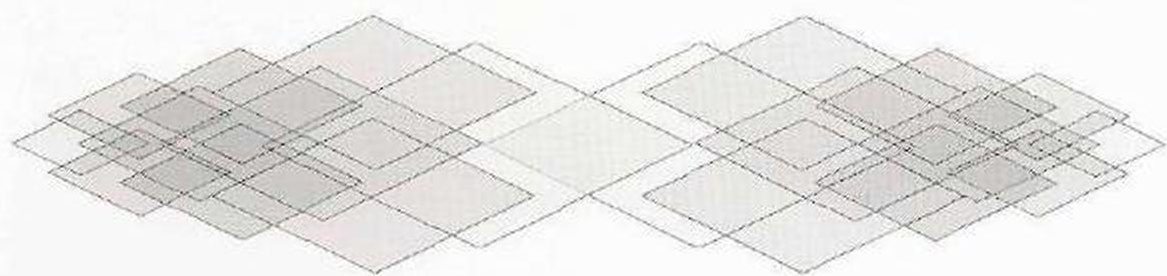


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CAD Graphics Adaptation for Making Internet Resources

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BRIEF SUMMARY: Operative access to the information has an important role of enterprise competitiveness. Web-technology applying is very adjective use in the design. Maintenance of the operative connection with clients protects from many problems on the first design stages. Applying of the web-technologies gave opportunity to arrange an efficient joint work of distanced designers.

Operative access to the information plays the important role in competitiveness of the enterprises. Use of WEB-technologies is actual in the field of designing and projecting. For the developer it is important to support operative connection with the client, that allows to avoid many problems on initial design stages. Use of modern technologies of communications had allowed to organize teamwork on the project, without dependence from a developer's location.

Manufacturers of CAD-systems pay big attention to support WEB technologies, creating various tools which make collective work on the project easier and more effective, and improve interaction between collectives of designers and customers. [1, 2]. It is very important to teach students of designer professions to enjoy those new technologies. Learning CAPP in Belarus agrarian technical university, students work not only with the "AVTOPROEKT" system, but study possibilities, given by WEB technologies.

To publish part's models in Internet, new graphic formats are created: VRML 1.0 - WRL in SolidWorks 2000, two-dimensional vector format DWF (Drawing WEB File) in AutoCAD, etc [1,2]. These formats, allow to display that the user usually sees on the screen when he works on the drawing. They keep pictures in compressed condition, what essentially reduce time of loading. It is possible a disposal of URL references on them too. For viewing drawings of such formats, developers offer the modules, which can be built-in in browsers. They allow to look through, to zoom, and to pass after references of the drawings located on WEB-servers.

When ActiveX technology is used, documents can be putted in HTML pages, and, if the user has the corresponding software, he can open them for editing and save on the removed server or the client machine.

There are facilities which allow to look through not only special formats, created

for Web-space, but "genuine" *.DRW, *.DWG, etc formats too. Naturally, only some opportunities of editors are accessible, but switching on/off of layers, switching between named views, change of a sight direction, drawings and models saving on client machines and "editing" by a marker – are quite sufficient for viewing projects of a product.

The problem of creation of archives of the design documentation, and their viewing in local and global networks, search of the document by one or several parameters in Internet-libraries, are also successfully solved by CAD-systems makers.

The problem of shearing of access and teamwork with models, as well as with other files through Internet, is solved like shearing of folders in a local network. It is also possible to work in common in real time with drawings and models by means of function 3D Meeting: technologies on Microsoft NetMeeting basis [3,4].

Very important function is to transfer of a project to partners and customers. For that, it is not enough just to choose drawings files. Indications of the version, kind of the archive, the password, and system tools, including external references, fonts, etc, say, a full set of the means, necessary for correct work with the document, should be transferred too.

The integration with other office applications is solved by means of creation of objective hyperlinks. They are well coordinated not only with CAD-objects, but also with text documents in Windows, URL addresses, *.xls and to other files [3].

Internet can be also used as means of storage and access to data, associated with CAD-system, including the primary drawings, files connected to them, and also files of the menu, scripts, programs in languages of development. Indexes of URL resources are distinguished by systems in file input/output operations, external references are set by URL addresses.

Many of described above remarkable means of work in local and global networks are full accessible, certainly, only to owners of licensed versions of CAD/CAM-systems. Considering this circumstance, it is especially necessary to note the possibility of creation of Internet-libraries. For example, built-in in AutoCad function of creation a full HTML-code, after what the document is ready to disposal on a server [5]. The document can support i-drop – new technology for transfer data, as blocks, models, light sources, shadings, structures, from HTML document into the drawing or model.

Having taken advantage of this function for development of some educational projects, we would like to pay attention to some features and working methods with the named tool.

CAD-objects are stored as XML-definition inside page. All modern browsers, editors and compilers support XML, what is important. "DesignXML" – the XML updating, developed by AutoDesk, – allows to describe graphic entities, and also attributes of the drawing and another information [5]. The most important advantage of this means is an openness of a data format and existence of the experts, capable to understand a code and to generate the necessary image.

In this sense the format is similar to the *. DXF-description with inherent to it advantages and disadvantages, namely an openness of a format, huge sizes (compare to corresponding vector file), simple access for all.

The size of a file, automatically converted into XML, basically, is acceptable for the publication, however contains a significant amount of a superfluous code, which is a subject of manual removal [6]. As a result, the file, naturally, contains mistakes, which became apparent sometimes only after the publication. Thus, "cleaned" file always should be checked up.

Before document converting, it is necessary to remove all unused blocks and other objects and attributes, which are possible to do without, otherwise they will be described as belonging to the drawing.

All participants of teamwork, working on the project, easily take the necessary data, both from global, and from a local network. In this connection there is a problem of maintenance of protection and safety of the data. This problem is, probably, solved by the special coding, used sometimes by developers, using AutoLisp, however this opportunity is not checked up by us.

To our opinion, the publication of the project in a global or a local network is the best way of its demonstration to the customer and partners. Such technology of work provides big advantages to groups of the remote developers, particularly on initial design stages: allows to avoid unproductive losses of time for transfer and the coordination, exclude obviously "dead-end" decisions during development of a product. The opportunity of a publication of a projects in Web-space without labor-consuming alteration and unreliable converting, provides the important advantages at work with resources and raises competitiveness.

Fine opportunity to take advantages of new technology, is integrativeness of XML-definitions, because it is serves to expansion of a circle of developers and to improvement of quality of projects.

We are working on reference WEB-cite for CAD/CAM systems users, which will include the part "teaching" in which many of mentioned above opportunities will be described in details.

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