Reform of Emergency communications in France

Presented by:

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Guillaume Lambert - Head of the programme Réseau Radio du Futur (RRF)

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- Current emergency calls handling system in France - Romain Moutard

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Current situation: France’s emergency calls handling system
Current situation

- There are 13 emergency numbers in France, which co-exist with the European emergency number 112.
- There are over 450 Public Safety Answering Point (PSAPs) for the 4 main emergency numbers (112, 18, 17, 15).
- There is no dedicated structure handling 112 calls, which are routed to one of the national emergency services.
- PSAPs can only receive voice calls.
Reforms and projects related to France’s emergency calls handling system
Fire and Rescue Services’ (FRS) systems

Today

- IT systems are **partitioned** and do not take advantage of the power of the **digital revolution**.
  - Phones and radios are the main emergency communication tools, data is not sharable.
- The procurement system has shown its limits in terms of **cost-effectiveness** and **innovation**.
- Sometimes, local technical environments are **fragile**.
  - Security levels depend on local capabilities.
- FRS’ systems are **not interoperable** with other emergency services systems.

Tomorrow:

- NexSIS 18-112 is an **open**, **user-oriented** and **scalable system**, allowing for a greater **mobility** and a better use of **data**.
  - Communication will be unified and information-sharing mechanisms will be improved.
- All the FRS will benefit from the **best technologies** while **decreasing their expenses**.
- The national technical environment is **safer**.
  - The digital infrastructure will belong to the Ministry of Interior.
- NexSIS will enable **interoperability** between emergency services.

The European Emergency Number Association – Webinar - Emergency Communications Reforms in France.
NexSiS 18-112’s main components

<table>
<thead>
<tr>
<th>Component</th>
<th>Description</th>
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<tbody>
<tr>
<td>SIG</td>
<td>Geographic Information System</td>
</tr>
<tr>
<td>SGA</td>
<td>Alert management system <em>(multi-channel and multi-emergency service)</em></td>
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<tr>
<td>SGO</td>
<td>Operations management system</td>
</tr>
<tr>
<td>SGE</td>
<td>Exchange management system</td>
</tr>
<tr>
<td>SGC</td>
<td>Crisis management system</td>
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</table>

Emergency Services IP Network Baptised SECOURIR
The Emergency Services Interoperability Framework has been developed to meet all Emergency Response Organisation needs.
The European Emergency Number Association – Webinar - Emergency Communications Reforms in France.

NexSIS’ alert management system is eligible as a national 112 reception tool.

Improving the handling of emergency communications

- Transition from phone calls to the “data era”: NexSIS 18-112 can collect, process and use data before the call is even answered (precise location of the caller, basic information...), and can manage multi-media flows.

Creating a tool that is fully adaptable to organisations

- NexSIS 18-112 can adapt to different alert management organisations.

Ensuring the resilience of the alert management system

- NexSIS 18-112 ensures the resilience of the alert management system by enabling assistance between different PSAPs.

Proposing an objective qualification system

- NexSIS 18-112 enables to factual emergency situation qualification through to the implementation of a common language called “CISU” (Emergency Services Interoperability Framework).
The operations management system includes tools in PSAPs and fire stations, as well as mobile devices.

A mobilisation system is being developed to optimise the choice of resources for each intervention.
NexSIS’ exchange management system ensure full interoperability

NexSIS’ architecture includes an exchange management system that ensures full interoperability with other emergency services systems.

- Today, connexions are being implemented with :
  - “Bon Samaritan” (citizen application);
  - Scriptal, a company that equips medical emergency services (SAMU).
- Other software publishers such as EXOS, APPLIGOS, RRAMU-HN, and INETUM are favourable to the interconnexion of their systems with NexSIS 18-112.
- There are ongoing discussions with the police prefecture.

The exchange management system includes a Structure and Routing Repository (RSR), which :

- Improved the method for contacting partners;
- Implements a shared directory;
- Selects partners according to the location and circumstances of the emergency situation.
The first deployment of NexSIS is aimed at the end of 2021.
NexSIS can be seen as a platform that can integrate digital services for civil security

1. App 112: Alerting emergency services
3. ENKI: An operational information platform for mayors and prefects
Our Target Model

➢ Modular system adaptable to any alert management organisations.

➢ PSAPs can receive all type of emergency communications (video, photos, data, ...).

➢ The system can be linked to citizen applications, a national 112 App and to CNR 114 (accessibility).

➢ France is planning to experiment the implementation of a single emergency number (law proposal entitled “Consolidating the French civil security model and enhancing the value of volunteer firefighters”)

Target Emergency calls handling system in France
Reform of Emergency Communications in France in the context of the European legislation
The deployment of the Advanced Mobile Location (AML) in France

- AML is now operational for **18 and 112** and has already saved lives;
- AML ensures that France is in compliance with the first obligations of the European Electronic Communications Code;
- The AML service is currently extended to other forces.
SECOUIR is the Intelligent and Resilient Emergency Communications Service which will be implemented in NexSiS 18-112.

