER SCHNEPFLEITNER** and **SILVIO GIORGETTA** offer a vertical separation case study of the Principality of Liechtenstein

We have been discussing the merits of vertical separation forever. The benefits for society are well-known and apparently also agreed upon, yet the implementation is, without naming names, mostly botched (on a good day). But there is an example of a small nation which has nailed it.

After an extended period of discussion, in 2006 the government of the principality of Liechtenstein took a landmark decision that the national and state-owned Liechtenstein power supply company – Liechtensteinische Kraftwerke (LKW)¹ – would be the sole provider of passive infrastructure for all fixed networks (copper, coaxial cable and fibre).

This decision was triggered after the European Economic Area (EEA) accession and the development of an independent national telecommunications market. Liechtenstein was in a situation where, following several reorganisations, the two state-owned telecom operators were both investing in duplicated infrastructure.

The government expected efficiency gains by having one infrastructure, synergies from combined civil engineering works for energy and telecommunications, and increased competition at service level due to easier market entry.

ABOUT THE PRINCIPALITY OF LIECHTENSTEIN²

Liechtenstein is one of only two double landlocked countries



in the world – nestled between Switzerland and Austria, in the most beautiful Rhine valley, surrounded by snow dusted mountain peaks and fertile vineyards. With a total surface of 160 square km and a population of 38,500, it is the sixth smallest country in the world. Additionally, the available settlement area is 18 square km or only 11%, making for economies of density.

Liechtenstein has a very diverse national economy with a large number of small- and medium-sized enterprises.³ The strong industrial sector and financial service providers in particular contribute significantly to Liechtenstein's GDP. The contribution of the public sector to the national economy is comparatively small. Due to its specific geopolitical situation Liechtenstein has access to the EEA and Switzerland.

Of note is that Liechtenstein has one of the highest GDPs per capita in the world.⁴ A population with a high spending capacity creates the demand for the latest fibre-based services.

Contrary to common belief, Liechtenstein's main GDP contributor is not finance (although at more than 20% it is still significant), but rather the secondary sector – good old-fashioned goods production (more than 40%).

That strength is really helped by having some world market leaders such as Ivoclar Vivadent (dental implants), Hilti (fastening technology) and Oerlikon (high-tech surface coatings).

In summary, Liechtenstein is an important economic hub in the border regions of Switzerland, Austria and Germany, with more than 56% of the workforce consisting of cross-border commuters and with strong worldwide business relations, for which an efficient and performant telecommunications industry is of utmost importance.

THE PRELUDE

In the early 2000s parallel passive infrastructure investment was rolled out by LKW (coaxial cable network) and the fixed network incumbent operator LTN (copper). The retail level was also served by both operators.



12th century Vaduz Castle is the official residence of the Prince of Liechtenstein and has 21st century glass fibre connectivity

Effectively, the two state-owned entities rolled out parallel infrastructure and competed at the retail level. This unusual situation was an indirect outcome of the EEA accession of Liechtenstein, which made it necessary to separate Liechtenstein's telecommunications market from Switzerland's and to form an independent market. At that time the initial set-up required several reorganisations, which in the end led to the two state-owned operators.

This was, of course, neither cost-efficient nor effective. The effects were high costs, low competition due to high barriers for market entrants, and unhappy customers – which of course did not support the ambitious goals of Liechtenstein. The government and parliament both recognized the need for reform and acted accordingly.

THE REFORM

In 2006 the vertical separation of (passive) fixed networks and (active) services was agreed by parliament. The key provisions were:

(i) all passive infrastructure was consolidated in the LKW utility

(ii) all active infrastructure and retail activity was consolidated in the incumbent operator (LTN).

These points also formed part of the strategies of LKW and LTN (now TLI). The effects were:

(i) discontinuation of duplicate investments in independent infrastructure by the two state-owned companies

(ii) clear distribution channels – the customer knew who to talk to

(iii) clear interfaces between LKW and LTN

(iv) equal treatment and non-discrimination by LKW towards all service providers; LKW, in the role of a pure network provider without retail activity, had no conflict of interest

(v) ease of market entry for service providers

with very limited investment due to the possibility of renting passive services

(vi) cost efficiency – no duplication of investments, synergies in civil engineering.

