network skin
a facade concept for the ars electronica center, Linz
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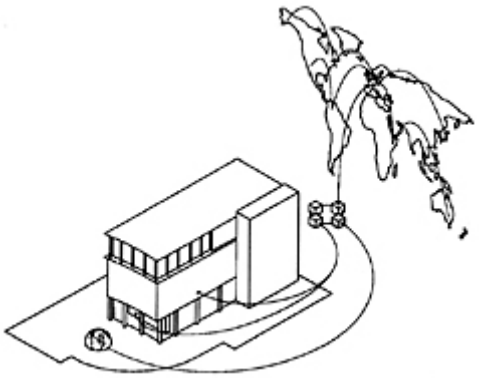
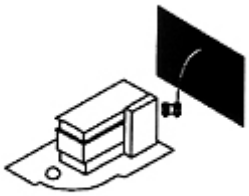


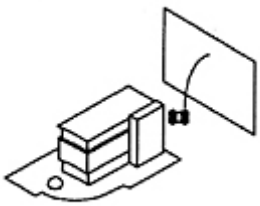
Explanation of the concept and description of the components:

1.0 Networks, programs and data:



1.1. Global network

All users connected to worldwide computer networks will be requested via lnternet channels, News, e-mail, WWW … to send 3D objects data (Program 1) or 2D graphics data (Program 2) to the AEC.

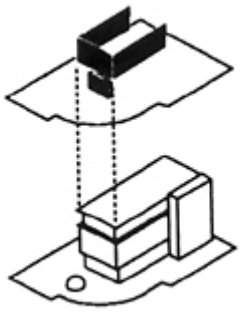


1.2. Internal AEC computer network

Program 1: The AEC computer network receives and collects these data. It automatically places them on a virtual globe according to their origin. This artificial world is subject to constant change due to its reception of new data. In the case of old data, the geometry is

simplified according to the age in the event that the display capacity is no longer sufficient - new data therefore grows on top of the ephemeral old data.

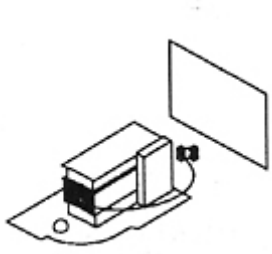
Program 2: In this program, 2D data (static and movable images) rather than 3D data are arranged on the virtual globe as virtual representatives of the sender. According to their origin, they will be mapped on polygons standing perpendicular to the globe. These polygons turn towards the viewer when he or she walks through ("billboards"). These objects are assigned a specific behavior in this virtual world. (They change, unite, etc. according to predefined rules.) The objects are in contact with their senders, whom they represent virtually: When the data is first placed on the globe and at every change, the sender will receive a generated picture of his or her representative and its environment via the network.



2.0 Displays

A double-sided video wall is located on the ground floor. The network projected onto it can be viewed from the inside and the outside at the same time.

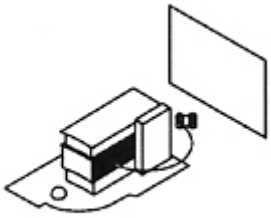
The surface of the building's continuous two-story facade section ("cummerbund") consists of large, etched glass plates. During the day, the "network skin" facade appears to be a closed balustrade element of opaque white glass. In the evening and at night, the opaque glass sheathing functions as the network world's rear projection surface for the outside world.



2.1 Southern facade

On the second and third floors of the building's gabled end, there are breaks in the continuous, solid outer wall. Images are projected through large windows onto the opaque outer sheath.

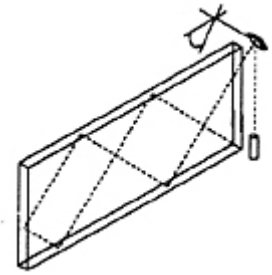
In this way, the slight curve in the southern facade incorporates the curve of the projected globe into its form. With regard to the content, the virtual architecture therefore enters into a dialog with the real architecture through this projection.



