PRESS RELEASE

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SAZKA ARENA, the most modern multipurpose arena in Europe, recently hosting the "Ice Hockey World Championship 2004" is now available on-line as fully interactive 3D model on the internet page: www.SazkaArena.com/3d. A Prague based development & multimedia services organization Digital Media Production, Inc. (www.dmp.cz) created this online project as part of a complex Sales & Marketing support concept they provide for the SAZKA ARENA.

The main goal of this special service has been to provide the operation management of the largest facility, built in the Czech Republic in the past years, with a complete set of tools, visualizations and simulations for various professional groups using specific application modules in different periods of building and operation, such as previsualizations for marketing communication to masses and investors, prediction of architectural changes in time of building the object, simulation of the information, security and promoters system, various seats/set-up configurations depending on the type of event, measurement module for civil engineering statistics, special 3D GUI for document management, facility management, incl. planned integration into the SAP system. All that was built on the proprietary off-line engine "DMP-RT3D" made by Digital Media Production, Inc. However when releasing the online version of the core of this 3D interactive model Digital Media Production, Inc. decided to use the online technology commercially available from Bitmanagement Software GmbH (www.bitmanagement.de) which proved to be the state of the art technology, with excellent compatibility in terms of internet 3D ISO-standards (VRML and X3D), extendibility, scripting possibilities, hardware acceleration, licensing and technical support interconnection to the internet networks as well as its unbeatable optimization algorithms enabling very fast implementation and friendly access for different user levels.

Every visitor of www.SazkaArena.com/3d can now enjoy the 3D virtual user-operated tour through all the public-access rooms in the Prague arena. Nowadays in the ice-hockey configuration, and soon to be released in the version for other multipurpose events such as concerts or athletics.

About Technology:

The 3D model is based on VRML/X3D technology with several extensions proposed by Bitmanagement BS Contact VRML browser (multitexturing, advanced scripting).

The BS Contact VRML/X3D browser proved itself as the best platform for the project thanks to its excellent rendering power, stability and constant improvements. The model is executable only with the latest full release of the browser because of improvements in the BS Contact engine that the Bitmanagement team made recently to fulfill the special needs of the project.

The task of the 3D model is to represent the actual state of affairs in the real building together with large exterior parts around SAZKA ARENA. It includes almost 1600 rooms. Most parts are fully furnished with furniture and other equipment and all the rooms are textured.

As the model is extremely large and highly detailed (over 2 millions of polygons in full detail) a dedicated proprietary framework has been developed in order to manage the data in both the preprocessing step and real-time. Several programming techniques were used to constrain both the

amount of data and the number of polygons rendered during the walkthrough.

The main purpose of the preprocessing step is the division of the monolithic model to smaller parts called cells, connected by portals. The cells correspond to rooms and the portals to doors in most cases. In the next step the global visibility information is computed and stored in metadata structures that encapsulates the geometry data. For each cell the visibility information consists of so called Potentially Visible Set (PVS), which is a list of all the cells that can be seen from the current cell. Only these cells are rendered during the walkthrough. In result the average culling ratio is about 90%. The view frustum culling decreses the number of rendered polygons besides.

To manage the rendering of the PVS a script based portal walkthrough engine has been designed and implemented in BS Contact scripting language.

Level of Detail (LOD) technique has been used to meet the desired grade of visual quality. This technique has the largest impact in the central auditorium with more than 16.000 seats for spectators. The seats are organized into hierarchical structure and are highly shared so that the resulting amount of data is very small.

The illumination framework increases the visual quality of the model but has only little impact on computation complexity. The scene radosity solution is baked to monochromatic ligthmaps per object. All the lightmaps in each cell are then composed into larger bitmap to speed the rendering. The lightmaps are modulated with textures using BS Contact multitexture framework.

3D model is also animated with active objects. The doors open as the visitor's walks around, escalators help to move from one floor to another.
There is also a clickable navigation map and several predefined viewpoints to help to orient to the user.

Visit **www.SazkaArena.com/3d** (entrance to SAZKA ARENA 3D world)

About Digital Media Production:

Since 1997 Digital Media Production, a.s. (www.DMP.cz) has produced more than 700 DVDs and numerous interactive multimedia applications. Significant emphasis on quality, timeliness, reliability, creativity and loyalty have helped DMP to establish successful international partnerships in numerous challenging projects, such as German DVD release of Lara Croft (awarded by "Best DVD of 2002-International Movie"/Concorde Home Entertainment), special collector´s box of Lara Croft 2 (The 1. High Definition DVD in Europe: www.wmvhd.de), American Psycho (InterXS mode) or in the paneuropean production of all the 3 parts of "The Lord of the Rings" (Special DVD edition). For its systematic approach in the development of any complex and unconventional professional multimedia applications using its innovativeness and technological capital DMP was awarded by Deloitte & Touche as one of the fastest growing IT companies from the whole Europe in 2003 ("FAST 500").

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