The expected results of RECONASS

- Relief organizations, insurers and banks can begin funding restoration efforts at a much earlier date.
- Emergency response crews will be provided with critical and timely information on damage in monitored facilities so that danger can be pinpointed and emergency response directed with precision.
- Disaster cost will be reduced by preventing monitored structures from collapsing to limit damage to adjacent structures and additional loss of life when explosive devices impact highly populated urban centers.
- Knowing the functionality of hospitals immediately after the disaster will help the government direct injured victims to available hospital capacity.

- RECONASS information to all major recovery stakeholders (in the form that they need it) will help them acquire a common picture of the situation.
- Communication in case of disaster, such as guaranteed by the proposed communication gateway, in addition to helping the recovery efforts, can save lives.
- Early, effective handling of the reconstruction and recovery process will have long term financial repercussions.

Consortium

Contact Us

Project Coordinator:
Dr.Angelos Amditis
A.Amditis@iccs.gr

EU Project Officer:
Jana Paskajova
jana.paskajova@ec.europa.eu

Technical Manager:
Dr. Athanasia Tsertou
atsertou@iccs.gr

Dissemination Manager:
Stephanos Camarinopoulos
s.camarinopoulos@risa.de

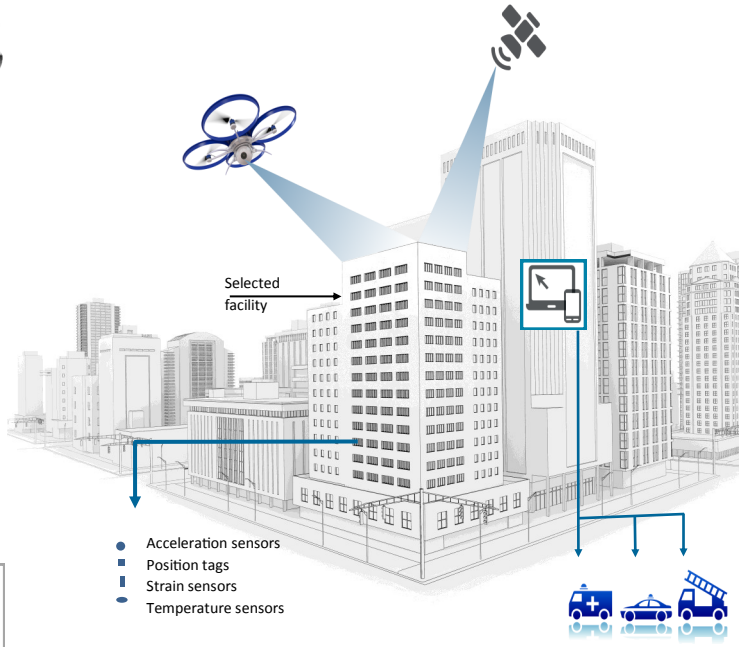
Project Manager:
Evangelos Sdongos
esdongos@iccs.gr

Project Facts:

DURATION	TOTAL COST	REQUESTED EU CONTRIBUTION
42 months	**5,48** million euro	**4,26** million euro

RECONASS

Reconstruction and REcovery Planning: Rapid and Continuously Updated COnstruction Damage and Related Needs ASSessment



This project has received funding from the European Union's Seventh Framework Programme for research, technological development and demonstration under grant agreement no [312718]

The need

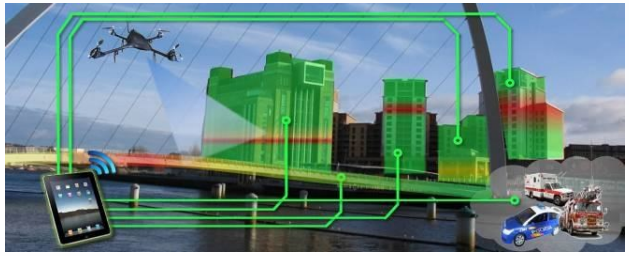
Terrorist actions often strike buildings and civil critical infrastructures of strategic interest, such as government buildings or bridges. The same buildings and critical infrastructure can also be damaged in a natural disaster. **During such events the above facilities may exceed their functional or structural limits and this can be visible**. On the other hand, they can also suffer enormous damage to their capacity **without producing any apparent visible signs**. Such damage, for instance, in the case of an earthquake, can **render the facility incapable of surviving consecutive aftershocks**.

