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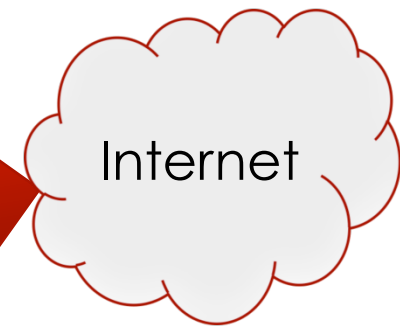# The REFIRE User interface for the proof of concept
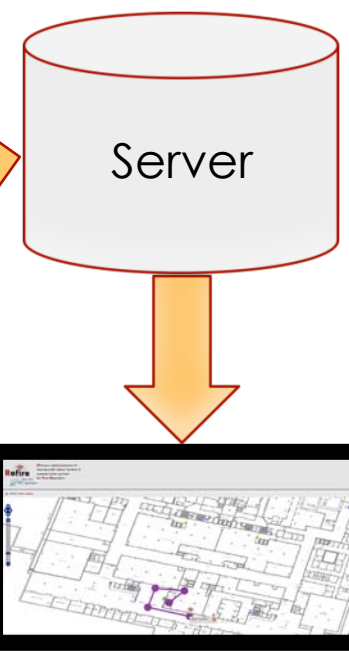
Ing. Uberto Delprato – u.delprato@i4es.it
IES Solutions srl

