

3D CAD for Architectural Visualizations

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Objective

To demonstrate the capabilities and benefits of computer-generated 3D visualizations in the architectural industry



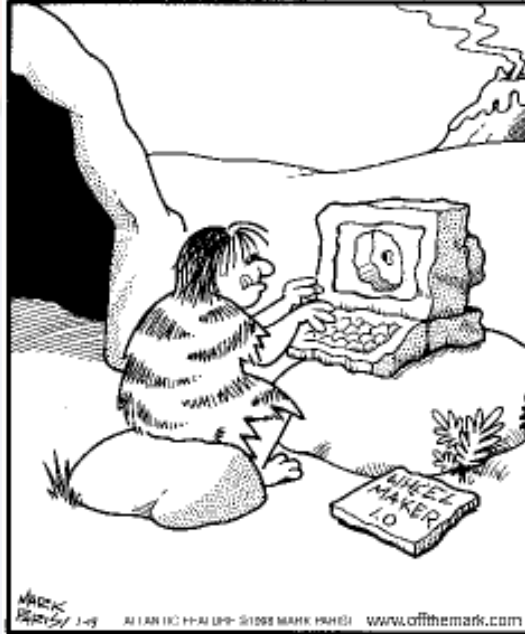
Agenda

- Introduction Video
- Capabilities of 3D CAD
- Benefits of 3D CAD
- Process Overview
- Project Timelines
- Flexibilities of 3D CAD
- How 3D CAD Works
- Costs of 3D CAD
- Success Stories



Past Capabilities of 3D CAD

off the mark by Mark Parisi
www.offthemark.com



- UNIX-based hardware
- Difficult to use
- Expensive
- Entertainment dominated industry
- Unrealistic



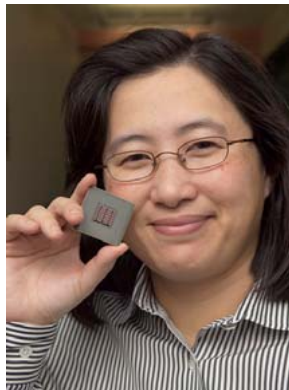
Present Capabilities of 3D CAD



- **Today's Typical Workstation**
- **Entertainment & Visualization evenly divided**
- **Programs Parameter Based**
- **Scenes Predominately Textured**
- **Radiosity and raytracing**

Future Capabilities of 3D CAD

- Cell Chip / 100 core+ machines – Moore's Law
- Visualization dominated industry
- Programs intuitively based
- Completely 3D objects – trees, people, water
- Real-time Rendering
- 3D Printers Commonplace



Benefits of 3D CAD

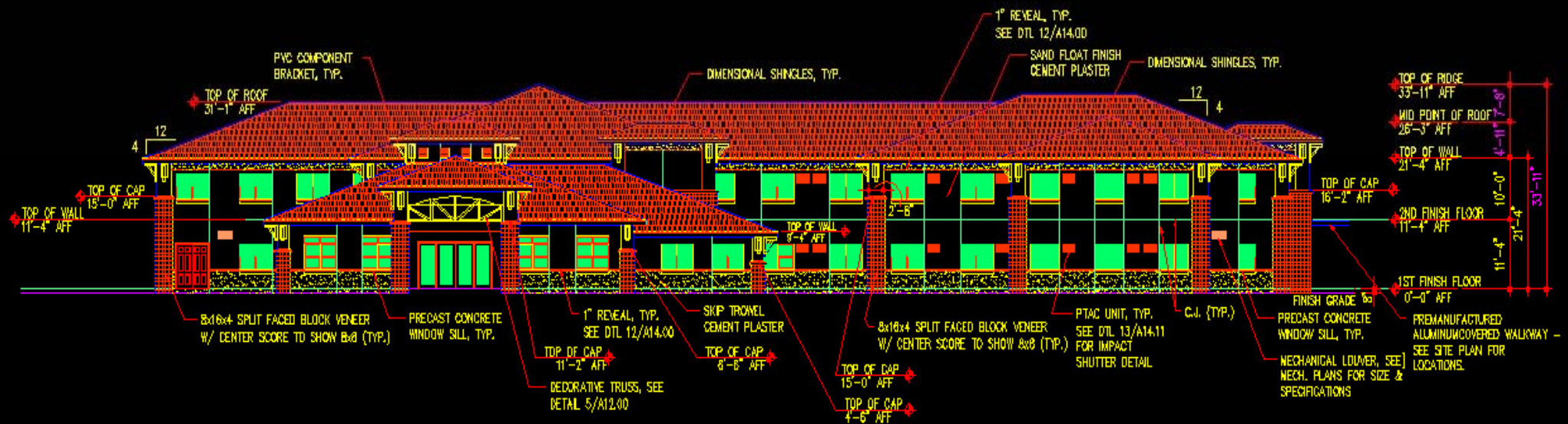


- Reduce bidding
- Improve marketing
- Improve communication
- Improve curb appeal
- Identify design flaws and poor color schemes
- Win government approval



