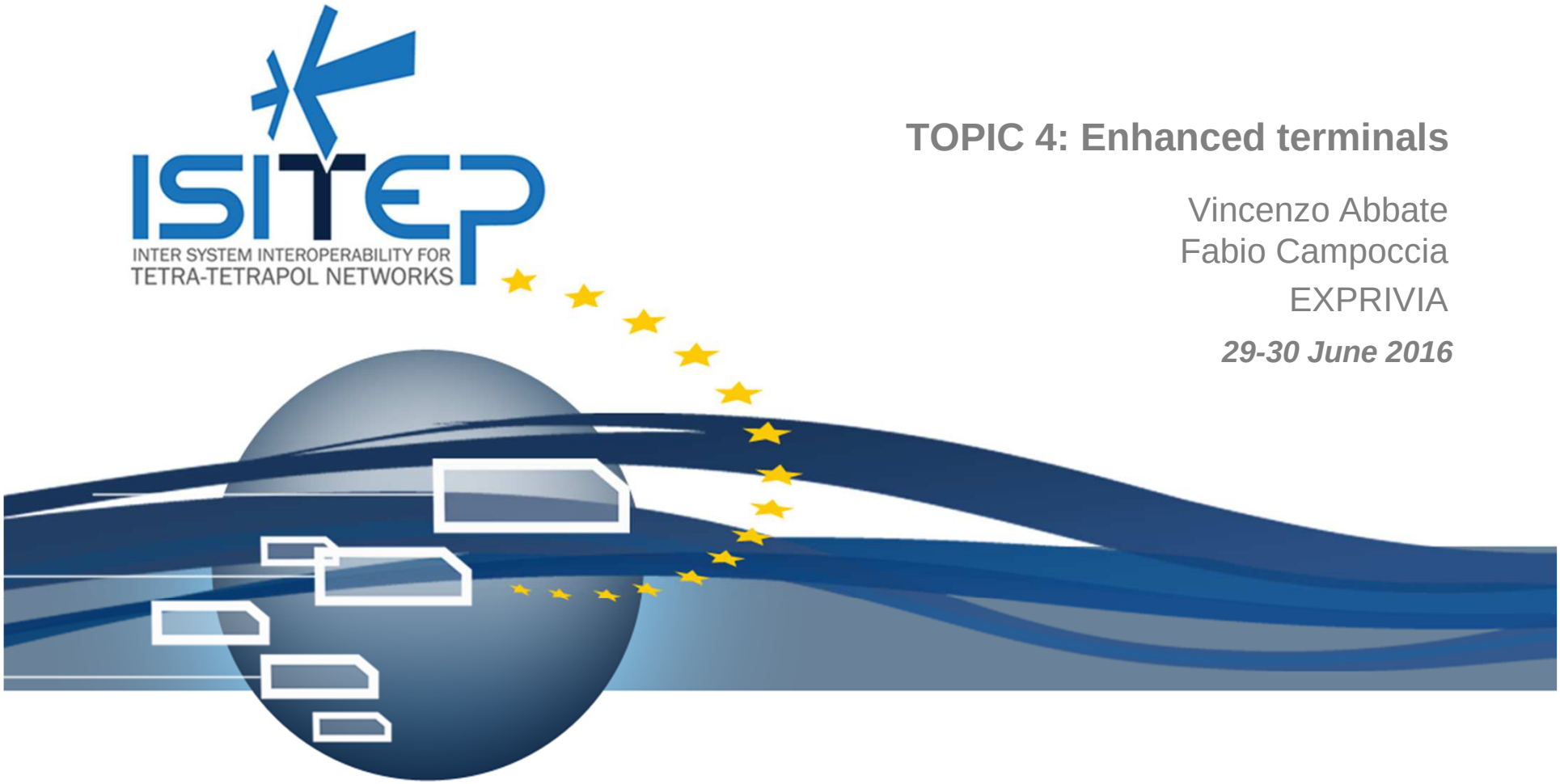

TOPIC 4: Enhanced terminals

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EXPRIVIA

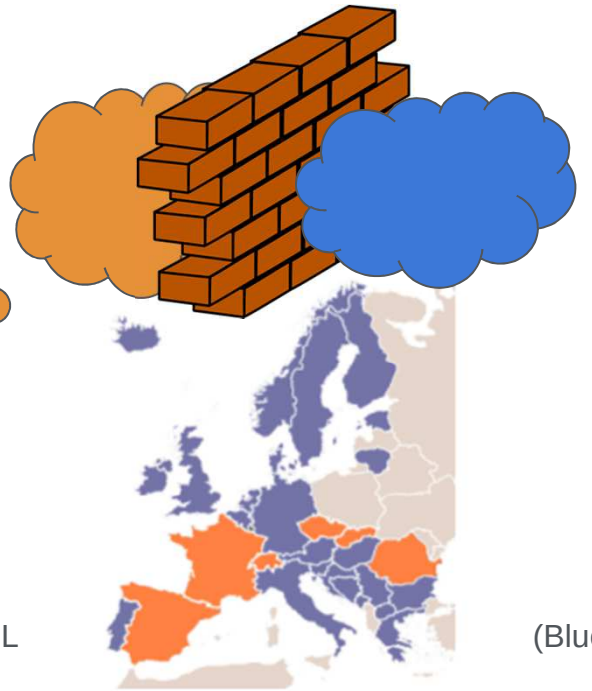
29-30 June 2016

Scenario before Isitep (what was the necessity to imagine ISITEP?)

✓Currently there are two main PPDR(*) communication systems in Europe: TETRA and TETRAPOL. Both are expected to remain operational until 2025.

✓As directly consequence, the communication among Member States is limited due to the incompatibility of the radio systems (TETRA + TETRAPOL)

