D2.6 END-USER INTEREST GROUP REPORT

EMMON

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Authors and Contributors

Name	Contact	Organization	Description
Lubo Jankovic	l.jankovic@e-intesys.com	INT	Author
Délio Almeida	dalmeida@criticalsoftware.com	CSW	Co-Author
Nuno Cunha	nccunha@criticalsoftware.com	CSW	Contributor

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1. Introduction

1.1 Objective

The objective of this document is to present the EMMON End user Interest Group (EUIG) project body, its main goal, objectives, the activities and interactions performed with this body and preliminary results.

1.2 Scope

The " End-User Interest Group Report" is produced inside the scope of Work Package 2 (WP2) "Exploitation, Dissemination and Standardisation", "Task 2.1 Dissemination" (with contributions from the remaining WP tasks), whose main goal is to define and execute the plans for dissemination and exploitation activities, including standardisation and the management of end-user bodies in all operational scenarios.

The document is still being progressed, and is expected to be refined. The document first issue at T0+24 we explain the creation and management of the end-user interest group. The main focus has been the identification and contact with other potential end-users, in each operational scenario or others, to make them aware of project existence and results. In the second issue at T+36 we will focus on the results of interaction with end users and on future opportunities and commercial leads.

1.3 Audience

This document is targeted to all project consortium members since all partners are engaged and contribute to the project dissemination activities. More specifically, it is most relevant to partners with assigned responsibilities within WP2.

It is also intended for EC stakeholders, evaluators and independent experts who have special interest on the regular monitoring, progress and dissemination results of the project for evaluation and auditing purposes.

1.4 Definitions and Acronyms

Table 1 presents the list of acronyms used throughout the present document and Table 2 presents the list of definitions used in this document.

Acronyms	Description
AD	Applicable Document
EUIG	End-User Interest Group
FAWG	Future Applications Work Group
RD	Reference Document
TBD	To Be Defined

Table 1 - Table of acronyms

Definitions	Description
Middleware	Software that connects wireless network components with the end user.

Table 2 - Table of definitions

1.5   Document Structure

Section 1, Introduction; presents a general description of the contents, pointing to its goals, intended audience and structure.

Section 2, Documents; presents the documents applicable to this document and referenced by this document.

Section 3 Executive Summary; provides an executive summary concerning the interaction with End-User Interest Group.

Section 4, End User Bodies in EMMON; explains the structure of end user bodies in the project.

Section 5, Established End-User Contacts; gives end user details, type of action performed by the project, and potential benefits/applications for end users.

Section 6, Responsibilities; gives details of the roles of the Dissemination Manager (WP2L), and T2.1, T2.2 and T2.3 responsibilities are explained and detailed here. It also identifies the person responsible for the contacts with the EUIG.

Section 7, End-User Engagement; lists planned events such as end user meetings, workshops, seminars as well as surveys to be conducted with end users, including dedicated presentation meetings delivered to some end users.

Section 8, Web Forums; explains the structure of web instruments prepared for end-user engagement.

Section 9, Preliminary results; reports on lessons learnt to date from the end user engagement.

Section 10, Next Steps; gives an overview of subsequent actions to be performed by the project in relation to the end user engagement.

2. Documents

This section presents the list of applicable and reference documents as well as the documentation hierarchy this document is part of.

2.1 Applicable Documents

This section presents the list of the documents that are applicable to the present document. A document is considered applicable if it contains provisions that through reference in this document incorporate additional provisions to this document.

[AD-1]   Technical Annex, EMMON Project, ARTEMIS Joint Undertaking Call for proposals ARTEMIS-2008-1, Grant agreement no. 100036, Submitted for Approval on 2010-11-12.

2.2 Reference Documents

This section presents the list of reference documents. A document is considered a reference document if it is referred but not applicable to this document.

The following documents are referenced within this document:

[RD-1]   "D2.2 Exploitation and Standardisation Plan", Critical Software, Nuno Cunha, FP7-JU-EMMON-2009-DL-WP2-002-D2.2, Version 2, 2010-12-07.

[RD-2]   EMMON E-Groupware Project Collaboration Tool, http://egw.artemis-emmon.org/ (2011-02-28).

[RD-3]   Information Letter, Critical Software, Tiago Franco, FP7-JU-EMMON-2009-TPL-WP1-032, 2009-07-15.

3. Executive Summary

The End-User Interest Group is one of the instruments used by the project to leverage the project results, and it is complementary to the other dissemination and exploitation activities.

The main aim of the creation and management of the end-user interest groups is the identification and contact with other potential end-users, in each potential operational scenario, while making them aware of project existence and results.

The project keeps 'market watch' and the purpose of the End-User Interest Group is to ensure the continuing relevance of the work for the evolving market. This helps with monitoring the market for the purpose of evolving the research agenda and the strategic plan.

The Dissemination policy will be oriented towards the embedded systems market and actors. SMEs, large industrial and service organisations, and industrial associations are all possible end-users. Special emphasis has been given to environmental organisations, energy players and governmental agencies. These have been invited to belong to a privileged EMMON informed EUIG – End Users Interest Group.

This document explains end user bodies and internet forum tools that have been developed for end user engagement. It gives details of established end-user contacts together with type of action performed by the project, and potential benefits/applications for end users. End user engagement occurs through both on-line and through planned physical mechanisms, such as workshops, seminars, surveys and targeted presentations. The document explains lessons learnt to date and outlines the next steps towards further end user engagement.

The EUIG will be instrumental in assisting the consortium to take into account relevant end-user needs and priorities, and creates a pool of exploitation prospects.

4.   End User Bodies in EMMON

4.1   End User Committee (EUC)

This is a consultative body responsible for assuring that their objectives are identified, considered and achieved by the technical and research committees.

It's also responsible for coordinating, with WP2 leader, the composition of the EUIG and promoting EUIG related activities.

The EUC contains members that are external to the consortium, consisting of representatives from organisations that stated their interest in the project results.

4.2   End User Interest Group (EUIG)

The main focus in relation to the creation and management of the End-User Interest Group (EUIG) is the identification and contact with other potential end-users, in each operational scenario or others, and making them aware of project existence and results.

One of the main reasons to have so many end-users in the consortium, or otherwise involved in the project through End-User Committee and EUIG, is that this is the best way to have a clear route to exploitation and foster innovation activities - that lead to good marketing prospects in the long term.

Specific entities will be invited to belong to a privileged EMMON informed EUIG – End Users Interest Group: SMEs, large industrialists, industrial associations, possible end-users and international organisations, with special emphasis on environmental organisations, energy players and governmental agencies.

EUIG activity will be oriented towards the embedded systems market and actors. Prospective members for the EUIG have been contacted during proposal set-up, while others have been identified.

The EUIG will be instrumental in order to assist the consortium and the EUC to take into account relevant end-user needs and priorities. Besides it will be a breeding area for exploitation perspectives.

5. Established End-User Contacts

During the first 24 months of the project a set of promising end-users were further identified and contacted in order to evaluate and understand their potential interest and capability for collaborating with EMMON.

Table 3 presents the full list of end-user organisations contacted and the main outcome:

End-User	End-User Type	Country	Domain	Type of action performed by EMMON/ Outcome	Potential benefit/application for the end user
Steering Commission for Regional Development of the North of Portugal (CCDR-N) http://www.ccdr-n.pt/	Governmental Agency responsible for Air Quality Monitoring in the North of Portugal	Portugal	Urban Quality of Life	Performed targeted project presentation. Performed several technical meetings. Demonstrated a significant interest in EMMON technology. EMMON performed several Ozone sensors feasibility tests on-site which are still on-going. Providing cooperation for EMMON Business Plan and Exploitation Plan.	Development of an Ozone Monitoring Application Air Quality Monitoring Application (CO, NO2, SO2, temperature and humidity)
Coimbra City Council http://www.cm-coimbra.pt/	City Council	Portugal	Urban Quality of Life	Performed targeted project presentation. Demonstrated a significant interest in EMMON technology.	Air Quality Monitoring Application (CO, NO2, SO2, temperature and humidity)
S. João da Madeira Industrial Living Lab (SJM ILL) / City Council http://www.ua.pt http://www.cm-sjm.pt/	Living Lab	Portugal	Urban Quality of Life	Performed targeted project presentation. Demonstrated a significant interest in EMMON technology. Are collaborating as interested parties in hosting a Large Scale Trial for EMMON.	Smart Buildings Environmental Monitoring in Application Energy-Efficiency Application
Lighting Living Lab / Águeda City Council http://www.lighting-living-lab.pt/ http://www.cm-agueda.pt/	Living Lab	Portugal	Urban Quality of Life	Performed targeted project presentation. Demonstrated a significant interest in EMMON technology. Did not identify any suitable monitoring problem for the scale of EMMON. Best monitoring application could only reach around 200 monitoring points.	Not identified
ISaLL - Intelligent Sensing and Smart Services Living Lab http://www.isa.pt	Living Lab	Portugal	Urban Quality of Life	Performed targeted project presentation. Demonstrated some interest in EMMON technology. Living Lab took action to try to find other potential end-users for EMMON (with no response yet)	Not identified

End-User	End-User Type	Country	Domain	Type of action performed by EMMON/ Outcome	Potential benefit/application for the end user
IKEA Factory www.ikea.com	Private, main IKEA Group Factory in Paços de Ferreira	Portugal	Industrial Monitoring	Performed targeted project presentation. Demonstrated a significant interest in EMMON technology. End-User took action to identify requirements and monitoring needs for EMMON.	Noise Monitoring Application
SAUTER http://www.sauter-controls.com/	Private, Smart Buildings and Building Automation	Sweden	Smart Buildings	Awaiting response for presenting EMMON project....	Smart Buildings Environmental Monitoring in Application Energy-Efficiency Application
Digital Birmingham / Birmingham City Council http://www.birmingham.gov.uk/	City Council	UK	Urban Quality of Life (Smart City)	Demonstrated a significant interest in EMMON technology. Contact and conversations are being progressed.	Lighting Monitoring Application
European Commission Directorate-General Environment (DG Environment) http://ec.europa.eu/environment/index_en.htm	European Commission	Belgium	Urban Quality of Life (Environment)	Demonstrated a significant interest in EMMON technology. Contact and conversations are being progressed.	Development of an Ozone Monitoring Application Air Quality Monitoring Application (CO, NO2, SO2, temperature and humidity)
Living PlanIT http://living-planit.com/default.htm	Private	Portugal / International	Urban Quality of Life (Smart City)	Demonstrated a strong interest in EMMON technology. Showed interest in hosting a Large Scale Trial, open to co-funding. Contact and conversations are being progressed.	Air Quality Monitoring Application (CO, NO2, SO2, temperature and humidity)
Living Lab Malta (LLM) / Valletta Local Council http://www.livinglabmalta.com/	Living Lab	Malta	Urban Quality of Life (Smart City)	Demonstrated a strong interest in EMMON technology. Showed interest in hosting a Large Scale Trial, open to co-funding. Contact and conversations are being progressed.	Air Quality Monitoring Application (CO, NO2, SO2, temperature and humidity) Light/UV Monitoring Application

Table 3 - Established end-user contacts

The great majority of the newly identified End Users consist of either Living Labs - all part of the European Network of Living Labs (ENoLL) (URL: http://www.openlivinglabs.eu/) - or City Councils involving Portugal, United Kingdom or Malta countries. A Living Lab is a novel research paradigm. It is a user-centred, open-innovation ecosystem, often operating in a territorial context (e.g. city, agglomeration, region), and problem or technology-oriented (e.g. focused on mobile technologies, environment, energy, traffic problems, etc), integrating concurrent research and innovation processes within a public-private-users partnership.

This new paradigm has the advantage of involving researchers, technology creators and end users at an early stage into testing the new technologies being created. The big benefit

of this is to provide valuable feedback into the technology chain and facilitating and fostering product and service innovation.

It is also worth noticing that three of the End Users contacted aim to develop or create Smart Cities projects, including Birmingham City Council, Living Lab Malta (via Valletta Local Council) and Living PlanIT organisation.

6. Responsibilities

The Dissemination Manager, role assigned to project partner InteSys (INT), is responsible for the overall co-ordination of WP2 including planning and management of all dissemination activities (with the contribution and inputs from all project partners).

"WP2 Exploitation, Dissemination and Standardisation" is composed of three (3) project Tasks, each focusing on a specific area for leveraging project results. Responsibilities for individual tasks within the work package are as follows:

• "T2.1 Dissemination" (Leader: INT) – task aiming at planning and managing all internal and external dissemination activities, and management of the End User Interest Groups (EUIG) and Future Applications Work Group (FAWG);

• "T2.2 Exploitation" (Leader: CSW) – aims to define and plan for the exploitation strategies per partner of the future results;

• "T2.3 Standardisation"(Leader: CSW) – aims at fostering standardisation activities and contact with standardisation bodies relevant for EMMON technologies.

INT is also responsible for managing and contacting prospective members of the EUIG and the Future Applications Work Group (FAWG). The End-User Committee (EUC) is another end user body of the project, which is managed directly by "WP1 - Project Management". Nevertheless, this end user body is also engaged and involved in the dissemination activities planned within WP2.

7. End-User Engagement

End users (including the EUC and EUIG) will be engaged through the following instruments:

- **User surveys**: a number of end user questionnaires have been developed by WP3 with the aim of establishing end user requirements. These questionnaires have been sent to prospective end users. Similar material will be developed and surveys carried out in response to the operational needs of the project.

- **Interactive workshops** will be organised in order to exchange ideas with the end users. The workshops will be organised once per year to enable the end users to get updates about the progress of the project and give them an opportunity to define the work and steer it in the direction of satisfying their own requirements.

- **Seminars** with a programme of topics and speakers both from the project consortium and the EUIG will be organised in order facilitate an in-depth dialogue with the EUIG. The seminars will also be organised annually, to precede or immediately follow the interactive workshops.

- **Dedicated project results presentation** meetings will be delivered to several End Users (such as CCDR-N and Living Lab Malta).

- **Joint Participation in Funding Instruments Calls**: after analysis of monitoring needs and problems, eventually, some End Users might be involved in a joint-application for National or International Funding Instruments in order to explore project results and help resolve EU monitoring needs.
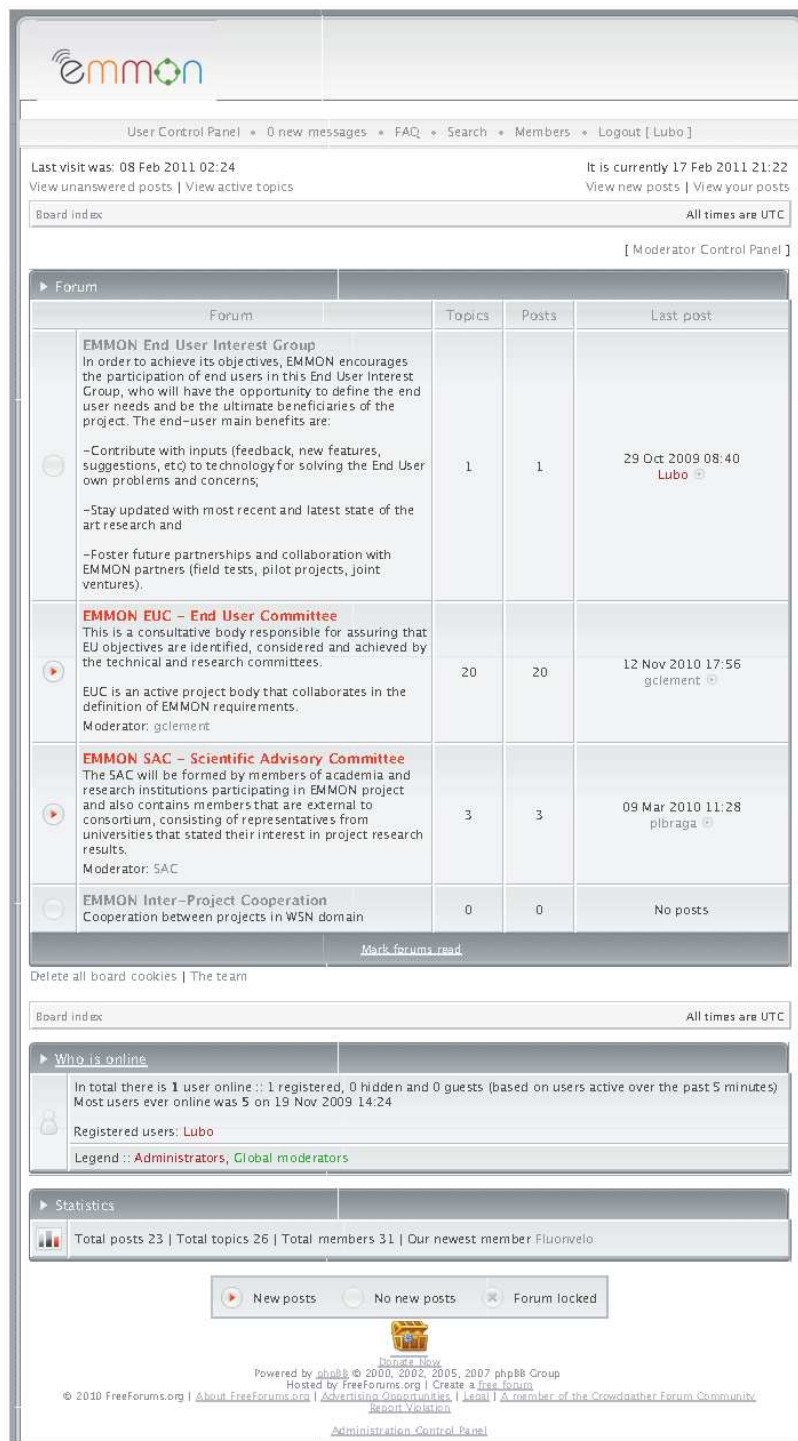
8. Web Forums

In order to encourage interaction with end users and to encourage discussions between end users on EMMON related topics, the consortium has created an interactive web forum, consisting of:

- EMMON End User Interest Group

- EMMON EUC – End User Committee

- EMMON SAC - Scientific Advisory Committee

- EMMON Inter-Project Cooperation

Any organisation can join freely the EUIG body for dissemination purposes. Details of these three forums are given below. The forums however have not yet been populated by relevant users. Populating the forums and getting end user discussion underway will be carried out between now and the end of the project. It is expected that the forums will provide valuable application ideas and real world deployment routes for EMMON project.

The description of the forums is in the following sections. An image of the front page of the forum is shown in Figure 1.

Figure 1 - Web forum front page

8.1 EMMON End User Interest Group

In order to achieve its objectives, EMMON encourages the participation of end users in this End User Interest Group, who will have the opportunity to define the end user needs and be the ultimate beneficiaries of the project. The end-user main benefits are:

• Contribute with inputs (feedback, new features, suggestions, etc) to technology for solving the End User own problems and concerns;

- Stay updated with most recent and latest state of the art research and

- Foster future partnerships and collaboration with EMMON partners (field tests, pilot projects, joint ventures).

  Moderator: InteSys

8.2   EMMON EUC - End User Committee

This is a consultative body responsible for assuring that EU objectives are identified, considered and achieved by the technical and research committees. The EUC is an active project body that collaborates in the definition of EMMON requirements.

Moderator: Critical Software

8.3   EMMON SAC - Scientific Advisory Committee

The SAC will be formed by members of academia and research institutions participating in EMMON project and also contains members that are external to consortium, consisting of representatives from universities that stated their interest in project research results.

Moderator: Critical Software

8.4   EMMON Inter-Project Cooperation

Cooperation between projects in the WSN domain.

9. Preliminary results

We have learnt from the end users when presenting our technology that the cost of nodes is of paramount importance. Some end users were not stating the need for large-scale and dense monitoring needs, because they were instantly associating that to huge costs. Their reference for sensor costs is the cost of using current technology they already own in their existing solutions. This means precise, reference and standard equipment, and therefore expensive, not only when purchasing, but also when maintaining. A work on "cleaning" pre-concepts and stereotypes and breaking existing paradigms had to be performed by the consortium in order to make the end users aware of the WSN paradigm.

Also the data communication costs which might be required in order to connect the sensor network (its gateway components) to the centralised Command & Control server is an important concern. If an end user does not have access to an end user-owned data network (such as WiMAX) and has to rely on mobile network operators using 3G cards - as an example – to transmit data from the sensor network gateways to a central location, then the data communication costs over time are a key factor for choosing to deploy the technology.

The majority of the end-users do not have a monitoring need or problem that requires a dense network of nodes. Only very specific monitoring problems involving scenarios with buildings, industrial plants, might require these types of deployments. More specifically, governmental organisations responsible for National Forests, Civil Protection, Water Quality and Air Quality monitoring, require large scale networks in terms of number of nodes, but quite geographically distanced, with node distances between nodes, ranging from 30m-50m to 1-5 km each.

All End users identified as relevant need to have, from a technological point of view:

- An easy to use and intuitive visualisation platform (GUI) over the geographical area being monitored;
- Real or near real-time data access and visualisation capability;
- Data refresh rates of around 5mins to 15mins, or even 1 hour, are considered perfectly acceptable performance requirements for this type of system (and sensor network);
- Data sanity checks to invalidate incorrect readings due to, as an example, sensor malfunction or artificial environmental changes that would affect the readings;
- Possibility to use multiple user profiles and access restrictions to the Visualisation tools;
- Reduced or inexistent maintenance operations over the sensor network;

End users also felt as necessary, but not considered as top priority:

- Capability to extend the network geographically or by adding more features over time (such as updating the network software/firmware);
- Data security mechanisms;
- Integration with Third-Party Systems;

Finally, and more generically, End Users found quite appealing the following technology characteristics:

- Fast deployment;
- Easy maintenance and replacement of faulty nodes;

- The need for no costly infrastructure or minimal support for infrastructure;

- Capability to cover large geographical areas;

- Capability to extend the network both in area/number of nodes, and in functionality;

- Robustness, and broader and refined situation visibility provided by the large-number of sensors.

