GRUPPO TELECOM ITALIA

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eCall Deployment

Mobile Network Operator Perspective

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Outline

- eCall needs and related requirements
- Overview of the European Pilot (HeERO)
- HeERO Italian Pilot
- Topologic Model Alternatives
- Routing Mechanisms
- Status and Open Issues

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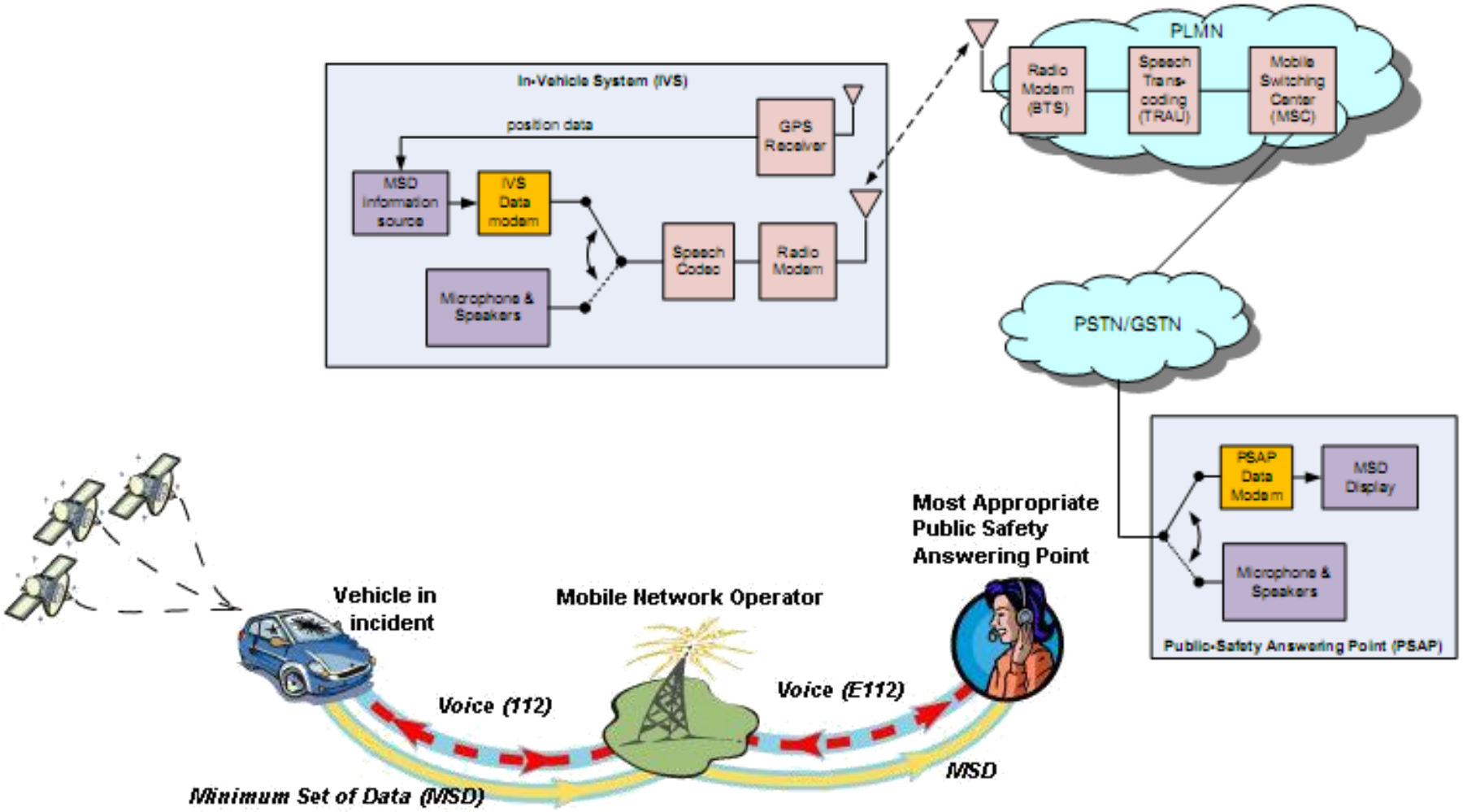
eCall – Main EC Drivers & Requirements

