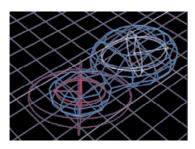ARCHITECTURE
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FRANKEN\ ARCHITEKTEN GMBH
NIDDASTRASSE 84
D-60329 FRANKFURT/MAIN
FON +49.69.297 283 0
FAX +49.69.297 283 29
WWW.FRANKEN-ARCHITEKTEN.DE

Save the Bubble

By :

Bernhard Franken (Franken Architekten, Frankfurt),
Sümri Vogel (Deutsches Architekturmuseum, Freelance),
Berthold Scharrer (Franken Architekten, Frankfurt)

Archiving expertise:

Inge Wolf (Deutsches Architekturmuseum, Frankfurt)

Abstract

At the DAM a project concerning the examination of strategies for permanent conservation of digital databases in architecture is currently carried out with the concrete example of a project of Franken Architekten, Frankfurt. Their transparent "BMW Bubble" of 1999 was a non-permanent mobile pavilion for the IAA International Motor Show in Frankfurt, which does not exist anymore.
The architectural form had been generated by the architects with special animation software. The data of the project, which is reputed to be a prototype for digital design, run the risk to perish, due to the fact the software and hardware are not used anymore. In cooperation Franken Architects and the DAM want to cooperate to find how it is possible to preserve with the highest possible grade of detail the digital data of the BMW Bubble.
The study which began in summer 2007 is foreseen to be lead as a permanent project.
In 2009 the existing and newly generated material of the Bubble will be transferred to the archives of the DAM.

Frankfurt, 15.05.2009

Prologue

In 1998, Bernhard Franken for ABB Architekten won a competition held by BMW for a design for the company's trade-fair presence at the 1999 IAA Show in Frankfurt. It was a freeform in the shape of a drop of water that visitors could walk into, and was intended to be a landmark symbol for hydrogen-based technology – the so called Bubble. After two weeks at the IAA Show the Bubble was dismantled, stored and then rebuilt at the Expo 2000 presentation of BMW in Munich. Here it served as a café and club for another four months. Again it was dismantled and stored. There had been several approaches to rebuild it for example as a club in Ibiza or as part of a museum of the Blob Research Group of the Delft University, but in 2005 BMW decided to have the remains destroyed.

The Bubble was one of the first buildings ever that had been designed in and manufactured with computer aided design and manufacturing methods. The continuous digital production chain as well as the form of the building itself represents a prototype for an emerging line of architecture at the end of the 20th century - the so called "Blobs". Even just being a temporary pavilion, even being a small building, the Bubble stands for the beginning of a new era in architecture and is therefore most important for science. That is one of the reasons why the Deutsches Architekturmuseum is so much interested in taking over the Bubble and looking for an adequate way to preserve it.

When the museum contacted Bernhard Franken at the beginning of 2007 it was known that the building had already been destroyed, but there was no idea at the time – that after eight years only - there was a high risk to loose the digital Bubble, too.

19.5 GB and 13,901 digital files had been recovered, screened, reordered and cleaded recursively from overall 29 backup CD's. Another ancient and unfortunately defective SCSI 1, XFS formatted disk volume with overall 15 GB capacity still is to be recovered and the relevant recovered data to be integrated into the existing collection of files.
Furthermore digital data had been requested from different project-participators, i.e. Bollinger & Grohmann Ingenieure (1.69 GB, 7,567 files). This data also required screening and sorting.
A prototypic concept for transferring physical as digital remains of the Bubble project into the DAM's archive had been developed collaboratively by the DAM, ISC (Informations-Service-Center, responsible for IT-equipment, the configuration and maintenance in the urban museums of the City of Frankfurt) and Franken Architekten.
An easy-to-use interface will enable architects as archivists to capture large amounts of objects. It is necessary to adopt the archive-structure to varying project-creation-processes.