Objectives

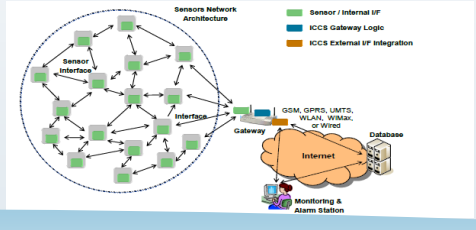
RECONASS aims at providing a monitoring system for constructed facilities that will provide a near real time, reliable, and continuously updated assessment of the structural condition of the monitored facilities after a natural or manmade disaster. The above assessment will be seamlessly integrated with automated assessment of physical damage, loss of functionality, direct economic loss and needs of the monitored facilities and will provide the required input for the prioritization of their repair. Still another aim of RECONASS is to provide **seamless interoperability among heterogeneous networks** to secure that the required information from the monitored facility can reach, in near real-time, the base station even after difficult conditions, such as post-crisis situations.

The RECONASS system

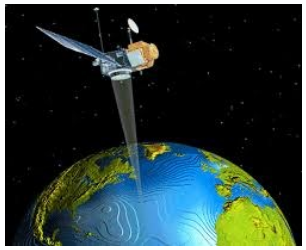
1 In order to achieve its objectives, **RECONASS will develop small, inexpensive, wireless, local positioning tags** that will be embedded in the structural elements of the monitored buildings and report their position to the base station. Following a disaster, comparison of the original position of the tags – in the undamaged state – with the final position of the tags – in the damaged state – will be used in order to hypothesize the structural system that has emerged from the disaster. This latter system, then, will be used to assess the structural response, damage and loss.



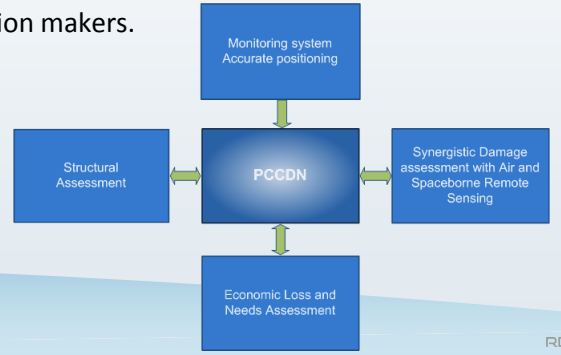
2 To ensure that the **positioning,** and also information from other gauges recording **acceleration, strain and temperature** from the monitored buildings can reach the base station, **a gateway-PCCDN tool for communication will be developed** in this work that will provide redundancy at situations of access network unavailability by utilizing multiple and different access interfaces, e.g., GSM, UMTS.



3 Our own **Unmanned Aerial Vehicle (UAV-drone)** will be operated around the monitored building after the event to capture the images of the building in all possible viewing direction. The 3D model of the building will be generated using the images and a detailed 3D damage assessment will be carried out along every exterior elements of the building. In case of extensive events like earthquake, the local UAV based3D damage assessment on monitored and neighboring buildings will be used to calibrate and validate the air-and-space-borne imagery based damage maps provided for extensive area.



4 A **PCCDN Tool will be developed** that will provide the recovery stakeholders with near real-time, continuously updated, detailed and reliable data and information on the construction damage, loss and needs of monitored buildings. Space borne and airborne damage map, fused and integrated with relevant external data and information will in a much reduced time support the involved decision makers.



RECONASS