COMPILATION AND ORGANISATION OF A PHOTO ARCHIVE

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The section "Koordination Betrieb Anlagen West (OG 8830)" operates a photo archive with pictures from throughout the PSI accelerator complex. The archive is an essential part of the documentation of the complex and accessible via the Internet and because of its simple structure easy to use and to support. The URL address of the archive is ***http://atkpics.web.psi.ch/fotodatenbank/****.*

INITIAL POSITION

The section "Koordination Betrieb Anlagen West" mainly deals with the maintenance of existing beam line installations; the set-up and modification of experiments and the planning and realisation of new experimental set-ups. Documentation is an essential part of our work. From right at the start of the build-up of the accelerator complex (1973) to today photographs have been taken of the essential parts of the systems. These give valuable visual information of the many inaccessible parts of the installation.

Over the years a huge number of pictures have been collected. These pictures have been classified to the extent that they are grouped by "installation" and are kept in separate files, but there has been no attempt to make a comprehensive catalogue.

CONSERVATION OF KNOW-HOW

Due to the forthcoming retirements of a long-standing colleague the question has arisen of how to preserve the detailed knowledge about the existing pictures. In addition, many new photographs have been taken with a digital camera. These photographs are stored on the group's computer and can be printed-out on request. A demand for a more general and easy access to these pictures has been recognised.

For conservation of "know-how" a simple caption added to the existing pictures would have been sufficient. However, to place the digital pictures at the disposal of a broader clientele, we decided to transfer all photos into an electronic database. The first ideas about such a database came up about five years ago. Essentially, all 3500 pictures had to be collected together and classified. Such a picture archive needed to be able to handle ten to twenty new pictures per week. Additionally, all pictures need to be provided with keywords and in some cases also with additional explanations and documents.

Initially we considered purchasing a commercial system. However, a closer look at the products available showed us that none met our requirements (those that could do the job were far beyond our budget). In summary, the general problem was that they could handle a lower number of pictures with a higher resolution, while we preferred to have a large number of pictures with a lower resolution. Likewise from our side the request arose to allow search and view of the pictures via Intranet and/or Internet.

WWW INTEGRATION

Internal experts recommended us to set-up the photo-archive based on single html-pages. After initial scepticism from our side, we soon saw the wisdom of this idea.

The following advantages are dominant:

- The only requirement for using the archive is an Internet access.
- Aside from hard disc capacity no additional hardware or software is needed.
- Modular structure.
- Smooth integration of additional documents or links.

HANDLING OF EXISTING PICTURES

As a first step, all the existing pictures were examined and those which were still up to date, i.e. which show installations and components still in operation, selected.

The photographs were classified by copying them mounted on a general mask. The mask lists all likely component types and installations in a check-box format, so that identification and description only required the relevant fields to be selected. Finally, the pictures have been digitised and saved on CD.

About 3300 pictures have been catalogued in this way.

To index the documents a convenient data structure was needed. It turned out quickly that all pictures could be indexed using three criteria; all can be assigned to unambiguous places, components or experiments. Fig. 1 shows the top hierarchical level of the data structure. As an additional help to finding a picture, a plan of the accelerator complex together with underlying links has been included. With this the photographs of a specific place can easily be selected and searched. An example is shown in Fig. 2.

As an additional option we plan to generate a drawing of the complete beam-line system as a graphic, also with underlying links, to allow selection of pictures.

For the preview of the photographs a relatively low resolution is quite practical; this allows up to twelve previews to be shown on a single page. The previews contain a link to the corresponding picture, which appear in full screen mode by clicking on the preview. A compromise between image quality and having rea-

sonably short loading time for the Internet pages had to be made by choosing the right resolution and compression factor of the images. It turned out that a file size between 60 and 100 kB was reasonable. On the one hand an image with a pixel resolution of 800 x 800 has acceptable quality and on the other, the pages can be viewed with a 56 kB standard modem in a practical time.