(*) Public Protection & Disaster Relief



(Orange):European diffusion of TETRAPOL

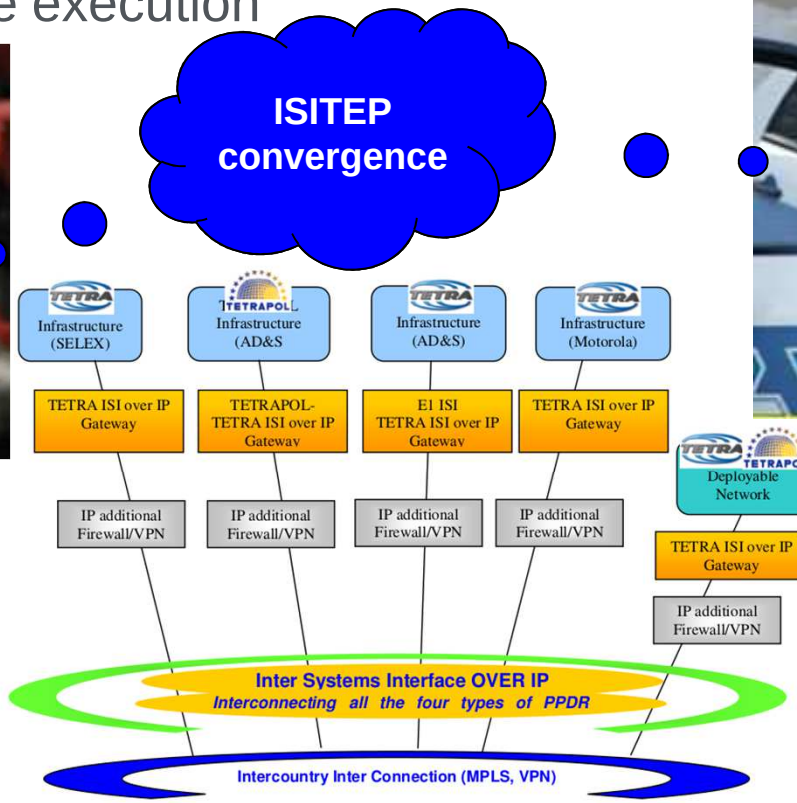
(Blue): European diffusion of TETRA

- The best solution for a bi-technology terminal could be to have a single terminal with both technologies integrated inside
- When ISITEP project started, this goal was not achievable because of time for agreement and budget contrains-.
- ISITEP project has the goal to integrate two already existing modems providing a single control unit to manage both.

