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INNOTRACK

Integrated Project (IP)

Thematic Priority 6: Sustainable Development, Global Change and Ecosystems

D7.1.4: Report on the dissemination activities and proposal for further actions/update

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Final

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Dissemination Level		
PU	Public	X
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	

Table of Contents

Table of figures.....	3
Glossary	4
1. Executive Summary.....	5
2. Introduction	7
3. Dissemination platform & activities.....	8
3.1 Dissemination platform.....	8
3.1.1 <i>Mediums of dissemination</i>	8
3.1.2 <i>Network of Industries and Infrastructure Managers</i>	9
3.1.3 <i>General Dissemination Timeline</i>	9
3.2 Dissemination activities – past, present & future	9
3.2.1 <i>Public website & INNOTRACK Extranet & KMS</i>	9
3.2.2 <i>Newsletters and press releases</i>	10
3.2.3 <i>Events and conferences</i>	11
3.2.4 <i>Technical leaflets & publications</i>	13
3.2.5 <i>Links with past and current EU-funded projects and also with UIC projects</i>	13
3.2.6 <i>Preparation of Summary Reports</i>	14
3.2.7 <i>Training activities</i>	15
3.2.8 <i>Information exchange with provider of software solutions in the area of INNOTRACK</i> ..	15
3.3 Guidelines (specific deliverables).....	15
3.4 Industry-meets-SP6 & 'Systems Approach to LCC'	17
3.5 Analysis of project impact and how this is facilitated by dissemination and implementation	20
3.5.1 <i>Examples of input to standardisation from WP2.1</i>	20
3.5.2 <i>Examples of input to standardisation from WP4.2</i>	21
3.5.3 <i>Other important factors to facilitate dissemination</i>	22
4. Conclusions	23
5. Annex – Dissemination timetable	24

Table of figures

Figure 1 – Evolution of dissemination platform	7
Figure 2 - Areas of the guidelines in Sustainable bridges in red.....	16
Table 1 - Guidelines from INNOTRACK SP4 (this table is not definitive yet)	17

Glossary

Abbreviation/acronym	Description
KMS	Knowledge Management System
LCC	Life Cycle Costing
RAMS	Reliability, Availability, Maintainability and Safety
TSI	Technical Standard for Interoperability
UIC	Union of International Railways
UNIFE	Association of the European Railway Industries
EFRTC	European Federation of Railway Track Work Contractors
ERA	European Railway Agency
TEG	Track Expert Group: a UIC expert group dealing with tracks
LICB	Lasting Infrastructure Cost benchmarking: a UIC project

1. Executive Summary

A dissemination platform was established at the start of the project to ensure effective exploitation of project results by partners and implementation of technologies within infrastructure administrations and industries. The platform functions continuously as an essential tool for the implementation of products and methods developed. While the majority of dissemination takes place towards the end of the INNOTRACK project, a number of activities have already taken place. Past, current and future activities are reported and described in this report.

A number of mediums of dissemination have been and are continually being employed:

- Public website and INNOTRACK Extranet & KMS
- Newsletters and press releases
- Events and conferences
 - Project Presentation in related conferences & events
 - Preparation of internal conferences and workshops
 - The yearly General Assembly & Workshop is one of the most important forums for disseminating information inside and outside the INNOTRACK project.
- Technical leaflets & publications
 - Through strong links with the UIC TEG relevant results are implemented in UIC-leaflets and guidelines which in turn form the basis for European standards and Technical Standards for Interoperability (TSIs).
- Links with past and current EU-funded projects
- Guidelines
 - A proportion of the deliverables is assigned as guidelines and will be prepared in a form of instructional manuals suitable for direct implementation of the results.
- Databases
 - Several of the deliverables are databases. It is a clear goal of the project that the databases shall be used outside of INNOTRACK. Therefore a special review has taken place and future reviews will continue to take place.
- Preparation of Summary Reports
 - In order to make the progress of INNOTRACK easier to grasp, a summary report containing all Executive Summaries of the deliverable reports has been brought forward. This document is a living document that is enlarged throughout the project. The report is available from the public website.
- Training materials
 - Training is an essential tool for implementation of project results and there is a link between dissemination activities and training activities. A special activity has been undertaken to contact several training centres in different European countries.
- Industry-meets-SP6
 - Joint Industry-Railways collaboration on Life Cycle Costing to achieve sector-wide confidence in LCC modelling and develop a 'systems approach' to Life Cycle Cost Analyses with broad participation.
- Current contact with IMs outside of INNOTRACK
 - The Track Expert Group in UIC plays an important role in the review, dissemination and implementation of results from INNOTRACK. A special subgroup has been established. This subgroup consists mainly of IMs outside of INNOTRACK. The group has a special folder on the INNOTRACK KMS.

A dissemination timetable sets out past, current and future activities. UNIFE has been working actively with its experts committees and UIC with its Track Experts Group in providing periodic work progress updates and results.

2. Introduction

The dissemination platform is a key component of the broader area of dissemination and training, and involves communicating the INNOTRACK project's progress and results to its target audiences, both inside and outside of the project. Dissemination activities are crucial to achieving implementation of the products and technologies developed in the project and demonstrating genuine LCC reductions.