REFIRE Prototype

www.refire.org

RF

Tag

Reader

GSM/UMTS/WIFI

Internet

Mobile terminal

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REFIRE Prototype

www.refire.org
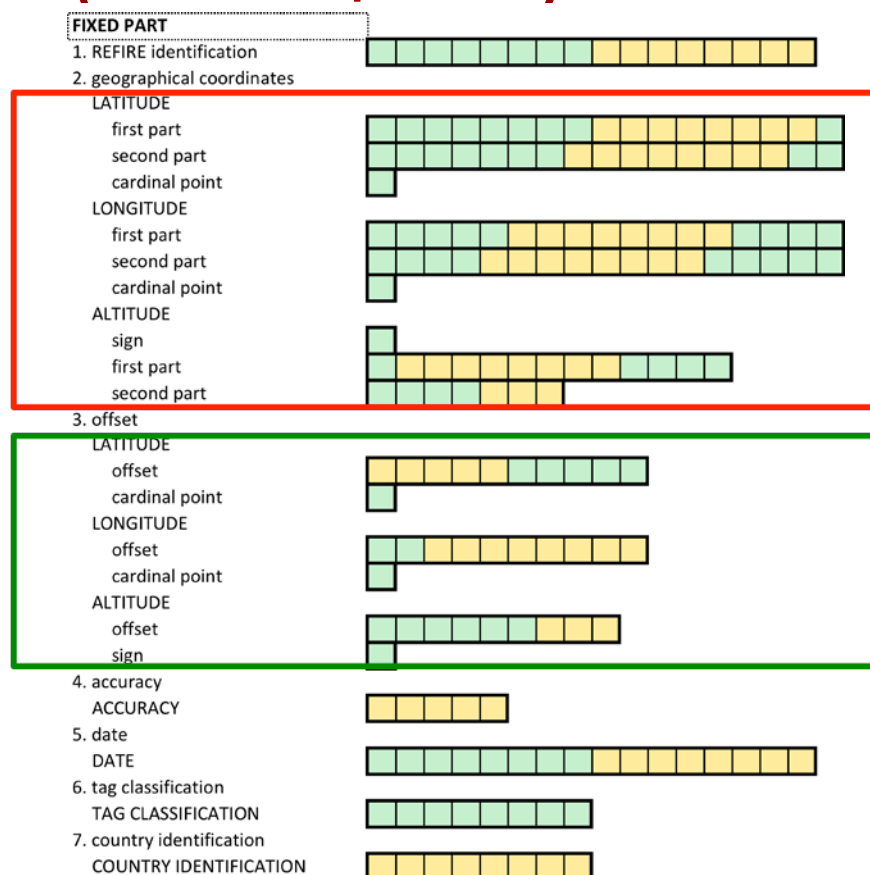
Tag

Standard

Reader

CAP messages

Mobile terminal
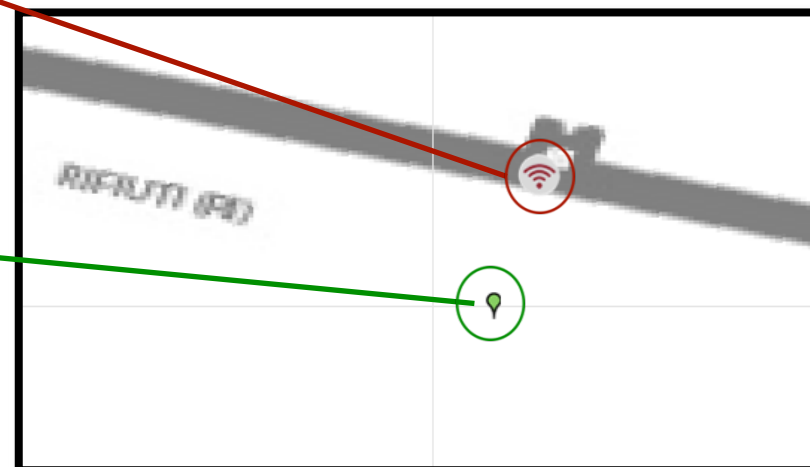
Server

REFIRE: use of the standard

- The user memory of each tag is configured with a set information concerning:
  - Location
  - Date of installation
  - Accuracy
  - Tag classification

- and (optional):
  - Information about the area of installation
  - Hazards and safety resources
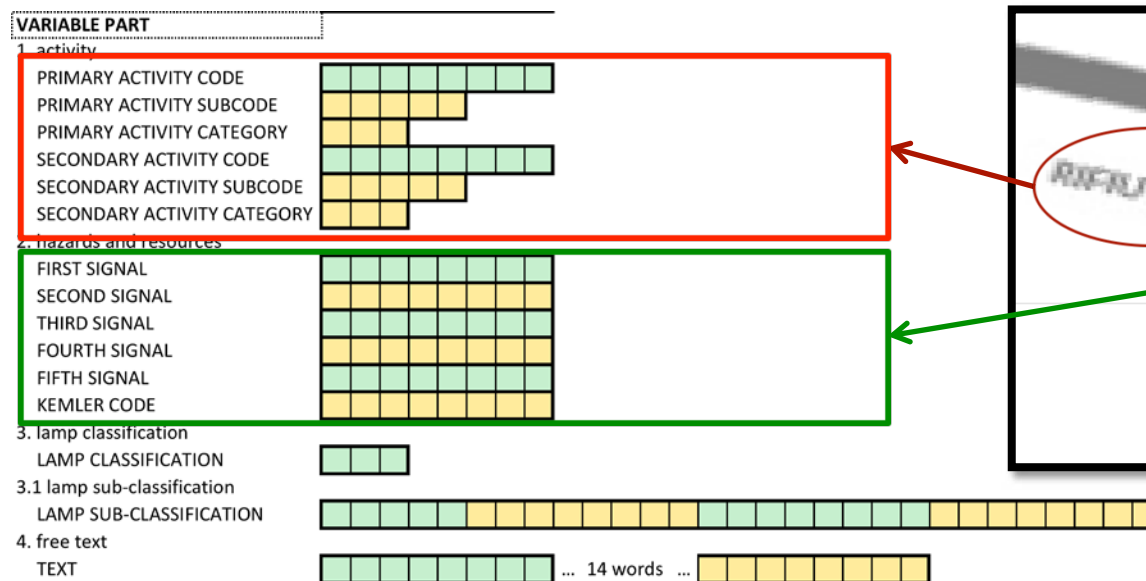 - Free text

REFIRE: user memory (fixed part)

FIXED PART
1. REFIRE identification
2. geographical coordinates
   - LATITUDE
     - first part
     - second part
     - cardinal point
   - LONGITUDE
     - first part
     - second part
     - cardinal point
   - ALTITUDE
     - sign
     - first part
     - second part
3. offset
   - LATITUDE
     - offset
     - cardinal point
   - LONGITUDE
     - offset
     - cardinal point
   - ALTITUDE
     - offset
     - sign
4. accuracy
   - ACCURACY
5. date
   - DATE
6. tag classification
   - TAG CLASSIFICATION
7. country identification
   - COUNTRY IDENTIFICATION

- 176 bit (or 22 words)

- mandatory

REFIRE: user memory (variable part)

- 336 bit (or 42 words)

- optional

VARIABLE PART

1. activity
   - PRIMARY ACTIVITY CODE
   - PRIMARY ACTIVITY SUBCODE
   - PRIMARY ACTIVITY CATEGORY
   - SECONDARY ACTIVITY CODE
   - SECONDARY ACTIVITY SUBCODE
   - SECONDARY ACTIVITY CATEGORY

2. hazards and resources
   - FIRST SIGNAL
   - SECOND SIGNAL
   - THIRD SIGNAL
   - FOURTH SIGNAL
   - FIFTH SIGNAL
   - KEMLER CODE

3. lamp classification
   - LAMP CLASSIFICATION

3.1 lamp sub-classification
   - LAMP SUB-CLASSIFICATION

4. free text
   - TEXT   ... 14 words ...

REFIRE: user memory (complete content)

- Max 512 bit (or 64 words)

- Flashed into the tag after installation

- A semi-automated method for defining the content was developed

- A tool provided by the tag supplier was used for recording

REFIRE: the scenario

- Thick smoke from 2nd floor underground

- 2 rescuers on scene, each of them equipped with a REFIRE device

- They split to survey the floor and search for the cause of the smoke

- Some rooms feature hazards

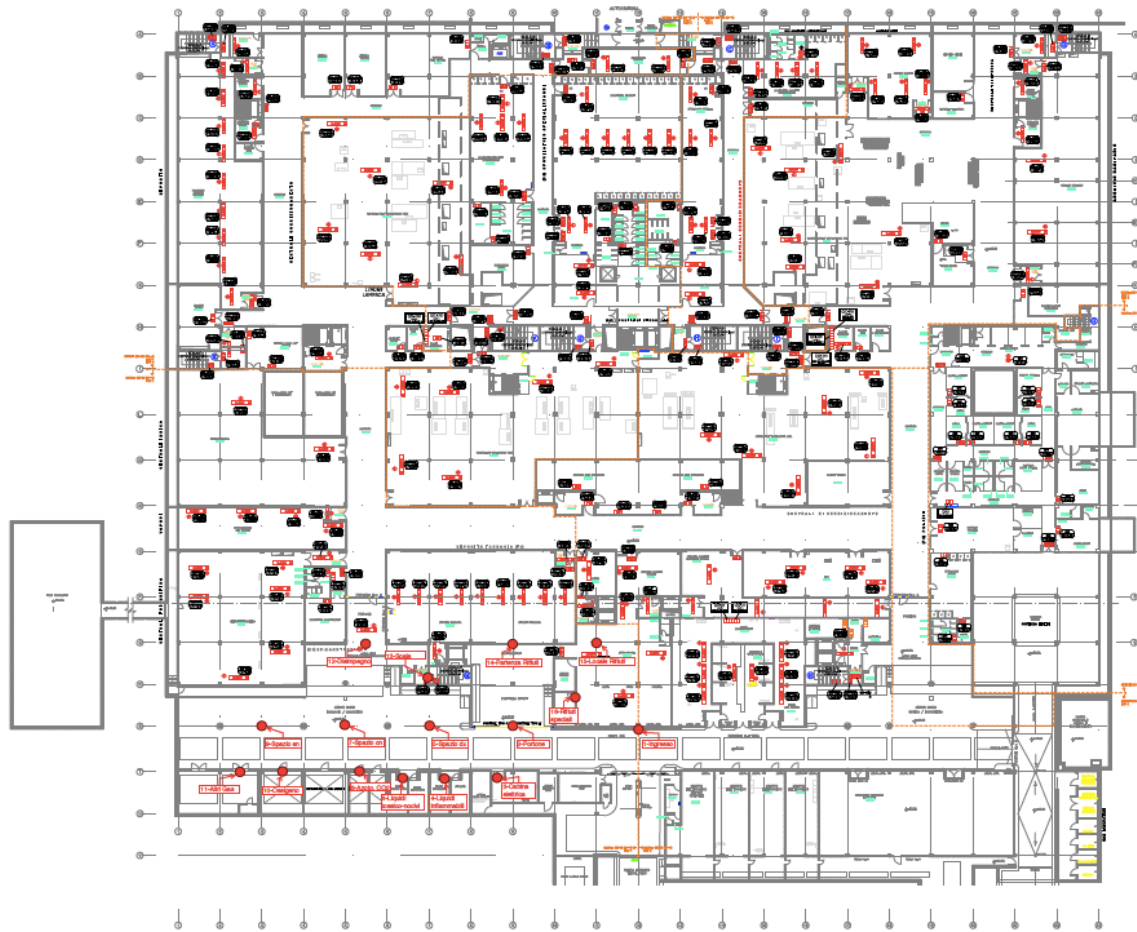- The area is surveyed and the fire is located

REFIRE: location

- CAMPUS Bio-Medico
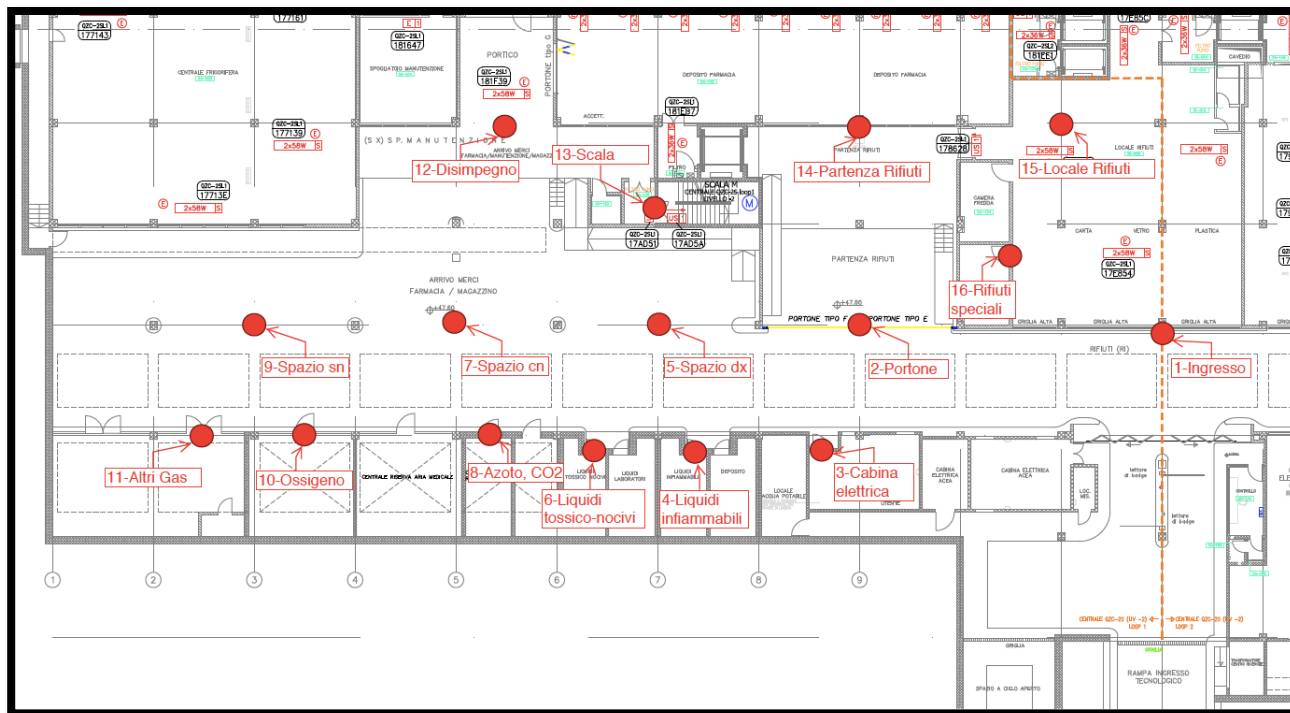
- Hospital building

- Floor -2

- Technical area

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REFIRE: location

www.refire.org

- CAMPUS Bio-Medico

- Hospital building

- Floor -2

- Technical area

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REFIRE: location

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- 16 PILDs

REFIRE: search paths

- 2 rescuers

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www.refire.org

REFIRE: user interface (full page)