ISITEP fill gap

✓**TETRA\TETRAPOL** technologies integration into a **new terminal architecture** based on programmable devices (i.e. tablets and smartphones)

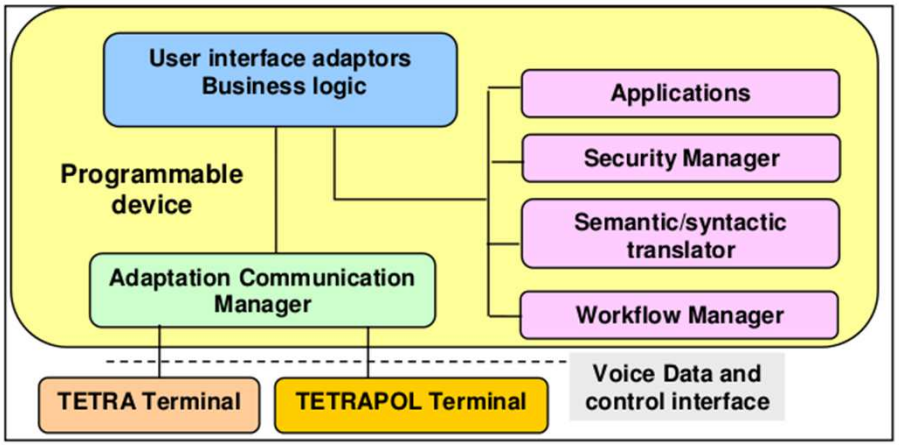
✓**Full interoperability facilitation** overcoming language barriers and supporting procedure execution



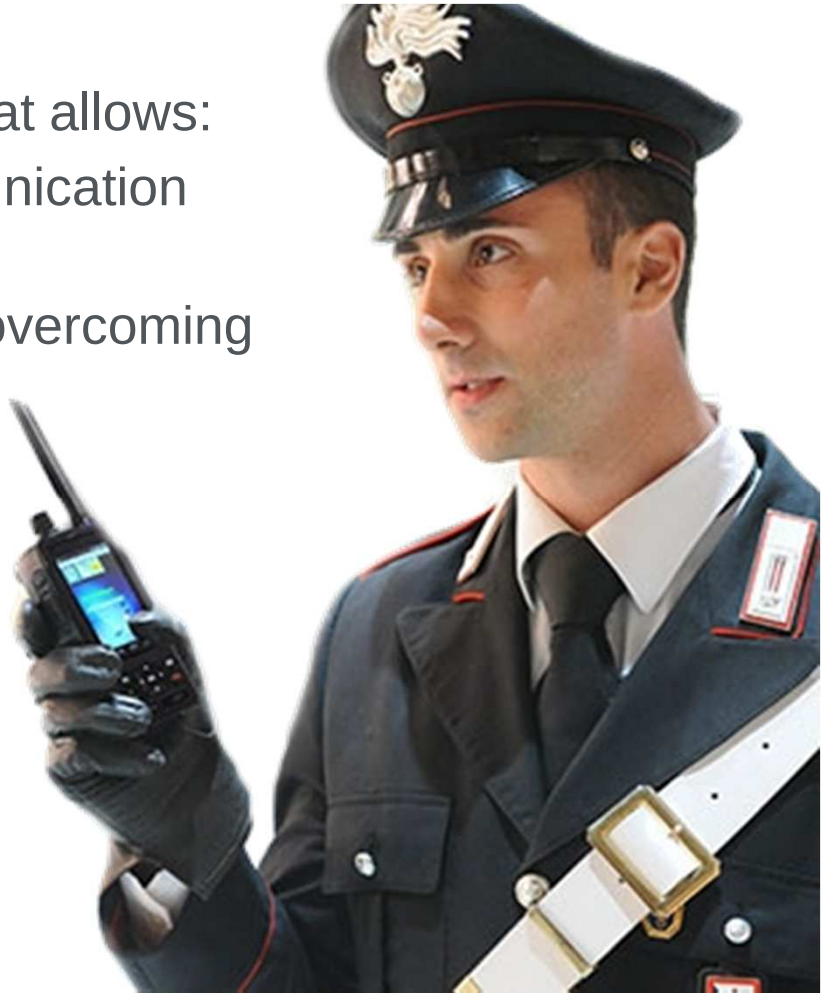
Enhanced Terminal Overall

- ISITEP Enhanced terminal is an Android device that provides graphic user interface able to use both technology TETRA and TETRAPOL
- The IET is based on:

  Android programmable device that allows:
- operators to use both speech communication technologies
- operational procedure for execution overcoming language barrier!



