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**Next Generation Damage and Post-Crisis Needs Assessment Tool for Reconstruction and Recovery Planning
Capability Project**

Brochure & CD Demo for Monitoring System and PCCDN Tool

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TABLE OF CONTENTS

DOCUMENT CONTROL PAGE..... 2

REVISION LOG..... 3

TABLE OF CONTENTS..... 4

LIST OF FIGURES..... 5

EXECUTIVE SUMMARY..... 6

1 INTRODUCTION 7

 1.1 GENERAL PROJECT OVERVIEW 7

 1.2 DELIVERABLE OVERVIEW 7

2 BROCHURE 9

3 CD DEMO FOR THE MONITORING SYSTEM AND THE PCCDN TOOL..... 12

LIST OF FIGURES

Figure 1 - Brochure Page 1 & Page 4 10
Figure 2 -Brochure Page 2 & Page 3 11

EXECUTIVE SUMMARY

RECONASS aims to provide 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, near real-time and continuously updated 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.

This deliverable D8.2 represents the second deliverable in WP8. The specifics covered in this deliverable are the Brochure & CD Demo for the Monitoring System and the PCCDN Tool.

Our approach with the brochure has been to keep the message short and simple and to the point in line with the exploitation approach and the product website www.shoxsolutions.com. The brochure can be seen in this report.

For the CD Demo for Monitoring System and PCCDN Tool we have already demonstrated this software working at the RECONASS pilot demonstration in August 2016. In this report we have discussed the different methods we may use to deploy a demonstration version of the CD Demo for the Monitoring System and the PCCDN Tool software.

1 INTRODUCTION

1.1 General Project Overview

RECONASS aims to provide 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, near real-time and continuously updated 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, a base station even after difficult conditions, such as post-crisis disaster (natural or man-made) situations.

In order to achieve its objectives, RECONASS will develop small, inexpensive, wireless local positioning tags and other condition based sensors (to measure building acceleration, strain of load bearing building columns and building temperature) that will be embedded in the structural elements of the monitored buildings to report their position and condition to a base station. Following a disaster, comparison of the original position of the tags (and condition of the sensors) – in the undamaged state – with the final position of the tags (and condition of the sensors) – 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.

To ensure that the positioning, acceleration, strain and temperature information from the monitored buildings can reach the base station, a gateway 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, ADSL connections etc.

Also, remote sensing-based damage maps will be provided, using both air- and space-borne imagery. Near real-time construction damage data from the monitored buildings will be used in order to effectively calibrate and evaluate these maps.

Based on the above, a PCCDN Tool will be developed in RECONASS that will provide the recovery stakeholders with near real-time, detailed and reliable data and information on the construction damage, loss and needs of monitored buildings, continuously updated, and space borne and airborne damage maps (calibrated and validated for the buildings monitored) in a much reduced time, fused and integrated with relevant external data and information. This Tool will provide international interoperability, allow for customization and expansion and permit collaborative work between the civil agencies/authorities and the relief units. The gateway will forward the data to the PCCDN tool, which is used, inter alia, to host the assessments/interface with users and maintain a database of measurements.

1.2 Deliverable Overview

This deliverable is the 2nd deliverable from work package 8 and has the specific description from the description of work.

D8.2) Brochure and CD demo for the monitoring system and the PCCDN Tool: This deliverable will include the production of a brochure and a CD demo for the PCCDN and the monitoring system. They will both be used towards wider dissemination of the project results

This deliverable specifically relates to the following task

Task 8.5: Production of Support Products (Task Leader: GS) Such products will include documentation in a form that is easy to understand and accepted by potential users. They will also include a brochure

and a CD Demo for the PCCDN Tool and the Monitoring System that will be used to present the results to major users. A printable version of this brochure will be available on the web site. Partners' Roles: GS, the task leader, will be in charge of the production of support products, produce a brochure and CD demo for the proposed monitoring system and PCCDN Tool and present the project results to major potential end-users.

The production of this support material is described in section 2 and 3 of this report.

2 BROCHURE

Our approach with the brochure has been to keep the message short and simple and to the point in line with the exploitation approach and the product website www.shoxsolutions.com.

The basic aim was to be able to generate interest from the specific end using groups previously identified. We have led on the Phrase 'Structural Health Monitoring in a Box', in order to quickly explain what the RECONASS system is. This approach is based upon GeoSIG's successful experience within this market place.

The brochure can be seen Figure 1 and Figure 2. The brochure is designed in a foldable A5 format.

This is the first issue of the brochure. It will be reviewed and amended for D8.4 in month 42. However we will use it in its current form to stimulate interest.

4

Modules include:



Position



Acceleration



Strain



Temperature



Image



Gateway



Structure Assessment



Loss Assessment



Web



SHOX

Structural Health Monitoring in a Box

Your Building's Nervous System
 Imagine if your building had the ability to make an accurate assessment of damage. When the human body is harmed, the nervous system senses and reports damage. If a building could do the same, damage assessment would be easier, faster and more reliable. So that, your building is able to have its functionality restored and generate income again — in a much shorter timescale. The need for better damage assessment has been recognised and SHOX addresses this need.

