Typical *problems in the development of megaprojects in the construction industry, illustrated by the example of the Stuttgart–Ulm Rail Project*

The *Stuttgart–Ulm Rail Project* is one of the largest (ongoing) European infrastructure projects. Due to the complexity of the interaction between numerous people and organizations involved, as well as various technical, economic, social and organizational factors, the construction time is constantly being extended. This also drives the costs higher and higher. In addition, the megaproject is judged extremely negatively by the public and is confronted with a strong movement of the project opponents – the “Iron Law” case of large-scale projects is thus fully fulfilled in this Stuttgart example. But does it always have to be this way, and if so, why?

The aim of this work is to uncover the factors behind the poor performance of the project (i.e. the construction time extensions and cost increases) and to draw conclusions from them as to how it can be better adhered to keep these within the planned framework in future major projects. In connection with the classic project management topics such as scheduling–cost–quality, this work also deals with why the acceptance of the project is so low, or how this affects the three above-mentioned main features of the venture.

To address it in a short way: there is seldom a simple truth about projects of this size. What works in one case, might not work in an other scenario. But still, there are a few clear reasons for the unsatisfactory performance and possibilities for actions to consider when managing large-scale projects – these are divided into three main characteristic groups.

In group 1 for the weak performance the actors and their activities can be found. These include politics and law, human factors such as the human resources themselves, strategic misinterpretation paired with exaggerated optimism, as well as cases of corruption. The project communication plays an enormous role, just as the forecasts and predictions, which are sadly often way too inaccurate. Group 2 contains the technology or rather the requirements of the project itself – these are originating mostly from the geographical location, and find their way through the applied technology into the risk management, which is a huge topic on its own. The third group represents the project organization and management – here the lack of front-end planning, the applied management methods, unsatisfactory stakeholder management, the lack of independent controlling, the mixed-up roles and responsibilities along with the not existing learning from experience must be mentioned as reasons for poor performance.

Furthermore it is found, that the factor of public acceptance plays a major role while developing megaprojects. It is organically connected to the performance: On the one hand, the acceptance is low because there are deadline and cost problems, and there are deadline and cost problems because the acceptance is low. To get out from this vicious circle, (most of all) the project communication must function effectively. Regarding the quality / requirements, it can be said that projects in general will also be carried out as planned if the costs explode. It seems to be very difficult to stop an ongoing project or to lower the planned quality level. This problematic is connected to the scope creep, which happens due to other cases of poor performance, such as the already mentioned absence of front-end planning, inaccurate forecasts or inadequate risk management.

Finally, the recommendations for a better performance of large-scale projects include basically all of the identified reasons. These are summarized within group 1 actors: the use of international contract forms, the establishment of evaluation systems for the investigation of variants, transfer / institutionalisation of knowledge, independent controlling on all areas, an implemented system of penalties and rewards, improved project communication (internal and external), and the standardization of forecasts. In group 2 technology it can be mentioned that the requirements from the location of the project (responsible for public interests) must be collected at an early stage, as subsequent modifications are always difficult to carry out. Furthermore, the Most Likely Development Principle should be applied in risk management instead of treating everything as planned. More to that, the early involvement of risk management is crucial too. Within group 3 project organization and management, the front-end planning is recommended, which states that the planning should be completed as far as possible before construction begins or the project is generally given the green light. Furthermore a pre-feasibility study along with improved stakeholder management (management FOR stakeholders) and accountability are needed. The roles and responsibilities (most of all for the public hand) should be clearly defined, while no side plays a double role. In addition, it is recommended to involve private sponsors in the project, as they can contribute to the successful implementation with valuable knowledge and private risk capital. Also, the performance-specific approach should be used instead of the technical solution-oriented approach at an early stage. Further exciting possibilities are the sector-based benchmarking, or the integration of the superordinate goals of sustainability to the goals of the project in order to achieve a better performance.