2.2 Eastern and western facades

The metaphorical transfer of the network idea conceived on the two large square surfaces of the eastern and western facades is the dominating formal element of the facade design. From the exterior, the material and construction of the longitudinal facade sections are identical to those of the southern facade elements. In contrast to the former, however, an image is not projected onto the facade, but along the surface of the glass.

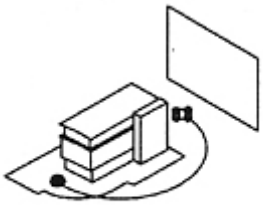
Laser beams are projected parallel to the outer skin via movable tilted mirrors controlled interactively by the viewers, and these beams trace through the opaque glass of the balustrade element in the form of a whitish green pattern of lines. A strip along the entire edge of the balustrade element, which consists of a surface mirror directed towards the interior, reflects the beams striking it until they are lost in infinity due to the gradual decrease in their luminous intensity. The lower the angle of projection (which can changed interactively), the denser the lined image on the facade, which reminds one of a wire frame drawing, and so, an interactive, quickly changeable facade texture of varying line density is created.

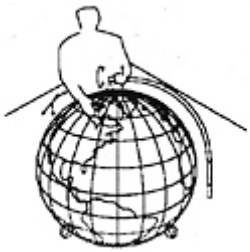


3.0 Interface:
3.1 Earthtracker:

The Earthtracker is the interface through which passers-by and visitors can interact directly with the facade. With the aid of a globe, which is set into the floor in the same way as a trackball, the projected virtual globe can be moved, thereby allowing the visitors to navigate through it. The real globe is at the same time connected in direct proportion to the virtual one. In addition to the possibilities of direction of movement, which the visitor can control by rotating the globe, the height and direction of the line of sight can be changed by means of a bow which resembles a latitudinal line (by pulling it up or pushing it down and turning it).

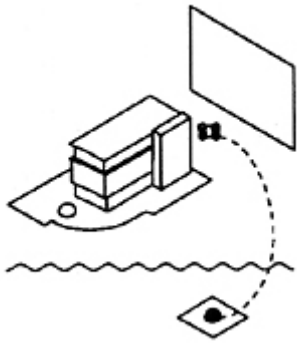
In addition to the network world projected onto the southern side, the Earthtracker also influences the angle of the system of mirrors on the eastern and western facades. This means that all facade sections are controlled in harmony.





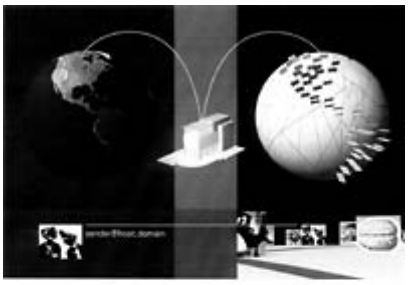
3.2 Network Traffic Visualizer

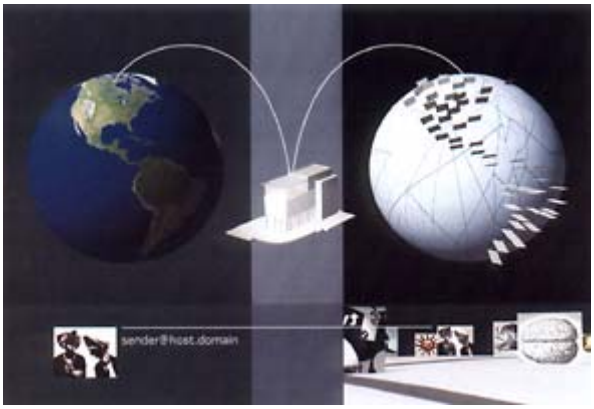
If the Earthtracker is motionless for an extended period of time, the laser/mirror system will be controlled according to the load or fluctuations of the AEC network traffic.



3.3 Interfaces from other locations

At night, the laser network visualization will be visible not only in the immediate surroundings, but also at greater distances from locations with a clear view of the AEC. Other Earthtrackers will be placed at these locations to teleinteract with the AEC's network skin.

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