

ITA-COSUF WORK PROGRAMME

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ABSTRACT

COSUF – the ITA-Committee on Operational Safety of Underground Facilities was installed in May 2005 following a joint initiative of 8 European research projects which all aimed at an improved tunnel safety. The Committee's scope concerns the operational safety in tunnels and other underground facilities including the aspects of security. Starting from this the objectives were defined and the work programme derived. For being able to conduct the ambitious work programme COSUF formed 3 activity groups. Details to this and other organisational aspects are described in the full paper.

1. SCOPE AND OBJECTIVES

COSUF – the ITA-Committee on Operational Safety of Underground Facilities was installed in May 2005 at the occasion of the ITA World Tunnel Congress in Istanbul, Turkey. This important step followed a joint initiative of 8 European research projects which all aimed at an improved tunnel safety after the disastrous fire accidents in various road tunnels in 1999 and the following years. The scope of COSUF concerns safety in tunnels and other underground facilities. It is limited to safety in operation and not during construction This subject is covered by ITA Working Group No. 5: "Health and Safety". Security will also be covered and is considered as part of safety.

Within this scope the following objectives as basis for all the future activities of COSUF are defined:

- maintain and develop a network to:
 - exchange knowledge
 - encourage collaboration
 - facilitate the creation of dedicated teams and groups to perform specific (research) activities
- facilitate cooperation worldwide
- enhance research and development activities through combining of national, European and international funding and promoting support
- promote safety (and security) by:
 - fostering innovation
 - raising awareness of current and newly developed safety (and security) issues amongst decision makers, professional end-users, financiers, risk managers, international forums and other stakeholders
- supporting the development of improved regulations

2. ACTIVITIES

Considering the aforementioned objectives COSUF will follow the below listed activities.

The list gives examples but does not claim to be complete. In detail the activities will include:

- networking and coordination meetings, at least once a year, possibly linked with other events
- to take part in international standardisation
- actions towards focussing international research programmes to include tunnel and underground safety (and security), e.g. in the EU framework programmes, European Technology Platforms or other international activities
- developing and maintaining a website, based on the FIT-website, which will promote its activities and disseminate its findings
- (co-)organising workshops and conferences
- to form groups and ad-hoc task forces inside the Committee to address issues related to the scope of the Committee and its objectives

3. BASIC STRUCTURE

For conducting the manifold activities COSUF has formed three Activity Groups (AGs) described to more details further down. These AGs generally aim at collection of information, creation of syntheses and recommendations, dissemination of information, identification of current and future needs for research and development giving direction as well as specific initiatives, and other related activities.

The AGs themselves do not carry out studies, research or similar activities of commercial value which could be done by institutes or companies. Instead of that they should develop to be centers of excellence for exchange of information and know-how with regard to safety and security of tunnels and other underground facilities.

The general objectives of the AGs are

- sufficient safety and security for tunnel users, employees and rescue personnel
- cost efficient solutions for safety and security
- a strive for optimality taking into consideration life-cycle cost and socio-economy and societal demands
- improvements of tunnel safety and security by fostering innovation and with a vision of future possibilities and needs

The three AGs must interact to avoid duplication in their work. Thus their activities have to be coordinated by the SB. The AGs will establish task groups and ad-hoc groups which shall deal with specified sub-items.

The Activity Groups are controlled and receive advice in a strategical and political sense by the Steering Board (SB), which consists of representatives from the 8 research projects. The SB is chaired by a chairman as representative of ITA – the International Tunnelling Association and a vice chairman as representative of PIARC – the World Road Association. Both are responsible to the annual General Assembly of ITA.

4. ACTIVITY GROUPS AND THEIR WORK PROGRAMME

4.1 Activity Group 1: Interaction with European and international initiatives

AG 1 will take and keep contact with other external institutions, groups and projects in order to receive relevant information, to co-operate for avoiding duplication of activities, to give information about activities in COSUF to external groups and possibly influence the initiatives.