AFTER 2006

Due to the vertical separation of 2006, and further regulatory obligations imposed upon LKW in 2015, like non-discrimination and cost orientation for passive infrastructure, retail services improved considerably over time. Since then for example, VoIP wholesale services and number portability have contributed to the dynamic developments of more recent years.

The Gigabit Society will soon become a reality in Liechtenstein. By 2023 Liechtenstein will have 100% fibre coverage.

The Amt für Kommunikation firmly believes that easy market access for downstream service providers without investment barriers is the key reason for the very favourable competitive situation in the fixed market in Liechtenstein. Now, with hindsight, it is clear that this very early and unusual, courageous step of consolidation was the right choice for Liechtenstein and has laid the path for a competitive future.

Of note, LKW is rolling out P2P⁵ (point to point) fibre services, which give full flexibility to service suppliers and are truly future-proof. Only in its role as the national network provider without retail activity, and with the very typical long term investment approach of utilities, was the LKW able to plan the shut-down of the legacy infrastructure as an integral part of the national fibre roll-out, providing for cost efficiency, fast adoption and no investment risk.

CURRENT MARKET SITUATION

One of the effects of competition in the retail markets is the very high speeds offered. In 2018, when the first glass fibres became available at LKW, Gbit/s (download) connectivity was available as a mass-market product.

A typical consumer Gbit/s offer is currently in the range of CHF/USD 60-70 per month.

The trend towards higher speed demand is also visible in Liechtenstein, where already more than 25% of fixed ➔

◀ broadband connections are above 25 Mbit/s.

What can also be seen is a pronounced trend towards bundles.

This, on the one hand, shows that service providers are converging by offering triple and quadruple play services and is, on the other hand, an indication of convenience for customers who are able to purchase all their services from one provider.

FROM A POLICY AND REGULATORY POINT OF VIEW

From a regulatory and governance perspective, the sea change in 2006 was well thought out. Liechtenstein is one of the very few examples in the world where vertical separation has been implemented successfully and truly works. We now have:

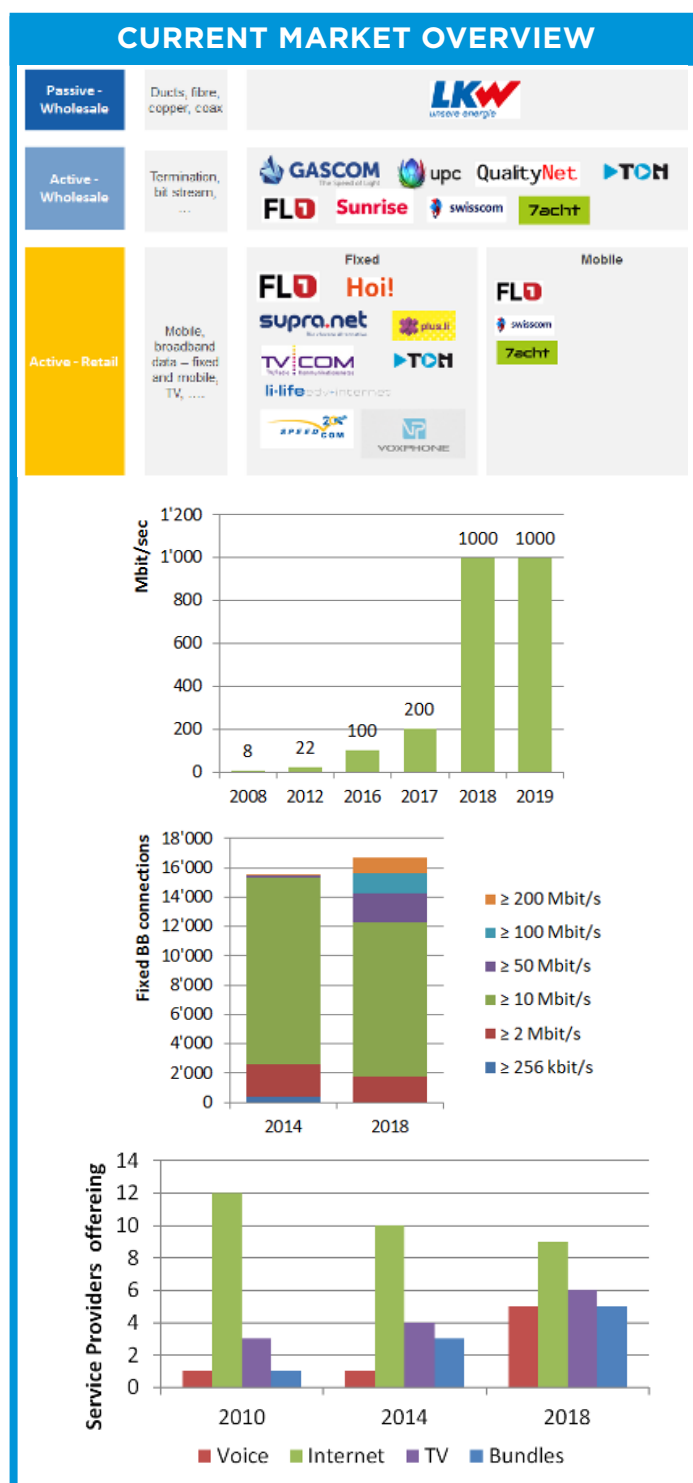
- (i) non-discriminatory offers to all downstream service providers, including the incumbent (TLI)
- (ii) an open forum ("planning panel" at LKW), in which all service providers participate and discuss the passive network roll-out
- (iii) P2P infrastructure, which will soon cover the whole country
- (iv) one passive wholesaler – LKW – which is used to long planning cycles of up to 100 years and truly understands passive infrastructure
- (iv) and finally, not to forget, lively competition with an increasing number of service suppliers.

The Covid-19 pandemic, declared in 2020, effectively put a large part of the world's population into quarantine. This led to massively increased network usage due to home office work and video consumption and brought many networks to their limits. One of the positive side effects of vertical separation is that Liechtenstein's operators have fully distinct networks and are less interconnected with/ less dependent on other service providers' active products. This reduced dependency means less room for error and is one of the reasons why our networks are working smoothly (we are keeping our fingers crossed).

We in Liechtenstein are rightly proud of what has been achieved. It was not easy and had its twists and turns. But now Liechtenstein has a future-proof infrastructure, open to all service providers and which will serve its whole ICT industry for the 21st century.

The successful recipe includes the following ingredients:

- one independent passive network operator without retail activities
- immediate phase-out of legacy infrastructure after glass fibre roll-out to avoid duplication of operating costs
- strong governance with a duty of coordination between operators
- one courageous government setting rules for the future
- one independent regulator safeguarding non-discrimination and transparency, and promoting market entrants in a fearless fashion.



Source: Office for Communications

RAINER SCHNEPFLEITNER heads the Amt für Kommunikation (Office for Communications - AK) of Liechtenstein. The office regulates electronic communications, post, electronic trust services and audio visual media. He firmly believes that the regulation of communications markets is not complicated, only complex. **SILVIO GIORGETTA** heads the economics section, dealing with access offers, among other things, and the production of informative reports. This article does not necessarily represent the official position of the Liechtenstein authorities.

REFERENCES 1 LKW is the national power utility, with a business unit providing passive network infrastructure (fibre, copper, coax) to service providers as a wholesale service. LKW does not offer active or retail services. 2 Unless otherwise indicated all figures are from Liechtenstein in Figures 2019. bit.ly/3aMm5vd 3 Approximately 4,500. 4 United Nations (2019). National Accounts – Analysis of Main Aggregates. United Nations Statistics Division. bit.ly/2XjkSYa. It should be pointed out that there is a large share of cross-border commuters in the overall workforce. bit.ly/3e3lxci 5 Rather than Gigabit Passive Optical Networks (GPON) which require a splitter.