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Archiving strategy

Integration into existing context

Goals of the "Save the Bubble"-project are to develop strategies to archive physical as digital remains of the "Bubble" and further related architectural projects at the DAM. Metadata-structure, platform extensions and data storage will seamlessly integrate into the existing Object Capturing System (OCS) and the given political context of the museums of the City of Frankfurt.
At current, two different types of objects, models and plans (inclusively relating materials), are being put to the archive.
The plan section is going to be extended by a digital-data-type. Generally it can be said that the amount of submitted files relating to one project will be far larger than the amount of submitted physical artifacts. Therefore the objects' primary key has been extended by a fourth digit which makes it possible to submit 9999 files per project-phase.
Project Phases will be handled apart from object-specific information in the project level of the OCS.
Overall, metadata, besides the default information already being collected in the OCS per object will contain information about the project-creation-process, show up connections between different files, parties, design and development phases. Tag-like short descriptions, links and keys will indicate individual files and interconnections.

Materials being archived

Physical scale Model of Aluminum Construction
The original model of the Bubble will go to the archive. A duplicate model will be assembled based on the original digital data which will be kept at the office of Franken Architekten. Metadata will be saved into the Model-Archive section,

Slides/Photographs
A set of physical slides and photographs will be saved into the Plan-Archive section.

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Storing the original design Environment
SGI O2 incl. external SCSI Drive: While attempting to recover data from an ancient external SCSI 1 Harddrive formatted in XFS format partition data got lost. The drive contains 5 months of relevant project data – especially regarding the initial parametric creation process that took place in Wavefront Explore!-software. Another attempt to recover the files from an image-file of the broken drive will take place soon.
The hardware will be saved into the Model-Archive section besides the physical scale model of the Bubble.

Storage containing Digital Data
The digital data will be handed out on Compact-Flash media in read only mode. Another 1:1 copy will be kept at the office of Franken Architekten. On the one hand media without moving parts and standard-interface (USB/Ethernet) should remain accessible for a while. On the other hand the miniaturization of storage-media which happened in the meanwhile gets clearly visible.

Project data
As said above there will be some double tracked-system to store common and exotic file formats within one archive.
Background information about file type specifications, versions and properties will be kept in another dataset being related to each single entry.
Original files will be kept on their original position in the eventually very deep original folder structure while duplicate and eventually converted files will be created in a parallel and plain folder. Those files receive their name from the primary key being defined in the metadata while the original files are being totally left like found. A relative link to the original file in the metadata indicates the connection between original and duplicate file.
The reason why to do so is, that on the one hand there is a strong interest in defining minimal standards for file maintenance – on the other hand a digital architectural project like the Bubble has the necessity to also save particular and definitely nonstandard data to the future. Active, parametric geometry had been created on antique hardware platforms (SGI O2 and periphery) with antique software tools (Wavefront Explore!).
It is another point on the schedule to maintain this original data accessible via certain applications and hardware environments in case of virtualization being impossible.
First priority is to keep the original files because the projects' spirit, insight and impact are inherent there the most.

Metadata
Relevant metadata will be stored in an Excel-Sheet and a .pdf-derivate. The Excel-Sheet will be the basis for database import.

File relevant metadata descriptions

The "Bubble" had undergone five project phases: Briefing, Process, Form, CAM and Experience which are being indicated in the project section. Furthermore files will be classified and associated by a predefined set of keywords which indicate i.e. working or representational state of the file, if a 3d-File is a "master" or a "derivate" etc.

Importer to the OCS

Besides the extension for the OCS ISC is writing and a tool which imports data from our predefined and filled by metadata Excel-Sheet to the OCS's database.
Tests will prove how handy and correct importing from an Excel-prototype is going to be. After a circle of debugging and adjusting the metadata relating to the Bubble will be save in the archives of the DAM. Simultaneously physical Artifacts will be submitted, too. Therewith the Bubble will be saved.

Outlook

Independent from local presence the DAM archives' availability should be extended by providing archive data to people who show an interest via web-platforms. They may be of proprietary or meta-platform nature.
Current web-technologies hold the potential of generating a return value from providing data via web. A better understanding for target groups and therefore for further archive optimizations via data-harvesting can be reached.

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Epilogue

The "Bubble" as an entrepreneur architectural project of the digital age identifies many issues emerging when talking about contemporary archiving strategies for digital architectural content. It is fundamental that strategies leave open possibilities for structuring data individually as to store certain individual, nonstandard data to the structure. From an architect's point of view the central aspect for archiving processes always should be having the possibility to save the projects' spirit to the future.