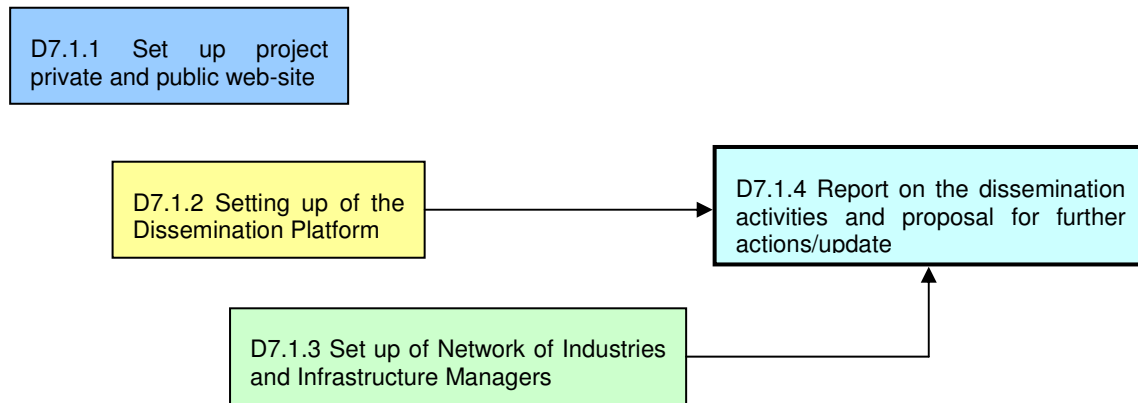


Figure 1 – Evolution of dissemination platform

This document D7.1.4 “Report on dissemination activities and proposal for further actions/update” draws on the work completed in D7.1.2 “Setting up of the Dissemination Platform” & D7.1.3 “Planning Report: set up of Network of Industries and Infrastructure Managers”. D7.1.2 deals with the set up and planning of dissemination activities as foreseen at the beginning of the project and D7.1.3 describes the Industry and Infrastructure Manager networks through which dissemination is channelled to reach its target groups. D7.1.4 (this document) reports on dissemination activities which have taken place or that are planned for the remainder of the project in the scope of these preceding deliverables.

The report focuses on the key media of dissemination and describes in detail the important activities which are considered central to implementation of results. It is compiled by UNIFE and UIC who are responsible for the dissemination activities and lead the Industry and Infrastructure Manager networks. It also describes the ongoing collaboration between Industry and SP6 on a ‘systems approach to LCC’ which should lead to broad-based confidence and participation in the LCC evaluation process.

In connection with the INNOTRACK project review held on the 13th November 2008, an additional and updated analysis was requested from the EC. This analysis is implemented into the updating of this document, in particular in a new section 3.5.

A last report on dissemination activities is envisaged at the end of the project. That report will draw on this document and will list and describe dissemination activities which occurred over the entire project lifespan. A section will be dedicated to the implementation of results to that date. Further, a section will be dedicated to future activities beyond the life-span of the INNOTRACK project.

3. Dissemination platform & activities

3.1 Dissemination platform

A dissemination platform was established to ensure the effective exploitation of project results by partners, and also the implementation of new technologies within railways. The dissemination platform was set up near the start of the project and details were published in deliverable D7.1.2 Setting up of the Dissemination Platform. A dissemination timetable was derived that set out past, current and future activities.

3.1.1 Mediums of dissemination

The following mediums of dissemination are employed in the project. Each medium is described later in more detail:

Public website and INNOTRACK Extranet & KMS

- Working documents & deliverables are available for partners to download & review.
- Finished deliverables & guidelines approved for dissemination to the public domain are available via the public website: <http://www.innotrack.eu>

Newsletters and press releases

- An ideal medium to keep the Railway Community informed about the project.
- UIC e-news & UNIFE newsletters/publications: inclusion of INNOTRACK articles
- Project & internal (sub-project) newsletters e.g. in the form of an updated compilation of Executive Summaries of finalized deliverables.

Events and conferences

- Major railway events enable the presentation of INNOTRACK latest and past results
- Internal UIC & UNIFE events and assemblies

Technical leaflets & publications, European codes

- UIC-leaflets and guidelines incorporate the results and form the basis for European standards and Technical Standards for Interoperability (TSIs).

Links with past and current EU-funded projects and also with UIC projects

- Urban Track
- InteGRail
- UIC LICB project
- UIC Asset management working group
- UIC working group: Switch and Crossing Maintenance

Guidelines

- A proportion of the deliverables is assigned as guidelines and will be prepared as instructional manuals in a form suitable for direct implementation of results.

Preparation of Summary Reports

Training materials

- Training is an essential tool for implementation of project results and there is a link between dissemination activities and training activities.

Industry-meets-SP6

- Joint Industry-Railways collaboration on Life Cycle Costing to achieve sector-wide confidence in LCC modelling; first phase focuses on reaching consensus between Industry and Railways on LCC model and key parameters; second phase deals with the 'systems approach' to LCC.

3.1.2 Network of Industries and Infrastructure Managers

The Network of Industries and the Network of Infrastructure Managers have been established to ensure a wide spread of results outside of the consortium. UNIFE manages the Network of Industries, which is made up of its various committees and the EFRTC, while UIC manages the Network of IMs, which is formed by IMs and Railway Undertakings from UIC, CER and EIM.

UNIFE has been working actively with its committees in providing work progress updates: EFRTC who is already involved in the project in WP5.1 is closely following INNOTRACK and regularly receives information on other project components. UNIFE's other committees; including the Technical Plenary, UNIRAILINFRA infrastructure committee and the Infrastructure TSI Mirror Group are groups of industry experts who are regularly informed on the project's work progress and results.

UIC has been working actively with the Track Expert Group (TEG) and other committees such as Asset management working group.

The TEG has continuously been informed of the results from INNOTRACK. A subgroup of TEG is also active in reviewing relevant deliverables. This has several advantages. First, it is important in keeping a high quality of the reports. The second reason is that it is a good means to pave the way for dissemination and implementation to make the result known to the end-users – the IMs – in advance. It should be noted that the TEG consists of senior track engineers from nearly all European railways. A positive response from the TEG is therefore necessary if field implementation of INNOTRACK results should be considered at all by the European infrastructure managers!