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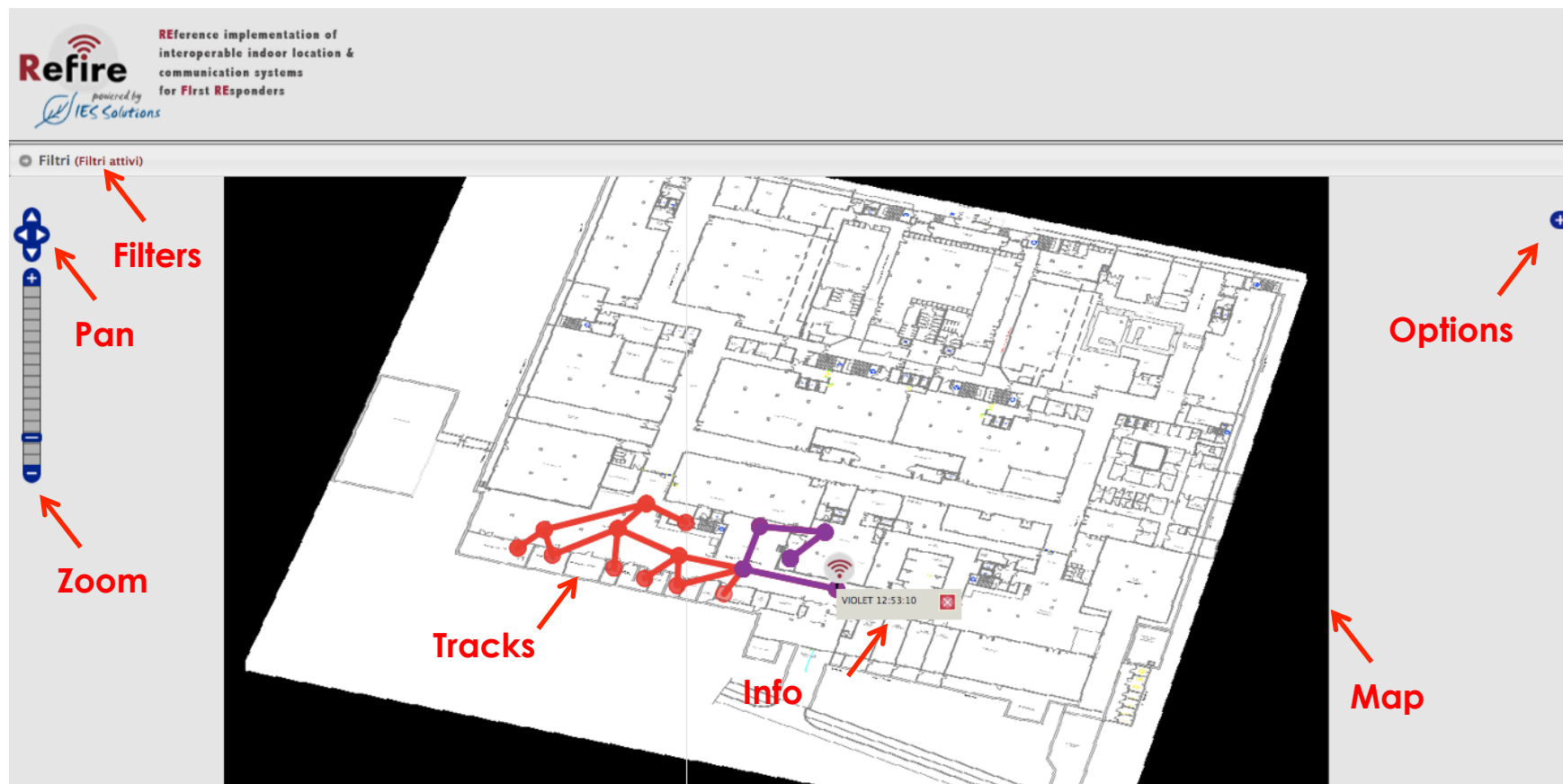
REFIRE: user interface (filters)