- Public Safety service
- Additional features and value to the E112 deployment
- Time reduction for rescue intervention
- Provision of reliable data to increase rescue efficiency
- Interoperable EU-wide service
- Gradually deployable on all vehicles
- Availability, Reliability and Testability
- Long life-cycle (modular and upgradable solutions)
- Free of charge for the end-user
- Integrated with the extended ITS services ecosystem

eCall Public Service - Functional Architecture

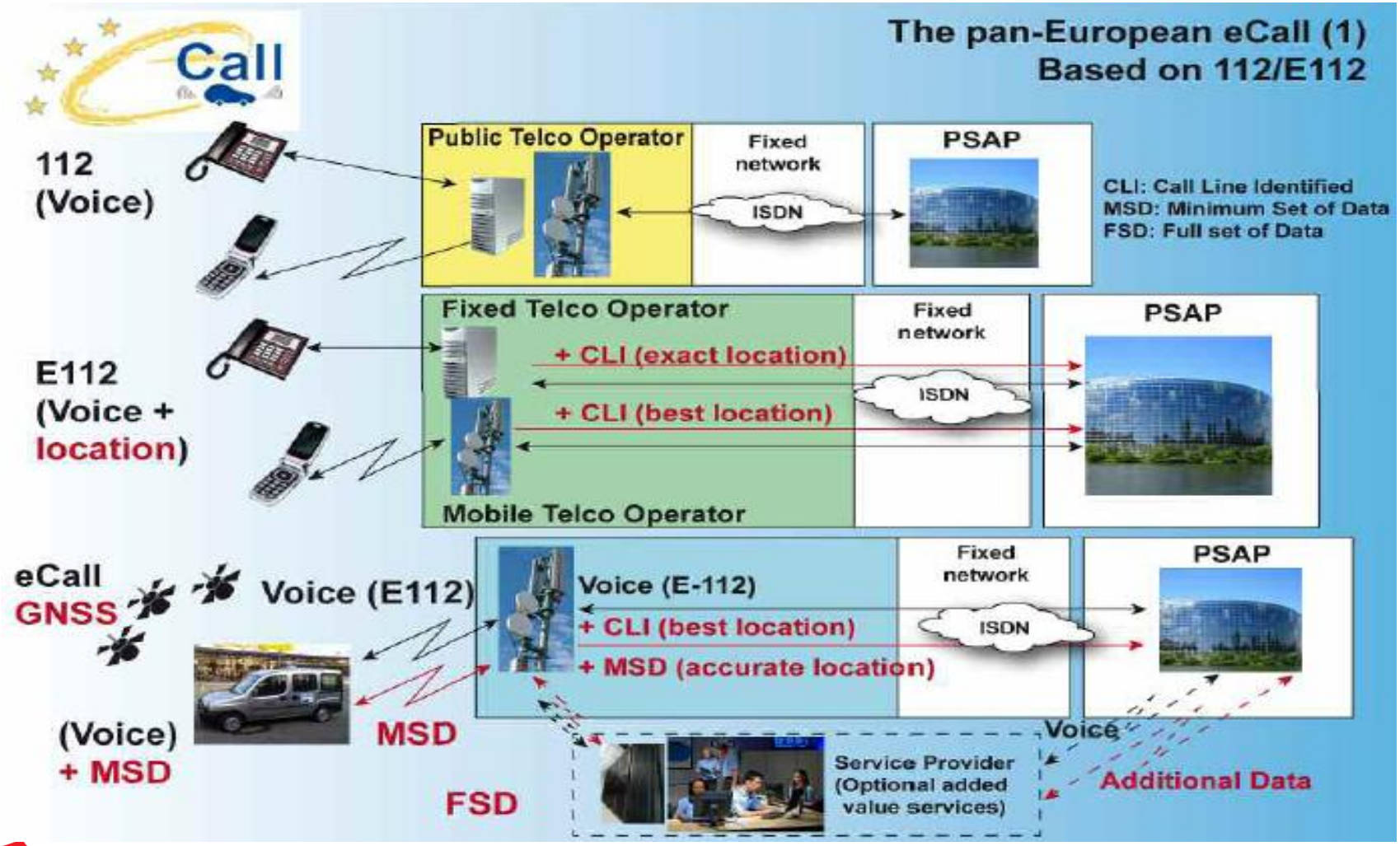


HeERO – Italy Pilot : Objectives and Expectations

- Establish a multi-sector national Working Group able to develop a common vision and a realistic roadmap for the deployment of the eCall in Italy
- Jointly assess and test the technological solutions in a realistic environment and identify the possible issues
- Collect usability/operational experience from all actors involved in the pilot
  - National Government (Ministry Counsil Pres. → Min. Interiors, Min. Transp)
  - Vehicle Maker (CRF → FIAT)
  - Fixed & Mobile Network Operator (Telecom Italia)
  - Telematic Provider (Magneti Marelli)
