Local4Global

System-of-systems that act locally for optimizing globally

611538, FP7-ICT-2013.3.4

Deliverable 7.1:

Local4Global Website

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D) FROM ANALYZING TO CONTROLLING BEHAVIOUR OF SYSTEM OF SYSTEMS (SOS)

Deliverable SUMMARY SHEET

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Project Coordinator:	CERTH – Centre for Research and Technology – Hellas
Participating Partners:	Eidgenössische Technische Hochschule Zürich (CH); Rheinisch-Westfaelische Technische Hochschule Aaachen (DE); Fundacion Tekniker (ES); Technical University of Crete (GR); Transver GMBH (DE); and Technische Universitaet of Muenchen (DE)
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Deliverable 7.1: Short Description
This deliverable depicts the development of the Local4Global project web site, accessible via http://local4global-fp7.eu, a brochure and a project cd-rom. It focuses on the goal of the three instruments, its structures, and its general look.
Keywords: Local4Global; Website; Brochure

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Executive Summary

This deliverable depicts the development of the Local4Global project web site, accessible via http://local4global-fp7.eu and a project brochure. It focuses on the goal of the three instruments, its structures, and its general look.

1 Website

1.1 The aim of the website

The website is a key tool for internal and external communication. It provides information about the current status of the project (Figure 1). Public results of the project can be obtained. Dissemination material like the brochure and also the content of the project CD-ROM are propagated to all interested parties.

The website is set up as content management system. The usage of a readily available open source solution which also includes a number of tools for online WYSIWYG editing, and its adaptation to the project needs, helped to keep the development costs low.

The website will be kept online for at least one year after the end of the project.

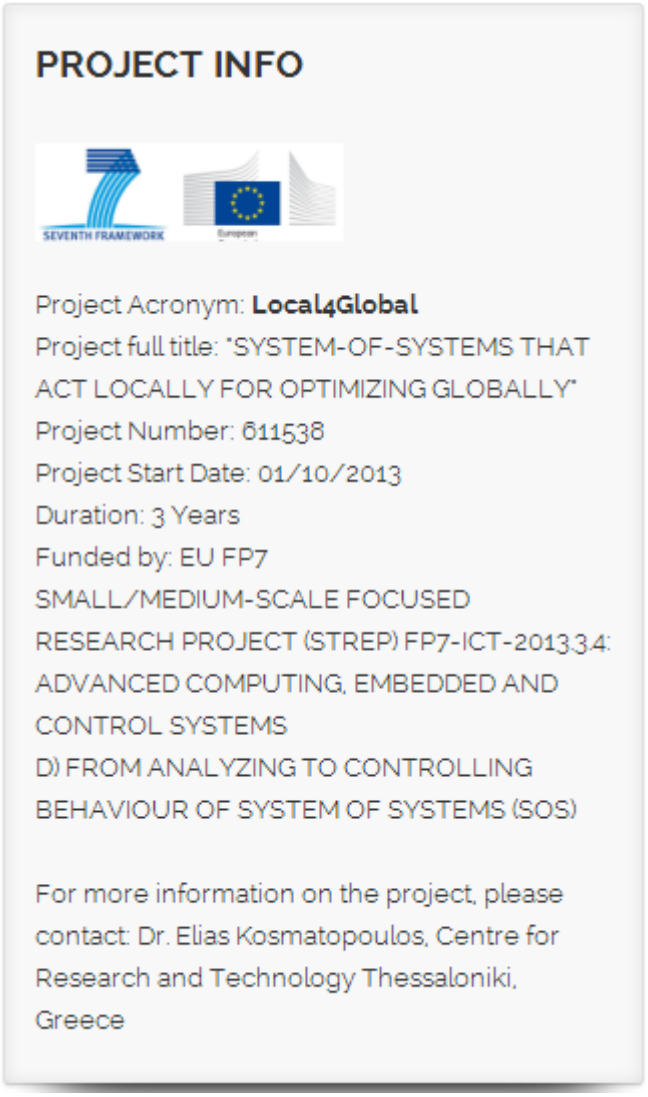

Figure 1 : Project information

1.2 Description of the website

The website is available under http://local4global-fp7.eu. It is managed by the project coordinator.
Figure 2 shows the whole opening page of the Local4Global website.

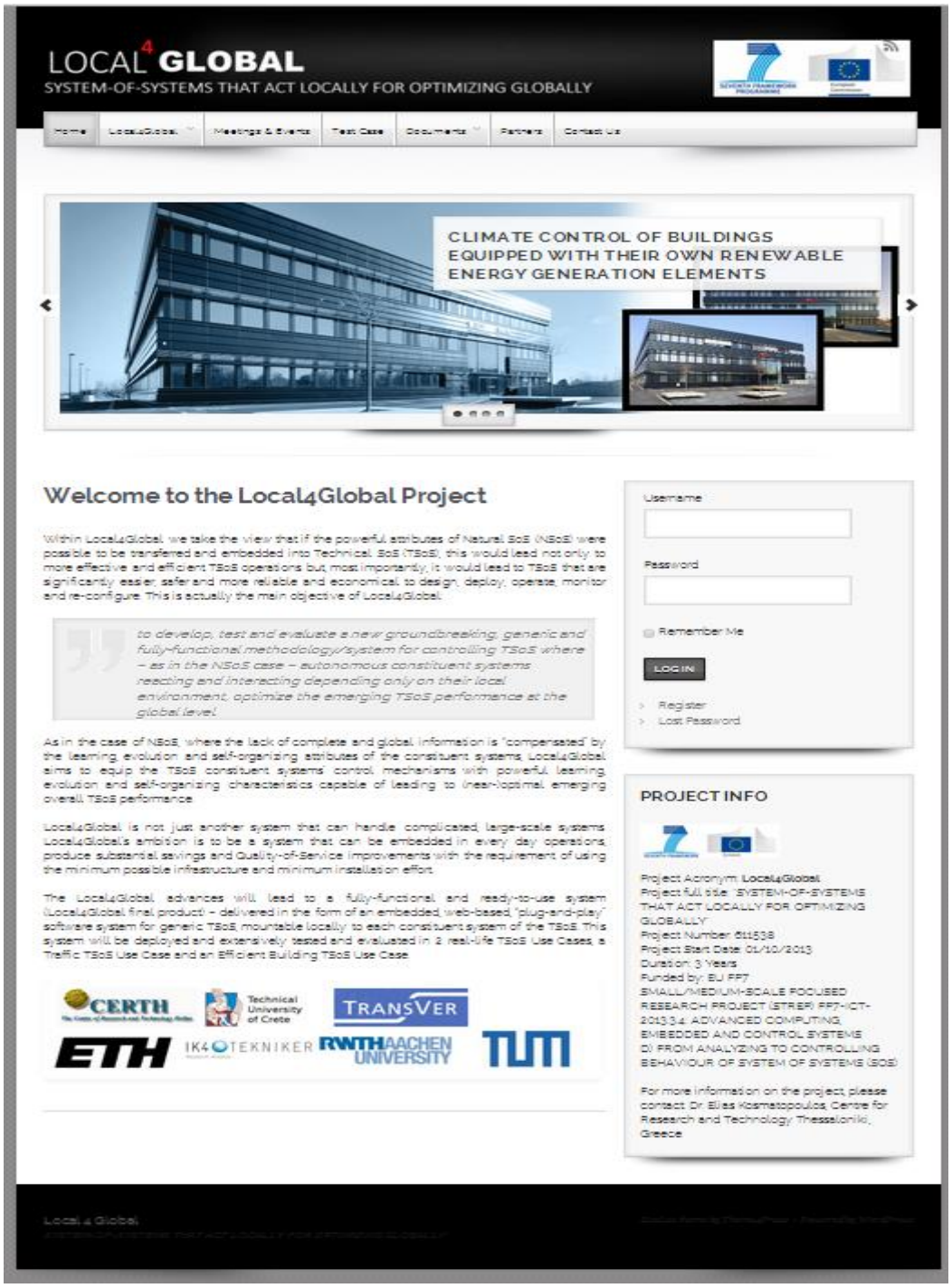

Figure 2: Opening page of the Local4Global website

The opening page gives access to the following links in Figure 3:

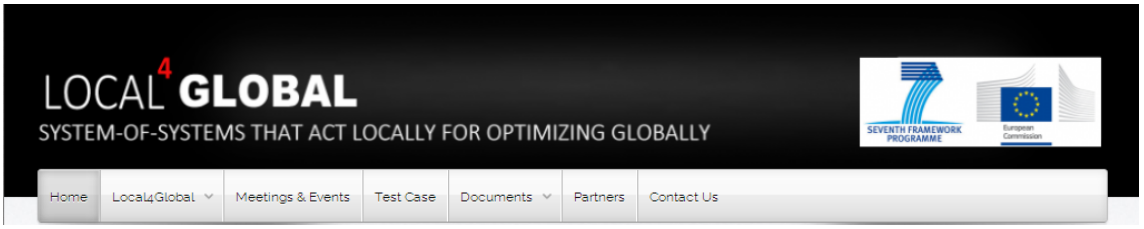

Figure 3 : Tab selection

Beside this public section the website consists of a private section. The public section comprises all material accessible to the general public, whereas the private section has some additional pages intended for internal organization of the project. The internal organization also includes the exchange of documents and modelling libraries.

The content of the private section is only viewable after performing a login via username and password entry.

The whole website uses a content management system so that changes can be easily integrated by different authors. It also supports the frequently storage and change of documents.

The website has been checked successfully for accessibility for all popular web browsers

1.3 Description of each tab

As we mentioned above, the main page of the Local4Global project consists of numerous tabs. Each tab, give more information about different needs-aspects of the project:

1. Local4Global Project: It gives a short overview about the whole project, the key parts of Local4Global and also detailed information about the single work packages. It also presents related projects, state of the art methods and the progress beyond that point.

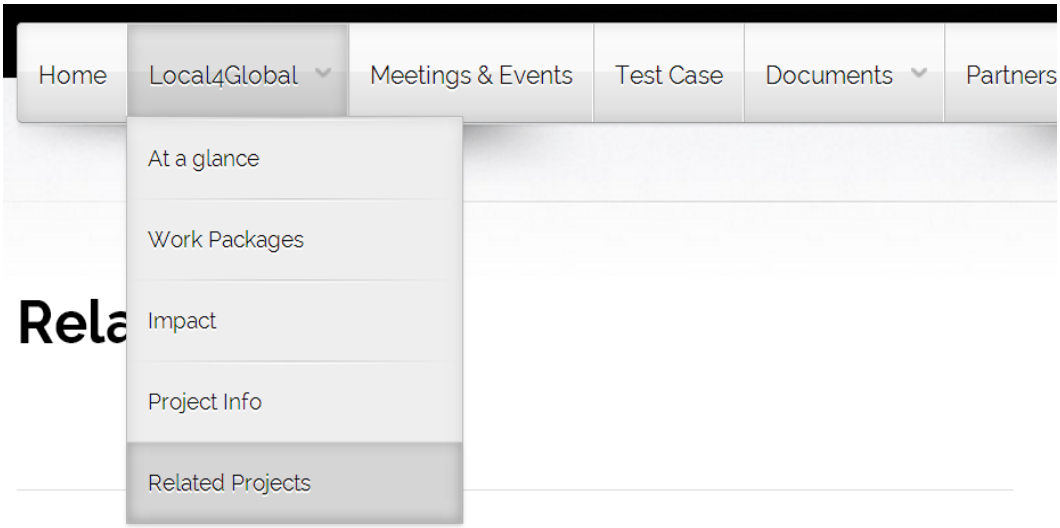

Figure 4 : Zoom in Local4Global tab

2. Meetings & Events: Latest news and next events will be presented. What is more, for each project meeting, presentations are provided.

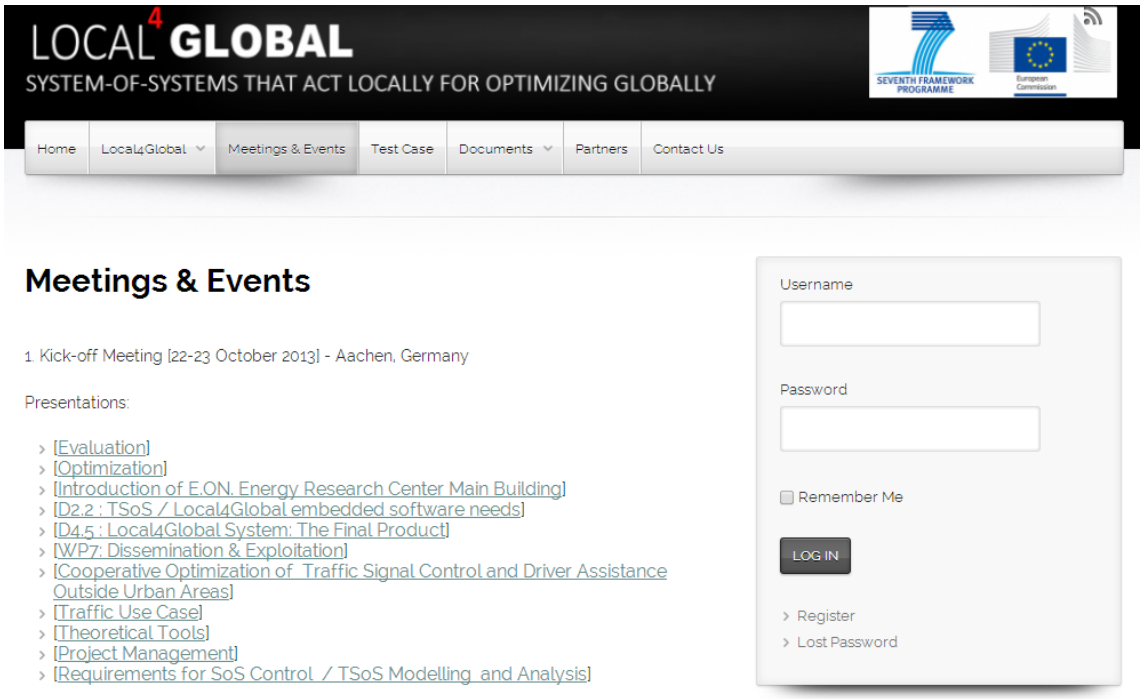

Figure 5 : Meeting and Events tab

3. Test Cases : Presentation of each test case of the project. This system will be deployed and extensively tested and evaluated in 2 real-life TSoS Use Cases, a Traffic TSoS Use Case and an Efficient Building TSoS Use Case.

4. Documents: The brochure, deliverables, scientific papers, conference papers, the newsletter and other dissemination materials can be achieved and downloaded in this section.

5. Partners: Short information and link to the external homepages of all project partners is given.

6. Remote optimal control client : A secondary/auxiliary webplace is incorporated in the L4G website, dedicated for remote L4G methodology client application which will be developed within upcoming tasks framework (see WP4, WP5, WP6) - L4G tools implementation and lab validation tests.

