

## **MANAGING LARGE INFRASTRUCTURE PROJECTS**

### ***Research on the Best Practices and Lessons Learnt in Large Infrastructure Projects in Europe***

#### **Executive Summary**

Transport networks are needed for modern economies to create wealth and employment. The need for mobility is ever-growing. Therefore, Europe has set up an ambitious programme of transport network projects. The European Commission has identified 30 trans-national axes, that cross the borders of the Union. In 2005 the EC estimated that the investment required to complete a true trans-European network to be approximately € 600 billion. Effective execution of mostly Large Infrastructure Projects (LIPs) is needed to complete this trans-European network. Apparently, realising these LIPs is difficult, since the EC reported repeatedly that the axes and projects face substantial cost overruns and time delays.

LIPs are complex in several ways. From inception to realisation these projects regularly take two decades or more. With a length of often tens or hundreds of kilometres it is an enormous task to design the work and to construct it. Most projects require different kinds of new technologies. The projects have an important impact on the environment and numerous shareholders and stakeholders are involved. In addition, the number of internal requirements (safety, noise-levels and aesthetics) and external requirements (health and environment) are continually increasing. As the project task is becoming more complex (people, planet, profit), the quality of the administration and the management of these projects have to improve correspondingly.

The NETLIPSE project focuses on the management and organisations of LIPs. NETLIPSE is an acronym for 'NETwork for the dissemination of knowledge on the management and organisation of Large Infrastructure ProjectS in Europe'. Core of the NETLIPSE project is the research of 15 LIPs. The NETLIPSE research shows unambiguously that knowledge exchange in Europe is scarce. When comparing the projects we found that often similar challenges are faced. The chance to learn from other projects is a terrain yet to be developed. At the beginning of the NETLIPSE project, we expected that cultural differences would make it difficult to compare the 15 projects. Yet the research proves that many lessons learnt and best practices are independent of the specific national framework conditions, context and cultural habits. In fact, there are many similarities between the best practices and lessons learnt found in the 15 projects. The partners involved in the NETLIPSE project are now convinced that a network that focuses on knowledge exchange can work.

One of the most important findings is that LIPs must be conceived, managed and operated as an integrated whole, focussing not only on the completion of a physical project as an end in itself, but also on stakeholders involved. LIPs are an important link for European transport and on a higher level contribute to economic and social sustainable growth of our society.

Key success factor in the organisation and management of LIPs is a dual focus between 'control' and 'interaction'. Control focuses on the internal world of the project and the project team, requiring adequate (processes for) planning, risk management, financial engineering and scope definition. Mature control mechanisms and verification should be developed. Interaction is related to the external world of society. Two elements are essential: an open culture and the ability to adapt to changes within the context. Mature management of LIPs asks for a hybrid approach combining control and interaction. For example: clear contracts are essential but must be supported by joint solutions if the end outputs of the project are not to be compromised. Another example: it is important to implement a system of risk management that focuses on threats, but this is not sufficient. Risk management should also focus on opportunities, opportunities that often are the result of interaction with stakeholders. And last: the dual approach is needed to cope with the ever changing context, for instance from new legislation, changing policies (for instance tunnel safety after the tunnel disasters in the Alps) and changing governments during the long planning and realisation periods of LIPs.

The NETLIPSE research found that in the batch of 15 projects, the 'control' part is better organised than the 'interaction' part. The 'hard factors' are better organised than the 'soft factors'. The projects are not very open to optimisations, opportunities and new ways.

LIPs offer a challenging playing field for innovations, such as new technologies or contract arrangements. However new technologies have a high risk profile and need to be managed according to the specific needs of the project or as an innovation. Ideally innovations should be managed as separate projects or sub-projects – however this is often not the case. The NETLIPSE research results have led to the exploration of an Infra Maturity Tool. A tool that can be used by the EC and other, f.e. financing organisations for evaluating and improving LIPs. The evaluations focus on assessing the maturity of a LIP in terms of management and organisation in various phases of the project. It can also be used for benchmarking projects. Organisations should be able to use the tool as a basis for their own management system. The NETLIPSE project has provided a huge amount of information on the management and organisation of LIPs that can be used to develop an Infra Maturity Tool. Besides finding the vast amount of best practices and lessons learnt on eight themes, NETLIPSE focuses on dissemination of the knowledge gathered. During the past two years we have seen interest in the NETLIPSE project increase. More and more people have attended the network meetings and read the biannual newsletter. NETLIPSE has provided the need for a network of specialists working in or around LIPs. A network where experiences can be shared and discussed.

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