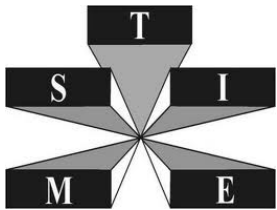




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CUSTOMISED ALARM TECHNIQUES IN MONITORING FLASH FLOODS IN SICILY



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HAZARDOUS

It has been realised a project addressed to the early warning of flash floods in Sicily, to give the Civil protection Office a system able to efficacely face more and more frequent events.



HAZARDOUS CONSORTIUM

RTD Performers

⦿ Palermo University

⦿ Proteo

End Users

⦿ Civil Protection Office of Catania

⦿ Civil Protection Office of Palermo

Stakeholders

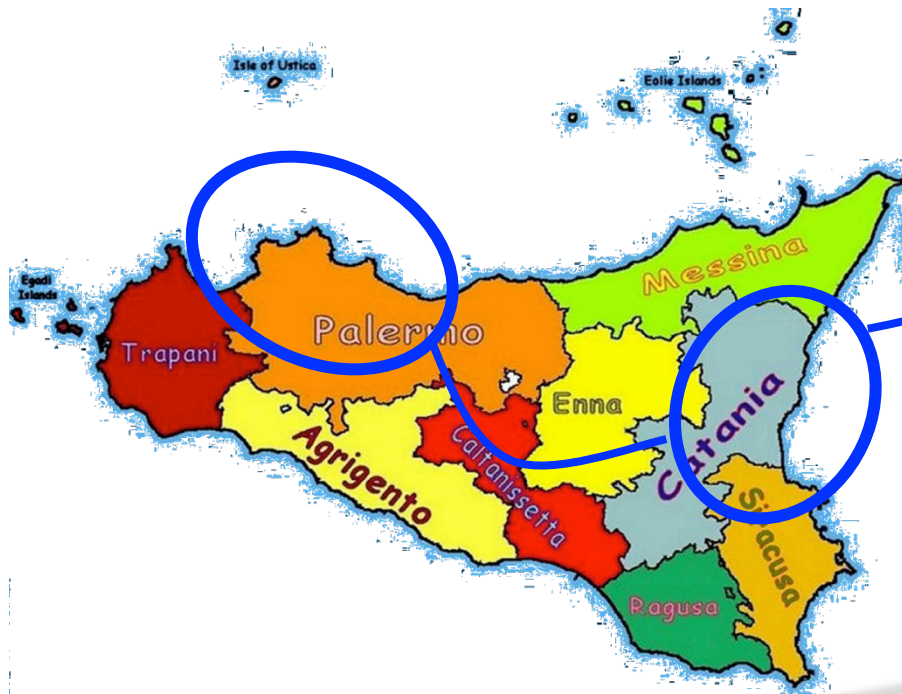
⦿ Region Campania Fire Department

⦿ Regional Hydrographic Office of Sicily



HAZARDOUS GOALS

The project focused urban areas of the cities of Palermo and Catania. The metropolitan area of Catania has been highlighted.



Urban flash Flood Early Warning Systems



URBAN FLASH FLOOD

- ⦿ Too much water in a very strict time
- ⦿ An urban flood result (when the drainage system is unable to manage the mass of water falled down)

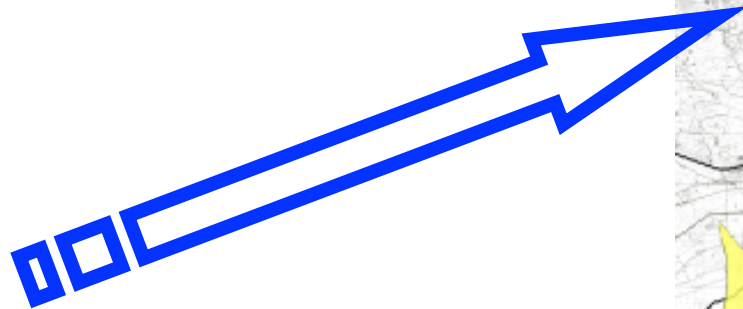




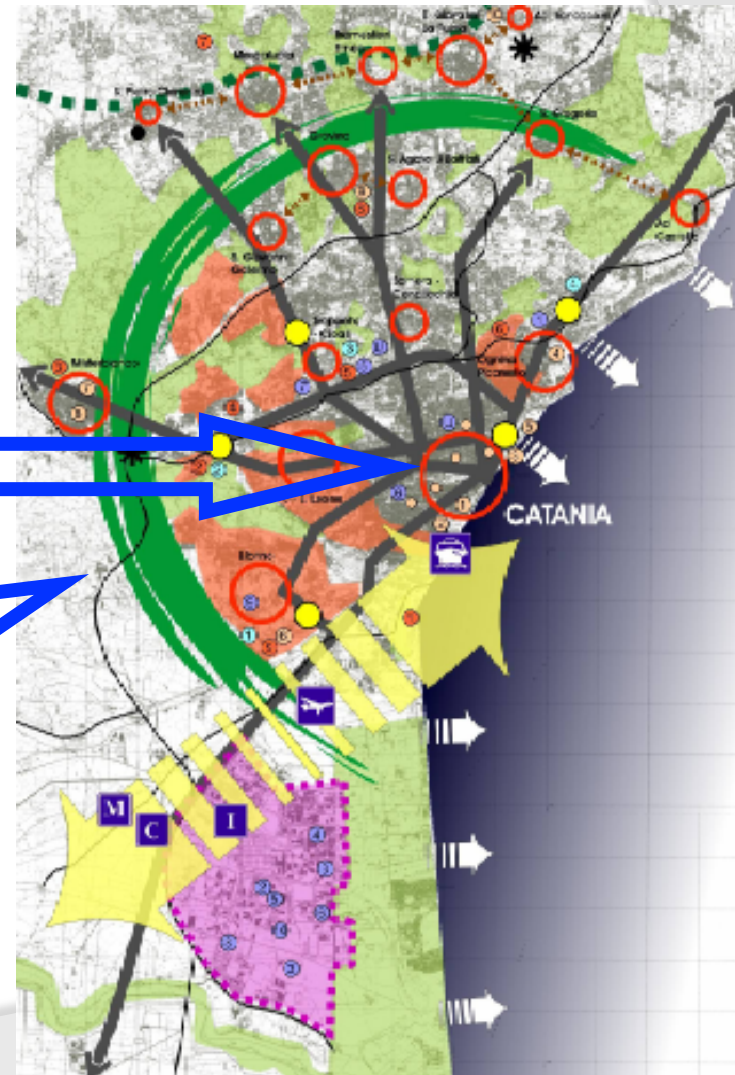
MAIN CAUSES

- ◎ Brief torrential rain
- ◎ Growing Urbanization
- ◎ Climate Change

The OLD Town (1950)



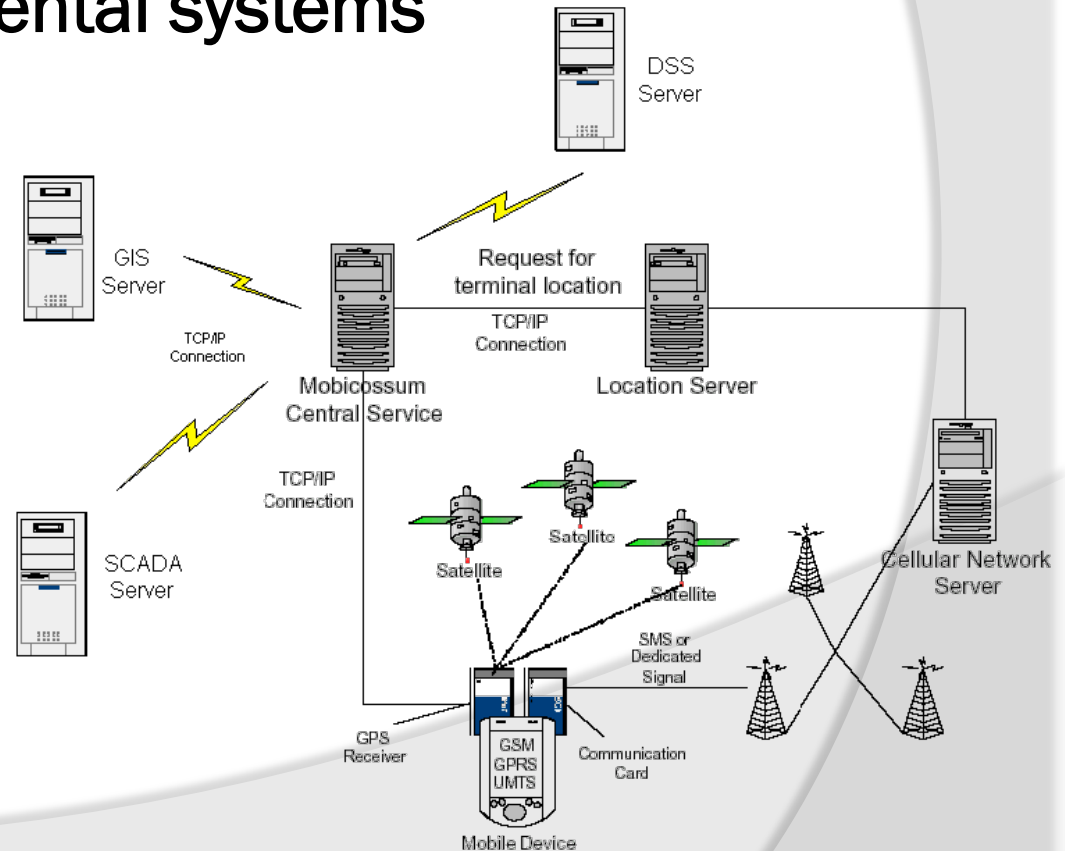
The Metropolitan Area (2013)