Android Device Block Diagram



Enhanced Terminal - Hand Held

Android Device with TETRA modem integrated

Headset Bluetooth for TETRAPOL audio

USB

TETRAPOL modem

Enhanced Terminal - Vehicular

Android Device with TETRA and TETRAPOL touch HMI, and with ISITEP added value App

USB/custom

Wi-Fi

AIRBUS vehicular

Selex-ES Audio Device

Selex-ES Vehicular

PTT

Microphone

PTT

Microphone

Loudspeaker

Loudspeaker

Let's prepare to enter into the IET functionality with HMI-

The Human Machine Interface (HMI) of the ISITEP enhanced terminal, like in other terminals, could be constituted by:

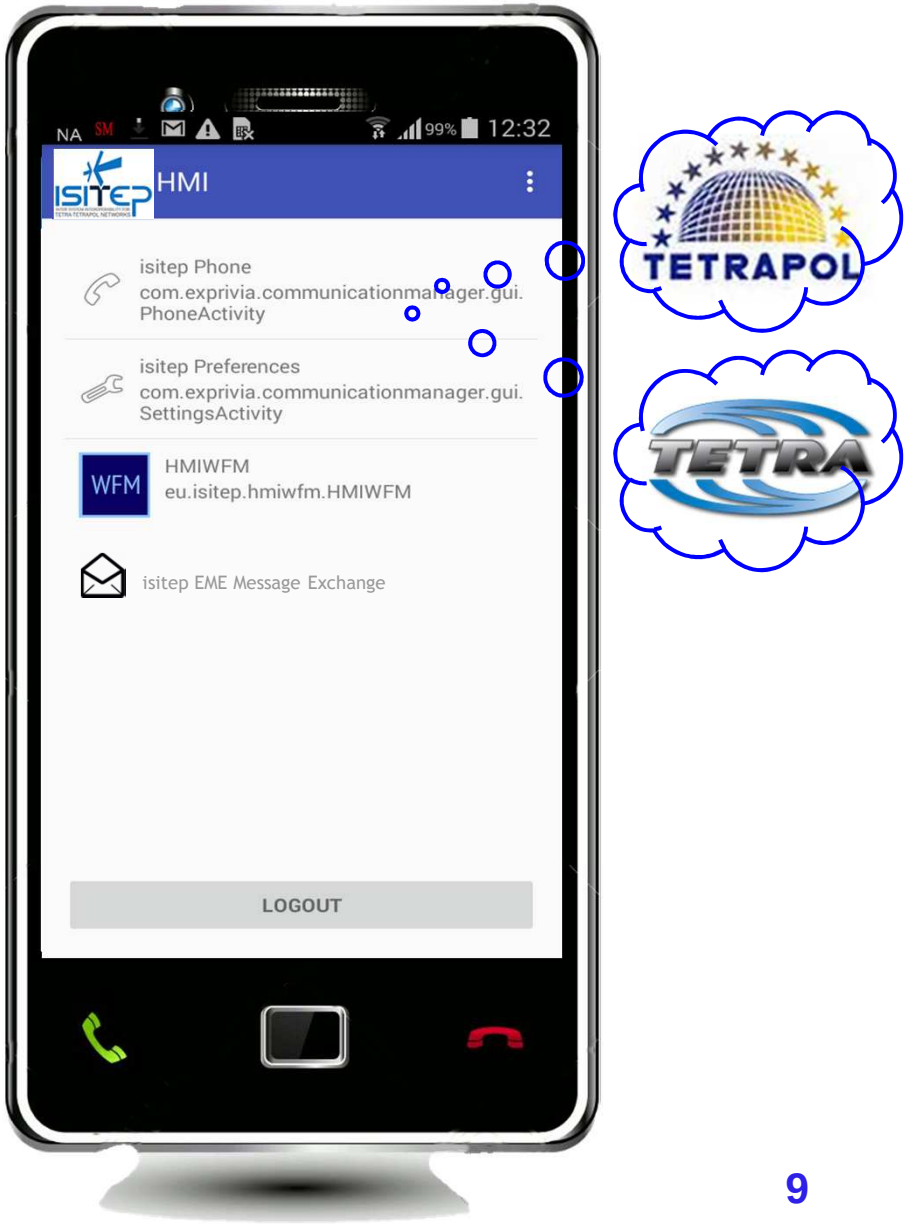
- ✓ physical interfaces (buttons, knobs)
- ✓ touchable interface (icons on screen)