Filters : **Rescuer, Event, Floor, Date**

Pan

Zoom

Options

Map

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REFIRE: user interface (tracks)

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REFIRE: user interface (tracks)

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REFIRE: user interface (details)

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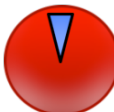
www.refire.org
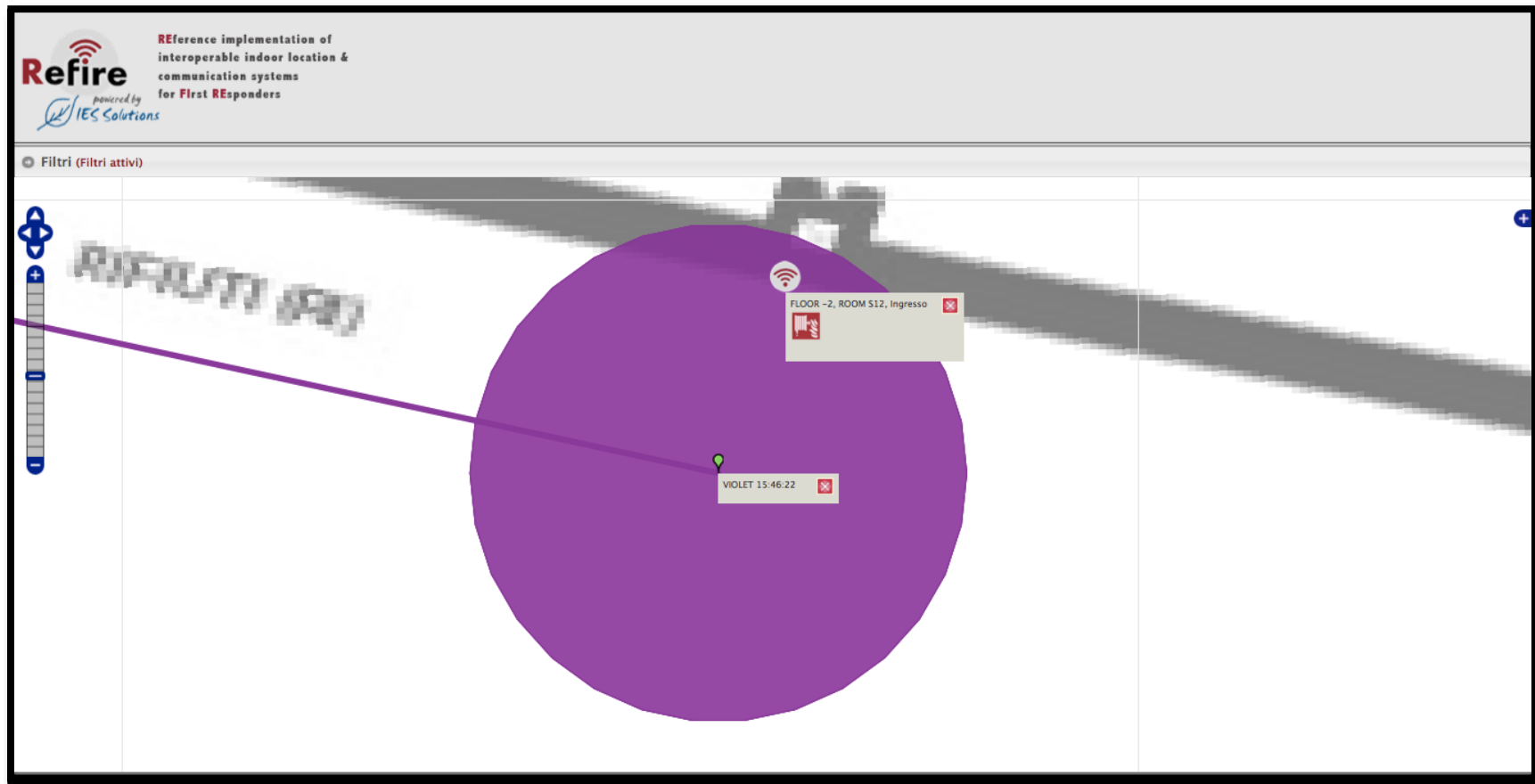
REFIRE: Level 0