It enables:

- Fire and rescue services’ incoming and outgoing communications through:
  - The processing of non-multimedia flows (voice);
  - The processing of communications using mobile data (video conferences, images, videos, etc.);
  - The possibility of transferring communications or opening a conference with several persons (for example, the victim, several FRS or PSAPs...).

- The intelligent routing of emergency communications according to the information about the caller and its environment, and the configuration of the PSAP and the operators on the moment.

- The implementation of virtual fire and rescue services served by several FRS or PSAPs at the same time.
Le numéro d'urgence européen - Webinar - Réformes des communications d'urgence en France.

La Direction Générale (DNUM) en tant que Sponsor

La Direction Générale des Compétences Étendues par les États de la Direction Générale (DNUM) en tant que Coordonnateur

Un seul équipe transversale

Un seul point d'entrée avec les MNOs

Les bénéficiaires du projet FR-Alert des stakeholders
The European Emergency Number Association – Webinar - Emergency Communications Reforms in France.

**FR-Alert: French Territories Distribution**

- **Guadeloupe**: 5 MNOs, >350 000 citizens
- **Martinique**: 4 MNOs, ~300 000 citizens
- **French Guiana**: 4 MNOs, ~300 000 citizens
- **St Martin**: 5 MNOs, ~35 000 citizens
- **St-Pierre and Miquelon**: 2 MNOs, ~6000 citizens
- **Mainland France and Corsica**: 4 MNOs, ~65 Million citizens
- **New Caledonia**: 1 MNO, >280 000 citizens
- **Wallis and Futuna**: 1 MNO, ~11 000 citizens
- **French Polynesia**: 3 MNOs, >250 000 citizens
- **Mayotte**: 4 MNOs, >250 000 citizens
- **La Réunion**: 4 MNOs, >850 000 citizens
FR – ALERT will use 2 technical solutions:

- **Cell Broadcast** which is a method of sending messages to multiple mobile telephone users in a defined area at the same time. It is defined by ETSI's GSM committee, 3GPP and is a part of 2G, 3G, 4G and 5G standard.

- **Location Based SMS**: method of sending messages to multiple mobile telephone users in a defined area at the same time. It is defined by ETSI's GSM committee, 3GPP and is a part of 2G, 3G, 4G and 5G standard.

**Cell Broadcast**
- Imminent alert warning
- Sending message quickly to a large number of users in a sort of intrusive way

**Location Based SMS**
- All geolocalisation data
- Acknowledgement of receipt
- Estimation of population in the area
- During and after crisis informations

*Emergency Alert: Ongoing fire, Please avoid smoke clouds*
The project started in 2019, and 2022 will be the year of end-to-end testing and national implementation.

FR-ALERT will be processed after 2022, in order to pay attention to 3 aspects: consolidation, resistance of the system, channel diversification.

Galileo is a global navigation satellite system developed by the EU.
Galileo signals are available at any location on earth and new generations of mobile phones are systematically Galileo compatible.
This technology enables to reinforce redundancy of an alert system.

France usually hosts large events. Our system needs to be ready to warn a larger number of users.

2024 Summer Olympics and Paralympics is a specific event that is a perfect use case to experiment higher capacity of our system.
As an example, multilingual messages will be numerous. Before this event, FR-ALERT will be experienced in 2023 Rugby World Cup.
In France since 2018, calls from eCall systems are handled by a private organization recognised by French State and called "Syndicat National des Sociétés d'Assistance" (SNSA). Thus SNSA is in charge of operating the nationwide eCall PSAP.

An agreement has been signed between the Ministry of the Interior and the Ministry of Health.
### eCall 112

- **Total of alerts received over a period of 10 months.**

<table>
<thead>
<tr>
<th>Calls</th>
<th>39,348 calls</th>
</tr>
</thead>
<tbody>
<tr>
<td>Calls terminated</td>
<td>27,453</td>
</tr>
<tr>
<td>without follow-up</td>
<td>39.3%</td>
</tr>
<tr>
<td>Calls transferred</td>
<td>930</td>
</tr>
<tr>
<td>to PSAPs</td>
<td>2.7%</td>
</tr>
<tr>
<td>Calls in need of</td>
<td>6,439</td>
</tr>
<tr>
<td>assistance</td>
<td>19.0%</td>
</tr>
</tbody>
</table>

**Total of alerts received excluding blacklisted numbers: these are the alerts processed by the assistance platforms. It is the official number.** There is a 97.6% filtering rate (only 930 calls were transferred to PSAPs).

- **Total of alerts handled by the assistance platforms for which information on the type of call (terminated without follow-up, transferred to PSAP, in need of assistance) is available.**

- **Despite the COVID-19 lockdown periods, the numbers are on the rise.** This is due to the increase in vehicles equipped with the eCall112 system.