THE GROWING COMPLEXITY

- Several IT Systems and data sources
- Large scale environmental systems
- Mobile workers





SENSITIVITY ANALYSIS

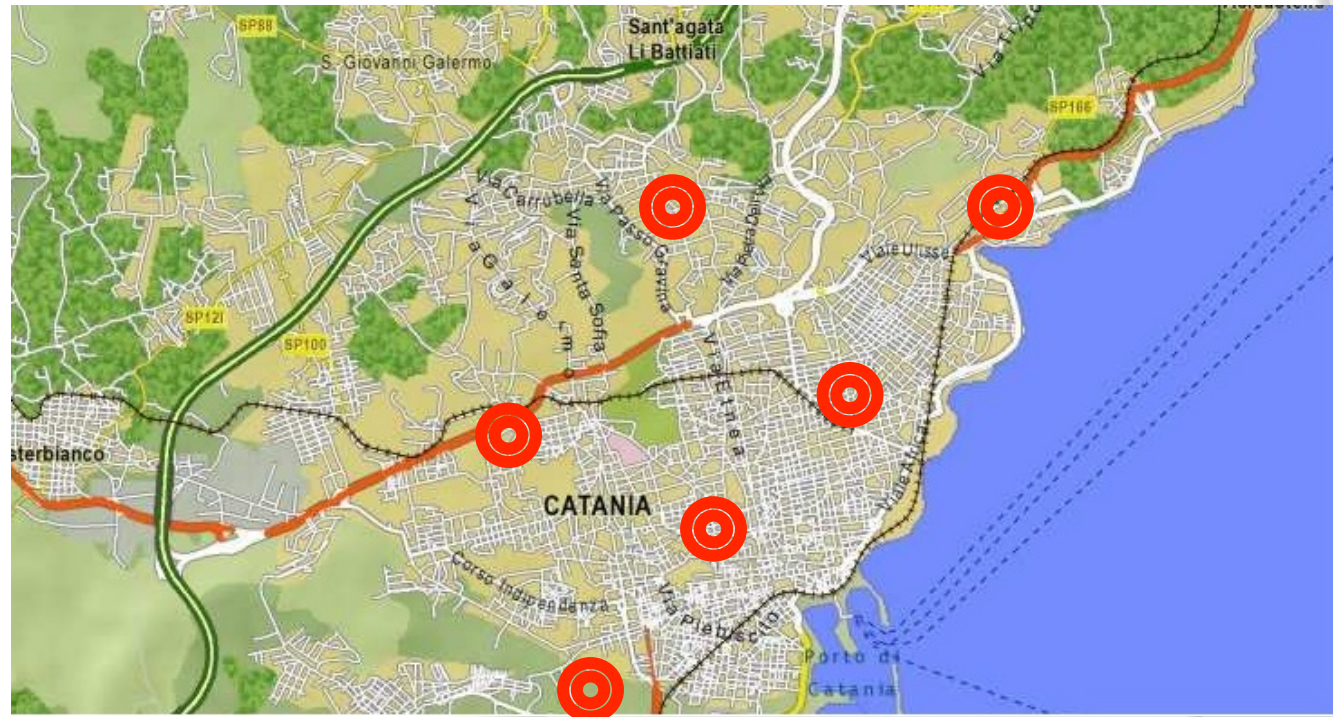
This study is essential since you need to provide information about the interested sites where the event will take place.

This specific analysis allows the user to find the sites to place sensors that give those information useful to know early what is going to arrive in the city (i.e. much rain, ...).