  - PSAP Operator (AREU → Reg. Lombardia)
  - Driver's National Association (ACI)
- Analyze the possibility to enable commercial value added services by means the same eCall in-vehicle system
- Increase the public awareness about eCall
- Identify the national-specific process issues

HeERO 112
Harmonised eCall European Pilot

HeERO – Italy Pilot : the eCall Roadmap

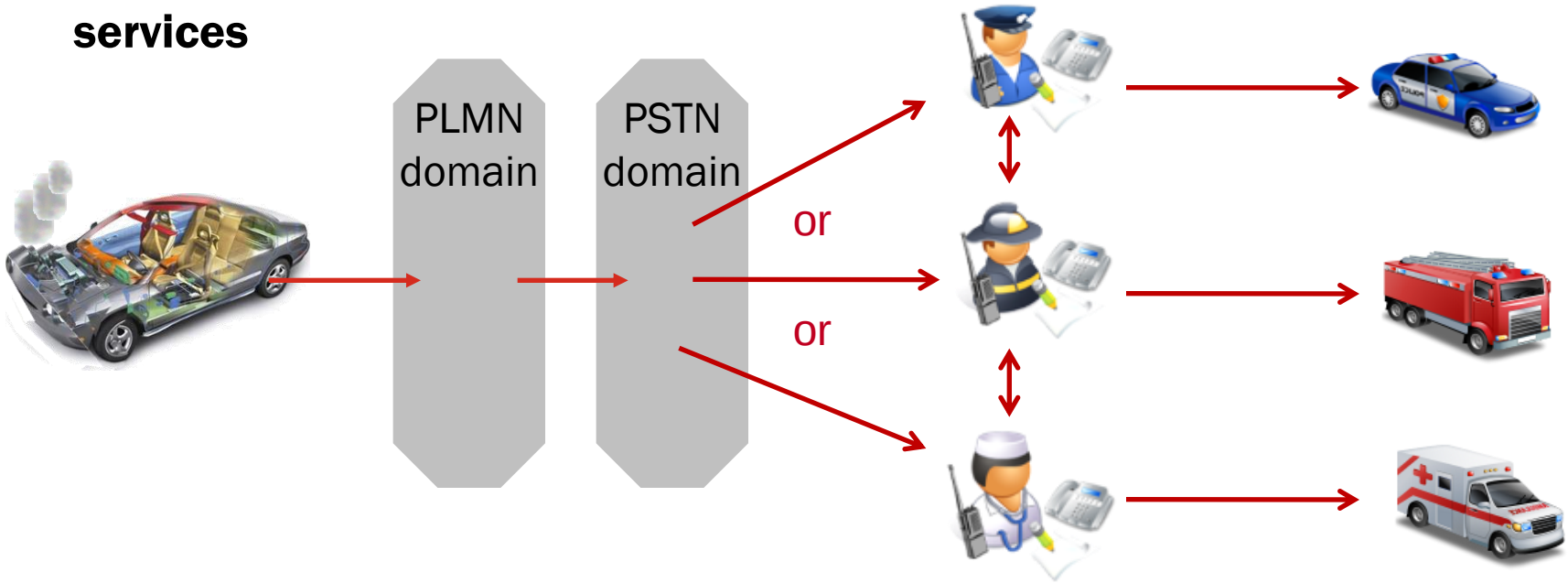


eCall Deployment on top of the legacy infrastructure

- The actual end-to-end network topology is more complex than in the theoretical architecture
- In most EU countries eCall network infrastructure extends the legacy infrastructure for public E112 service
- Most of EU Member States currently adopt a topology consisting of a network of several PSAPs geographically distributed over the country (typically at either regional or provincial level)
- When a legacy infrastructure exists, each PSAP is typically specialized (e.g. police, fire brigade, emergency rescue) and operated by a different body
- Different roadmaps exists for the actual deployment depending of the PSAP model adopted at national level