- PILDs are used as proximity sensors for localization

- The Mobile Terminal updates its position estimate by using a Calibration Message from the RFID tags

- In this level, only a rough estimate of the position of the rescuers can be computed, by using trivial datafusion approaches.

PILDs

Rescuers

Control Center - Coordinator

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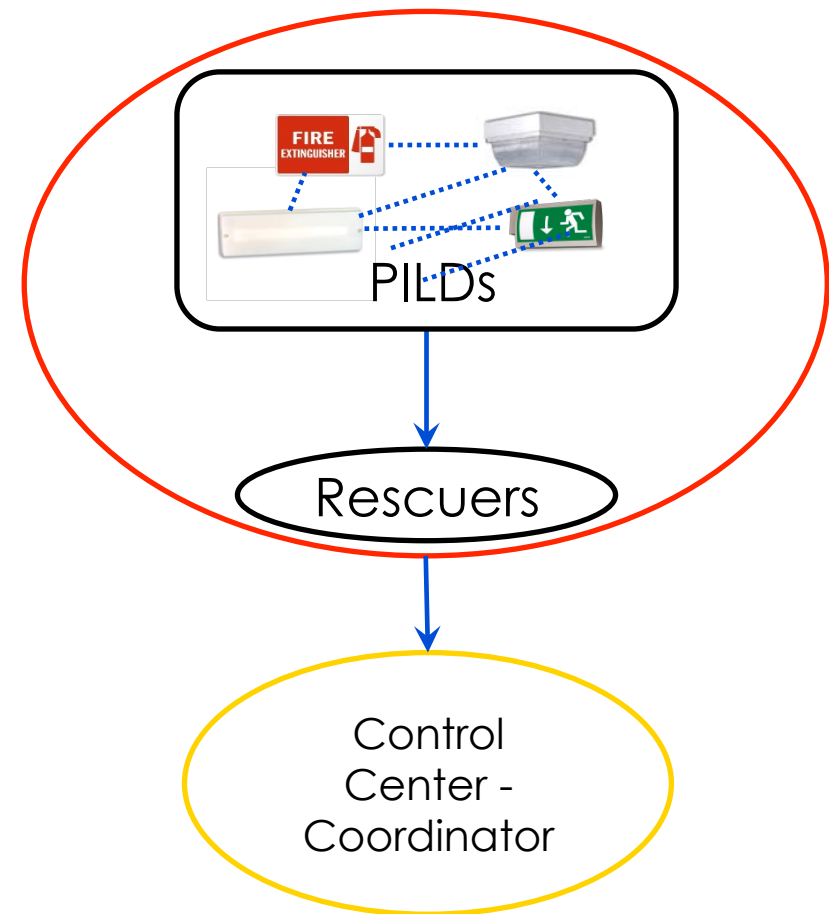
REFIRE: the demo

Refire PILDs

RED

VIOLET

www.refire.org

REFIRE: some considerations

- Geo-referred maps are a must

- Retrieving all information for the tags is a time-consuming task

- Configuring the tag may become an expensive task without a simple and automated procedure

- The use of semi-active tags may improve accuracy but would require a level 1 set-up

- Indoor communication must be in place

www.refire.org

REFIRE: conclusions from the demo

- The full chain of communication was tested

- The standard was implemented

- Level 0 was demonstrated

- Detailed information were retrieved from the tags

- Some glitches in the flow of messages

- The integration at Level 1 should be very powerful, although with a "dense" infrastructure, Level 0 is a clear improvement

REFIRE: www.refire.org

Many thanks for sharing your thoughts

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