7. Contact us: Contact to the project coordinator through a friendly-user form.

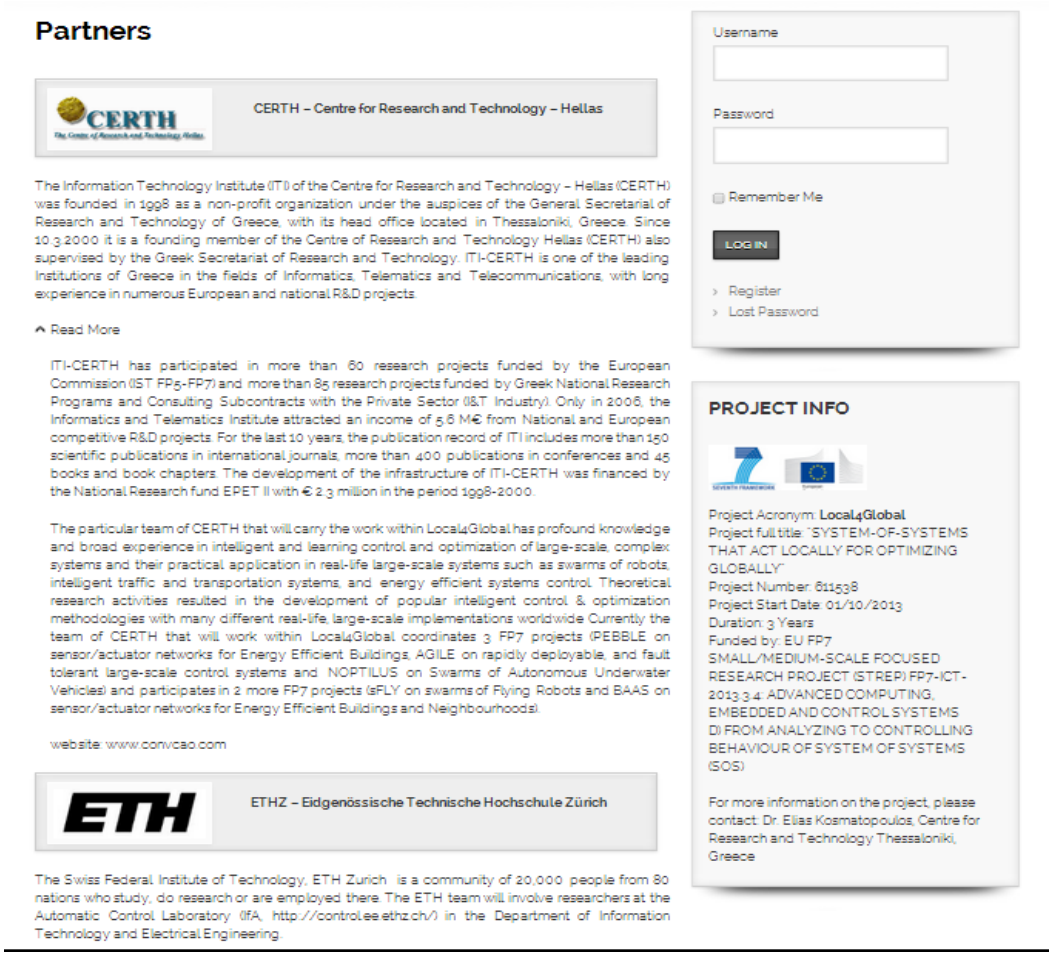

Figure 6 : Partner Tab

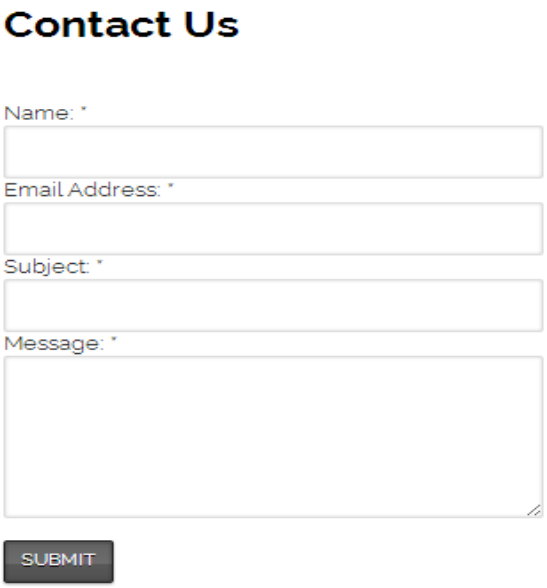

Figure 7 : Contact Form

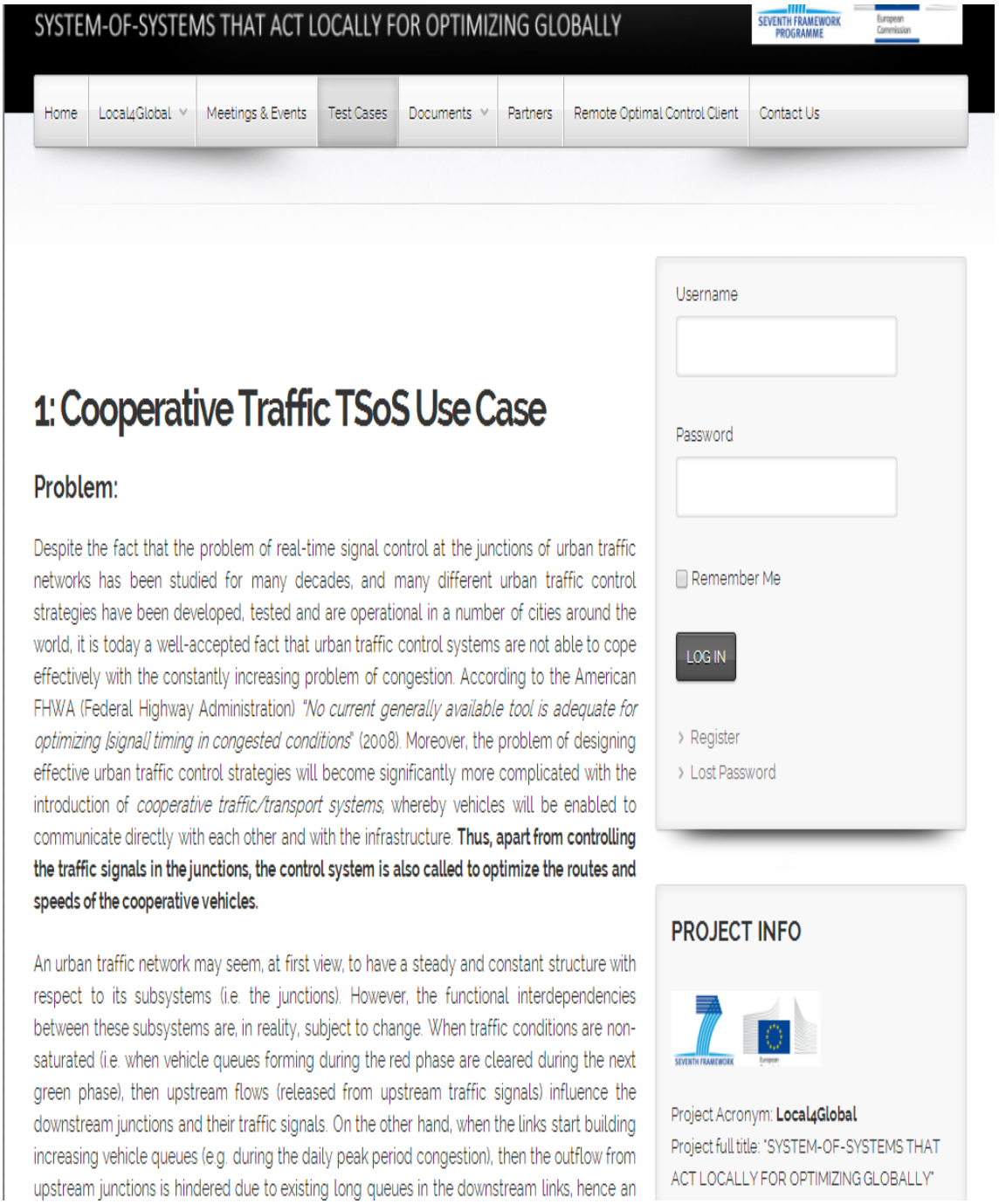

Figure 8: Test Cases Tab

2: Efficient Building TSoS Use Case

Problem:

The second Use Case of Local4Global concerns the climate control of buildings equipped with their own renewable energy generation elements (such as e.g., photovoltaic arrays, wind turbines, geothermal energy, etc) along with a collection of automatic control elements for affecting the building thermal characteristics such as e.g., automatically control the HVAC system set points, window and blind openings, heat pumps and central radiator set points, etc. The problem at hand is a quite challenging problem where the control system attempts to exploit "as much as it can" the renewable energy so as to reduce the demand for non-renewable energy (coming from the grid) or during time-slots of low-cost tariffs, while maintaining user comfort (i.e. making sure that the building occupants are "satisfied" with the in-building temperature and other thermal conditions). One frequently adopted procedure for developing control systems for building climate control is to first model the building dynamics using one of the existing building modelling tools (e.g., TRNSYS, EnergyPlus, Modelica, etc) and then develop a model-based control using the model for the building dynamics. Unfortunately, such an approach suffers from several disadvantages:

1. First of all, *developing and maintaining a reliable model for the building dynamics is "very expensive"*: a tedious and time-consuming effort is required to develop, calibrate and validate such a model. Moreover, such a model should be continuously tuned so as to take care of changes in the building infrastructure. All these factors render the "luxury" of developing a reliable model for building dynamics prohibitive for most of the buildings (in some cases, the cost of developing and constantly tuning the building model will be more expensive than all the other operating costs of the building!).
2. Moreover, even if a very accurate and reliable model for the building is available such a model *must be accompanied by an expensive sensor infrastructure* in order for the model to be able to accurately predict the building dynamics performance: real-life experience has shown that the building models may produce quite inaccurate results or even completely fail in cases where they are not accompanied by a complete set of real-time sensor measurements: for instance, if there are no sensors for detecting whether a room is occupied or not or whether a window is open or not, the overall model may produce totally erroneous predictions.
3. Last but not least, even if the above two problems/shortcomings were not present, model-based approaches face the so-called "*curse-of-dimensionality*" problem: even if the perfect model and a complete sensor infrastructure are used, the current state-of-the-art in control system design is unable to compute the best (optimal) controller as this is a

Figure 9: A second caption of Test Cases Tab

2 Project Brochure

2.1 The aim of the brochure

The project brochure supports the dissemination of the project. It gives a general overview of the project activities together with a listing of project partners and contact information. It generates interaction with all interested persons. The project Brochure is available through the website for anyone who is interested and is one of the basic means of dissemination of the pproject.