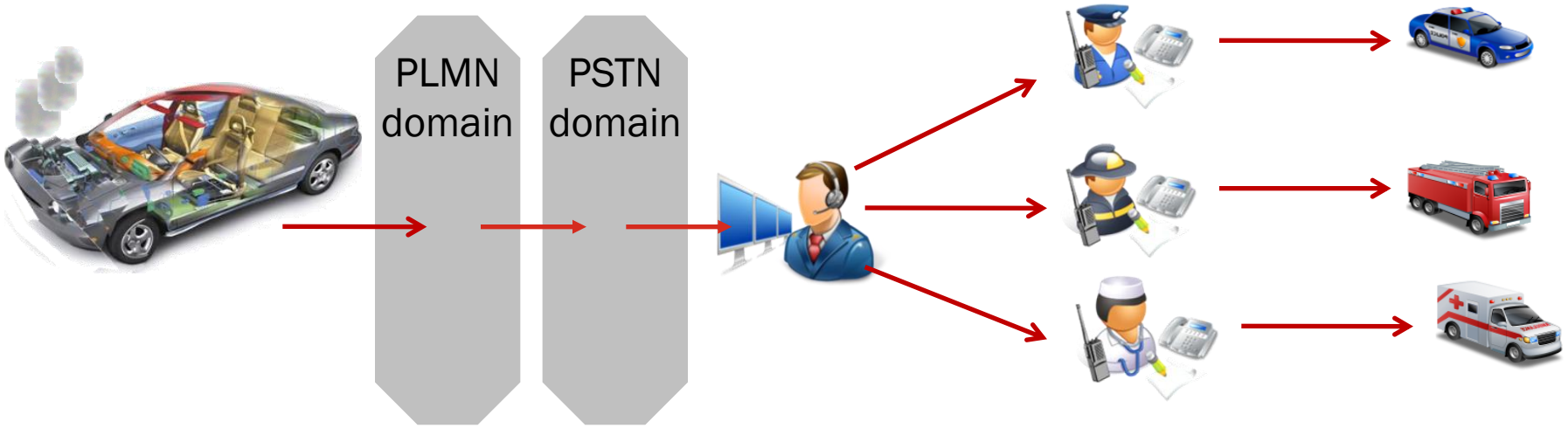
Current PSAPs network topology

- Topology to be replicated in each district/province/region
- eCall routed to one of the local emergency service → all of them should be upgraded to become able to manage the eCall
- Coordination/interaction is needed among different emergency services

