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Capability Project

Plan for the use of the foreground

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ABBREVIATIONS AND ACRONYMS

ABBREVIATION	DESCRIPTION
2G	2nd Generation
3 GPPP	3rd Generation Partnership Project
3G	3rd Generation
AC	Alternating Current
ADC	Analogue to Digital Converter
ADSL	Asymmetric Digital Subscriber Line
CPE	Customer Premises Equipment
CPU	Central Processing Unit
DB	DataBase
DBMS	DataBase Management System
E/M	Electro-Mechanical
EC	European Commission
EDGE	Enhanced Data rates for GSM Evolution
EIRP	Equivalent Isotropically Radiated Power
EMS-98	European Macro-seismic Scale-98
EPON	Ethernet Passive Optical Network
ETABS	Software package for the structural analysis and design of buildings
EU	European Union
GPRS	General Packet Radio Service
GPS	Global positioning System
GSM	Global System for Mobile communications
HSPA	High Speed Packet Access
HW	Hardware
IEC Code	International Standard
IP	Internet Protocol
IP Code	International Protection Marking
IPR	Intellectual Properties Rights
LAN	Local Area Network
LCD	Liquid Crustal Display
LED	Light Emitting Diode
LOS	Line-of-Sight
LPS	Local Positioning System
LTE	Long Term Evolution

NS	Non-Structural
NTP	Network Time Protocol
OFDM	Orthogonal Frequency-Division Multiplexing
OGS	Open Geospatial Consortium
OLSR	Optimized Link State Routing Protocol
PAN	Personal Area Network
PCCDN	Post Crisis Needs Assessment Tool in regards to Construction Damage and related Needs
POTS	Plain Old Telephone Service
QoS	Quality of Service
RECONASS	Reconstruction and REcovery Planning: Rapid and Continuously Updated COnstruction Damage, and Related Needs ASSessment
RF	Radio Frequency
RTLS	Real Time Location System
SEED	Standard for the Exchange of Earthquake Data
SW	Software
SWE	Sensor Web Enablement
TCP	Transmission Control Protocol
UAV	Unmanned Aerial Vehicle
UMTS	Universal Mobile Telecommunications System
USB	Universal Serial Bus
VDSL	Very high bit rate Digital Subscriber Line
VLAN	Virtual Local Area Network
WAN	Wide Area Network
W-CDMA	Wide Code Division Multiple Access
WGS84	World Geodetic System
WLAN	Wireless Local Area Network
WP	Work Package
WSN	Wireless Sensor Network

GLOSSARY OF TERMS

Case Study	A case study is a descriptive, exploratory or explanatory analysis of an event.
Communication Gateway Module	In this work the Communication gateway Module refers to the overall communication means utilised to exchange information from the sensors and LPS to the assessment tool (PCCDN).
Early recovery	A multidimensional process of recovery that begins in a humanitarian setting. It is guided by development principles that seek to build on humanitarian programs and to catalyse sustainable development opportunities. It aims to generate self-sustaining, nationally owned, resilient processes for post crisis recovery. It encompasses the restoration of basic services, livelihoods, shelter, governance, security and rule of law, environment and social dimensions, including the reintegration of displaced populations (CWGER, 2008).
Fragility Functions for non-structural components	In this work they show the probability of the non-structural component experiencing or exceeding a certain damage state conditioned on the level of acceleration in the case of acceleration-sensitive non-structural components or the level of drift in the case of drift sensitive non-structural components.
Functional Requirement (FR)	An FR is a statement of an action or expectation of what the system will take or do. It is measured by concrete means like data values, decision making logic and algorithms.
GEM (Global Earthquake Model)	In the GEM project researchers from different countries are developing a physical earthquake risk estimation model of global use. In it a common terminology or taxonomy is critical to document variations in building design and construction practices around the world
GSM, GPRS, UMTS, HSPA, LTE	GSM, GPRS, UMTS, HSPA, LTE refer to a holistic package of public mobile communication solutions with capabilities to transmit data.
Interstory Drift	The relative horizontal displacement of two adjacent floors in a building. Inter-story drift can also be expressed as a percentage of the story height separating the adjacent floors.
Magnitude	Size of an earthquake measured on the open ended scale of moment magnitude, sometimes called Richter magnitude.
Miniseed	A stripped down version of SEED (Standard for the Exchange of Earthquake Data) which only contains waveform data. SEED is a data format intended primarily for the archival and exchange of seismological time series data and related metadata.
Non-functional Requirement (NR)	An NR is a low-level requirement that focuses on the specific characteristics that must be addressed in order to be acceptable as an end product. NRs have a focus on messaging, security, and system interaction.
Non-structural Components	All items in a building other than the building structural system and its foundation. Included are all architectural elements such as cladding, glazing, ceiling systems and interior partitions that are permanently attached to the building; all mechanical and electrical equipment such as fire sprinkler systems, water and sewer piping, HVAC (Heating, Ventilating and Air Conditioning) systems and electrical distribution and lighting systems that are permanently attached to the building. For the purposes of this deliverable non-structural components do not include building

	contents.
Point Cloud	A point cloud is a set of data points in some coordinate system. In a three-dimensional coordinate system, these points are usually defined by X, Y, and Z coordinates, and often are intended to represent the external surface of an object.
Rehabilitation	This term is used to include repair, retrofit and replacement and is used interchangeably with these words.
Remote-Sensing	Remote sensing is the acquisition of information about an object or phenomenon without making physical contact with the object and thus in contrast to in situ observation. In this work by using such term we refer to the procedure of obtaining data through aerial or satellite photos regarding the condition of a building as seen from its exterior.
Structural Components	Building components that are part of the intended gravity, seismic, blast/impact or fire forces resisting system, or that provide measurable resistance to these forces.
System Architecture	A system architecture or systems architecture is the conceptual model that defines the structure, behaviour, and more views of a system. An architecture description is a formal description and representation of a system, organized in a way that supports reasoning about the structures and behaviours of the system. A system architecture can comprise system components, the externally visible properties of those components, the relationships (e.g. the behaviour) between them. It can provide a plan from which products can be procured, and systems developed, that will work together to implement the overall system.
Taxonomy	Categorization system
Technical Requirement (TR)	A technical requirement pertains to the technical aspects that a system must fulfil, such as performance-related issues, reliability issues, and availability issues etc.
Technical Specification	Specification (often abbreviated as spec) may refer to an explicit set of requirements to be satisfied by a material, design, product, or service.
User Requirement (UR)	A UR is a statement of what users need to accomplish. It is a mid-level requirement describing specific operations for a user (e.g., a business user, system administrator, or the system itself). They are usually written in the user's language and define what the user expects from the end product.
Wi-Fi	The Wi-Fi Alliance, the organization that owns the Wi-Fi (registered trademark) term specifically defines Wi-Fi as any 'wireless local area network (WLAN) products that are based on the IEEE 802.11 standards.'
WiMAX	WiMAX (Worldwide Interoperability for Microwave Access) is a wireless communications standard designed to provide 30 to 40 megabit-per-second data rates, with the 2011 update providing up to 1 Gbit/s for fixed stations. The name "WiMAX" was created by the WiMAX Forum, which was formed in June 2001 to promote conformity and interoperability of the standard. The forum describes WiMAX as "a standards-based technology enabling the delivery of last mile wireless broadband access as an alternative to cable and DSL"
Wireless Sensor Network (WSN)	Spatially distributed autonomous devices (nodes) using sensors to cooperatively monitor physical (such as, acceleration, strain) or environmental conditions.

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.