The relevant external groups and initiatives can include for example:

- European Construction Technology Platform, Focus Area Underground Construction (as far as COSUF is concerned)
- European Technology Platform on Industrial Safety “ETPIS”
- other international committees like: ISO, PIARC, fib, RILEM etc.
- national or international organisations funding research
- existing and completed European research projects others than the projects founding COSUF, for example EuroTAP and TUNCONSTRUCT
- other research, commercial, national or international projects
- testing programmes
- large construction projects
- other relevant initiatives, groups or similar

The areas considered in Activity Group 1 are complementing those mentioned below for Activity Groups 2 and 3. The activities in Activity Group 1 consist e.g. of

- identifying relevant initiatives outside COSUF
- attracting COSUF members from the initiatives or appoint liaison responsible COSUF members
- liaison with initiatives outside COSUF
- reporting to Activity Groups 2 and 3 about the results and findings of activities outside COSUF
- reporting transparently to relevant external groups and initiatives about the ideas and results of COSUF
- ensuring that safety and security is given proper priority in initiatives concerning underground facilities
- influencing initiatives to include safety and security aspects in line with the ideas of COSUF
- bringing COSUF ideas to life as projects either as part of existing initiatives or as new separate projects

Participants should come from the 8 projects, but should also be representatives from projects, committees, groups, and institutions outside of COSUF. If not otherwise possible a COSUF member could be appointed to be the liaison officer for those projects.

4.2 Activity Group 2: Regulations and best practice

AG 2 will cover regulations, the state-of-the-art and best-practices in various countries world-wide. The state-of-the-art can monitor the current practice and experience with various design methods for different tunnel systems. This includes discussion and comparison of regulations

and best-practice procedures from different owners, networks, projects and the experience gained by them.

By doing this it is aimed to collect and distribute information on existing national and international regulations and recognised recommendations as well as to establish the best-practice for tunnel safety (and security). As a result it can be identified that

- there is a need of improvement or harmonisation considering regulations in different countries, between networks, between different projects etc.
- the regulations are not up-to-date compared with the recent activities and achievements in practice
- state-of-the-art or state of practice is deviating significantly from region to region, from industry to industry or from institution to institution

The findings can result in requirements for new regulations; they can also contribute to disseminate the knowledge from region to region or from industry to industry, from institution to institution and identify areas for which new research is needed.

Ideally the work in this Activity Group is part of establishing a global state-of-the-art for tunnel safety (and security) and the regulatory tools to control that an adequate safety (and security) level is achieved.

All underground facilities are covered by these activities. This includes underground facilities for transportation like road, rail and metro tunnels, as well as underground facilities such as underground shopping malls, underground stations, places for other purposes e.g. for concerts, sports, exhibitions, production facilities, underground technical facilities, etc. For these areas there might be a need for establishing the best practices and the necessary up-to-date regulation.

The activities should cover all safety related aspects such as (at least):

- safety objectives
- basic methods of technical approach (prescriptive and performance-based approaches)
- protection of the structure
- methods for risk assessment
- safety systems and equipment
- interaction with human behaviour
- operation and maintenance
- intervention

These above-mentioned activities may be distinguished for the different types of underground facilities (road, rail, metro and other underground use) or may be considered together. For all activities it will be relevant to discuss both the side of best-practice and the side of regulations and to compare the two sides.

The area of security may be highlighted specifically, since there may be a need for establishing the state-of-the-art also in this field. Security deviates from safety particularly with respect to the prevention, whereas the reaction consequence side may be similar to those which are resulting from evaluation and analysis of accidents or so. These prevention activities will involve regulations of control, enforcement, and similar.

The participants will be mainly engineers, scientists, fire brigades, rescue teams, and other professionals with experience concerning safety in design, operation and rescue in various areas related to underground facilities. For security the professionals may include the police. Public servants and others involved (on project, regional, national, supranational (EU) and international basis) in developing and reinforcing regulations can significantly contribute to

these activities. Also researchers and other professionals with knowledge of the most recent achievements and findings may contribute to the identification of needs and demands for the design process and its regulation.

