European Cooperation in Science and Technology
- COST -

Secretariat

Brussels, 9 June 2011

COST 4144/11

MEMORANDUM OF UNDERSTANDING

Subject :	Memorandum of Understanding for the implementation of a European Concerted Research Action designated as COST Action TU1103: Operation and safety of tramways in interaction with public space

Delegations will find attached the Memorandum of Understanding for COST Action TU1103 as approved by the COST Committee of Senior Officials (CSO) at its 182nd meeting on 17 May 2011.

MEMORANDUM OF UNDERSTANDING

For the implementation of a European Concerted Research Action designated as

COST Action TU1103

OPERATION AND SAFETY OF TRAMWAYS IN INTERACTION WITH PUBLIC SPACE

The Parties to this Memorandum of Understanding, declaring their common intention to participate in the concerted Action referred to above and described in the technical Annex to the Memorandum, have reached the following understanding:

1. The Action will be carried out in accordance with the provisions of document COST 4154/11 Rules and Procedures for Implementing COST Actions, or in any new document amending or replacing it, the contents of which the Parties are fully aware of.

2. The main objective of the Action is to improve tram and Light Rail Transit (LRT) safety, through a better management of their insertion in urban spaces, and therefore to minimize accidents and their impacts on both transport system and society.

3. The economic dimension of the activities carried out under the Action has been estimated, on the basis of information available during the planning of the Action, at EUR 36 million in 2011 prices.

4. The Memorandum of Understanding will take effect on being accepted by at least five Parties.

5. The Memorandum of Understanding will remain in force for a period of 4 years, calculated from the date of the first meeting of the Management Committee, unless the duration of the Action is modified according to the provisions of Chapter IV of the document referred to in Point 1 above.

A. ABSTRACT AND KEYWORDS

The Light Rail Transit (LRT) is spread in many countries all over the world, and particularly in Europe. Some historical networks have a very long experience and others are (re)discovering LRTs with a high disparity in terms of institutional and economical contexts, safety management, operational monitoring and technical choices.

In this context, the Action aims at improving LRT safety and reducing the impact of their conflicts with other public space users. This can be achieved by sharing European experiences on LRTs' accidents and their interaction with public space, practices and operating methods, taking into account the different cultural and historical contexts. Through exchanges with other LRT specialists on available data and results, analysis and comparisons on accident and incident data, the Action will allow to give the greatest safety benefits at best costs.

This Action is built on a bottom-up approach in order to give practical results and solutions to operators and authorities. Beyond internal exchanges, communication and dissemination of outcomes by various means (guidelines, recommendations, website …) will allow to reach most concerned stakeholders at the European level. It will also encourage a common approach and possible transpositions of some good practices in a context of internationalisation.

Keywords: light rail transit, tram, safety, urban insertion, accidents

B. BACKGROUND

B.1 General background

Existing in more than 150 towns all over Europe, the Light Rail Transit (LRT), including trams, is a major tool for managing travel in both large and medium-sized conurbations. For Public Transport, LRTs sometimes represent a significant market share, or an opportunity for increasing Public Transport part in modal shift, in a context of increasing tension about the use of urban public space. Over the last years, important developments in LRT systems took place throughout Europe, integrated in strategic sustainability cities and regions, both by renovating historical networks and creating new lines. This trend continues, rolling stock manufacturers are expecting a growth of about 3.7% for this market during next years.

Depending on the history and context of different European countries, there is a high disparity between historical networks (Germany, Switzerland, Poland and some other Eastern countries, ...) and more recent ones (France, Spain, Portugal, ...), in terms of institutional context (involved actors, regulations, culture, …), organisation of safety and operational monitoring, and technical choices (rolling stocks, running conditions, infrastructure...).

Even if Public Transport stays the safest mode, everywhere safety is a hot issue for LRT systems. Accidents are sometimes serious, often spectacular and overexposed in the media. Beyond the direct consequences for victims, safety also has a big impact on the productivity and reliability of transport systems and urban functioning, by disturbing operation as far as LRT often runs on structuring lines of the networks. The primary cause of LRT accidents is the conflicts between LRT and other users of public space, in relation with their behaviours and their perception of the risk. Thus, urban insertion of LRT through infrastructure design and traffic handling is a crucial challenge for both transport authorities and operators.