ISITEP Enhanced Terminal HMI home

In fact, this is Isitep HMI home page

✓ The main screen provides access to:

- Isitep Phone: it is the calling application that allows the use of PPDR services (both TETRA and TETRAPOL)
- Isitep Preference: it's the setting menu in which the user sets preferred network and automatic handover activation
- Work Flow Manager: it is an application that allows user to manage a police mission by exchanging assignment messages with police operative central
- Enhanced Message Exchange: it is an enhanced client with automatic function of message translation.



Now explaining on reverse order all these buttons…

Enhanced Message Exchange

Enhanced Message Exchange:

- ✓ allows users to get real time translation in owner language during message exchange

Work Flow Manager allows user to follow operative procedures

Isitep Preferences

Here it is possible to set two different preference to drive the Communication Manager in automatisms:

- Preferred Network
- Automatic Handover

Real example:

Assuming that:

- Preferred Network=”TETRA”
- Automatic Handover=”YES”

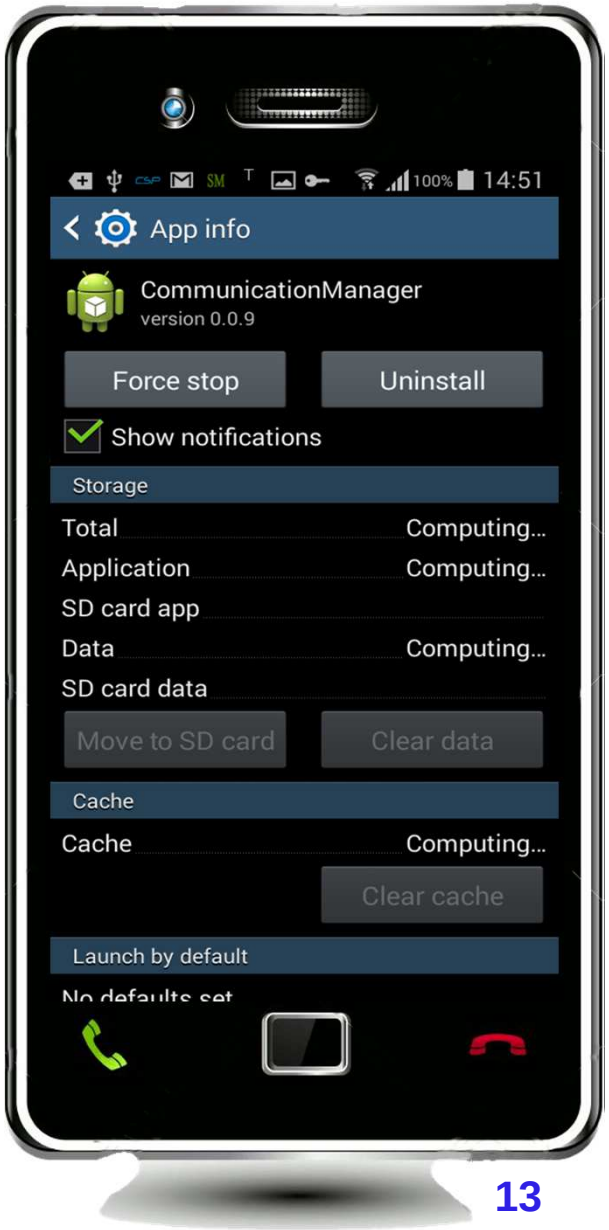
These are the possibility that we could have:

Presence of net TETRA	Presence of net TETRAPOL	Results expected: (by CM action)
YES	YES	Preferred Network
YES	NOT	Activation of TETRA
NOT	YES	Activation of TETRAPOL(*)
NOT	NOT	Status “Not Active”

(*) only if Automatic handover was set “YES”

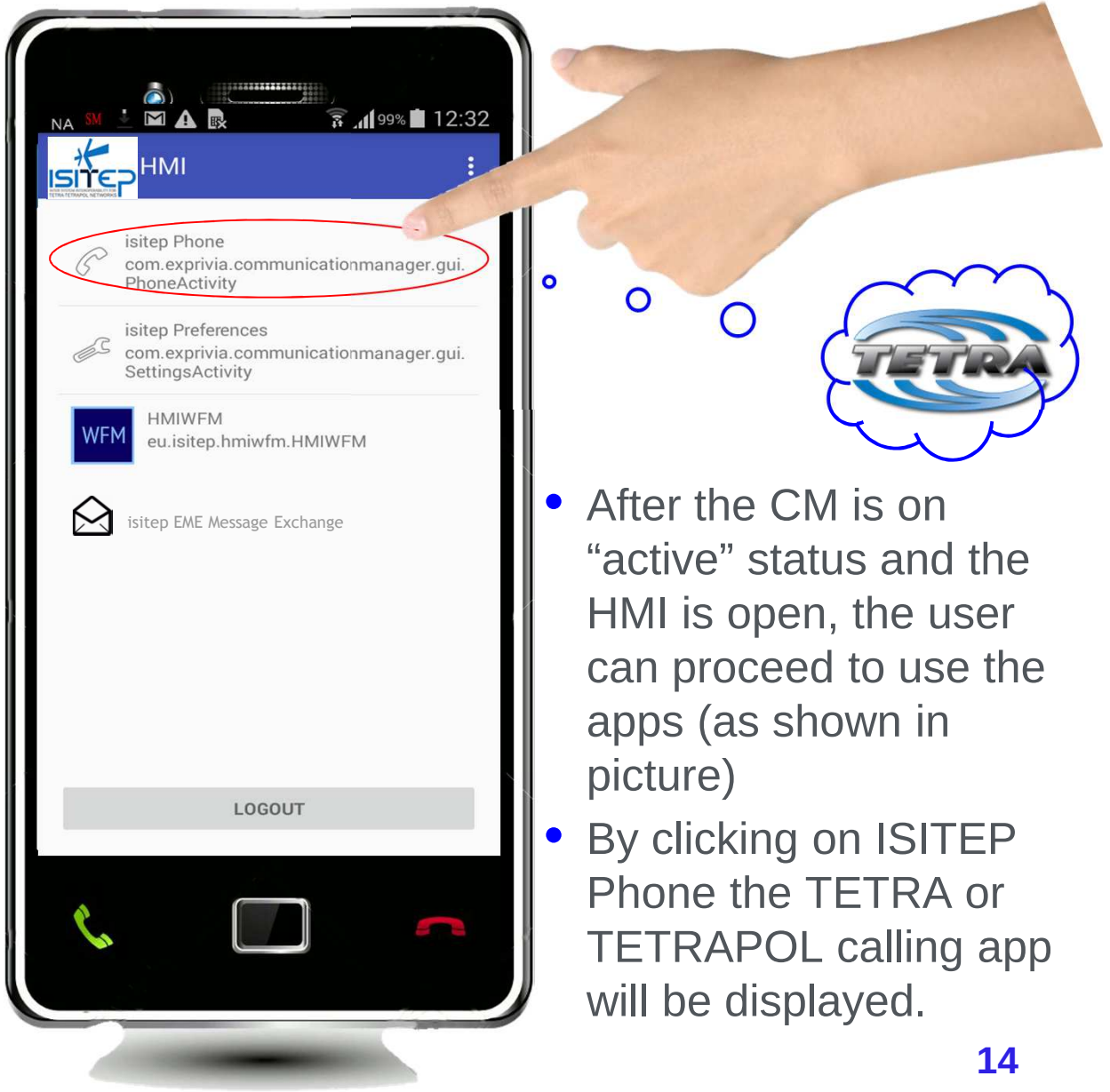
Taking a step back …What's happen when turn on IET?

