Competitive Support by Visual Simulation
A critical analysis

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Abstract. In this article the range of visual simulations for the competitive support is discussed and critically analysed by means of numerous definite competitions carried out within the working field of the authors – the range of experience concerning this matter covers a period of fifteen years (easily), all analysed examples were supported with the aid of CAAD/CAP-technologies. Recommendations are formulated and put forward for discussion. Furthermore the aspect of different acceptance of different presentational qualities (Levels of Detail) with the persons involved in the decision-making process are addressed (differences between so-called experts and laymen are particularly scrutinised).

Keywords. Visual Simulation, Competitive Support

Dialogue between planning and reality

Planners and architects refer to a real, physical world with plans and concepts. Definite actions can be derived from plans and concepts whose definite realisation actually changes this world.

For this purpose planners and architects first of all abstract this reality by means of models and thus create working models for specific problems and substantiate their planning visions with simulations.

So-called laymen – politicians, citizens, users and investors – also take part in this process to different extents. By the change, preferably improvement of the concepts and plans a subsequent change, preferably improvement of the common living space is possible.

Decision-making process

Urbanistic and architectural competitions take an important part in this communication between planning and reality.

First of all it is necessary to recognize and analyse definite problems and to formulate general conditions and objective targets for the competition. This topic is to be dealt with by the tenderee of a competition (e.g. a city, a municipality, a property developer) and his expert consultants.

Diverse solution variants for definite problems are precipitated within the scope of anonymous expert advisory procedures that are targeted at a certain number of colleagues who were chosen for the work or within the scope of anonymous competitions that are targeted at an initially little known group of colleagues.

Definite projects and prize winners are chosen
Competitive Support - Examples

The range of the analysed spectrum of use of digitally created simulations in the competition field covers – differentiated by the producer and the time of production– for example:
- visualisations which were produced by the participants in the competition; which were created by the tenderer’s assistant as quasi objectifying illustrations and are available for the jury for decision;
- visualisations which are generated after the successful decision-making on behalf of public relations;
- furthermore: interactive simulations which can on demand be recalled by the jury during the decision process (as single images or animations).

Different topical situations serve as further analysis criteria:
- large situations concerning urban space,
- single objects in urban space,
- solutions in historically sensitive context etc.

In the following, five selected examples from the authors’ fields of activity are outlined.

Planning of the provincial capital of St. Pölten

In the course of the planning of the provincial capital of St. Pölten comprehensive use was made of digital visualisation technology as an Austrian pilot project with the objective of optimising the comparability of the projects submitted for the competition. The computer simulation of the planning variants in the urban spatial context as seen from identical vantage points permitted a comprehensive and simultaneous spatial visualisation of status quo and proposed project as well as a presentation of the respective planning focus. Furthermore, exhibitions offered interested local citizens...
their first ever opportunity to “get a picture” with the help of the computer and view the respective projects from any perspective at the touch of a button.

Commissioned by the provincial capital of St. Pölten and the municipal planning company, Vienna 1988-1989; Project-Team: Moser, F., Dosti, P., Frei, W.-D., Voigt, A., Hirschmugl, K., Mayr-Ebert, M., Meierhofer, Ch., Meusburger, G.

Wien Valley Bridge expert appraisal procedure

Within the framework of the expert appraisal procedure for the Wien Valley Bridge, part of the Vienna Western Approach project for the high-performance network of the Austrian Federal Railways (ÖBB), an important step was taken towards a new form of decision-making process and “visual spatial compatibility analysis”. Above all, besides having the opportunity to view prepared computer simulations of the bridge projects on the basis of defined vantage points, the jury was also able to select new vantage points on a spontaneous, interactive basis and thus gain fresh insights into each project, especially from the perspective of pedestrians, motorists or railway users, for instance.


Expert workshop “High-rise development on Wagramer Straße”

A three-dimensional digital working model was produced for a selected cross-section of Vienna’s urban structure (Donaucity, UNO-City, Wagramer

Figure 3. Wien-Valley-Bridge, Contribution Arch. A. Krischanitz

Figure 4. Wien-Valley-Bridge, Contribution Arch. W. Holzbauer

Figure 5. Wagramer Straße

Figure 6. Wagramer Straße
Straße area) to provide a basis for the discussion of urban spatial development possibilities. In an expert workshop entitled “High-rise development on Wagramer Straße”, participants were able to discuss urban spatial variants supported by interactive use of a high-performance graphics computer and thus arrive at a decision regarding future development.

Commissioned by the City of Vienna, Municipal Department MA 21, Vienna 1997; Project-Team: Mayerhofer, R., Linzer, H., Voigt, A., Walchhofer, H.P., Wittine, H.

Wien-“Brachmühle”

In the course of the extension of the underground line U1 a new station is planned in the area of the former “Brachmühle“-mill premises. Municipal Department MA 21C of the City of Vienna organised an urban planning competition with several participants for the design of this station environment with its predominantly commercial use. The scope of the project not only comprised the competition brief, accompanying organisational activities and pre-assessment, but also visualisation of the submitted projects (two competition stages and the master project forming the basis for the Land Use and Development Plan) and the production of a related webpage.

Commissioned by the City of Vienna, Municipal Department MA 21C, Vienna 1999; Project-Team: Mayerhofer, R., Vargason, R., Walchhofer, H.P., Wittine, H.
Ephesos: Protective superstructure for terrace houses in Ephesos – computer visualisations of the submitted projects for assessment by the jury.

Following the decision to furnish an archaeological excavation site (terrace houses in Ephesos, Turkey) with a modern protective superstructure complying with museum requirements, an architectural competition was organised. Due to the huge international interest in the project, predefined interior and exterior views were modelled photo-realistically in digital form and placed at the disposal of the jury to supplement the analogue-format competition entries as a basis for assessment and decision-making.

Commissioned by the Austrian Archaeological Institute, Vienna 1996; Project-Team: Moser, F., Kleiber, G., Voigt, A., Walchhofer, H.P.
Analysis and Recommendations

The examples outlined above represent different aspects of visual simulation in the context of competitions. The simulation support was used both during and after the decision-making process, both in combination with other simulations (e.g. physical models) and as a stand-alone visual aid. Depending on the respective circumstances, the decision-makers can be provided equipped with varyingly intensive levels of detail awareness with regard to the spatial quality of projects in their respective spatial context.

In particular, the following findings were derived:

- Special responsibility attached to the production of decision-making tools
- Outstanding significance of visual simulation as a basis for decision-making
- Different (visual) quality requirements depending on time of production and target audience (differentiated into “experts” and laypersons)
- Necessity of establishing quality standards (e.g. with regard to degree of detail, choice of colour, perspective).

In connection with competition contributions the entire spectrum of use of simulations is applied as contribution to the recognition, communication and decision-making process. The proper handling of the simulations during competitions should be regarded as essential success criteria.

References: