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AMBITION

Reporting Tuner

[Incident Reporting Tool]

ProtectRail
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Optimal decision making requires full knowledge of (all the) facts about a situation or an environment.

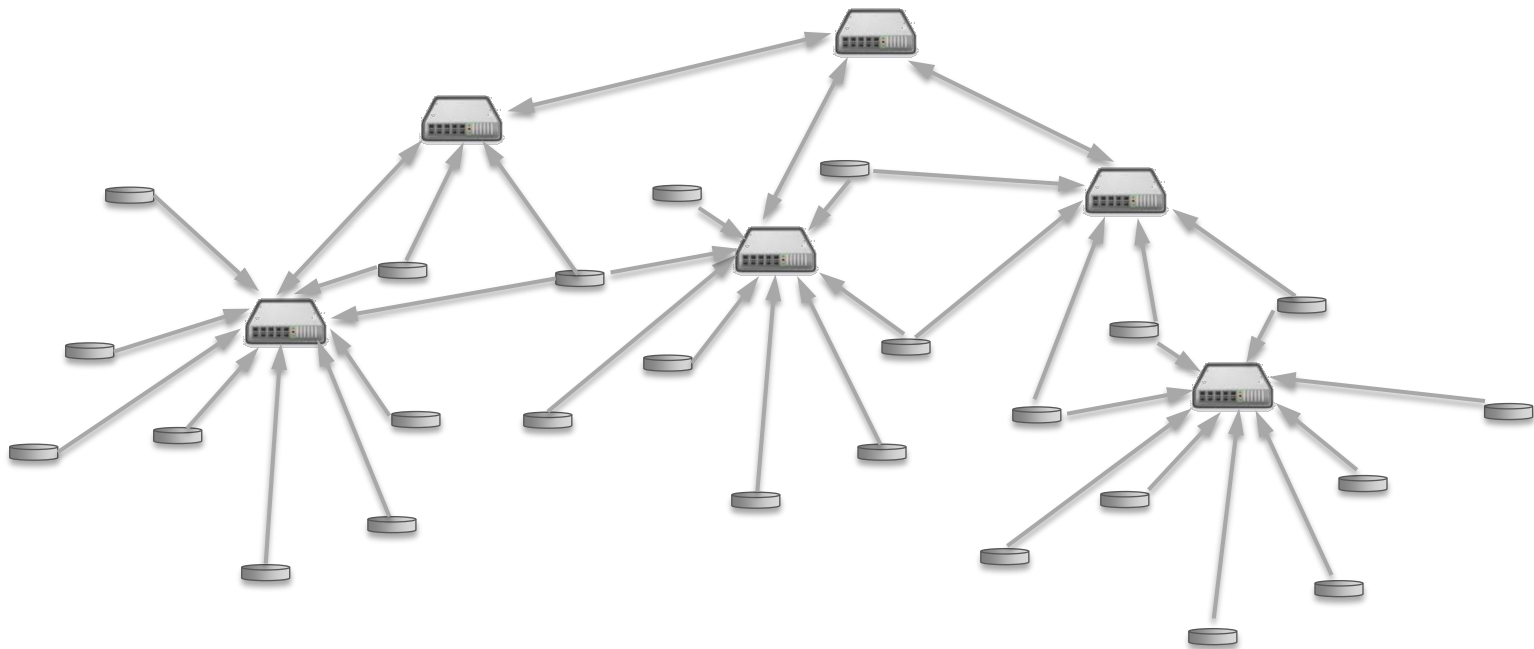
Knowledge (information) is captured by sensors.

Ideally the sensors' network should:

- ✓ **Provide information about the environment variables;**
- ✓ **Cover every relevant location;**
- ✓ **Monitor every relevant variable (temperature, counting, density, disturbances, people grouping, etc.);**
- ✓ **Require low CAPEX;**
- ✓ **Have low complexity and installation cost;**

In a real environment and project, some of the relevant variables are difficult to monitor;

To stay within a reasonable budget, the range and number of sensors that may be deployed is usually much lower than the adequate/ideal.



An ideal sensor should:

- ✓ Be capable of capturing different environment variables;
- ✓ Be able to cover different locations (mobility);
- ✓ Have high processing capacity (capable of analysing and evaluating events);
- ✓ Be present almost everywhere (ubiquitous);
- ✓ Be able to send the monitoring results to a CC;
- ✓ Large autonomy;
- ✓ Easily rechargeable;

The Human (sensor):

- ✓ Is capable of capturing different environment variables (vision, sound, smell, movement, ...);
- ✓ Is movable, roaming through different locations throughout the day;
- ✓ Has high processing capacity (analyses the information it collects);
- ✓ Is present almost everywhere (of interest);
- ✓ Has sophisticated communication skills;
- ✓ Is autonomous for large periods of time;
- ✓ Is easily rechargeable (a sandwich and a glass of water);

In conclusion Humans are sensors that “comply” with most of the ideal requirements for a sensor;

But have some weaknesses:

- ✓ **Different sensors may understand the same event differently (age, education, perception, etc.);**
- ✓ **The sensors may be directly affected by the event (e.g. burglary);**
- ✓ **In some cases the sensors make deductions that have no concrete support (intuition);**
- ✓ **Their communication skills are variable and there is no standard communications protocol to overcome this issue;**
- ✓ **Under stress, the sensors are prone to errors or bias;**

How to use humans and their abilities to credibly report events?

Include “control” mechanisms to identify, reduce or mitigate their weaknesses

- ✓ **Perception homogenization;**
- ✓ **Control involuntary error reporting;**
- ✓ **Control voluntary error reporting;**
- ✓ **In general evaluate error input ;**

Add a continuous evaluation of the report reliability and criticality

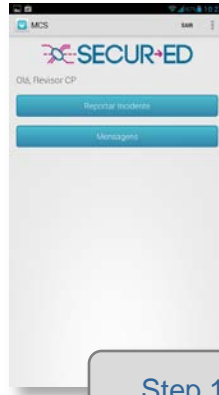
- ✓ Identification of the source of the report (staff, type of staff, passenger, type of passenger, type of usage, ...);
- ✓ Evaluate content consistency;
- ✓ Identify event location and time of report;
- ✓ Identify and evaluate similarity with other events at the same time period and location;
- ✓ Identify and evaluate similarity with past events;

Have a continuous update of the environment “characterization” based on the reports received and their evaluation and follow-up.