Moreover, the internationalisation of stakeholders such as transport system operators, rolling stocks and equipment manufacturers, engineering consulting firms and enterprises, in a context of a harmonisation of European legislations, is also an important background to the field the Action will concern. It militates for a homogeneous approach on behalf of the national or regional institutions, which are these actors' interlocutors.

It appears that COST funding is the best choice for this initiative, because of its bottom-up character, contrary to a top-down approach (EU Framework Program for example). Indeed, it will consist in exchanging on available data and results as well as practices or operating methods, rather than launching a pure research project. The Action will deal with practical aspects of LRT accidents and running conditions, corresponding more to applied research than high-technological research and innovation (for which Eureka would be more suitable). It will also associate many different stakeholders from academia to operation, hence COST Action aptness.

B.2 Current state of knowledge

First of all, we observe different historical and institutional contexts, different practices in terms of safety knowledge and its relation to layout design, direct and indirect stakes or solutions (layout space, LRT running and operating). Countries have their own regulations, and a priori some tools and guidelines concerning LRT safety and layout design, but no European network or research program has been identified on the link between LRT safety and space layout.

At the 46th meeting of the UITP (International Association of Public Transport) Light Rail Committee, in May 2008, Ireland proposed a European benchmarking of accident and incident statistics for Light Rail and Tramways. Only twelve countries have answered to the questionnaire and it was mainly focused on accident statistics, not on the link with space layout. Unfortunately, this project has been abandoned. They had some shared data accidents but still too disparate to be correctly analysed and not linked to urban space. Besides, in some countries such as Portugal, there is no safety organisation for LRT infrastructures design.

The data concerning the impacts of accidents on the productivity are not shared and are often very insufficient. Thus, they should be very pertinent to justify actions on layout or operation, from an economic point of view.

B.3 Reasons for the Action

There are many reasons for this Action: first of all, LRT is spread in many countries, among which some have a very long experience (in particular in central and Eastern Europe) and others are (re)discovering it. It seems important to have exchanges and to gather knowledge while the introduction of the LRT raises problems to countries that discover or reintroduce it and while, reciprocally, those with historical LRT networks need to make revision of their regulations and guidelines, and to modernise their systems in a difficult financial context. There is a need to share European experiences in order to better understand the link between LRT safety and space layout: the Action will be a source of rich and fruitful exchanges.

For example, some layouts of LRT facilities may seem to be innovative in one country, while they have been implemented for a long time in others (e. g. tram running on fully shared road, on single-track line, LRT conflicts regulation without rail signals …). So, strategies and ideas implemented in one country have the potential to be transferred and implemented in other countries, possibly avoiding an operator to learn by mistake, therefore increasing the service for public transport users and sparing resources. Moreover, especially when stakeholders have questions or want to set up an evaluation, it is interesting to look if it has already been made somewhere else, in particular in countries with a long experience of trams and LRTs (example: impact of safety on productivity costs, on the level of service) and to know which results it has given.

Furthermore, launching the Action at the European level will also allow to develop a common approach and possible transpositions of some good practices. It will be profitable to capitalise on various experiences and practices due to different ways of measuring the non-safety and its impact on productivity and level of service (disruptions, number of disturbed passengers …), different ways of managing safety. A network of specialists will be essential to exchange opinions on subjects LRTs are confronted with. It could be a pool of knowledge in the domain, together with a number of successful (and maybe also less successful) experiences from which a large number of people can ultimately benefit from. It is also possible that experiences in other cities can provide an idea of how to address the problems in the future, as cities grow and develop even further, increasing tensions between users sharing the public space. Consequently, it is important to be able to share ideas and experiences on the observed accidents, to share analyses, to identify and capitalise the innovative and interesting practices of insertion via a long-term European network in order to foster progress in the LRT safety and management of their conflicts with other public space users.

