The Development of Critical Broadband Networks – Five Nations give their Perspective

TCCA Critical Update Webinar

26 January 2021

View the webinar recording [here](.).

This document sets out the questions and answers from the webinar.

Presenters:

BELGIUM: Christophe Gregoire, Director, Technology & Operations at ASTRID

FRANCE: Gérard Carmona, in charge of the national and international relationships with the future radio network program directorate, Ministère De L'Intérieur

GERMANY: Luz Fernández del Rosal, International Cooperation Directorate Strategy and Central Management Federal Agency for Public Safety Digital Radio (BDBOS)

NETHERLANDS: Herman van Sprakelaar, program manager, the Police of the Netherlands

SWITZERLAND: Sanne Stijve, Program Director for Secure Mobile Broadband Communications at the Swiss Federal Office for Civil Protection

QUESTIONS and ANSWERS:

Questions to all:

Q. When does each project think their broadband solutions will be rolled out and operational?

Belgium: ASTRID is now building a new roadmap for the roll-out of the Next Generation Communication Broadband Network. We estimate that a new service could be operational by 2025. In the early phase of the transition, the first to migrate will probably be the Blue Light Mobile users for Data Services. The transition will probably be fast and be finalized long before 2030.

Adoption of the new services by TETRA users (Voice communications), as we see in other countries (ESN, in UK), could take more time depending on the available features for Voice Communications and availability of solutions for specific use cases (DMO, Air Ground Air communications, Indoor Coverage). The transition could then be extended until 2030.

France: The service will be opened in the first quarter of 2023 and the migration of the first wave of users will end in 2025.

Germany: It depends on the pending decisions. For the implementation of a dedicated core, we are assuming 2023 after the corresponding tender; for a more extensive scenario with its own RAN, we are moving in the second half of the 2020 decade.

Netherlands: We expect the 4 to 5 stage to be finalized in 2026 or 2027. we will start with the first stage in 2023 depending on success of first steps of preparation.

Switzerland: Second half of the 2020 decade

Q. What terminals are you using for your trials?

Belgium: N/A

France: Crosscall Trekker X4

Germany: Commercially available smartphones which support LTE Band 28 such as the iPhone 11 or the Samsung Galaxy S20.

Netherlands: That has not been decided yet.

Switzerland: standard smartphones as well as purpose-build handhelds for first responders.

Q. Do you consider WiFi as an option for tactical bubbles (high bandwidth, improved security with WiFi 6 and reduced latency)?

Belgium: This topic still needs to be investigated.

France: we always have an issue with the use of non-licensed frequencies for PPDR use because of the risk of jamming. Nevertheless, WiFi can be a solution for indoor coverage or bubbles around a vehicle in remote areas.

Germany: Ad-hoc coverage will be a part of the future broadband network. Nevertheless, no decisions have been taking yet regarding which technologies will best suit public safety organisation and the German Armed Forces.

Netherlands: We will not exclude WiFi at the moment, but we have to make sure that the mission critical functionalities will perform without problems for our end users. At this moment we think following 3GPP (Rel-14, Rel-15, Rel-16, …) standardisation will work best.

Switzerland: We do not consider Wi-Fi as an option for tactical bubbles. Main reason is that the coverage provided by Wi-Fi would be too limited. We do not assess Wi-Fi as a technology suited for mission critical communications.

Q. What is your main challenge for 2021?

Belgium: ASTRID is currently setting up the foundations that will allow the building of the next Generation Communication Network for PPDR. Our objectives for 2021 are:

- Extend its Blue Light Mobile service (our broadband mobile data - & voice- communication service) and publish therefore a new RFQ.
- Build up a dedicated team (acquire & hire the competences) to build our solution. ASTRID started end 2020 a reorganization to prepare the company to the adoption of these new technologies. The process is already Started.

- Have a new Management contract with the Federal Government and a new investment plan approved. This is expected by Sep 2021.
- Have the Legal framework in place that guarantees ASTRID & PPDR communities that MNO's in Belgium will deliver the service (RAN) with the needed QoS, Availability, Robustness and Security.

France: issuing and notifying the procurement

Germany: On the one hand, the implementation of the TETRA network modernisation. On the other hand, the further development of the critical communication strategy together with the Federal Government and the Federal States. This will consider the results of the Broadband Taskforce test as well as the strategic decisions taken in the first half of the year.

Netherlands: There are a lot of challenges, but our focus will be on program approval, budget reservation, involving key stakeholders and users, preparation of tender procedure.

Switzerland: Probably governance.

Q. Are all countries planning Air-to-Ground radio solutions with dedicated or hybrid terminals?

Belgium: We do not have information yet.

France: There was no time to talk about this in the webinar but this is fully part of the RRF. We are not planning a dedicated solution (as ESMCP for example) and have a more service-oriented approach but the study is still ongoing.

Germany: The broadband network will consider Air-to-Ground communications but there is not a decision yet regarding terminals.

Netherlands: We have not planned a solution yet. We will look into results from trials and operational use from ESN (UK), and others and probably do research and trials ourselves.