10. Next Steps

Using the new dissemination material, such as DEMMON1 video which is now live on the project web (www.artemis-emmon.eu) site and on YouTube, we expect to attract new prospective end users.

To facilitate easy access to the project and stronger end user engagement we will produce a Web Form on EMMON Web Site for any interested organisation to register and belong to EUIG group. These would receive News Items and Press Releases and so forth from EMMON project.

This will be done in the immediate future in order to disseminate DEMMON1 results and publications. We will choose prospective members from established EU contacts and invite them to participate in the EUIG group. The invitation to register will be sent by email with registration instructions and explanation of benefits for the end users. A registration page on the web site will be developed to facilitate easy registration.

Physical meetings for end user engagement will focus on the users with whom the project is negotiating field trials and those end users where there is a future potential for field trials. Detailed project presentations followed by discussions with end user representatives in order to understand better their needs will be held at CCDR-N, Living PlanIT, Living Lab Malta, as well as with Digital Birmingham.

Annex A. Introductory Presentation to End User Interest Group Members

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ARTEMIS JOINT UNDERTAKING
The public private partnership in the field of ARTEMIS

EMMON

End-User Interest Group (EUIG)

XXth, <Month> <YYYY>
@ <Location>

This presentation has been produced in the context of the EMbedded MONitoring project. The research leading to these results has received funding from the European Community's Seventh Framework Programme (FP7/2007-13) under grant agreement No. 217967.

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End User Interest Group

- Overview
- Benefits
- Members
- Responsibilities
- Interfaces

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EUIG Overview

- Description:
  - Consultative body interested in the project results and achievements.

- Activities:
  - Participate in EUIG Discussion Forum
  - Participate in optional End User dissemination meetings with EMMON
  - Be aware and open for future partnerships and collaboration activities with EMMON

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Benefits

- End-User main benefits:
  - Contribute with inputs (feedback, new features, suggestions, etc) to technology for solving the End User own problems and concerns;
  - Stay updated with most recent and latest state of the art research in the wireless embedded systems domain;
  - Potentially gain valuable visibility and exposure in European Research Area, International Conferences and Journals;
  - Foster future partnerships and collaboration with EMMON partners (field tests, pilot projects, joint ventures).

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EUIG Initial Member Areas

Domain Area	Scenario
Regional marine and climate monitoring	Marine
Protection to populations from threats (floods, earthquakes, fires), Emergency Planning, catastrophe response and reaction	Civil Protection
Forest protection, forest fire prevention and fighting, forest health protection	Forest
Urban areas and cities, public spaces situational awareness and environment monitoring	Urban/City
Rivers, dams and hydrographical resources Monitoring	River
Real-time traffic monitoring, Congestion control, Road condition monitoring	Transports
Other areas of application	Others

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Interfaces

- Point of Contacts (PoCs) in EMMON:
  - WP2 Leader (Dr. Lubo Jankovic)
    - Email: l.jankovic@e-intesys.com
    - Phone: +44 7932 176 444

  - WP3 Leader (Pedro Braga, as PoC deputy)
    - Email: plbraga@criticalsoftware.com
    - Phone: +351 22 944 69 27

  - Project Coordinator (Délio Almeida,)
    - Email: dalmeida@criticalsoftware.com
    - Phone: +351 239 989 142

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End User Responsibilities

- Participate in EUIG Discussion Forum

- Be willing to receive information, publications, news and dissemination materials of the project

- Contribute to questionnaire's related to business needs and market interest (market/user surveys)

- Eventually participate in a End User Dissemination Meeting/Workshop during project execution

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EMMON Responsibilities towards EUIG

- Collect and analyse feedback, suggestions, new features and improvements provided by End User (to drive research work in the project)

- Keep End User informed of project results:
  – Disseminate scientific papers, flyers, brochures;
  – Disseminate scientific achievements of interest to End User;

- Reference End User involvement in Press Releases, End User conferences, publications and journals

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Contacts

- Lubo Jankovic, WP2 Leader
- l.jankovic@e-intesys.com

- Pedro Braga, Technical Manager
- plbraga@criticalsoftware.com

- Délio Almeida, Coordinator
- dalmeida@criticalsoftware.com

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