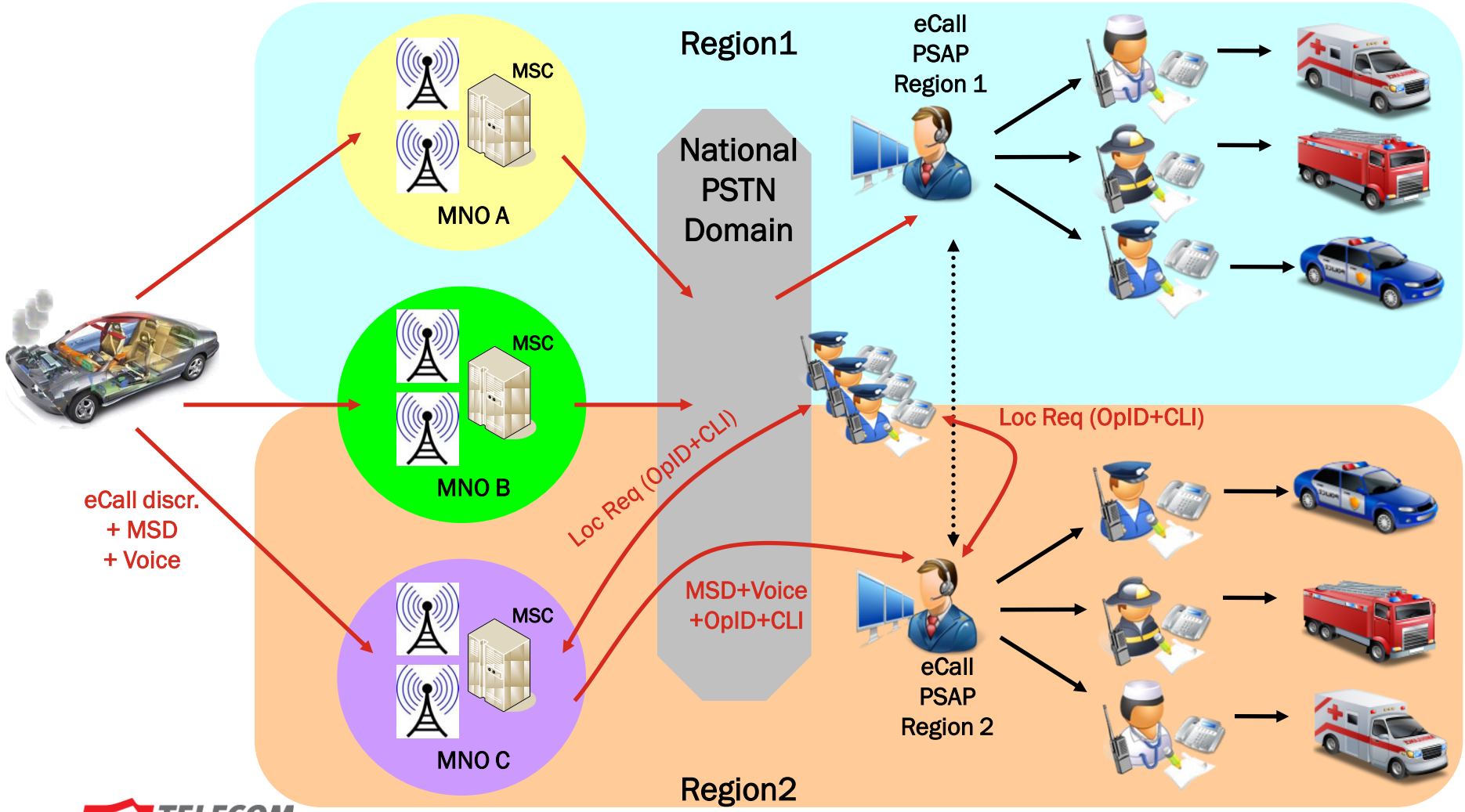


1° and 2° Level PSAPs network topology

- Topology to be replicated in each district/province/region
- eCall routed to the designated 1° level PSAP able to process the incoming eCall
- Specialised PSAPs at 2° level