- Power on (CM start as service in background)
- Only at first use: the user clicks on SM icon and enter Password and PIN
- The user clicks on HMI icon and enter PIN
- The user gets access to HMI homepage
- The IET is ready to be used



ISITEP Enhanced Terminal summarize

- Basing on the isitep preferences, the CM will manage received network availability in order to activate correct network (TETRA or TETRAPOL).
- After this step the user, through a physical button or HMI icon on screen, will be redirected to the HMI home



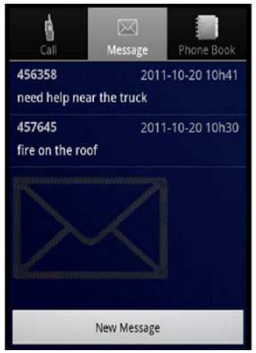
- After the CM is on “active” status and the HMI is open, the user can proceed to use the apps (as shown in picture)
- By clicking on ISITEP Phone the TETRA or TETRAPOL calling app will be displayed.

ISITEP PHONE view

- ✓ The TETRA application is activated by the Communication Manager and lunched on the Enhanced Terminal.

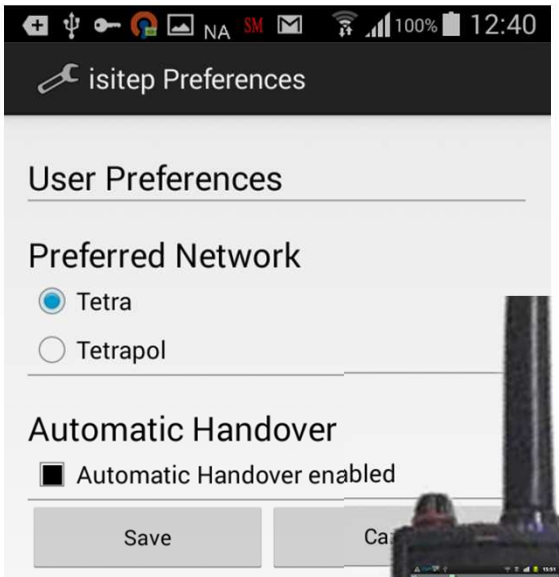
ISITEP PHONE view

- ✓ The TETRAPOL application is activated by the Communication Manager and lunched on the Enhanced Terminal.



CERN integration test scenario

Prerequisites:



Demo sequence:

- At PUMA T4 Startup : Both networks are availables so CM sends activate to preferred network (TETRA)
- Is it possible to speech, pushing on PTT button through TETRA App

1st Action: Disconnect Puma T4 Antenna

- Tetra network is not anymore available so CM sends deactivate to preferred network (TETRA) and an activate to not preferred network (TETRAPOL)
- Is it possible to speech, pushing on PTT button through TETRAPOL App

2nd Action: Re-connect Puma T4 Antenna

- Tetra network is again available so CM sends deactivate to not preferred network (TETRAPOL) and an activate to preferred network (TETRA)
- Is it possible to speech, pushing on PTT button through TETRA App

Additional ISITEP Enhanced Terminal Services

ISITEP Enhanced Terminal provides additional services that are not provided with an user interface.

- ✓ Semantic and Syntactic Translator (SST) interacts with the WFM and the EME to provide translation services;
- ✓ Dynamic Functional Numbering (DFN) provides the capability to automatically change the selected group according to Mobile Network Code and Mobile Country Code (http://www.mcc-mnc.com/) in which the IET has migrated;
- ✓ Location Dependent Addressing (LDA) provides the capability to automatically locale the IET through GPS information.

Please note that this functionalities are out of scope of this Demo and they will be detailed in an upcoming one (September 2016 in Bruxelles).