User login

Start report



Step 1

Specify event



Step 2

Refine event



Step 3

Report status



Step 4

Evaluate criticality



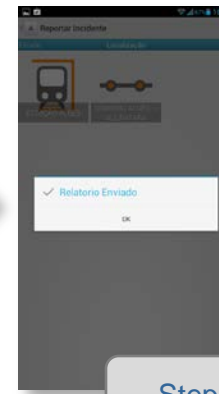
Step 5

Refine location



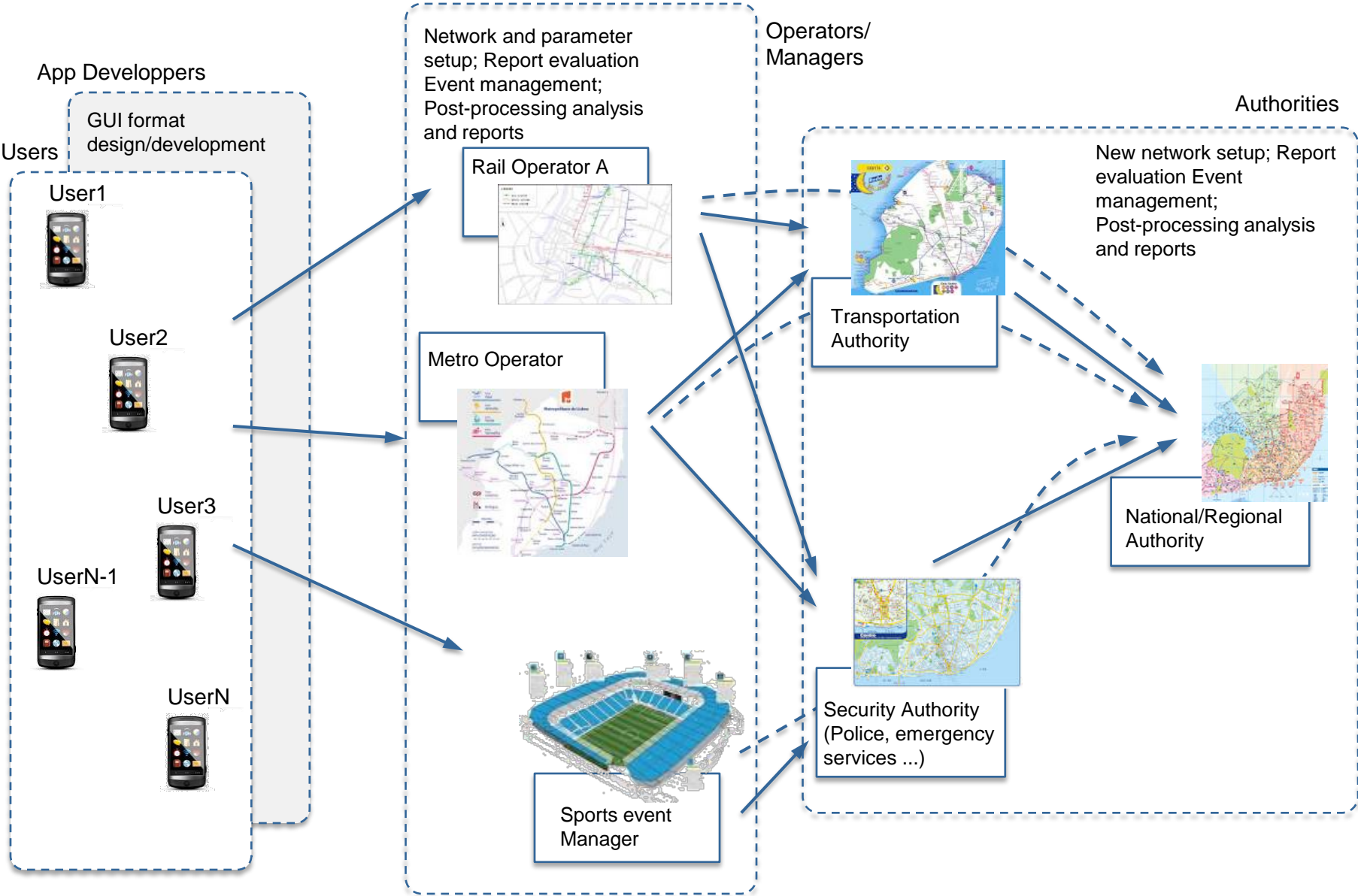
Step 6

Close report



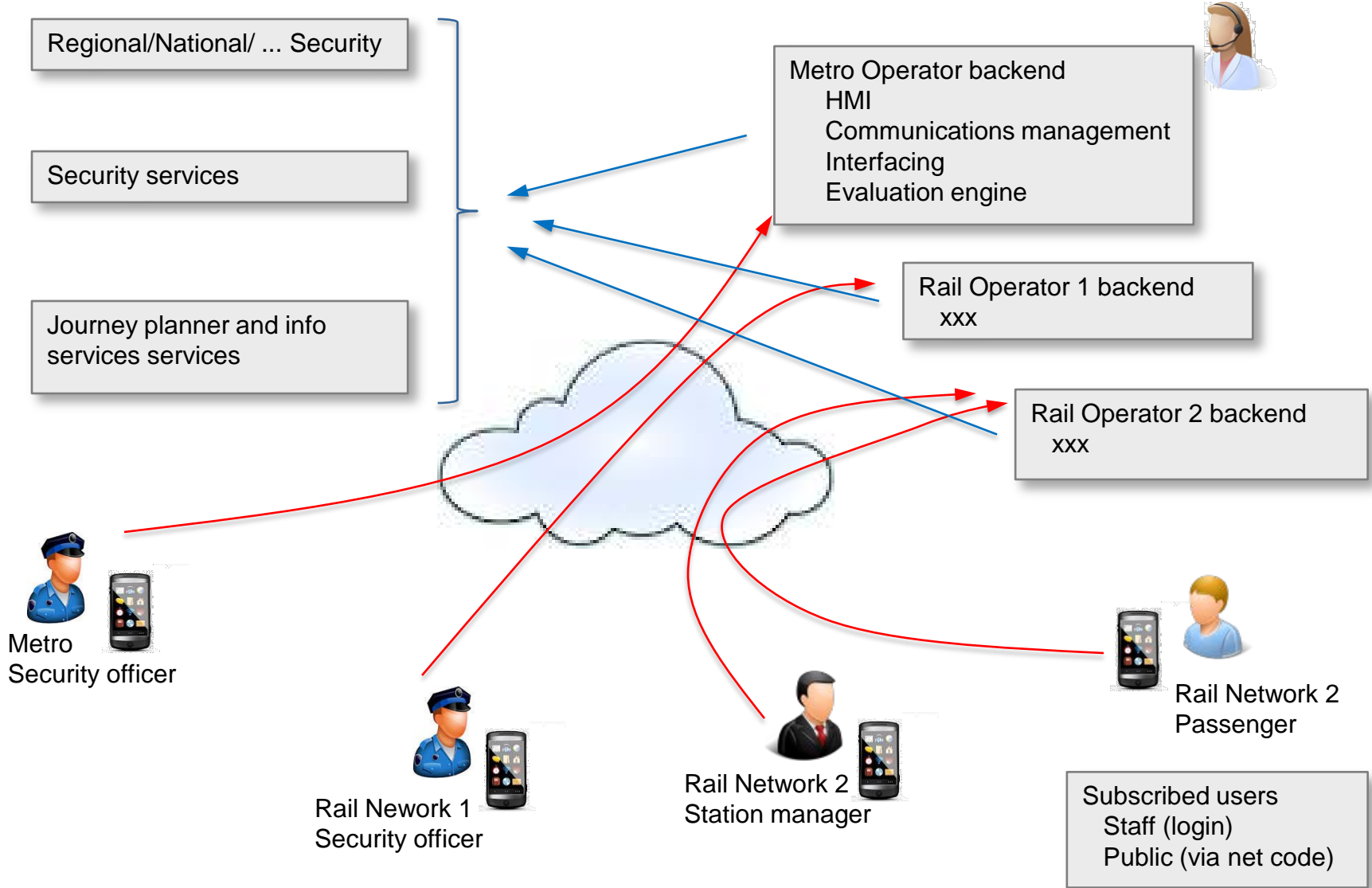
Step 7

Simplified Structure



Interface development

Simplified Architecture



❖ Reporting media

- ✓ Smartphone App
- ✓ Web Browser (No application needed)
- ✓ Use of standard hardware (smartphones, tablets, laptops , ...)
- ✓ Usable in open (public) or private networks

❖ Reporting process

- ✓ Structured reporting
- ✓ Dynamic GUI
- ✓ Very limited number of reporting steps
- ✓ No partial message loss
- ✓ Continuous evaluation
- ✓ Registered users may receive information

❖ Data collection and analytics

- ✓ Report and data analysis
- ✓ History analysis
- ✓ Reporting pattern characterization

❖ Reporting modes

- ✓ Critical events
- ✓ Operational events
- ✓ General information

❖ Report evaluation

- ✓ “User reliability”
- ✓ Message criticality
- ✓ Message consistency

❖ **Locations / situations**

- ✓ **Transportation Networks**
- ✓ **Shopping Malls**
- ✓ **Sports events**
- ✓ **Airports**
- ✓ **Large scale events (music festivals)**
- ✓ **...**

- ✓ **Virtually any location or situation where sensing or reporting may be relevant**

❖ **Type of reports**

- ✓ **Security events**
- ✓ **Assistance / information request**
- ✓ **Traffic update**
- ✓ **Disturbance report**
- ✓ **Critical events (terrorism, vandalism, ...)**
- ✓ **...**

- ✓ **Virtually any report**

Trespassing/restricted area encroachment
Aitek