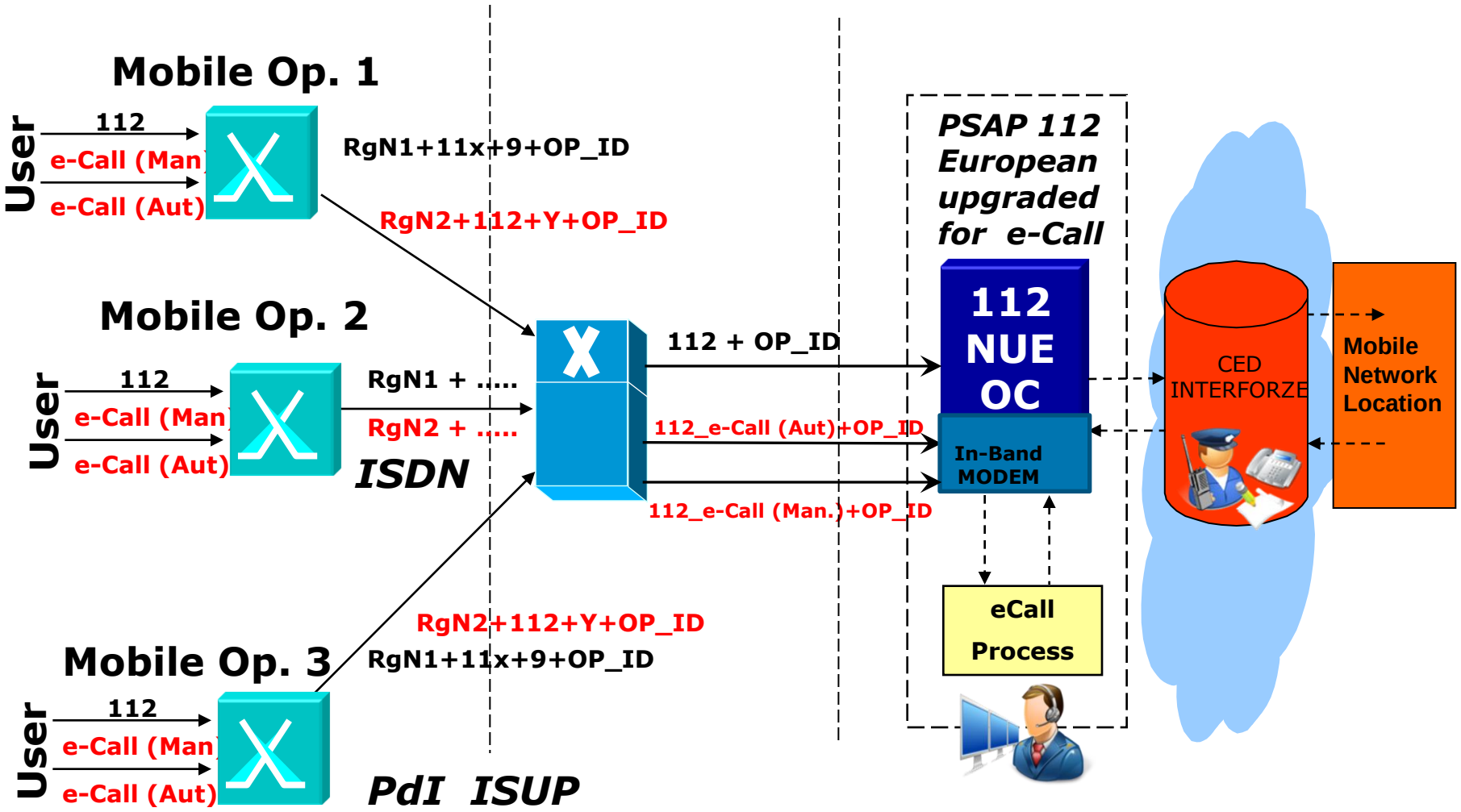
eCall Processing



Multi-MNO Routing mechanisms over PSTN

- **Requirements**
  - **Once fully deployed at national level, the eCall processing has to be MNO-independent in terms of routing through the fixed PSTN.**
  - **Service must be supported in international roaming conditions**
  - **No realistic possibility to modify the SS7/ISUP (ISDN User Part) signalling**
- **Routing solution proposed in Italy**
  - **performed by means of a dedicated RgN in the Called Party Number field agreed at national level among the MNO and the involved ministries.**

eCall routing scheme



eCall routing scheme

In order to route the eCall to the designated PSAP some additional parameter would be needed in the ISUP, but this is not feasible → the proper routing is achieved by means of a dedicated format of the Called Party Number field

The format adopted to deliver the 112 emergency calls (E112 service) was :

C97 0XYZ 11x 9 OP_ID

With a similar mechanism, the following routing number has been proposed and agreed for the Italian routing of the ecall:

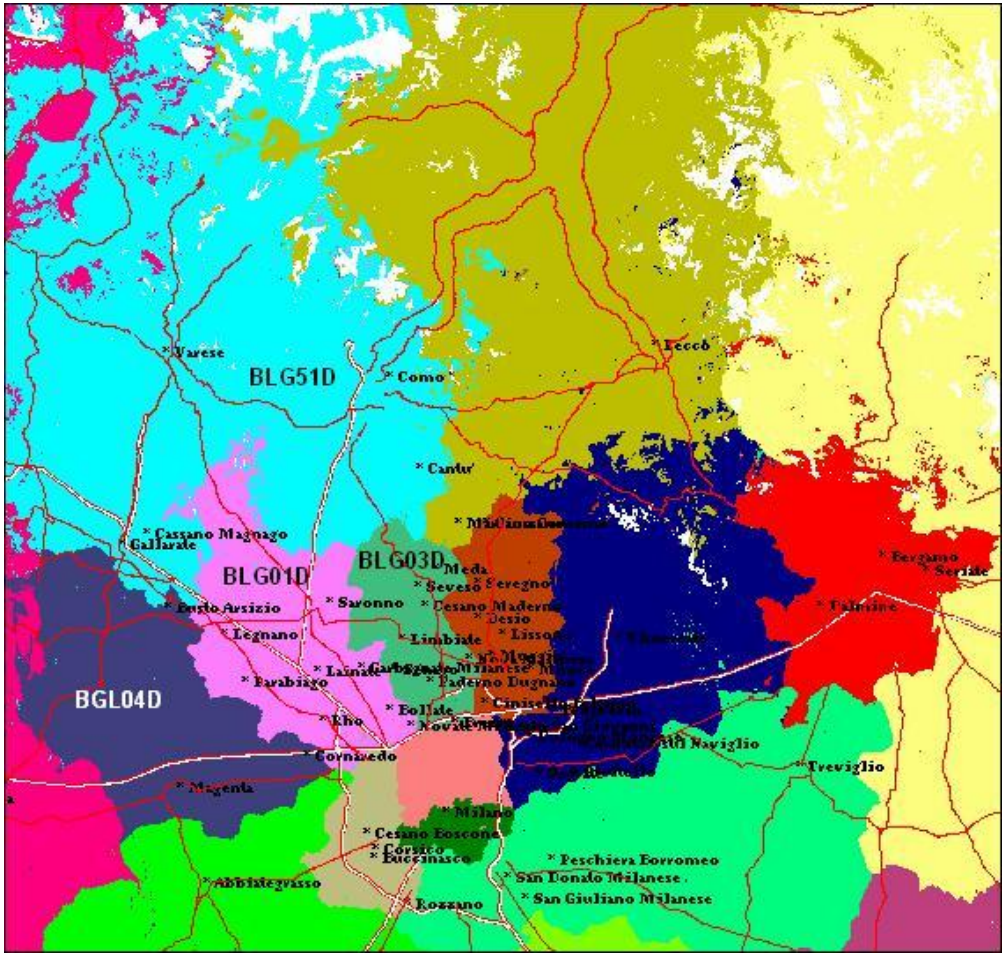
CXX 0XYZ 112 Y OP_ID

CXX = RgN; XX=96 is the value that has been proposed and accepted
0XYZ = origin district of the incoming eCall
112 = unified number for the eCall
Y = type of e Call : Y=0 automatic eCall; Y=1 manual eCall
OP_ID = Operator ID : code of the mobile network

