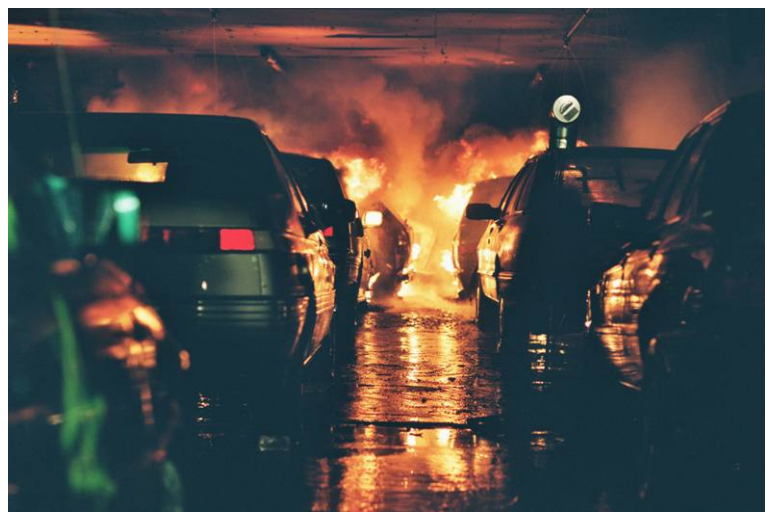


## The latest developments on the L-surF safety project

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Having just entered the third and ultimate year of the L-surF project, we may recognize that research on safety and security is more than welcome to our European Community. At least, this is one of the conclusions of the 2<sup>nd</sup> Security Research Conference held in Berlin under the German presidency of the European Community in the End of March 2007.

“Large Scale Underground Research Facility on Safety and Security” is the full title of the design study L-surF which is implemented as a “Specific Support Action” in the 6<sup>th</sup> European Framework Programme for Research and Technological Development. The design study on research infrastructure (RIDS) is carried out by five European partners who are in leading position in the field of safety and security research focussing on subsurface spaces. VSH (Switzerland), SP (Sweden), STUVA (Germany), TNO (The Netherlands) and INERIS (France) are concentrating knowledge and efforts in terms of elaborating a



feasibility study aiming in the construction of the Large Scale Underground Research Facility on Safety and Security. The closer the project comes to its end the clearer becomes the picture which is drawn into the minds of the L-surF partners. But how does this picture look like? Will such a groundbreaking large scale research facility ever become reality?

As you may already know the project’s work is subdivided into 6 Work Packages which become more and more interacting in order to meet the same boundary conditions and in order to result into a positive and constructive interference. So let us have a closer look at Work Package 1 dedicated to the integration process of potential third parties. In the beginning phase of the project, INERIS, who is leading this Work Package, had carried out a careful surveillance of the Consortium’s capabilities related to the most likely core activities of the future L-surF legal entity. May I draw your attention to the interface between WP 1 and WP 6 at this given moment, because we have both to prepare an offer to potential future partners on the one hand side, and to scrutinize potential legal forms of L-surF on the other hand side which will provide a frame and the corresponding boundary conditions for the integration of those potential partner mentioned above. It may be easily seen that these two WPs strongly influence each other as well as the other WPs, too. INERIS will now include information gathered from their screening of the consortium’s skills and additionally the preliminary results from the market analysis carried out by TNO into some description of requirements for a “second call for interest” which third parties interested in L-surF will have to meet to join the future L-surF legal entity. The second call will be launched in July 2007.

Safety and security research is presently connected with a growing market developing on European level. TNO being THE Dutch research organisation for applied research is within

the L-surF consortium the responsible partner for the inventory of research needs and the corresponding markets. Of course, the TNO team started to screen the market situation and research needs in their own homeland given the enormous amount of commercial activities carried out by TNO itself. Particularly the interaction with Work Package 5 dealing with “Research, Training and Experimental Activities”, led by our German partner STUVA, had arisen the question whether the surveillance of the Netherlands’s market situation could be accepted as a sound base for decisions necessary to control the development of L-surF into specific fields of safety and security research by defining the future activities to be covered by L-surF. Being aware of the fact that safety and security research especially related to underground spaces may never be considered as a national market but always as an international one, the consortium came to the conclusion that the information gathered from the Dutch market can quite well represent the European situation the more so as the results of the market surveillance would be further developed and validated by a screening of potential international clients, partners, and markets. As a matter of fact, the results from Work Package 2 will strongly influence WP 1 dealing with the integration of third parties, WP 5 elaborating the future L-surF activities, and WP 6 dedicated to the establishment of a legal entity called L-surF, too.



European research projects need to add value to the research community. Economically successful undertakings need a unique selling point. The possibility to offer total flexibility for research activities in subsurface spaces is up to now very limited. Given the huge costs of the adaptation of enclosed spaces like tunnels regarding cross sections or inclination to the client’s

requirements, the idea of a “Convertible Contour and Shape Scheme” called CCSS is a very promising one. VSH with its strong background in the design for underground construction (through Amberg Engineering) is therefore well prepared to develop such a flexible system of cross sections, inclined shafts, rooms and caverns of different sizes and shapes. To fulfil all properties of spaces and surfaces required by the research community, a list of requirements to the CCSS was very carefully set up including a detailed description in quality and quantity of both surface and geometric properties asked for. The second very important issue – maybe the most important regarding test activities connected with fire tests – is environmental aspects. Having a closer look at a realistic scenario of fire tests in tunnels, for example with a tunnel cross section of some 55 m<sup>2</sup>, an air velocity of about 6 ms<sup>-1</sup> and a duration of at least 30 minutes for the whole test procedure, it can easily be seen that such a test is producing about 600.000 m<sup>3</sup> of smoke in the course of this single test procedure. This huge amount of waste air we will have to cope with. Ideas and feasible solutions are worked on in Work Package 3 where also the waste water treatment of course is paid special attention.

SP is doing a very proper job in the description of new research methodologies. Without any doubt Work Package 4 is the most scientific one in the frame of L-surF. One of Haukur Ingason’s reports summaries the measuring techniques available for tunnel research and for testing in underground facilities with a focus on new technology. Additionally advantages and disadvantages in different fields of application are outlined with a special focus on how to

design measurement for fire and sprinkler tests using new measuring technology. Furthermore the Work Package 4 is dedicated to transfer technology from other fields of scientific research into the field of underground safety and security. In order to allow this technology transfer the consortium established contact with the Institute of Aerodynamics and Flow Technology Braunschweig / Göttingen. New measurement methodology based on the latest available technology may be adapted to the special requirements given by L-surF activities, e.g. range or accuracy of measurement equipment or measurement methodology. The inter-



face to L-surF's other Work Packages is mainly considering the research needs from the scientific point of view as SP's contribution to the Work Package 2. But also the interaction with Work Package 5 is quite strong, given that future research activities of course will strongly influence the measurement equipment needed and vice versa.

The decision what type of activities the future L-surF entity will carry out in the years following the design study, turned out to be quite challenging to the consortium. The first reason for that is that this kind of decision is a strategic one which has to be "blessed" by the management of each partner in the consortium. This was the point in the decision making process where the diversity in the natures of the L-surF partners caused some major problems being incredible different in both flexibility and responsibility as well. The initially for the thirteenth month planned Deliverable D 5.1 "Definition of R&D activities" was therefore split into three parts, of which the first one was

meant to substitute Deliverable D 5.1 while the following two parts would allow to take further developments within other Work Packages, especially results from WP 2 (Research needs, TNO) into consideration. The intermediate state of the project is a carefully established list of activities with a first classification regarding our estimation of each activity's business potential. Further steps are of course already planned but will not be discussed in terms of confidentiality. But what we know for sure and also communicate is the major role of harmonisation of experiments being an indispensable element in the scope of L-surF. We all believe that European harmonisation in order to allow benchmarking against the results from tests conducted wherever in Europe is necessary to save money to the research community and to facilitate the exchange of knowledge as well. Due to that fact the Deliverable 5.3 is dealing only with the harmonisation of test procedures, experiments, everything which has to do with research activities in the field of underground safety and security.

But who will in the end pay for all these research activities? Where will the money come from to realise the construction of a ground braking large scale underground research facility? Are there any financing tools offered the European Community – maybe bound to specific legal conditions? These are in brief the core questions to be answered by VSH being responsible for Work Package 6. In order to structure our process we are working with four scenarios in our imagination (the whole consortium is doing so) which offer to L-surF four different solutions to act in the field of safety and security research. These four scenarios are meanwhile well defined in the Consortium, but it was definitely not easy to reach a common understanding of these four ways putting L-surF into reality. All of these scenarios require different

means and forms of organisation as well as a custom selection from the broad diversity of research and training activities in the scope of L-surF. What is additionally necessary is political support for the realisation of the research infrastructure from a European member state or affiliate. VSH is trying with high pressure to establish political contacts to several ministries in order to present the idea of L-surF besides showing up the added value to a region to be gained through the establishment of such a large test facility. The European Investment Bank has capacities and financing tools fitting to the extension of L-surF. Furthermore there is a Risk Sharing Finance Facility being a financing instrument under the 6<sup>th</sup> and 7<sup>th</sup> Framework



Programmes for projects in some eligible countries. In addition to that "Layout of Financial Recourses" which is VSH's Task 6.1 a business plan has to be worked out drawing a way of a commercially successful operation of L-surF. This business plan will comprise all of the results gathered from the several Work Packages and may therefore be seen as the interface between all tasks of the project. Last but not least VSH has to scrutinize legal forms best fitting for the L-surF legal entity. It is possibly a very special property of L-surF that the project

will not be ended with the expiring contract with the EC, but this will launch a new area for L-surF by establishing a new legal entity which is foreseen according to the contract and therefore mandatory.

For that reason we are confident that we will manage to find one or more solutions for the future of L-surF and that we can quite soon offer the next step to be done in order to contribute to the European society becoming safer and more secure.

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