Second, to collect and to present the existing information on LRT accidents and their link with the urban insertion is another reason for the Action. Gathering experts on LRT and the public space from different European countries will allow sharing regulations, statistics and other information, not only on big and spectacular accidents but also on frequent accidents or incidents that are a sign of bad interactions between LRT and urban space. In some countries, methods of collecting accidents' information already exist but it can still be improved and shared.

To improve the tools to collect these accidents' consequences on the operation is another reason for the Action. Such a shared reflection on practices in terms of accident rates (various involved stakeholders, data collection and analysis), infrastructure design and traffic management will help to identify good ways to insert LRT into the urban areas and improve methodological tools and regulations. It could also provide some light in the tactical and operational issues directly related to the level of safety within a network, line or rolling stocks.

The knowledge of the statutory context is imperative, to avoid too simplistic comparisons and hasty transpositions of configurations or operation's ways. Such an Action would also allow working with a diversity of places in Europe, to improve the European know-how that is now exported (manufacturers, designers...). And it would make it possible to identify necessary progress in road signals and regulations.

Moreover, the Action is mainly aimed at European economic and societal needs. Sociological aspects bound to the spectacular and media character of the accidents and the impact in term of image of the transport service is also a point to be mentioned, as well as the economic incidence (in term of time loss and production costs for the operators and costs for the society) because these subjects have a priori been rarely studied and are meaningful for operators and society.

Applications from the Action will be guidelines with good practices, recommendations, leaflets, a website and a forum to expose problems and ask for solutions or ideas, a database to collect European reference documents.

B.4 Complementarity with other research programmes

First of all, the Action will focus on safety linked to the interface between LRT and public space, which is very specific and a priori little investigated.

There's no other COST Action concerning trams and LRTs. The TU 603 Action about Bus with a High Level of Service (BHLS) deals with busses' running conditions, and should give information about impact on road safety, which could be sources of learning and comparison.

Yet one of the first tasks will consist in looking for existing studies and research activities in order to be complementary and non-redundant with what already exists (i.e. in France, the IFSTTAR (French Institute of Science and Technology for Transport, Development and Networks) is doing a study on interactions between road and LRT, and analyses the perception of risk and difficulties between tram drivers and other space users).

Moreover, the Action is complementary to researches about urban road safety, public space sharing and heavy rail safety. For instance, the REST project, set up in the frame of the current FP7call entitled “mitigation measures and good practice to reduce human fatalities and disruption of services resulting from suicides and trespasses on railways property”, deals with all railways systems, including LRT.

Finally, beyond Europe, the TRB (Transport Research Board) disseminates several researches on Public Transportation.

C. OBJECTIVES AND BENEFITS

C.1 Main/primary objectives

The main objective of the Action is to improve tram and LRT safety, through a better management of their insertion in urban spaces, and therefore to minimize accidents and their impacts on both the transport system and the society.

C.2 Secondary objectives

The Action will enable at a European scale a better understanding of problems, solutions, and a shared feedback about:

- LRT safety assessment, through a harmonised approach in order to facilitate comparisons,
- LRT running in various infrastructure configurations, through a shared analysis of advantages, drawbacks and impacts on transport system functioning.

The goal is also to measure the accidents' impact on the system's productivity and to verify if a more expensive investment allows to spare on the future operation. In order to do so, it will also be necessary to assess this productivity (the follow-up of the time of route, the regularity, the time loss due to operation's disruptions, the repairing costs and other financial consequences of accidents).

The Action's aim is to gather specialists who represent their profession and country in order to share feedback and to find a harmonised approach to LRT safety in public space. This Action will set up a network of various stakeholders and specialists striving to achieve the following practical outcomes:

- panorama of the institutional organisations and the devices of follow-up,

- harmonisation of accidents and operation's data collection and analysis tools (indicators), keeping in mind to avoid too many complications in their implementation,

- common knowledge on safety issues (problems, levels, impacts, indicators, causes of accidents and incidents),

- assessment of various tools' efficiency (e.g. signage, street furniture), road design and traffic handling methods, regarding safety and operation,

- identification of good practices and innovative configurations of LRT's insertion into public space, and disseminate these to the whole profession.