The Infrastructure Forum is the decision body of UIC. The Infrastructure Forum is continuously being informed about the result from INNOTRACK at their semi-annual meetings. These information sessions have also been a good way to get strong support from the UIC members.

3.1.3 General Dissemination Timeline

The dissemination activities are ongoing during the entire project duration. Accordingly, the general dissemination timeline (Annex 1) is adapted and updated periodically. It serves as a communication plan and includes all past and future dissemination actions.

3.2 Dissemination activities – past, present & future

3.2.1 Public website & INNOTRACK Extranet & KMS

A web-portal was established at the beginning of the project. It consists of two components:

- Public website, which is the "project window" to a large audience. The public website provides general project information, news & events, organisational structure, list of partners & contacts and results as they become available to the public.
- Knowledge Management System (also called private website) which is provided as an online internal working tool to support the collaborative work of the consortium members.

The web-portal is a good channel to make the result easier to reach for a wider range of people; for example top managements and railways not participating in INNOTRACK.

A detailed description is included in the deliverable D7.1.2 Establishment of Dissemination Platform.

Of the deliverables produced up until month 24, there are approximately 24 deliverables available for download by the general public under the results section of the public website.

The Knowledge Management Systems (or KMS) provides members inside the consortium with access to all working & official documents, meeting documents, draft & final deliverables, presentations and a directory of all personnel involved in the project.

The INNTRACK members are divided into groups based on their areas of work. Group mailing ensures that members of a group receive all correspondence related to meetings, events and deliverables. The Coordination Group and Steering Committee currently receive information via group mailing.

3.2.2 Newsletters and press releases

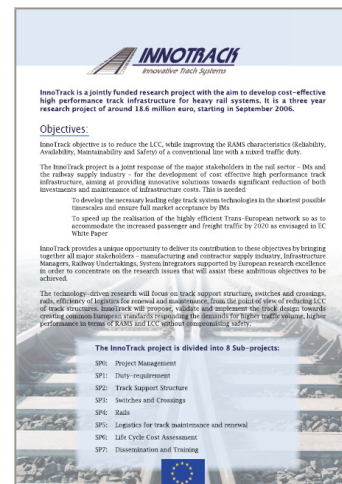
UIC e-news newsletters are sent out periodically with information about INNTRACK, including key milestones reached, current work status and news of upcoming events.



UIC e-News n°23
Cf pages 3-4



UIC e-News n°28
Cf pages 6-7



INNTRACK flyer

UNIFE has issued the following publications since the beginning of the project.

- Semi-annual newsletters featuring a half page article on the status of INNTRACK; particular attention is given to the work central to achieving the high-level objectives, such as LCC.
- Information on INNTRACK is also included in newsletters of associated organisations, such as the European Federation of Railway Trackwork Contractors (EFRTC).



UNIFE newsletter featuring INNTRACK

EFRTC newsletter

Two flyers have been produced so far and have been distributed at UIC and UNIFE events and at the InnoTrans fair. They are clear and simple and convey general information about INNOTRACK, key objectives and consortium partners. The revised flyer produced just before InnoTrans 2008 included some key achievements to date.

A project mid-term newsletter was produced in September 2008 just ahead of the InnoTrans 2008 fair; it gave a colourful snapshot of the (then) current status of the project and key results achieved to date. An updated newsletter and revised flyer with updated achievements is planned for mid 2009.

Press releases

At the project kick-off, a UIC-DB-UNIFE joint press release, covering the official and political launch of the project (at DB HQ on 21 September in Berlin) was distributed to journalists and media who attended the InnoTrans Fair in September 2006 in Berlin. It was also sent out to journalists worldwide by e-mail.

Press articles

Several press articles have been published since the project commenced. Most of them are internal documents within the participating organisations.

Future publications

The following future publications are envisaged in the near future:

- **Summary of deliverables booklet:** A summary document of deliverables produced to date has been compiled and has been regularly updated. The document is made up of the Executive Summaries of each deliverable. This provides a concise and easy to read report on the content of the deliverable and its key results. The document will continue to be updated periodically so that the latest deliverables are included. It is available to both project partners and external partners and will serve as a first point source of technical information from where more detailed information can be obtained.
- **Flyers and project newsletters:** Updated flyers will be released with updated information from current partners, a revised project description and general summaries of what has been achieved to date. The new flyer will be distributed at all upcoming relevant infrastructure-related events up until completion of the project. A project newsletter will be also produced for distribution inside and outside of the project focussing on progress, recent events and key results delivered.
- UIC and UNIFE (and associated organisations') newsletters will continue to feature articles on the current status of INNOTRACK, as described above.

3.2.3 Events and conferences

The project has been featured at the following UIC / UNIFE railway events:

- WCRR 2006 (Montreal 5-7th of June 2006). The idea behind the project was presented.
- UIC Joint session of Track Experts Group & Panel of Structural Experts (13th of Feb 2007 and 13th of February 2008)
- UIC Infrastructure Forum (Paris, 22nd of May 2007, 26th of October 2007, 29th of April 2008 and 29th of October 2008)
- RailTech Russia (Moscow, 18-20th of June 2007); Among others, the theme of "Integrated European rail systems for passenger & freight" was discussed during the conference)
- IHHA 2007 (Kiruna, 11-13th of June 2007)
- Innovative Track Systems - Rail Innovation (in Lille France 12th of June 2007)
- ÖVG Österreichische Verkehrswissenschaftliche Gesellschaft (in Salzburg, Austria 25-27th of September 2007)
- INNOTRACK General Assembly & Workshop (Paris, 28th November 2007)

