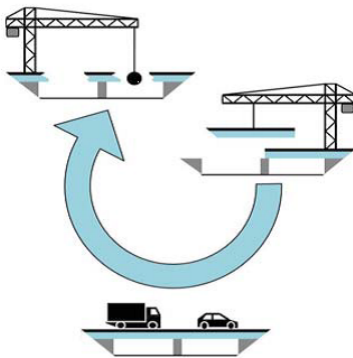


## VALORISATION OF KNOWLEDGE FOR SUSTAINABLE STEEL-COMPOSITE BRIDGES IN BUILT ENVIRONMENT - SBRIPLUS

### Goal of the project

Within the RFCS project SBRI, a holistic approach to assess steel-composite bridges by combining Life Cycle Assessment (LCA), Life Cycle Costs (LCC) and Life Cycle Performance (LCP) was developed and applied to some representative bridges. This project aims at the valorisation, dissemination and extension of the developed method for advanced applications and further bridge types. To reach a wide audience among engineers and authorities, two Design Manuals and a software tool will be disseminated in the frame of several seminars across Europe.



Sketch of the life-cycle of a bridge

### Short description of the project

The aim of SBRIplus project is to promote the developed knowledge and design methodologies by combining the LCA, LCC and LCP analyses along the entire life-cycle of bridges.

### Project implemented by

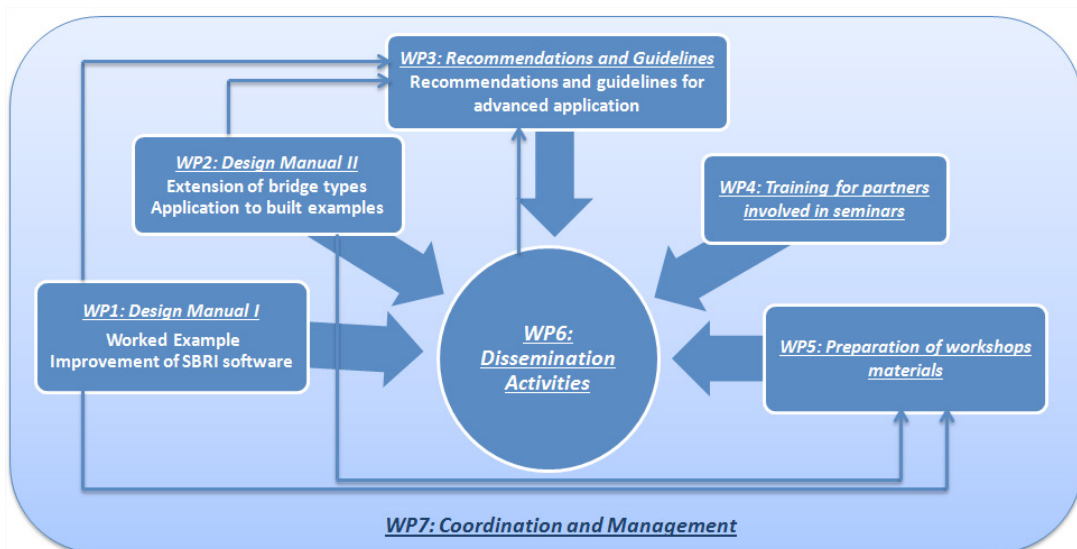
ArcelorMittal Belval & Differdange S.A., Luxembourg

### Implementation period

01.07.2016 – 31.06.2018

### Main activities

1. Explanation of methodology and background by elaboration of worked examples and improvement of the SBRI-tool;
2. Extension of bridge types by advanced application to innovative bridges across Europe demonstrating the flexibility and applicability of the methods developed;
3. Dissemination activities (11 European languages, organization of 13 workshops);
4. Providing of recommendations for advanced applications and guidelines for bridge authorities;
5. To provide recommendations summing up and concluding the analyses and being the bases for guidelines to be elaborated for bridge authorities.



The 7 Work Packages (WPs) of the SBRIplus project

## Results

Two design manuals will be prepared and translated in 11 European languages and distributed within the planned dissemination activities. The first Design Manual includes background information on the methodology and worked examples for easy application with the help of the improved software tool. By analyses of built examples, the SBRI method will be applied to innovative bridge solutions, the results and the conclusions being shown in the second Design Manual.

The seminars around Europe will offer the opportunity to present not only the results of the SBRIplus project, but also the advanced application to innovative solutions in addition to national regulations and practice.



*The location of the seminars around Europe*

## Applicability and transferability of the results

As bridges are an integral part of the European-wide traffic infrastructure, being of vital importance for society, the amount of steel used in the construction of steel and steel-composite bridges represents an important market for the steel industry. The application of a sustainable life cycle design of bridges causes an increased steel consumption. As currently the decisive criteria at tender stage are the minimum construction costs, the needed and promoted shift to a sustainable life cycle decision making, brings the steel-composite bridges forward. The advantages of low environmental inputs, low life cycle costs and low user costs for the entire life cycle are combined in sustainable steel-composite structures. The major objective of the proposal is to valorize and transfer the knowledge gained in the SBRIplus project into practice and thus to make it available to a broad audience along engineers, authorities, bridge operators and designers.

## Financed through/by

Research Fund for Coal and Steel, grant agreement No 710068.

## Research Centre

Research Center for Mechanics of Materials and Structural Safety (CEMSIG), Politehnica University of Timișoara  
Research Institute for Renewable Energy (ICER-TM), Politehnica University of Timișoara

## Research Team

ArcelorMittal Belval & Differdange SA (Luxembourg);  
University of Stuttgart (Germany);  
University of Coimbra (Portugal);  
Aktien-Gesellschaft der Dillinger Hüttenwerke AG (Germany);  
Institut Francais des Sciences et Technologies des Transports, de l'Amenagement et des Reseaux (France);  
RAMBOLL Sverige AB (Sweden);  
BRISA Engenharia e Gestao SA (Portugal);  
FOSTA -Forschungsvereinigung Stahlanwendung e.V. (Germany);  
Politehnica University of Timisoara (Romania);  
Ceske Vysoke Uceni Technike V Praze (Czech Republic);  
Fundacion Tecnalia Research & Innovation (Spain);  
University of Naples Federico II (Italy);  
ATKINS Consultants Limited (UK);  
Stichting Bouwen met Staal (Netherlands);  
BKE sp. z o.o. (Poland);  
Sveuciliste u Zagrebu Gradevinski Fakultet (Croatia);  
S. Stathopoulos - K. Farros Consulting Engineers (Greece).

## Contact information

Prof. Viorel UNGUREANU, PhD  
Faculty of Civil Engineering  
Department of Steel Structures and Structural Mechanics  
Address: Str. Ioan Curea, No. 1, 300224, Timișoara  
Phone: (+40) 256 403912  
Mobile: (+40) 740 137640  
E-mail: viorel.ungureanu@upt.ro  
Web: www.ct.upt.ro