The operational objectives of the project are multiple:

- to produce an overview of institutional contexts and regulations about LRT lines' construction and operation,

- to produce an overview of organisational options in terms of gathering and using data (safety, operation) and to capitalise on feedback from LRT systems,

- to determine a common vocabulary on the LRT's field,

- to create a database of existing reference documents (official texts, technical reference materials, research reports...) in the field of urban insertion of LRT in Europe,

- to establish a shared methodology and analysis criteria for accident data,
- to produce the corresponding safety assessments,

- to highlight the advantages and drawbacks of various configurations and traffic handling methods concerning LRTs,

- to favour the technical exchanges between partners.

The ultimate objective is to make this information available to every authority, operator, road network manager and firm concerned by the LRT and its interaction with public space (see part H). It will also be very fruitful for research bodies dealing with these topics.

C.3 How will the objectives be achieved?

An international network is one of the best ways to get out of a "national" point of view, to open minds and ways of doing/sharing experiences and good practices. The multidisciplinary approach of the project will avoid looking at different situations and issues from only individual perspectives. The COST Action will allow a European visibility and legitimacy.

Moreover, the Action will enable the integration of stakeholders with different skills, source of professional enrichment, favouring a global "system" approach in a "bottom-up" way.

Functioning in an organised network favours much more productive exchanges than independent and occasional bilateral contacts. Furthermore, it will allow to spare time and efficiency by sharing contacts already established by participants. The objective is to be as exhaustive as possible and to cover all networks in the countries involved in the project. All participants will have useful contributions to make to the project based on their existing knowledge or contacts in other non-participating countries. And a network approach allows to get more persons and countries associated, while debates concern a common problematic in many countries.

The idea is also to maintain the exchanges after the Action comes to an end, hence the importance of a built up network.

C.4 Benefits of the Action

The broad benefits will be improvements in LRT safety and reducing the number and the gravity of accidents between LRT and public space users (pedestrians, car drivers, cyclists...). It will thus take part in improving road safety in general and for vulnerable users in particular.

The Action will more precisely contribute to:

- improve the safety of European LRT networks, knowing better the causes of accidents,
- bring to light and qualify the link between safety and productivity,
- raise the question of “increase in safety vs. increase in costs”,
- decrease the accidents costs (maintenance / operating),
- contribute to rationalise and optimise the investment of the LRT, improving its insertion, its safety and its efficiency and reliability,
- and indirectly to go in the direction of moderating the place of the car in town.

Besides, it will contribute to strengthen European skills and know-how in LRT safety and urban insertion, thus increasing their influence at an international scale on a profitable market.

C.5 Target groups/end users

The ultimate objective is to make the information available to:

- oversight authorities and monitoring organisations at different levels,
- transport agencies and operators,
- road network managers,
- designers, architects, engineering consulting firms,
- research bodies.

D. SCIENTIFIC PROGRAMME

D.1 Scientific focus

The first important task to be coordinated by the Action is to make an inventory of the current situation of all participants, by identifying the data, information and analysis methods available while highlighting the most useful ones. The knowledge of the state of the art is imperative. It is often attractive to transpose configurations, modes of operation… but before every action, it requires to be able to estimate them and compare them, hence the interest of methods and tools of follow-up harmonised (without being necessarily standardised) and of common indicators. The comparison of data and results requires premises in term of definitions, modes of collection of the base, treatment processes.

This state of the art will be bound by the common definition of LRT and safety.

The second important task is to analyse all the data provided in the first phase, by highlighting weaknesses and strengths, and by emphasizing on the interface between LRT accidents and the use of urban space. It consists in defining comparable or common descriptive criteria and typologies, for safety assessment and for tramlines configurations analysis. Then, the analysis of collected information and data will be carried out according to the operational objectives detailed earlier (see in § C2).

A third task to point out is a set of recommendations for data collection, analysis methods, regulation evolution, design specifications, research fields that could be very useful. It will be an extension of the previous one, by producing practical results (conclusions on analysis, highlighting of good practices, recommendations…).