CURRENT STATUS

The photo archive contains at the moment about 2900 images. The largest quantity are from the beam lines and experiments in the experimental area. A lot of pictures from SINQ, SLS and the set-up of PROSCAN are already included.

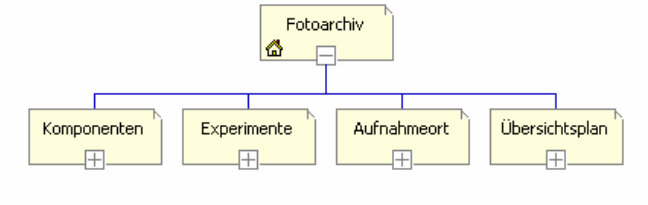

Fig. 1: Top hierarchical level.

Fig. 2: Comprehensive floor plan with underlying links.

The present database contains 6689 files which involve 31'900 links. The huge number of cross-links arises from the multiplicity of possible classifications of each single image e.g. on one photograph normally more than one component is shown. Additionally the components belong to a specific implementation place or a specific experiment.

Fig. 3 shows the complexity of the links of the separate pages. On the left are the links which refer to the corresponding page and on the right hand side is the list of pages to which a link is made.

FUTURE PROSPECTS

Apart from the routine work of maintaining the database, inserting new photos and removing outdated ones, the system has a high potential for enhancement and the addition of new facilities.

As already mentioned, the next step is to be devoted to user-friendliness. It is foreseen that the drawings of the beam-lines will get underlying links, so that the corresponding images of the components can be viewed via mouse click.

Another possibility would be to provide the component pages with links to the data sheets with their most important specifications.

A link to the PSI plan archive would be a great help. To be able to call up an assembly drawing by means of a simple link to the corresponding page would save a lot of time consuming searching activity.

All these extensions need neither additional hardware nor additional software. However, one should not underestimate the manpower needed. At the present time just the insertion of new images into the system requires considerable effort.

A rather clear outcome from the work is that photographing components and installations only makes sense when the images are properly organised and easily accessed.

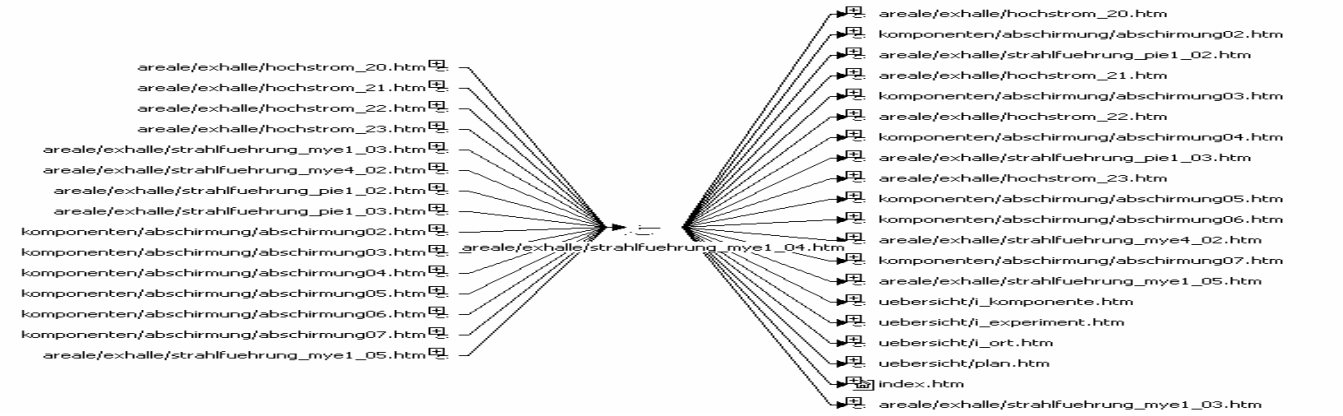

Fig. 3: Links for the secondary beam line μE1.