Switzerland: We are considering deploying a solution for Air-to-Ground communication. We haven't yet taken any decision regarding terminals.

Q. How long do you see your TETRA / Tetrapol network remaining in active service?

Belgium: ASTRID already took measures and made the major investments to extend the life cycle of the TETRA network to a horizon of 2030. Blue Light Mobile Service will also be extended to cope with the start-up of the new Mission Critical services.

It is currently not obvious if the transition can be shortened or even if the TETRA Services will have to be extended beyond 2030. The transition to the new services highly depends on the adoption rate by the end-user's organizations. ASTRID will coordinate the transition strategy with the End-Users organizations and its "User Advisory Committee". The Users Advisory Committee is a formal forum in which all users' organizations mandate representatives to give advices and directions to ASTRID and their respective organization on how to properly deliver and use the services.

France: This is a difficult question, we hope that we will be able to decommission quickly but the legacy technology could last 2 to 3 years after the start of the broadband roll-out.

Germany: BDBOS will ensure the functionality and reliability of the TETRA network until at least 2030.

Netherlands: The current TETRA system dates from 2020. We expect to turn it off somewhere between 2025 and 2028. But technically it could perform longer if needed.

Switzerland: At least until 2030.

Q. Do you plan to continue investment in those networks?

Belgium: Yes, we do. ASTRID still invests in the TETRA network to extend the coverage, the capacity and the quality of the network. ASTRID already performed major investments to extend the life cycle of the TETRA network to a horizon of 2030.

Extending the TETRA Network beyond 2030 will request new investments. This will be evaluated later when a strategy for the transition is aligned with the end-user's organizations.

France: as soon as the Broadband network rollout will start, the investment in the old technology will be limited to what is strictly necessary to keep them up and running: no new coverage or service.

Germany: Yes, currently BDBOS is conducting a mid-life update to migrate the TETRA network to IP and ensure its functionality until at least 2030

Netherlands: Since we had a complete renewal last year, it is not likely that we will invest substantially in the TETRA system.

Switzerland: Yes, in order to ensure operation until at least 2030

Question to those countries that have chosen the model with dedicated core:

Q. What are the highest weighted pros for this model, and will the models be Government owned - Government operated?

Belgium: The main Pro for the model is a better control & sovereignty of the Mission Critical Communications. ASTRID positioned herself as a "Trusted Operator" for the PPDR in Belgium. ASTRID is dedicated to the Mission Critical Communications.

Having a dedicated Core Network where highly sensitive information are managed (ie. information about Subscribers, Mobility Management (locations), Communication plans (fleetmapping), Call Data's under the control of ASTRID gives more guarantees to the PPDR and the Government about the security, confidentiality and control of these sensitive information.

ASTRID is de facto a Government owned - Government operated model. The aim is that the facilities (Core Network) is owned by ASTRID, ASTRID being a Limited Company that is owned by the Government.

France: in France two KPIs lead to this choice, the ability to connect to two MNOs (difficult if the core is operated by one MNO), the security issues (PPDR traffic is not concentrated in one not-controlled core). It will be built and operated by the incumbent of lot 2 and then progressively transferred to the governmental organisation.

Germany: A dedicated core offers more security, sovereignty and control over traffic, management and interfaces.

Netherlands: We did not value pros and cons separately in our first feasibility study. If we choose the model with our own core, it has not been decided yet if it will be a GO-CO or a GO-GO. We think that we want to perform subscriber management (access, roles and rights etc.), security measurements ourselves, which should be possible in both models. We think that the role for the government is more about control and functional management than managing technology.

Switzerland: Having a dedicated core has many advantages in aspects such as sovereignty, security, flexibility, centralised interworking and interconnection, etc. It has become a standard for national mission critical broadband networks for Public Safety, and for other verticals too.

We are considering a state-owned core, but not necessarily operated by a governmental organization. What is certain is that the entity operating such a core must have the appropriate capabilities and setup. The exact setup will be decided upon as part of the political decision processes.

Questions to individual countries:

To Belgium: What about indoor coverage and the current legal obligations of building owners in your MVNO model?

The legal obligation for the TETRA Network currently remains. We plan to operate the TETRA network to a horizon of 2030 and it is still relevant to proceed with indoor installation to guarantee MC communications for the first responders.

In the MVNO model, the way to achieve indoor coverage still need to be addressed. Different and combinations of solutions may be considered: access to the network that is already installed or will be installed by the MNO, access to 5G-private networks (if deployed by building owners), eventual hardening of existing networks by the owner (dedicated to PPDR), Installation of mobile systems (Cell On Wheels, for specific events), etc.

To Germany: Any plans by BDBOS for supporting exchange video/data in groups? Do you see challenges by using TETRA for voice group communications alongside a separate system and different terminals for group communications involving video/data?

The evolution of critical communications in Germany BDBOS foresees the enhancement of the current mission critical voice delivered by TETRA with broadband data services as a first step. One of the challenges associated to this are end devices. Therefore, BDBOS, the Federal States and the Federal Government are also investigating how to secure the interaction between TETRA and broadband end-user devices.

To Germany: Who are the main vendors in the broadband trials?

Nokia and Ericsson.