The global trade war between the US and China has placed mobile network operators in a serious dilemma. The politically motivated moves against Huawei significantly limit their options for action: if Huawei can no longer maintain the equipment operators buy because of US technology transfer restrictions, the integrity of networks could be called into question in the future.

The openRAN Opportunity

From an operator's perspective, separating hardware from software has many potential attractions. With software defined networks increasingly becoming the norm, the "white label" hardware becomes a "dumber" network element, and the software is what really puts intelligence into the network by enabling all network functionalities. Each market would separately be easier to enter than the current integrated product market, so it would be likely to stimulate greater competition and innovation. The operator would, however, have to manage a degree of system integration, which is currently undertaken by the vendor, e.g. Ericsson or Nokia.

From a vendor perspective, open source could be seen to be quite a threat, but in reality, it would be similar to them outsourcing the hardware design and construction, which is an increasingly commoditised market anyway. They would, however, be able to market themselves as having the capability to integrate different network elements to provide the operator with an efficient service, something few others would have the expertise to do.

Therefore, we can see how this evolution could work for the vendors as well. Ultimately, will openRAN help to release mobile network operators from the vendor dilemma? Yes and no! To answer this question, we have to distinguish three different dimensions, the political, technical and operational.

Politically

OpenRAN is an alternative because there is strong political tailwind and financial support in the billions in Europe and the US. The German government has set itself the strategic goal on 3 of June 2020 (Art. 45 of the economic-growth package) "of contributing to improving the interoperability of network components, supporting the implementation of open standards (openRAN) at European level and adapting regulation at national and EU level".

A budget of €2 billion is earmarked for this purpose. However, there is also strong expert criticism of that concept. These range from the statement that this is at least the admission to be one to two years behind the development in China, to the prognosis that due to the lack of resources and industrial competencies in Germany, the money cannot be absorbed or will ultimately flow to China, Israel or the US. In any case, this discussion clearly shows that – if at all – the goal of digital sovereignty can only be achieved through European cooperation.

Technically

Technical experts from several mobile network operators are sceptical openRAN will help to release mobile network operators from the vendor dilemma. Market sentiment of leading experts from the mobile industry consider that Huawei is way ahead of its competitors – about one and a half years ahead of NOKIA and Ericsson. The Rakuten model is not a viable, scalable solution because it is a green-field project without legacy, and only single-band. Furthermore, Rakuten lacks the industry partners.

Operationally

Operational decisions are generally made with great caution, often accompanied by scepticism about new, innovative approaches. There is often a concern that the new, innovative part will not work together flawlessly with legacy parts of the network. Of course, legitimate concerns should be carefully analysed and tested, but very often conservative behaviour dominates vendor selection decisions, according to the proverbial saying: "Nobody will fire you if you choose IBM".

Despite this scepticism, mobile network operators will continue to push the issue because they need options for the next two to three years. The technical and operational model of openRAN is not clarified or uncertain on a large scale. Some industry experts are raising concerns about the scalability and stability of the approach, for example, what would happen if the cloud solution on which the model is based did not work reliably on a large scale? Also, the efficiency of a white-box approach vs. an optimised vendor-specific solution and the relevant cost implications have to be considered. In case of severe operational problems, the small software providers from the US would not be able to effectively support the MNO – they probably lack the resources to do that. Ultimately, Huawei will be able to offer openRAN on a large scale (if they want), probably faster than anyone else. The separation of and interoperability with legacy technologies (2G, 3G, 4G) is also an issue.

Subject matter experts familiar with Huawei assume that the company's dependence on US chipsets will be over in two to three years.

We must remember that openRAN is based on a disaggregation of hardware and software. A large-scale openRAN approach leads to a new vendor lock-in for the mobile network operators on the hardware side, mainly INTEL, because many (if not all) hardware platforms work with INTEL processors. The software companies (many of them start-ups) are mostly from the US, and some from Israel, but they are often US-funded or dependent on the US. This means that ultimately the vendor lock-in that one wants to avoid only shifts from one area to another.

In the meantime, practical experience has taught us that system integration is one of the initially underestimated areas when introducing openRAN. Not only is it considerably more laborious and complex than traditional network expansion, it is also said that there is a lack of sufficient personnel capacity for this.

The normative power of the factual (technically and politically) means that large European mobile network operators are now, for better or worse, increasingly turning to the US.

The future of NOKIA is seen by some industry observers as uncertain. The US software giants are playing a growing role in the mobile communications sector. Google allegedly has a Mobile Core in its portfolio, and Microsoft has taken over Affirmed Networks in March 2020 and Metaswitch Networks in May 2020. Let us not forget the openRAN initiative has been driven forward significantly by Facebook. After losing all traditional providers in the mobile industry many years ago, the US is now beginning to penetrate the mobile market again and even stronger. Technology shifts help them do so. US software companies recognised this disaggregation between software and hardware early and seized the opportunities. If we look at the traditional mobile business today, it has changed completely. This development becomes evident from everyday experience: more and more people are making voice calls via Facebook (WhatsApp call), Apple (FaceTime), Microsoft (Skype), etc. This means that mobile network operators are becoming more and more providers of connectivity only. This is an irreversible process.

What can Europe do? As far as hardware is concerned, it is common ground that the train for Europe has left the station. As far as software is concerned, according to some industry experts, there may be a last resort. If Europe were to agree on an "Airbus open data platform model" for the software, take Ericsson and NOKIA under its wings and provide sufficient funds while mobile network operators commit corresponding purchase quantities, this scenario could work under the auspices of the new European industrial policy paradigm Open Strategic Autonomy. The proposed option should not fall into the old and unpopular concept of national champions. However, one must also be aware that the Airbus model cannot be replicated so easily. The industrial starting point for the foundation of Airbus was companies with significant public shares, coupled with a strong Franco-German industrial vision.

Is this really the only option? For example, what is the feasibility of Europe again becoming stronger in global standards setting? There are also multitudes of other issues, such as likely contradictions to EU competition law, procurement rules, restriction of choice, etc. and ultimately, a departure from the paradigm of global trade, which need to be considered as well.

The introduction of openRAN might also trigger secondary effects, like the role of smart antennas as part of the network stack, an area Huawei and many others have invested in recent years. Another influence to be considered is the emergence of campus networks and their impact on mobile network architectures.

Developments such as this might contribute towards a further shifting of the "strategic telecoms autonomy" debate from a vendor-specific cloud architecture to a white-box based cloud approach covering both core and RAN, ultimately making it more of a "strategic ICT autonomy" than a mere telecoms question. A potential "Airbus model" might, thus, need to strongly lean and build on the critical activities already gaining traction, e.g. in the GAIA-X context, again elevating the question beyond a mere telecom context.

The regulation of the telecom sector and the new European Electronic Communications Code (EECC) does not provide future-proof concepts for this fast-moving paradigm change. We need less or different regulation and more support for innovation and development. This point was correctly addressed in the German economic-growth package.

Why do the best and most innovative European software firms still go to the US when they want to do something global? If Europe wants to escape from the mobile industry vendor dilemma, action must be taken now. Not to forget, the elephant in the room is the battle for global technological and military supremacy between the US and China.

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