2.2 Description of the project brochure

This leaflet will be used as a means to provide project information in public correspondence, conferences and similar events.

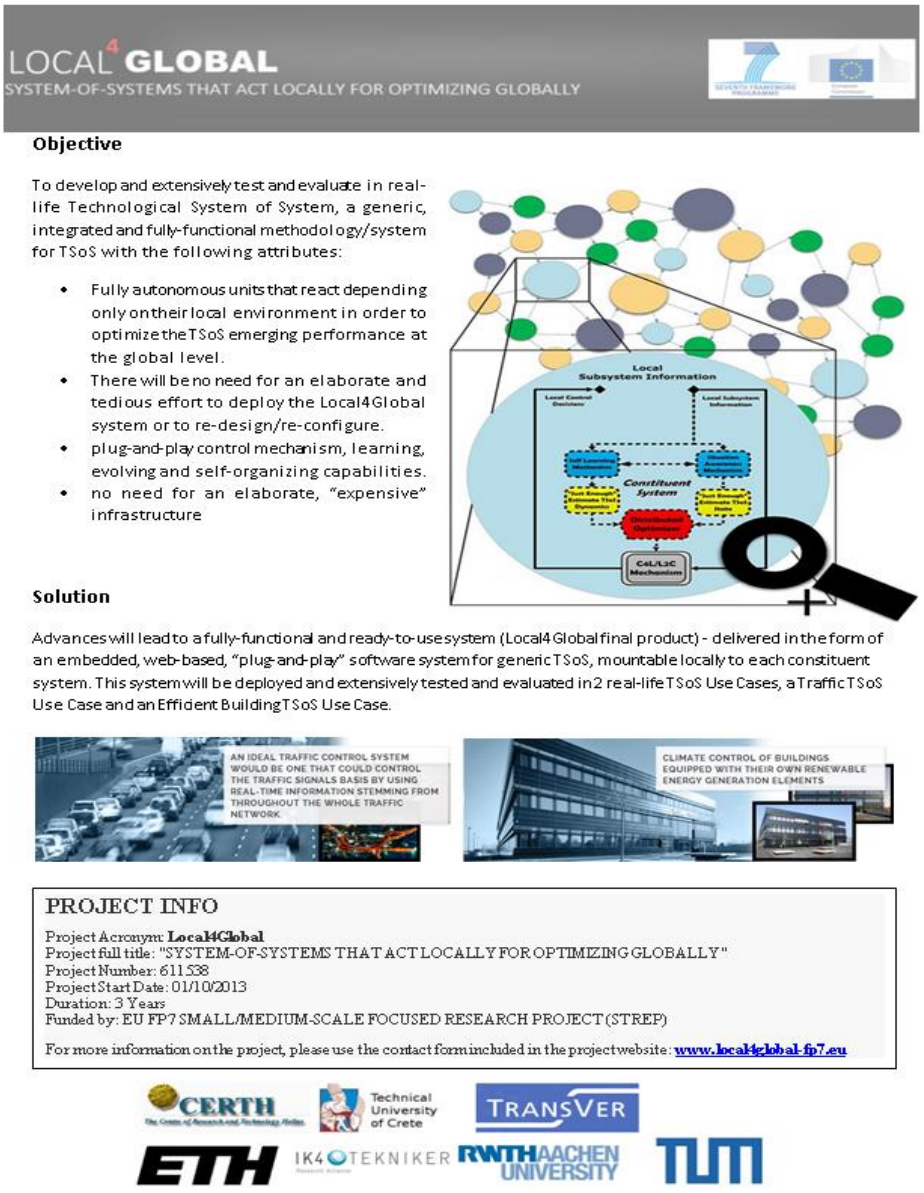

Figure 10: First Page of project brochure