The participants should also include representatives from Activity Group 1 and of current research projects, committees, organisations involved in developing and studying tunnel safety and security.

4.3 Activity Group 3: Research and new findings

The scope of AG 3 is to motivate to research and to use research results and other new findings for the benefit of safety and security in underground facilities in general.

The activities include

- collection of results of research and collection of new findings
- evaluation of events, results and new findings
- dissemination of the results and new findings among COSUF members
- synthesis of results and new findings into best practices (in collaboration with AG 2)
- collection and evaluation of ideas for research
- identify needs for the future and give directions for future research

The actual launch of new research projects is initiated outside COSUF by liaison through AG 1.

The aim is to make aware all relevant professionals of new findings and recent results of research in the safety and security related activities regarding underground facilities, to discuss these results and other ideas and to process them into specifications of needs of new research into recommended best practices.

In order to fulfil these aims it is necessary to

- identify safety (and security) related activities for underground facilities
- identify relevant research activities and their results
- identify relevant new findings
- process into best practices
- evaluate the results and the findings
- receive and develop ideas for research
- communicate the results and findings
- identify new needs and requirements for research
- outline the basis of new ideas for research
- liaise with Activity Group 1 for the launching of projects outside COSUF

The sub-items considered cover all safety (and security) related activities. These areas could include the following, but the list may be modified and extended during the work, depending on the available information and the interests and qualification of the members of AG 3:

- new/innovative equipment in tunnels and new materials
- processes, analyses and design procedures
 - integrated design procedures
 - risk analyses as part of the design
 - fire design techniques etc.
- IT tools in the tunnel design and operation
- test programmes using standardised techniques

- operation and maintenance monitoring
- safe intervention, evacuation, fire fighting etc.
planning
training
simulation
- interface tunnel, users, operators and rescue services (human behaviour etc.)
- experience from tunnel incidents, accidents and near misses
- tunnel safety related data collection
- specific security related problems for underground facilities

For research and new findings it may be also relevant to divide into the types of underground facilities: road, rail, metro and other underground use, as mentioned for AG 2.

The possible number of a crosswise combination of items, sub-items, activities and types of facilities is high. The AG will have to organise itself and to prioritise the activities.

The participants in the activities are mainly researchers with activities in the field of safety (and security) of underground facilities and engineers, scientists and other professionals with experience in safety design in various areas related to underground facilities. Furthermore, other professionals involved in design, operation, rescue etc. of tunnels, and particularly the safety (and security) related side of these activities can significantly contribute to the activities. Public institutions and representatives of formulating research and funding institutes would also be highly relevant as participants in the work.

In addition representatives from AG 1 and of current research projects, committees, organisations involved in developing and studying tunnel safety and security outside of COSUF should also become participants of this AG.

5. MEMBERSHIP

COSUF invites all parties world-wide interested in the field of operational safety and security of tunnels and other underground facilities to become member and to co-operate within COSUF. There will be exceptionally corporative members, no individual ones. The membership in COSUF has to be confirmed by the General Assembly of ITA, but is not bound to membership in ITA or vice versa. Of course, a membership in both is possible and welcome.

The annual membership fee will be as follows:

- public organisations and educational institutes: EUR 250
- all others: EUR 500

Interested parties can subscribe membership at the occasion of the 2nd International Symposium Safe & Reliable Tunnels on May 30-31, 2006 in Lausanne, Switzerland or online using the form given on the ITA webpage www.ita-aite.org.

A numerous and wide-ranging membership will certainly help to improve and standardise the safety and security level in traffic tunnels and all other underground facilities.

6. CLOSING REMARK

COSUF – the ITA Committee on Operational Safety of Underground Facilities was founded and installed in result of a joint initiative by 8 European research projects in the field of fire safety in traffic tunnels. The Committee generally aims at networking activities, gathering, combining, and clustering of (inter)national research and promotion of safety and security issues in tunnels and other underground facilities world-wide. Through these goals they intend to enhance and facilitate innovation, standardisation and integration activities to secure function and reliability concerning mobility both for persons and goods as vital precondition for modern and prosperous societies.