D8.3 is the third deliverable from work package 8. The work package objective which specifically relates to this deliverable is:

- *To develop the strategic approach, define the appropriate business plan and elaborate a suitable market model which can support the perspective of commercialization of the project results.*

From this objectives, the task which specifically relates to this deliverable is:

Task 8.3 Development of an Exploitation Plan (Task Leader: GS) Key activities of the exploitation task include:
- To extract market characteristics and to monitor the emerging market trends and systems.
- To evaluate the project's results from a cost-effectiveness perspective.
- To define the rules of exploitation of the results.
- The initial list of potential products will be reviewed and, possibly, extended in regards to the targeted markets and competition. Initially, emphasis will be given on collecting individual exploitation plans and trying to synthesize them into a common Exploitation Agreement.
- GS will coordinate issues relating to exploitation and more specifically:
- Produce the plan for use of the foreground by the partners that will explain how knowledge and intellectual property issues will be managed within the consortium and what are the intentions regarding the actual use (exploitation by consortium members or by third parties) of the expected project results.
- Identify and contact potential major users.
- Be in charge of the production and signing of the agreement among partners in the group on the allocation and the terms of exercising the ownership of the proposed local positioning system, temperature, strain and acceleration sensors, communication system, monitoring system, assessment modules and PCCDN Tool.
Partners' Roles:
- GS, the task leader, will provide the exploitation responsible and coordinate issues relating to exploitation and more specifically:
- Produce the plan for use of the foreground by the partners that will explain how knowledge and intellectual property issues will be managed within the consortium and what are the intentions regarding the actual use (exploitation by consortium members or by third parties) of the expected project results.
- Identify and contact potential major users.
- Be in charge of the production and signing of the agreement among partners in the group on the allocation and the terms of exercising the ownership of the proposed local positioning system, temperature, strain and acceleration sensors, communication system, monitoring system, assessment modules and PCCDN Tool.

In addition to completing most of the aspects of this task, we have also derived a catchy product name, developed a website, and product video. The only aspect which is not technically completed as per the task description, is the signing of an exploitation agreement. However, we have elected to try and form a joint venture company to take the technology forward. This will act as exploitation vehicle for the consortium and be jointly invested into. At the time of writing we are in the process of moving this forward with the wiling parties of the consortium.

This deliverable D8.3 represents the final plan for the use of the foreground and it will act as a supporting document containing guidelines and suggestions for project partners on potential exploitation opportunities. The deliverable proposes ways in which the project partners can benefit from the projects results; identifying risks preventing market deployment (and success) and how they can be overcome. It is a reviewed and revised version of deliverable D8.1. A new version of D8.1 which includes many of these changes was issued at M34.

The specific changes are described below. This was a significant revision to this document, and included specific details on our exploitation plans. In the period between M12 and M42 the consortium made some significant exploitation achievements that will significantly improve the magnitude of our post project success. The key achievements include

- Consultations with Zurich insurance, Interamerican insurance and British Damage Management Association (BDMA)
- Successful end user days and end user analysis
- Project Clustering
- Competitor analysis
- End user analysis
- Market research
- Creation of RECONASS project catchy brand name. 'SHOX – Structural Health Monitoring in a box'
- Creation of RECONASS product website http://www.shoxsolutions.com/.
- Creation of RECONASS product video.
- Successful RECONASS demonstration
- Creation of RECONASS cost benefits analysis
- Creation of RECONASS sales forecast
- Consortium post project exploitation approach agreed in principle
- Consortium agreeing a 'joint venture company' as an exploitation vehicle
- Creation of first draft exploitation plan Gantt
- Successful demonstration of the technology

The above have all been detailed in this report by the addition of sections 6 to 17.

We believe these achievements will create a good platform to continue to move to commercialisation of the RECONASS technology post project. In particular, the end user feedback and our close relationship with the insurance provider Zurich Insurance, have guided our approach and underlined the cost justification approach to be taken with RECONASS technology. We have shown that the installation and maintenance costs of RECONASS is easily justified by the large reduction in building down time, as a result of a reduction in the time to offer structural integrity assurance.

Although much of the exploitation actions and work is continuing, the consortium sees that the development of an exploitation agreement which encapsulates agreeable principles of the running of a joint venture company as key. Therefore the most significant post project exploitation action which is currently to progress the possibility of forming a company to act as a post project exploitation vehicle. This idea was first tabled by GeoSIG in mid 2016. It was decided that we should focus on the demonstration and project final reporting as we close the project off. However GeoSIG plan to table this idea again at the project final meeting in June 2017, and decide on the best course of action.