These three topics will correspond to the three first Work Phases (WP) of the work plan while a fourth Work Phase deals with the dissemination aspects:

- WP1: state of the art and context exploration;

- WP2: comparison / analysis / best practices;

- WP3: prospects and recommendations;

- WP4: dissemination aspects.

The Management Committee (MC) of the Action will validate this work plan.

The type of partners expected to join the Action are research centres and institutes, technical branches of local authorities, LRT operators, layout designers. The experts from these entities should be specialised on LRT safety and operation, urban layout, urban road safety including on users' behaviour, but other disciplinary perspectives and activities related to LRT and the Action's subject should be integrated to the reflection, such as ergonomists or statisticians.

D.2 Scientific work plan – methods and means

The first three work phases should quite follow on, while the last one will occur throughout the whole Action's duration.

WP1: state of the art and context exploration

To gather many countries will make it possible to establish a large inventory and to confront many different points of view in a future objective of harmonisation. At this stage, the work will be based on information made available by members, existing research and studies (among them those from research or studies offices and accidents' survey agencies). The Action will take into account confidential questions and property rights; however the basis of this WP1 is the share of enough pertinent information.

A method should be set up and improved according to each member's context in order to produce an effective inventory about:

- existing rules about LRT's running and integration into public space, and how these are really applied (organisational and legal aspects, standard practices, etc.),

- ways, methodologies and difficulties for data collection,

- assessment tools,

- analysis of accidents and analysis of LRT's running conditions, used to assess the impacts of accidents on operation and productivity,

- infrastructure design and operating methods,

- results in terms of safety and its impact on level of service (commercial speed, regularity, operating loss, number of users concerned...).

To do this, working groups will be constituted about the following topics, gathering the different points mentioned before:

- institutional and regulatory aspects, data collection (at the state level): a framework will be built up, to harmonise the presentation of the various countries on their state of the art and facilitate the compilation of information. The working group will rather do a work of centring and synthesis, but each country should give its own information. These will concern the legal basis and the technical requirements for LRT systems, operational, control and supervision practices, as well as operational measures aimed at increasing safety and users' awareness, social and cultural issues.

- data collection on accidents (at the national and local level): tools and mechanisms for data collection and processing, criteria of analysis, indicators, results. Beyond the data themselves, there will be a focus on the monitoring tools, to identify their limitations and possible future avenues for improving feedback; this will relate to organisation and the key players involved as well as to the type and form of the data and information to be collected.

- infrastructure design : just like for accidents, the Action will focus both on practical aspects (existing configurations, running handling, signage and operational performance) on the basis of examples, and on the tools (guidelines, regulation...). The appropriate working group should particularly highlight the innovative aspects of this field.

At the end of this stage, some deliverables will be produced to capitalise the state of the art, according to the objectives exposed in § C2:

- the overview of organisational context, stakeholders and tools dealing with LRT's safety,

- the information database.

It should be possible to disseminate them beyond the circle of the present COST Action.

WP2: comparison / analysis / best practices

At this stage, a particular attention will be paid to the causes of accidents and efforts will be made to identify the configurations that:

- pose recurrent problems in terms of operation or safety on straight sections as well as at intersections and stations,

- correspond to sections of line that perform well and/or have no accidents,

- are innovative in terms of design.

To achieve this second work phase, it will be appropriate to reconstruct the working groups on a way in line with the objectives. So, during the WP2, there will be two workshops dealing with:

- data collection, monitoring and evaluation tools,

- accident scenarios, tramlines design and operating methods.

The results of this work phase should not consist in publishable deliverables; they will rather be capitalised in working documents useful for the following step.

WP3: prospects and recommendations

The detailed content of the WP3 depends on the WP2's work and reflections. So the Management Committee will have to set it up at the right moment, but results, good practices and best examples should be gathered in deliverables. Some recommendations should be formulated, so that they can be adapted for use by each of the interested countries. These will relate both to safety and operation monitoring systems and to good practices for infrastructure design and LRT running.