Harmonised eCall European Pilot

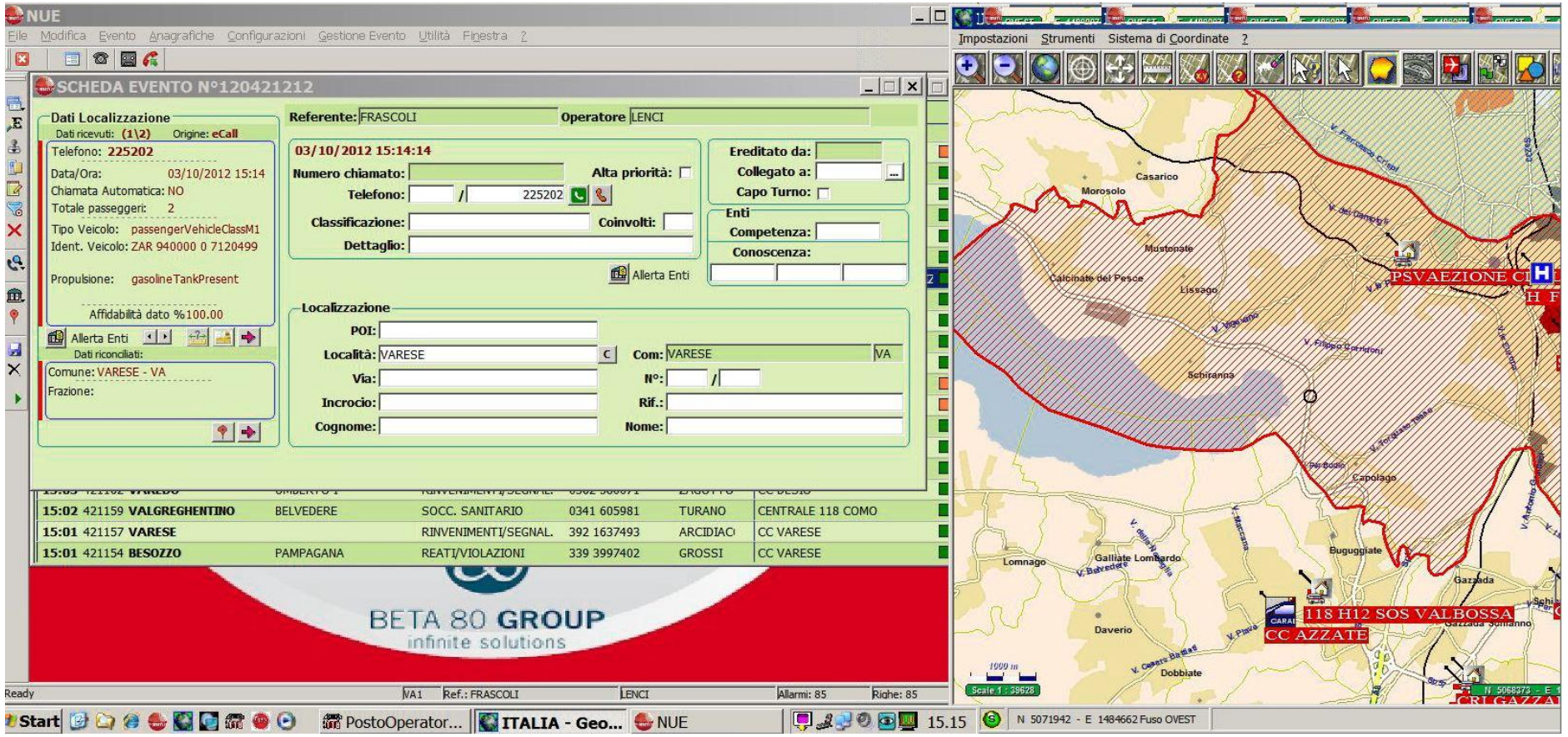
eCall Deployment in the Varese district

Italian HeERO Pilot



Harmonised eCall European Pilot

eCall Deployment in the Varese district



eCall status and open issues

- **Process**
  - eCall service deployment in Italy requires some reorganization of the safety/emergency management process at national level. → National decisions about routing policy
  - Fragmented deployment → need to build on top of legacy infrastructure to save costs of the infrastructure deployment/adaptation → E112 as a reference starting point
- **Technical**
  - The current standards for the PLMN enable an adequate initial deployment. Qualification tests of the eCall features for the mobile network have been successfully completed by TI and the deployment in the Pilot area (Varese) is on-going
  - Impacts on signaling processing and routing via PSTN requested the adoption of a dedicated solution at national level (already agreed with MNOs not involved in the HeERO Pilot)
  - In the long term, scalability and compliance to future network technology need to be achieved (through continuous standard evolution)
- **Costs & Business Models**
  - Models to support national deployment & operational costs to be exploited
  - Integration with other ITS public and/or commercial services recommended

Conclusions

- eCall is entering pre-operational phase
- From a mobile/fixed telco operator perspective technology is mature but the end-to-end system will have to be able to support modular evolution and upgrades
- TI started evaluating the needed network upgrades (e.g. eCall discriminator) as soon as the required features has been made available by network technology vendors
- FNO's need country specific solutions regulated by national government for properly routing the eCall coming from different MNO's to the designated PSAP
- HeERO Pilot Project is prooving a suitable tool for assessing the technical and deployment issues in a realistic environment with the involvement of all needed stakeholders
- Initial deployment costs in the infrastructure (PSAPs and telco mobile and fixed networks) → need to guarantee significant level of adoption and service availability from day one
- Need of suitable models for making initial deployment and daily operation economically sustainable for all involved parties

THANKS !

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