- WCRR 2008 (hosted by KORAIL in Seoul, 18-20th May 2008). Some preliminary project results were presented.
- Nordic Seminar in Railway technology (in Hook Sweden 18-20th May 2008)
- InnoTrans 2008 (September 2008, Berlin)
- General Assembly & Dissemination Workshop (November 25 2008, Brussels)
- CM2006 in Brisbane

The following future events are planned:

- IHHA2009 in Shanghai (22-25 of June 2009 a specific INNOTRACK paper sent in and accepted)
- CM2009 in Florence 15-18 of September 2009 with some 10 INNOTRACK related papers. An overview paper on INNOTRACK has been accepted.
- UIC Infrastructure Forum (Paris, April 2009)
- Special Workshop for the Track Expert Group on the 14th October of 2009.
- General Assembly & Dissemination Workshop planned in November 2009.
- A special issue of IMechE Journal of Rail and Rapid Transit – the most renowned scientific journal in the field of INNOTRACK.

INNOTRACK (General Assemblies & Workshops)

Each year following reporting, a General Assembly and dissemination Workshop takes place. The GA gathers all project partners who receive overall project information and a report on progress towards achieving the long-term objectives. The Workshop brings parties from outside the project, along with project partners to receive detailed information, SP by SP, on the current progress and results from each work package. The first GA & Workshop was held in late November 2007 and attracted almost all project partners and a number of external European Infrastructure Managers.

The second GA & Workshop was held on the 25th of November 2008 in Brussels and focussed on the results achieved within INNOTRACK so far.

A third GA & Workshop will be held in November 2009 and will focus on a summary of the results from INNOTRACK and their practical relevance and implementation.

Technical workshops

Technical workshops are an opportunity to share technical results, stimulate discussion and to gather contributions and technical expertise from the members. The following workshops have taken place:

- SP1 Workshops on a national basis (on maintenance & renewal expenditures)
- Workshops corresponding to the major milestones of each sub-project
- Dissemination workshops with CER / EIM (WP5.1, UIC Paris, June 18th 2008)
- SP6/SP7 workshops/training concerning LCC (held at UIC in Paris 26-27th of February 2008 and on the 19th of September 2008)
- SP5 joint workshop IMs and contractors (held at UIC in Paris 18th of June 2008)

Further workshops focusing on interfaces between the SPs, LCC and standardisation are planned. A workshop on proposals to standards (D7.3.4) is scheduled to take place at M36, organised by UIC.

It should be noted that in addition to the “official” workshops above, there are of course a multitude of informal workshops within industries and infra-managers where it is discussed how results from INNOTRACK can be implemented. As just a single example, there was one such workshop at Banverket in September where it was discussed how research in INNOTRACK could be adopted in the revision of Banverket’s regulations on allowed wheel flats.

InnoTrans

InnoTrans is the biggest Railway Infrastructure event in Europe. It takes place every two years. The kick-off of INNOTRACK was co-ordinated with InnoTrans 2006. Two years later InnoTrans 2008 was an ideal forum to present INNOTRACK and its results. A joint UIC-UNIFE stand showcased INNOTRACK and was accompanied by a placard, posters, all dissemination materials as well as a dedicated project presentation. The event was attended by the railway supply industry and European (and International) Railways and was therefore an ideal forum to link end users with the technologies and results from the project.

3.2.4 Technical leaflets & publications

UIC-leaflets and guidelines incorporate the results and form the basis for European standards and Technical Standards for Interoperability (TSIs).

Links between the project and European Standardisation bodies (CEN & CENELEC) are established. These will be described more in detail in D7.1.5.

The Technical Management Platform (TMP) in which both UIC and UNIFE are members is tasked with monitoring all standardisation activities. It is an appropriate forum for presenting INNOTRACK results and proposing additions to EN standards if appropriate. As a first example a working group (TC256-SC1) on hollow sleepers has been initiated. The INNOTRACK deliverable D3.2.2 is acting as a starting point in the derivation of a future standard.

There is a link between the project and the TSI for Infrastructure made via the UNIFE Mirror Group, which monitors the drafting of the TSI and is presented with regular progress update on INNOTRACK. Common areas of the INNOTRACK project and Infrastructure TSI are made note of to:

1. Ensure the TSI doesn't preclude innovations being developed in INNOTRACK; in the case of a conflict between the TSI and the project, the Mirror Group will inform the ERA Working Party (tasked with writing the TSI) and propose necessary amendments. An assessment of common areas was undertaken at around six months into the project but no serious conflicts have been sighted.
2. Identify areas of the TSI where results from the project may be incorporated at a later date. It is expected (and has already been shown) that the INNOTRACK project will develop methods that will be used Europe-wide and therefore should be incorporated into standards.
3. Link the project with the TSI in the life cycle cost assessment phase. It has been suggested by the UNIFE Mirror Group to undertake an LCC assessment on a Category of Line as defined in the TSI to demonstrate a link between the two and the outcomes of the project are consistent with the TSI. This process has begun and is ongoing with LCC assessment expected to be further undertaken in 2009.

3.2.5 Links with past and current EU-funded projects and also with UIC projects

Links with other running projects are maintained. The two most notable projects are Urban Track and InteGRail, both of which UNIFE is involved in. UIC is since 10 years involved in a project "LICB" and has also just started an Asset management working group.

Urban Track

There is a close association with the Urban Track project, which is a sister project of INNOTRACK focused on Urban rail infrastructure applications but with similar objectives, particularly regarding LCC target reductions. Established in mid 2007, collaboration between INNOTRACK and Urban Track was established to foster links between the two projects, in particular to:

- Pursue common approaches or "cross-standardisation" on LCC between both projects.
- Work towards a minimal comparability of LCC results of both projects.
- Serve as a general 'link' between the projects on the innovative methods/technologies under development.

Three meetings have so far taken place; the first meeting was held in October 2007 which enabled both sides to present their projects in general and present the work done on LCC in particular. The outcome of the meeting was for each side to provide a description of the result depiction, results of benchmarks and feedback on software tools. The second meeting followed on from the work done in the first meeting with a greater emphasis on key impacts / cost drivers, demonstration of the tool and a presentation of some initial results. The actions from the meeting were for each side to prepare an example for the next meeting, a questionnaire on important items and testing & evaluation of the software tools. A third meeting was held in September 2008. It was a continuation of the work done in the previous two meetings with a greater emphasis on comparability of LCC results and discussions on cross-standardisation.

InteGRail

Links with the InteGRail project are being explored. To date, no formal links have been established between the two projects but a number of areas have been identified where links could be forged, namely in the area of track maintenance practices / logistics.

UIC LICB project

Links with the UIC LICB project are ongoing since the beginning of INNOTRACK. The project leader of LICB is engaged in INNOTRACK SP6. Further, the project leader of WP6.1 and WP6.4 is engaged in LICB. LICB stands for Lasting Infrastructure Cost Benchmarking and started 1996 under the name InfraCost. Today 14 IMs who operate a railway network with more than 113,000 kilometres of track are participating. The IMs participate in LICB and deliver information each year. This means that it is possible to identify trends over long time.

The main benchmarking area of LICB is the analysis of maintenance and renewal expenditures as an integrated LCC approach for entire railway networks.

UIC Asset Management working group

During 2008 an Asset Management working group has been set up within UIC. SP6 and SP1 in INNOTRACK have supported and will continue to support with input. Particularly, the databases created in SP1 and SP6 will be used by this group. A known fact is that the biggest problem with Asset Management is to have correct and relevant information to put into the Asset Management systems. INNOTRACK data will to a large extent mitigate this.

UIC working group: Switch and Crossing Maintenance

The group works with S&C maintenance. The outcome from the group is guiding principle for S&C. Some result from INNOTRACK can implemented through this group.

3.2.6 Preparation of Summary Reports

Internal reports

At months 3, 9, 15, 21, 27 and 33, all partners must answer a very simplified one-page questionnaire covering a 3-month period (therefore called a 3-monthly report), where they must confirm that work effort and consumption of resources are as planned. This information is used to gain an overall picture of the current status of the project and to communicate to all partners and externally.

External reports

At months 12, 24 and 36, partners must provide detailed information on work progress and resource consumption over the previous year. The information is gathered from all partners and is submitted to the Commission for evaluation. Extensive feedback is provided to partners following the evaluation, enabling communication of preliminary results and project progress within and outside the project. UIC and UNIFE communicate the results from reporting to their respective networks and committees. Reports for the first two years have now been finalised.

3.2.7 Training activities

Training is an essential tool for implementation and there is a link between dissemination activities and training activities. This is especially important for the railways because of the need for training on many railway specific questions. It is also important to consider the reality regarding language skills. Most training concerning track and substructure must be held in the native language to obtain good implementation of the results. This means that the national training centres have an important role to fulfil.

However, as training is covered in a separate work package (WP7.2 Training Platform), the content of training activities will be detailed there. Training activities of relevance to dissemination include web-based learning and training workshops in both technical areas and in life cycle costing. The project guidelines will form a central component of training materials.

3.2.8 Information exchange with provider of software solutions in the area of INNOTRACK

A lot of software is today developed to manage huge amounts of data in order to make information more available for decision makers. Contacts have been taken with a leading provider of software in the area. The purpose is to see if modern tools can support implementation of parts of the results from INNOTRACK.

The information exchange can lead to some demonstration examples. A definitive decision will be taken in the beginning of February 2009.

3.3 Guidelines (specific deliverables)

The project has set aside about 20 of a total of 131 deliverables to be assigned as guidelines. They will be instructional manuals prepared in a form suitable for a more direct implementation of results. The guidelines will often take the form of handbooks or manuals and will feature a summary of the INNOTRACK results and instructional descriptions (with relevant diagrams and tables) on implementation of the products or methods described. Any background material not necessary for implementation will be housed in appendices or supplementary documents, which can be given as necessary via references in the guideline.

Guidelines will hopefully be translated within the project from English into at least three other European working languages: French, German & Swedish. Translation may be made into other languages subject to project resources and cooperation from national training bodies that may be willing to assist with translation services. Other possible target languages for guidelines include Spanish, Czech & Italian.

An example of the use of guidelines as a key means of disseminating and implementing project results is the previous European funded project '**Sustainable Bridges**'.

The 'Sustainable Bridges' project has produced four main guidelines namely:

- Guideline for Inspection and Condition Assessment of Existing Railway Bridges - SB-ICA (2007)
- Guideline for Load and Resistance Assessment of Existing European Railway Bridges - SB-LRA (2007)
- Monitoring Guidelines for Railway Bridges - SB-MON (2007)
- Repair and Strengthening of Railway Bridges - Guideline - SB-STR (2007)

A lot of extra work has been carried out on these four guidelines. For example extra reviewing has been done in order to assure best quality. Also the layouts have been paid special attention to. A lot of instructive pictures have been included. An example showing this is the defect catalogue where different bridge material is presented in a structure from contamination to detail picture of examples. Another example is the Non Destructive Toolbox where a concluding page describes the methods of testing from field of application through description, physical principle, limitation and more to give the

bridge engineer an overview of the method. Additional material is referred to so that the bridge engineer easily can find more information. All guidelines have pictures of good quality to make them easy to access. Below in – Figure 2 – it is shown where you can see how the different guidelines fit into the way of assessing bridges.

In INNOTRACK the results are much more fragmented. Therefore there will be more, but less comprehensive guidelines. Another difference is also that the level of education and experience with high-level technical reports in the target group is generally lower as compared to the bridge sector. Therefore there is a greater need for translations and training activities.

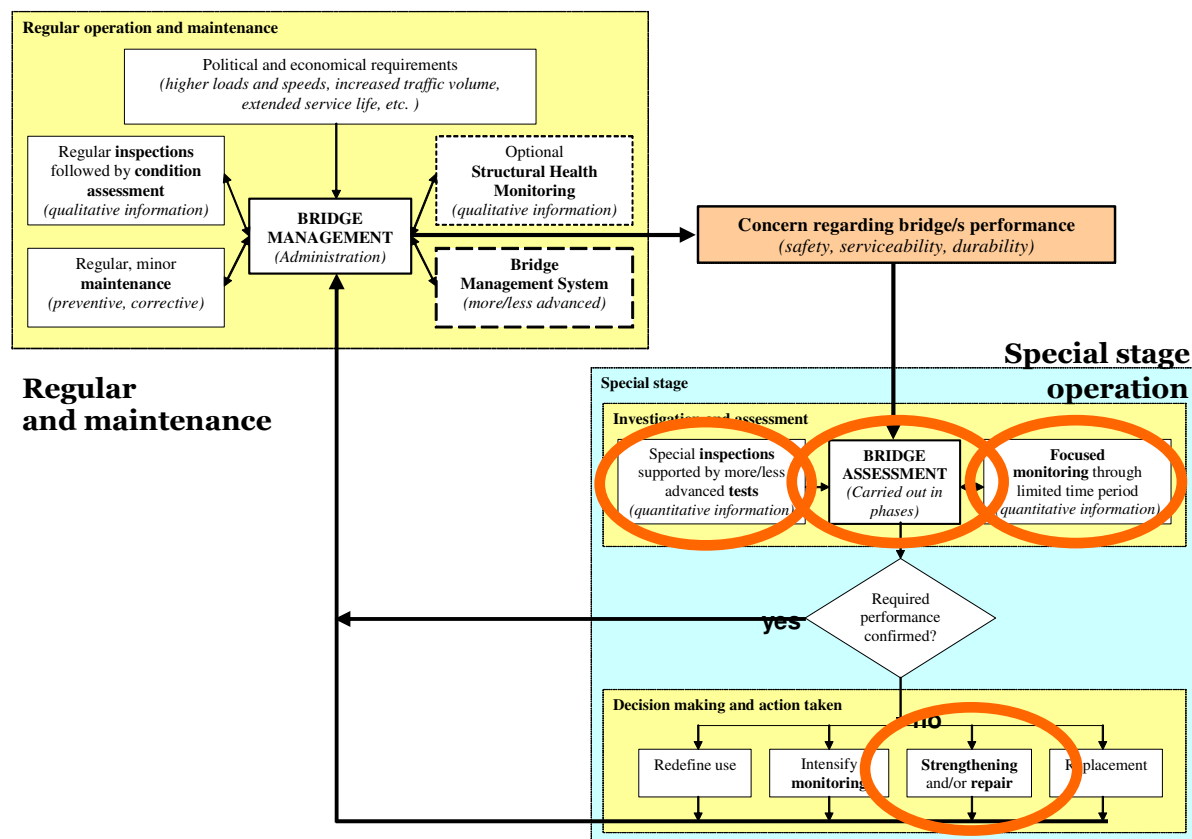


Figure 2 - Areas of the guidelines in Sustainable bridges in red

In table 1 below you can, as an example, see the planned guidelines of the project. The full list of planned guidelines is also implemented in the overall list of deliverables and milestones.

WP	Primary Deliverables	Proposed for Guidelines and for consideration for LCC Evaluation
2.1	D2.1.5	Methodology of geophysical investigation of railway track defects
2.1	D2.1.11	Methodology and evaluation for stiffness assessment
2.1	D2.1.12	Numerical modelling of the track subgrade Part 1: final report on the modelling of poor quality site Part 2: final report on numerical modelling
2.2	D2.2.5	Subgrade reinforcement with columns Part 1: vertical columns Part 2: inclined columns
2.2	D2.2.6	Subgrade reinforcement with geosynthetics Part 1: enhancement of track using under-ballast geosynthetics Part 2: Improvement study of transition zone on conventional line
3.1	D3.1.5	Summary of final results from optimization and recommendations for S&C design
3.2	D3.2.2	Functional requirements for hollow sleepers for UIC 60 switches
4.1	D4.1.3	Comparative suitability of Grades R260, R350HT, 400HB rail steel grades for different track and traffic characteristics
4.2	D4.2.6	Minimum actions for selected rail defects
4.4	D4.4.3	Multifunctional inspection equipment
4.5	D4.5.1 to D4.5.3	Grinding strategies & target profiles
4.5	D4.5.4	Friction management methods
4.6	D4.6.4	Gas Pressure Welding
4.6	D4.6.6	Comparative performance of different weld types
4.6	Not assigned	Semi-automatic repair of discrete rail defects e.g. Squats
5.1	D5.1.7	Public report on construction, maintenance & renewal activities - conduct of interface between infra managers and contractors and suggested improvements
6.5	D6.5.4	Guidance for LCC and RAMS analysis

Table 1 - Guidelines from INNTRACK SP4 (this table is not definitive yet)

3.4 Industry-meets-SP6 & 'Systems Approach to LCC'

A collaborative forum termed 'Industry-meets-SP6' was initiated by Industry in mid-2007 to increase industry participation in the area of Life Cycle Cost evaluation and to achieve an industry-wide consensus on an LCC tool that meets the interests of both Railways (who make up SP6) and Industry.

The first phase of the collaboration focused on the LCC model developed by DB used in the project. A presentation on LCC theory and the basis of the model was given with discussion on key parameters and boundary conditions. Non-availability costs were recognised as important cost drivers and it was considered necessary to include future traffic growth in the model. In addition, a joint Industry-IM example confirmed that the model is valid and also capable of absorbing additional cost elements. It was agreed that an overall system approach that combined the different components was necessary to demonstrate genuine significant LCC reductions – this would be the target of the second phase. This first phase consisted of three meetings, each well represented by Industry and SP6.

The second phase – systems approach to LCC calculation – continued from the work done in the first phase of Industry-meets-SP6 and is currently underway. It focuses on building a combined system for LCC calculation: firstly, the generation of reference systems and optimised systems at SP level with harmonisation between SPs; secondly combining the different optimised systems at SP level into an overall system(s). It is currently at the stage where SPs are building reference systems and optimised solutions as a first step to LCC evaluation of innovations. Parallel to these activities the LCC software is being finalised with a number of partners involved in the Industry-SP6 process opting for software purchase and active participation in the LCC calculation. The current situation regarding software use and purchase is discussed in deliverable D7.2.1 (Establishment of Training Platform).

A working document accompanies the meetings which have taken place. It is in the process of being updated and the current version (last updated at the end of the first phase) is available as a separate document titled: INT-SP6-19-070925-d1-LCC guidance.doc. It is available from the KMS under SP6 -> "SP6 / Industry" along with all associated presentations and meeting minutes. The first page is shown below. Minutes from the five meetings that have taken place are available upon request.



Project no. TIP5-CT-2006-031415O

INNOTRACK

Integrated Project (IP)

Thematic Priority 6: Sustainable Development, Global Change and Ecosystems

LCC guidance

Due date: 08.10.2007

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Start date of project: 1 September 2006

Duration: 36 months

Organisation name of lead contractor for this deliverable: DB

Revision [draft 1]

Project co-funded by the European Commission within the Sixth Framework Programme (2002-2006)		
Dissemination Level		
PU	Public	PU
PP	Restricted to other programme participants (including the Commission Services)	
RE	Restricted to a group specified by the consortium (including the Commission Services)	
CO	Confidential, only for members of the consortium (including the Commission Services)	



INT-SP6-19-070925-
d1-LCC guidance

The Industry-meets-SP6 initiative has been instrumental in increasing the profile and importance of LCC evaluation which has gathered the interest and participation of both Railways and Industry.

3.5 Analysis of project impact and how this is facilitated by dissemination and implementation

Firstly it is important to understand the nature of a project like INNOTRACK. It is a three year project with a common input from the IMs and the industry. This was described in the DoW, which took about two years to draft from idea to decided DoW and start of project. The DoW describes a number of problems that can be mitigated in various ways. It is not one idea or product that is the basis of the assertion that a reduction of 30% of LCC in track areas related to INNOTRACK. It is several enhancements that together will make the reduction possible to attain.

Another important effect of INNOTRACK is that a better understanding of deterioration means that a bigger portion of planned maintenance is possible to achieve. Today many railways have nearly 40% not planned maintenance. It is not unrealistic with a reduction of 10% in the track area if the result from INNOTRACK is introduced. Since we knew that planned maintenance is approximately 20% to 35% of not planned this is a significant reduction. If we also take into account that planned activities reduces traffic disturbance this is an very important effect.

The level of 30% can of course be discussed but related to LICB reports where different countries are compared in a very well documented study that has been going on for more than 11 years, it is clear that the potential of cost reduction is significant for most railways and that 30% is quite a low estimation.

A benchmark where different heavy haul operators are evaluated shows in detail that for example rail performance can be increased with much more than 30% if your maintenance routines are changed.

The big differences between the infrastructure managers and operators are maintenance routines and technical demands. This is addressed in INNOTRACK. The idea behind SP1 was to identify the most cost driving European problems within the railways. SP1 did not stop with identifying cost drivers, but also has been identifying root causes and priorities for innovation together with the technically oriented SPs. The question now is whether INNOTRACK covers those identified problem areas? The answer is clearly YES.

The consequences of this are that the projected cost savings due to INNOTRACK results are reasonable or even low estimations.

How does INNOTRACK assure that the results are possible to implement when the project is ended? This question is more crucial. There is always a danger that result just end up as shelf warmers. To avoid this, several activities have been taken in INNOTRACK.

The most important is the review process. Here the scientific basis and the "implementability" are ensured.

We all know that scientific reports are not automatically ready for implementation. Therefore the review among the key persons in the railways through the TEG is an important way to pave the way to implement the result from INNOTRACK.

Other important factors to take into account are to assure quality and to ensure traceability of corrections and validations. This is also taken care of in a professional way in INNOTRACK.

From experience we all also know that implementation is the Achilles heel of many R&D projects. Therefore implementation is planned for in advance through the guidelines which have high a quality with needed background documents clearly referred. To assure this, the review template contains a specific session on suitability to act as a guideline.

In table 1 you can see deliverables planned to be drafted as guidelines. The impact of these can of course be presented separately. However, since most of these reports are currently in a preparation stage, this would require rather extensive extra work and to some extent result in guesswork. Instead we have chosen to show the impact of INNOTRACK in two examples.

3.5.1 Examples of input to standardisation from WP2.1

Track stiffness is one of three open questions in the TSI for Infrastructure.