- **Regarding the data of emergency calls** coming from remote assistance centers or from TPS eCall, we are not able to discriminate this type of indicator at the level of PSAP 112.

- **For the reception of the TPS eCall or more generally of the remote assistance centers, a real work of interoperability is to be carried out** in order to have in particular:
  - a confidential 10-digit number in each PSAP 112 intended to receive calls from remote assistance platforms,
  - define a technical format for data interoperability: EDXL or other emergency data exchange communication standards,
  - define the certification procedures and specifications on the quality of service of the remote assistance centers.
Other planned projects
Enabling secured multimedia end-to-end communications between Fire & Rescue PSAPs and first responders

**Emergency signals (calls, data, text, video...)**

- CCTV
- E-Call
- Mobile telephony, text, data
- Landline telephony

**Call treatment**

**18-112 PSAPs (Fire & Rescue)**

Emergency call handling / first responders dispatch / operations monitoring

**Rescue operations**

- 4G Mission Critical network
- Low bandwidth networks (Rubis, INPT, Corail etc.)

**General public**

- Mobile telephony, text, data
- Landline telephony

NexSIS enables multimedia emergency communications between the general population and 18-112 PSAPs (Fire & Rescue)

Réseau Radio du Futur (RRF) network enables 4G high-speed, secured and reliable mission critical communications between all PSAPs and first responders
The European Emergency Number Association – Webinar - Emergency Communications Reforms in France.

RRF is a comprehensive communication system, up to modern standards, designed for first responders’ communications.

**4G services with modern Mission Critical standards for First Responders**

- All-in-one hardened smartphone for all communications
- Mobile telephony capacities and broadband services
- Secured communications
- Priority access over general public

**Low-bandwidth critical solutions**

- 2G – Low bandwidth
- Limited coverage
- Voice only

**Non prioritized 4G commercial offers (MNOs)**

- 2 distinct mobile terminals
- Non-prioritized access
- One operator coverage

**Modern Mission Critical communications (MCX) standards**

- Prioritized access to at least two MNOs
- Nationwide network coverage
- Prioritized Push-to-talk (MCPTT)
- Prioritized video communications (MCVIDEO)
- Prioritized broadband data applications (MCDATA)
- Real-time geolocation

**3GPP Mission Critical communications (MCX) standards**

- MCX mobile applications for first responders and CAD for PSAPs
- Very high-speed internet, high availability, reliability, low-latency

**Current Situation**

- 2G – Low bandwidth
- Limited coverage
- Voice only

**Future**

- 4G/5G
- Nationwide network coverage
- Prioritized access over general public

**Cross-agencies communications**

- First responders (police, fire and rescue services, emergency medical services, paramedics…)
- Other state services (customs, prison services…)
- Operators of vital importance (utilities: railways, nuclear plants…) and organizations

**Military communication standards**

- Prioritized access over general public
- Limited coverage
- Voice only

**Today**

- 2G – Low bandwidth
- Limited coverage
- Voice only

**Tomorrow**

- 4G/5G
- Nationwide network coverage
- Secured communications
- End-to-end encryption

**3GPP Mission Critical communications (MCX) standards**

- Prioritized access to at least two MNOs
- Nationwide network coverage
- Prioritized Push-to-talk (MCPTT)
- Prioritized video communications (MCVIDEO)
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**Military communication standards**

- Prioritized access over general public
- Limited coverage
- Voice only
A service designed for resiliency and security, enabling continuous communications even in usually poorly covered areas

- Secured storage in a state centralized duplicated database
- Highly available redundant IT architecture
- High level of data flow security guaranteed by Mission Critical standards

High availability services

- High network coverage (98% of territory in 4G) with multi-MNO coverage, national roaming and new sites continuously deployed
- International roaming
- Priority over general population in case of network saturation
- Under study (post-2025) : 5G low altitude network satellite

Communicate anywhere, anytime

- First responders’ vehicles equipped with relays
- Additional coverage extensions as-a-service :
  - Deployable base stations for foreseeable events
  - Rapid response vehicles for disaster relief
RFF is currently in its bidding process and will open its services in 2023 in time for the World Rugby Cup 2023 and Paris Olympic Games in 2024.

2021: bidding process

January 2021: Opening of the bidding process
June 2021: Review of bidding offers
October 2021: Selection of the candidates
Start of the development phase

Development and beta-testing (Version 0)
Beta-testing for the Parisian region and host sites for WRC 2023 and Paris OG 2024

2022: services development

Beg. 2023
First deployments

September 2023
World Rugby Cup

July 2024
Paris Olympic Games

2023: Version 1.0
Comprehensive services for first RRF users
1st wave of deployments

2024: Version 2.0
New multimedia services
2nd wave of deployments

2025: Version 3.0
5G services
3rd wave of deployments

Next versions

Expected by the end of 2025:
- 300,000 users
- 400 control rooms

Deployments maps are for illustration only.

The European Emergency Number Association – Webinar - Emergency Communications Reforms in France.
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