In addition the Action will strive to input safety as a whole in Guidance Regulations, hence alleviating the number of accidents in urban environment.

This third work phase fitting into a continuation of the second one, the same working groups will be continued to achieve these tasks on the two topics identified for the WP2.

WP4: dissemination aspects

This work phase won't begin at the end of the third one but rather sooner, during the first work phase (see in §E organisation and §F Time table). A sign of success for the Action would be a continuation of dissemination acts beyond the formal end of the COST Action.

As aforementioned in WP1, deliverables will be produced at the end of the WP1 dealing with the state of the art. This is one reason to begin to work on dissemination aspects, and therefore to engage the fourth work phase, while the WP1 is in progress. Indeed, dissemination tools also deal with communication about the Action itself, and not only with its results, so it will contribute to gather new contacts and feedback information.

Insofar as a specific part (H) of this Action is dedicated to dissemination aspects, more details on the means and ways to achieve the WP4 will be given there, while its corresponding organisation will be described in part E.

Beside the content elements, partners will have to deal with formal aspects of these deliverables (e.g. guidelines). Concerning the recommendations, they must be the result of a fully admitted decision or a consensus between each participant. They won't be compulsory but as every participant will have to agree on it, it could be considered as a voluntary application.

Due to the topic of the present work phase, there is no reason to set up specific working groups for this step. Nonetheless an editorial committee should be set up for validation of all the publications: articles on public webpages, newsletters or leaflets, intermediate reports, occasional outside communications...

From a general point of view, the Action will aim for maximal productive outcomes through:

- a wide representation of various contexts from all European areas, including recent as well as historical tram and LRT networks, Eastern and Western countries;

- a variety of stakeholders dealing with the topics, and a good repartition in the working groups.

Concerning the technical means needed, the specific website (see § E1) will be an essential tool for the Action, for internal exchanges and current tasks as well as for dissemination aspects. This requires good organisation, commitment from the users, and the availability of a competent and reactive webmaster. The website's architecture has to be coherent with the organisation of the Action in work phases and working groups.

It will include a technical forum to share ideas and organise debates on the operation and LRT safety in interaction with public space during the Action. Keeping this forum further available would hopefully be a mean to perpetuate the technical exchanges between the partners afterwards.

The tasks involved in the Action will not need any particular technical or scientific tool; however, in order to facilitate the task, we will have to be careful about the use of common softwares (word-processing, spread sheets ...).

Due to the COST funding characteristics, members will have to be able:

- to organise the conferences, plenary and working groups sessions, technical visits,

- and to mobilize their own logistical means to contribute to the feedback of information and data, as well as to the dissemination of the outcomes.

E. ORGANISATION

E.1 Coordination and organisation

"Rules and Procedures for implementing COST Actions" guidelines will be followed for the general organisation of the Action, and especially for the setting-up and functioning of the Management Committee.

The first meeting will permit to:

- elect its chairman and a vice chairman,
- validate the workplan and the architecture of the Action's website,
- choose persons in charge of the different work phases and working groups and a webmaster,
- prepare an opening conference.

To respect the work plan proposed before (see §D1), a plenary meeting gathering all participants should actually be set up as soon as possible, in order to:

- give information about general program, objectives and organisation,
- have presentations of involved persons and entities,
- set up working groups,
- give practical instructions about working methods and tools (in particular: website, data and information on sharing means).

Then, regarding to the scientific work plan, the Action will go on with talks and workshops inside working groups at regular intervals during the entire time of Action (see §F Time table). Therefore plenary sessions will also be held to update the progress of the project and to share interim results.

Working groups (WG) as well as plenary meetings will also provide opportunities to organise technical field trips. For practical and economical reasons, MC, plenary and WGs meetings will mostly be set up together on the same days at the same place.

A final conference will be held to present the synthesis of the Action and the main results. It will focus on recommendations, and hopefully on possible follow-up activities.

Thus, it should be opened not only to the participants of the Action, but also to other entities interested by theses aspects. The guests' list will be discussed during the last plenary session and validated by the MC.

The website dedicated to the Action will be organised in two distinct parts:

- private webpages with a limited access will facilitate sharing ideas, information and working documents, reporting talks and feedback from all the current activities between involved partners. This private part will involve a portal to get linked with resource centres, facilitating the access to data and studies and a forum;

- a free-access public area will be created for external communication about the Action and dissemination of its results. It will also be useful to get new contacts from people interested by the Action whilst running.

A webmaster will administrate the site and forum, and all participants will upload input on the private and public spaces under precise working rules.

E.2 Working Groups

Five thematic working groups will be set up according to the work plan: 3 during WP1, 2 during WP2 and WP3 (see §D2). The MC will validate the general work themes and designate a chairman for each group. Participation in working groups will be founded on voluntary service; thus, in order to be productive enough, the size of a group should normally not exceed 10 persons, with a variety of members in terms of geographic origins and profiles. So, the MC will validate the composition of the groups.

Each group will designate a reporter and a correspondent inside the MC and choose his own functioning rules. The job will not be limited at meetings' periods but will consist in permanent talks facilitated through the Action's website and forum. Production tasks will be shared between members, such as building up and filing of the planned database (WP1), writing analysis' synthesis (WP2) or recommendations drafts (WP3).

E.3 Liaison and interaction with other research programmes

As it has been said before, the state of the art will help to identify existing studies and research in the Action's field of interest, it will thus be easier to set up possible links with other programs during this step, and the MC will have to deal with this.

Although the "Safety and Accidents" Working Group of the UITP Light Rail Committee is not really a research program, a link will necessary exist between its activities and the Action. Thus UITP was associated in the preparation of the Action, and some members of the LRT committee are already identified as potential partners. They will obviously be in charge of mutual information during all the Action, and particularly for the dissemination aspects, on which the Scientific Committee of the UITP should be very active.

A member of the MC will be designated as the person in charge of these external interactions, to follow the corresponding activities. Dealing with dissemination aspects, they will come within the WP4's competence. In practical terms, one of WP4's tasks will consist in organising a specific watch about other research programs and studies, and in identifying the leaders of potentially interfacing ones as targets for the Action's newsletter and website; this one will include a specific page dedicated to interfaces, matching RSS (Really Simple Syndication). These leaders might be invited to plenary sessions or conference according to agendas. If necessary, specific meetings will be set up.

The links with other programs will also be facilitated by current information about the Action in various circles that all members should do in an internal way (activity report) as well as at a wide scale (conferences, networking activities, Medias... in Europe and beyond).

E.4 Gender balance and involvement of early-stage researchers

This COST Action will respect an appropriate gender balance in all its activities and the Management Committee will place this as a standard item on all its MC agendas. The Action will also be committed to considerably involve early-stage researchers. This item will also be placed as a standard item on all MC agendas.

Universities and research institutes but also other partners like operators and authorities involved in the Action are used to employ early-stage researchers or students to work on such items, and to give them STSMs. Bibliographical tasks, state of the art and analysis, work on data, exploration of context can be opportunities for formative jobs. And the dissemination will need synthesis, summaries tasks… Participants will also be encouraged to involve early stage agents in association with confirmed experts and specialists in the tasks which they will have to do in order to feed the COST Action.

F. TIMETABLE

There is no reason to break with the normal duration of COST Actions; so the Action is scheduled for four years, as shown below.

Years	Year 1																Year 2									
Months	00	01	02	03	04	05	06	07	08	09	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
Phase 1		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X									
Phase 2																X	X	X	X	X	X	X	X	X	X
Phase 3																									
Phase 4							X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X
MCmeetings	M			M									M						M						M
WGmeetings							W			W			W			W			W						W
Plenary sess.				P									P						P						P
Deliverables																			D						

Years	Year 3																Year 4								
Months	25	26	27	28	29	30	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45	46	47	48	
Phase 1																									
Phase 2	X	X	X	X	X	X	X	X	X	X	X	X													
Phase 3						X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X				
Phase 4	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	
MCmeetings						M						M						M						M	
WGmeetings			W			W						W			W			W							
Plenary sess.						P						P						P						P	
Deliverables															D									D	

G. ECONOMIC DIMENSION

The following COST countries have actively participated in the preparation of the Action or otherwise indicated their interest: BE, CH, CZ, DE, ES, FR, IE, PT, UK. On the basis of national estimates, the economic dimension of the activities to be carried out under the Action has been estimated at 36 Million € for the total duration of the Action. This estimate is valid under the assumption that all the countries mentioned above but no other countries will participate in the Action. Any departure from this will change the total cost accordingly.