The INNOTRACK project leader was asked by ERA, EIM, UNIFE, CER and several other organisations to present the current situation concerning track stiffness in order to give them advice. The current situation and what can be expected from INNOTRACK was explained at this meeting. A short review is given here:

The background why track stiffness is an open question and shall remain an open question is:

- Today the knowledge on European level is too low to put limit values on track stiffness
- Only a few countries have done tests and do stiffness measurements. The measurements from different countries are not coherent.
- In the EC-projects EUROBALT and EUROBALT II, a theoretical base was laid (participating railways: BV, DB, NR and SNCF)
- Concerning the vertical elasticity of BALLASTLESS TRACK, there are investigations on a European level

Which are the questions to be solved?

- How to measure
- How to evaluate results
- Limit values for stiffness for different frequencies
- Limit values for stiffness variations (the most important question)
- Natural variation of track stiffness is a reality. How to account for this?

In INNOTRACK track stiffness is included in SP2. In INNOTRACK, track stiffness will not be finally solved but a big step forward will be taken. Especially the two first questions will be focused on. Already today track stiffness results are used in several areas. One is when upgrading secondary lines at reasonable costs. Another is to eliminate too high stiffness variations along the track. In INNOTRACK we will take a next step and increase the use of stiffness measuring applications.

The INNOTRACK deliverables could and should then be used to start CEN work. The proposal on the information meeting in Brussels was that somebody has to take an initiative and start working with codes in this important area. In this initiative the outcome of INNOTRACK is crucial, if not a necessary pre-requisite.

3.5.2 Examples of input to standardisation from WP4.2

To give an idea of which input to guidelines, codes and standardization that can be expected, we take the expected input from a single work package (WP4.2) as an example.

The expected input regards:

- design of enhanced insulated joints
- allowed vertical misalignments of insulated joints (also relevant for welds)
- maintenance rules for rail corrugation (allowed corrugation magnitudes as functions of speed etc)
- maintenance rules regarding squats (allowed size, intervention times etc)
- allowed sizes of squats (critical sizes with respect to rapid growth, high vertical magnitudes etc)
- maintenance rules regarding inspection for rail cracks based on accounting for stochastic scatter in loading, material strength etc
- maintenance rules regarding inspection for rail cracks based on measured wheel loads
- allowed wheel impact loads
- guidelines on the influence of wheel/rail hardness on resulting wear

The magnitude of input will of course vary between the WPs. Just to give an idea, additional examples from SP4 are that the work already carried out in WP4.5 will have a significant influence in the standardisation of grinding profiles. The work in WP4.3 will significantly improve the comparability and accuracy of laboratory tests and lead to better evaluation methods of material damage and possibilities to translate laboratory results to predicted field behaviour.

The list can go on. There are similar expected outcomes from all other work packages in INNOTRACK. To compile an exact list would be very demanding at this stage (and the value questionable due to all work not being carried out yet), but this should give a relatively good overview of what can be achieved within a single WP. In the end of the project this compilation will of course be made.

3.5.3 Other important factors to facilitate dissemination.

The most important tool in INNOTRACK to implement the results is the way that we currently work. As said earlier the INNOTRACK results contain a lot of improvements. Therefore significant resources will be needed to implement the result. This question has been discussed in INNOTRACK. On the two last meetings with the Steering Committee the guidelines have been discussed. Today it tends to go in a direction that different parts will be implemented by different railways in the beginning so that the load of work for each railway can be low.

In addition, one very important group is, as said before, the Track Expert Group in UIC. The group has implementation of result from INNOTRACK as the prime priority for 2009. This means that the members are familiar with the result and also can support in implementing. The importance of this support can not be overestimated.

Finally, the open dialogue within the project and with other working groups, e.g. at UIC, UNIFE, in the scientific networks e.g. EURNEX is important. Through an open dialogue criticism and misconceptions can be discussed and mitigated at an early stage. This creates a trust in the INNOTRACK results and a familiarity with their consequences and usefulness.

4. Conclusions

A dissemination platform was established at the start of the project to ensure the effective exploitation of project results by partners and implementation and technologies within infrastructures. The platform functions continuously as an essential tool for the implementation of products and methods developed. A number of activities have already taken place. These have been reported and described together with planned future activities in the current report.

Dissemination activities have and will continue to be undertaken employing among others the following mediums:

- Public website and INNOTRACK Extranet & KMS
- Newsletters and press releases
- Events and conferences
 - Project presentation in related conferences & events
 - Presentation of INNOTRACK results at suitable forums
 - Preparation of internal conferences and workshops
- Technical leaflets & publications
- Communications with current and future EU-funded projects
- INNOTRACK Guidelines
- Summary Reports
- Training materials
- Industry-meets-SP6 workshops
- Special issue of the international scientific journal IMecE Journal of Rail&Rapid Transit.
- Communication with UIC and UNIFE workgroups
- Reviewing of INNOTRACK reports (by the IMs, the industry and the scientific community)

5. Annex – Dissemination timetable

<u>Event / Publication</u>	<u>Date</u>	<u>Responsible</u>
Workshops focusing on interfaces between the SPs, LCC and standardisation are planned	M30	SP1 and SP6
IHHA2009 in Shanghai – present the parts that also interests heavy haul audience	M33	UIC
A workshop on proposals to standards (D7.3.4) will be organised by UIC	M36	UIC
Special Workshop for the Track Expert Group	M37	UIC
CM2009 in Florence with some 10 INNOTRACK related papers	M37	Several SPs
A special issue of IMechE Journal of Rail and Rapid Transit	M37	UIC and SPs
Workshop/GA to present result in a general way	M38	UIC