STORM TRACKING SYSTEM

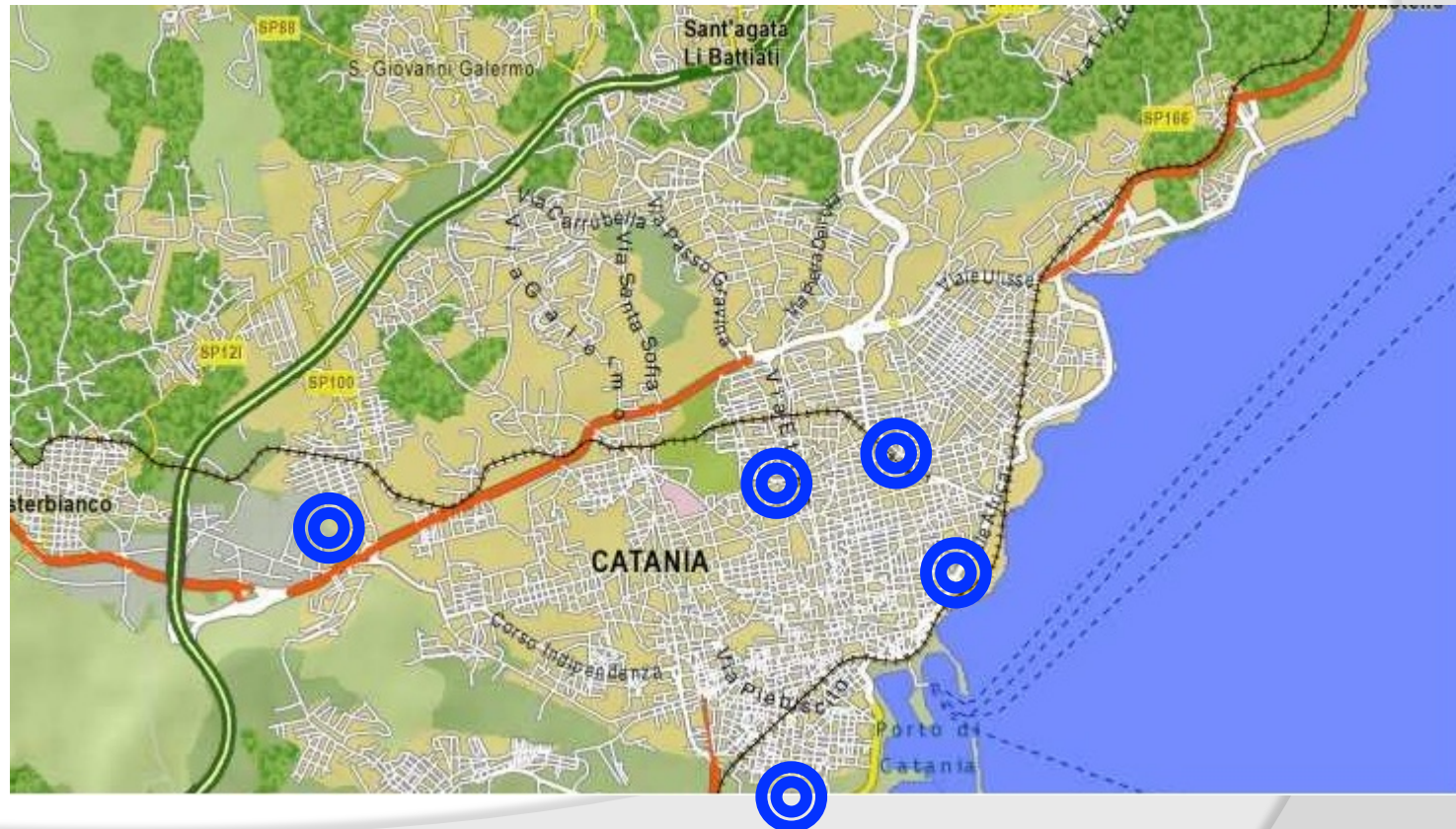
- n° 6 wireless rain gauges (GPRS)





WATER RUNOFF MONITORING SYSTEM

- n° 5 wireless water level gauges (GPRS)





EARLY WARNING SYSTEM

- ◎ The analysis of data from sensors and other meteorological available information allow to early warn about the exact time of the flood wave arrives in different areas of the town.
- ◎ Civil Protection Offices communicate to the Municipalities Departments the early warning. that be able to decide in which way gives the alarm to the citizens.



HAZARDOUS ALARM FORWARDING SYSTEM

- n° 15 wireless electronic traffic signals (GPRS)
- Sirens
- Bus stop points with electronic display





NEXT STEPS...

- ⦿ In Catania's pilot area the class presenting an high risk in terms of losses of human life is represented by the Motorcyclists (82%) and by Pedestrians (9%).
- ⦿ In order to reach the most people, Civil Protection Office is going to design an alert system based on social media tools, because of the young age of Bikers.

Alert messages will give information about:

- the entity of the trouble
- the place interested by the event
- eventual traffic restrictions and advised alternatives.



RESULTS

In these last years in Italy, and in the cities close to the sea, the consequences of the climate change have been heavy felt.

Experience, R&D project (such as OPTI-Alert) and ICT technologies allow:

- to realise early warning systems asserved to Civil Protection
- to define Users targets to find the best alert way per each class.

These systems will allow to save human lifes and to reduce risks coming from flash flood events, of an increasing importance in Europe.



THANKS FOR YOUR ATTENTION

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