SHOX is a brand new, state-of-the-art structural health monitoring system. It is a modular and configurable system that uses state-of-the-art ground and aerial sensor technology to remotely monitor any building.

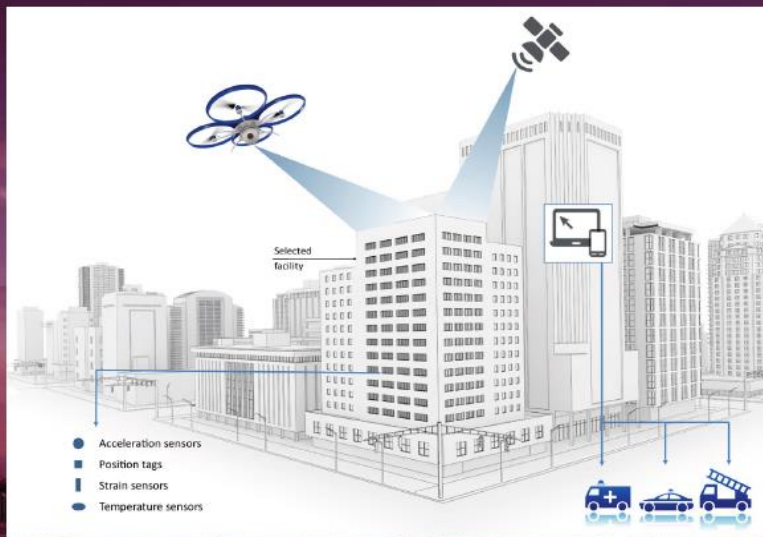


www.shoxsolutions.com

*SHOX development has been supported by EC funding via the RECONASS Project

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Figure 1 - Brochure Page 1 & Page 4



HOW SHOX WORKS

SHOX acts like an aircraft 'black box' or nervous system for a building or structure. It provides a monitoring system for the building or structure in a near real time, reliable manner. It uses sensors to continuously update an assessment of the operational loadings and structural condition of the building, during normal operation and should a disaster occur. In the event of a disaster, it has enough detail to be useful for early and full recovery planning.

It uses state-of-the-art sensors to provide detailed information about movement and stress and temperature conditions within the building structure. Additionally it collects satellite and aerial (UAV) imaging data for the monitored structure. All of this data is transmitted to a central 'cloud based' monitoring hub. Through computer analysis, SHOX reports the structural health of the building. 3D models allow damage to be visualised and animated —suitable for engineers, rescue workers and building owners. This creates an accessible pool of information which can be accessed remotely.

FEATURES

Access Live Structural Health Data Remotely

KEY FEATURES

- Modular based system adaptable for many applications
- Retrofittable – SHOX can be retrofitted to any building or structure
- High resolution 'state-of-the-art' sensors
- Remote access to monitoring data stored in cloud

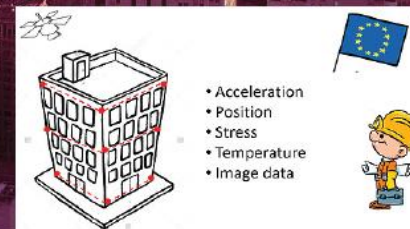


BENEFITS

Real time Structural Health Monitoring

BENEFITS

- Faster disaster response used in operations and resulting in large economic savings
- Accurate recovery and reconstruction planning
- Near real time monitoring
- Rapid structural and loss assessment



We are making a special introductory offer to the first 10 installations of SHOX. Please visit <http://www.shoxsolutions.com/> contact for details.

Figure 2 -Brochure Page 2 & Page 3

3 CD DEMO FOR THE MONITORING SYSTEM AND THE PCCDN TOOL

At the time of writing the original RECONASS proposal, one of the most common methods for software deployment was the use of a CD ROM. Some 5 years later the CD ROM method of software deployment is now much less common. Instead software developers choose to deploy software online via downloads or a server based application, sometimes referred to as the cloud.

At the time of writing this report, we have a choice of deploying the 'DEMO FOR THE MONITORING SYSTEM AND THE PCCDN TOOL'. These choices are:

- CD ROM
- DVD
- Online download and installation
- Online Server based demo

Discussions regarding this choice are ongoing at this time. Some of the points we are considering are.

CD ROM

This technology is a little outdated. Many PC's do not have CD ROM drives fitted now. Also we would need to write different software applications for PC and Apple MAC based systems.

DVD:

Again it is common that PC's do not have DVD drives fitted as standard now. Also we would need to write different software applications for PC and Apple MAC based systems.

Online download and installation:

This method would enable easy deployment and also the ability to capture contact information about the user requesting a download. Again, we would need to write different software applications for PC and Apple MAC based systems.

Online Server based web demo:

This method would enable us to capture user contact information at the time the user requests login credentials. Also it would enable the future possibility of the user interacting with live data. Finally this method is hardware platform independent.

In conclusion then, at this time the preferred method is an online web demo version. To deploy this version will require a significant investment in the development of a public accessible interface which complies to the required web security and accessibility standards. At the time of writing this report we are in the process of researching how the development of such a web demo version could be developed.