H. DISSEMINATION PLAN

H.1 Who?

The target audience the Action aims at reaching in terms of dissemination is rather wide. Indeed, the results should interest various stakeholders more or less concerned by LRT's operating and urban functioning.

Obviously, the end users identified in §C5 constitute the main target group, as far as the Action will set up operational outcomes.

These elements will be made available first to:

- oversight authorities and monitoring organisations,
- transport agencies and LRT operators,
- road network managers, designers, architects.

The state of the art, the information database, as well as the methods and the analysis' results will mainly interest research bodies, working on LRT safety or operation, but also on urban road safety or vulnerable users safety, or even transport planning.

In a more general way, deliverables about the general context, the methodological aspects and the information database will also be interesting to policy makers at European, national and local levels.

Last, engineering consulting firms, rolling stocks manufacturers, associations of road or public spaces' users could usefully get access and take advantage of the Action's results.

H.2 What?

Three levels can be distinguished for the dissemination methods to be used:

First of all, the internal communication between members has to be considered as an entire part of the dissemination aspects; this will mainly be achieved through:

- using the private part of the Action's website,

- setting up an electronic communication network (internet forum, mailing-list ...),

- taking part in the different meetings, and especially the plenary sessions, in which information sharing is a main goal.

Secondly, dissemination will more particularly target the community of Action's end users identified earlier. These people should be reached by the previous ways, but their attention will be caught by specific initiatives:

- making electronic newsletters at regular intervals, disseminated by using appropriate mailing-lists, to give information about the Action's processing,

- publishing articles in peer-reviewed scientific and technical journals,

- doing communications in national and international conferences and symposia.

The MC will have to decide to what extent some tools could be used beyond the circle of Action's members (e.g. restricted access to the forum or specific pages with password, special invitations to plenary meetings and conferences). He will also evaluate the opportunity to organise special working groups, seminars or conferences involving external participants.

Lastly, dissemination must be set up at a wide and open scale. It will be achieved through:

- posting general information and main results on the public pages of the Action's website, such as:

  + news about the Action's progress (organisation, agenda, activities' processing outcomes...),

  + validated deliverables: printable version of reports or guidelines, synthesis

- publishing specific documents: intermediate and final reports, case study reports, proceedings, guidelines...

- publishing articles (news, summaries) in non-technical publications.

H.3 How?

The Action will take into account confidential questions and property rights and lead the dissemination tasks according to the COST rules edited in the guidelines "COST 4115/10", chapters 8 and 9.

The required elements for the Domain Committee and COST office's reports will be prepared and given by the Management Committee. Beyond this formal information, all the Action's productions will be given a wide circulation at a national or local level; each participant will be an intermediate with his or her colleagues and professional contacts.

While the COST Action is going on, the dedicated public website will be the main tool of dissemination, for information about the tasks' progress, the meetings and other events, as well than for outcomes' publication. A way to keep this tool available could be the integration in an existing website dealing with the Action's topics.

The Action's historic and deliverables could also be published on websites of both the Action's members and the international organisations dealing with the LRT systems.

The participation of the Action's members in national or international conferences (e.g. European Transport Conference - ETC, Transport Research Arena - TRA, Transport Research Board -TRB), as well as articles in specialised press will be considered as an opportunity to communicate on the Action and its results, while it is occurring and afterwards.

Moreover, to foster the dissemination of the specific publications (reports, guides…) they will be translated in national languages.

Finally, a part of the results should consist in the provision of tools (collection of methods, indicators…) whose implementation will be the dissemination of the Action's results.