Displaying Architectural Projects

**What methods are used to
display upcoming architectural projects?**



Method 1 – CAD Elevations

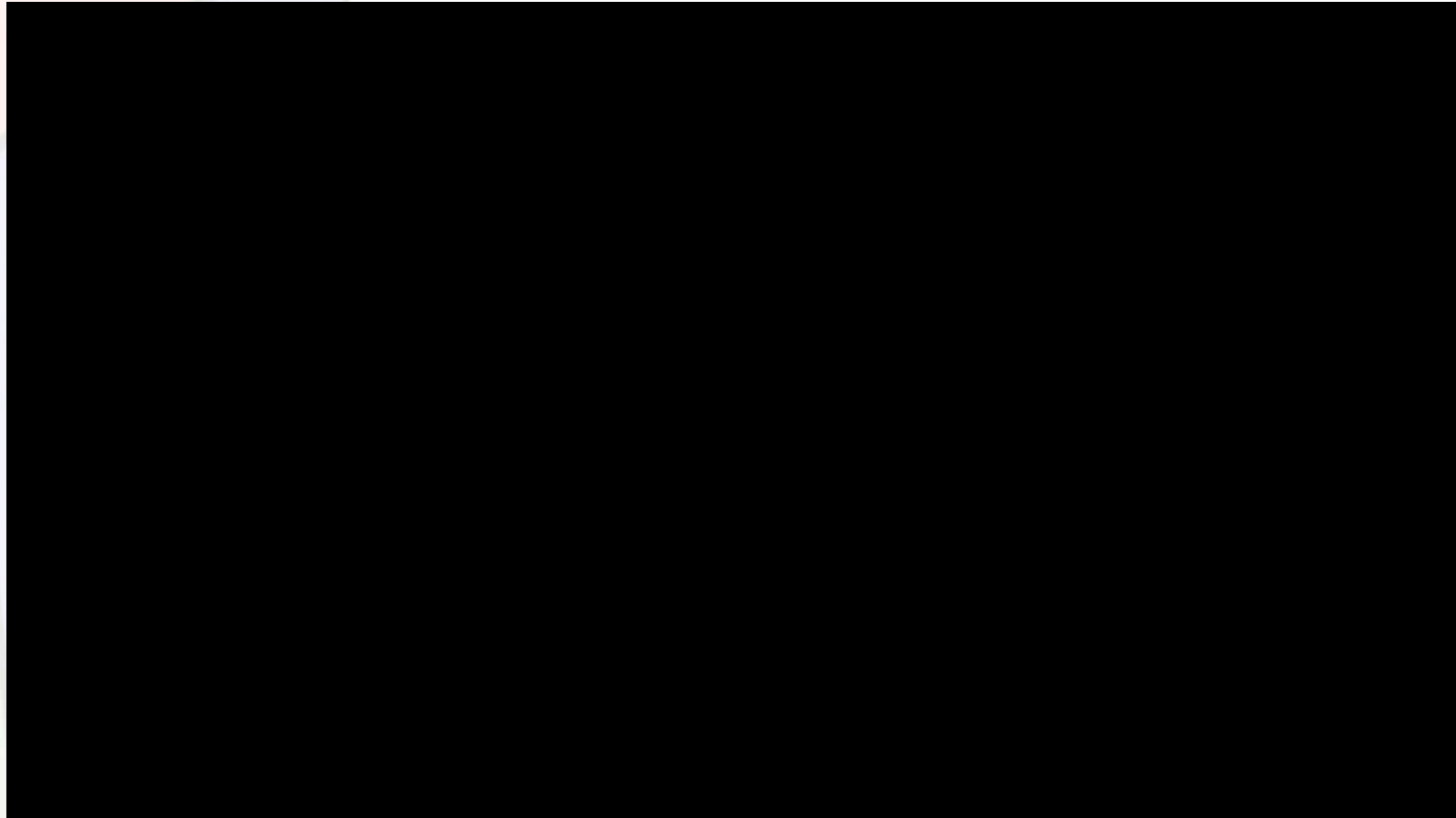
POOR



Method 2 – Hand-drawn Elevations
GOOD



**Method 3 – 3D Renderings
BETTER**



Method 4 – 3D Animations
BEST



The Ever-Changing Design

**Just how much can a design change
from start to finish when 3D is used?**



The client for this project realized from this image that the design was not appealing...



...so some changes were made!

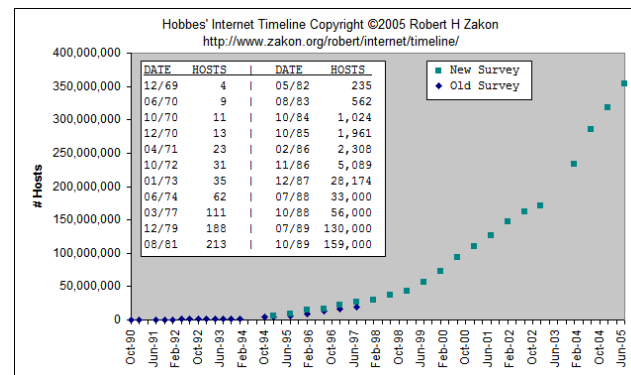
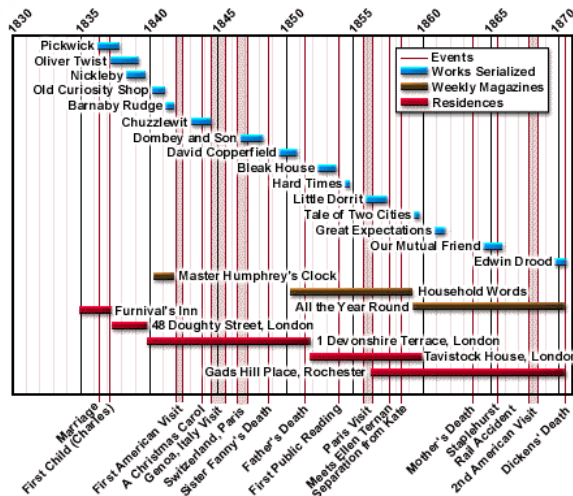
Process Overview

- Discussion of scope
- Review CAD Drawings – plans, elevations
- Cost Analysis
- Agreement / Contract
- 1st review of work
- Final review of work
- Visualization produced in final form

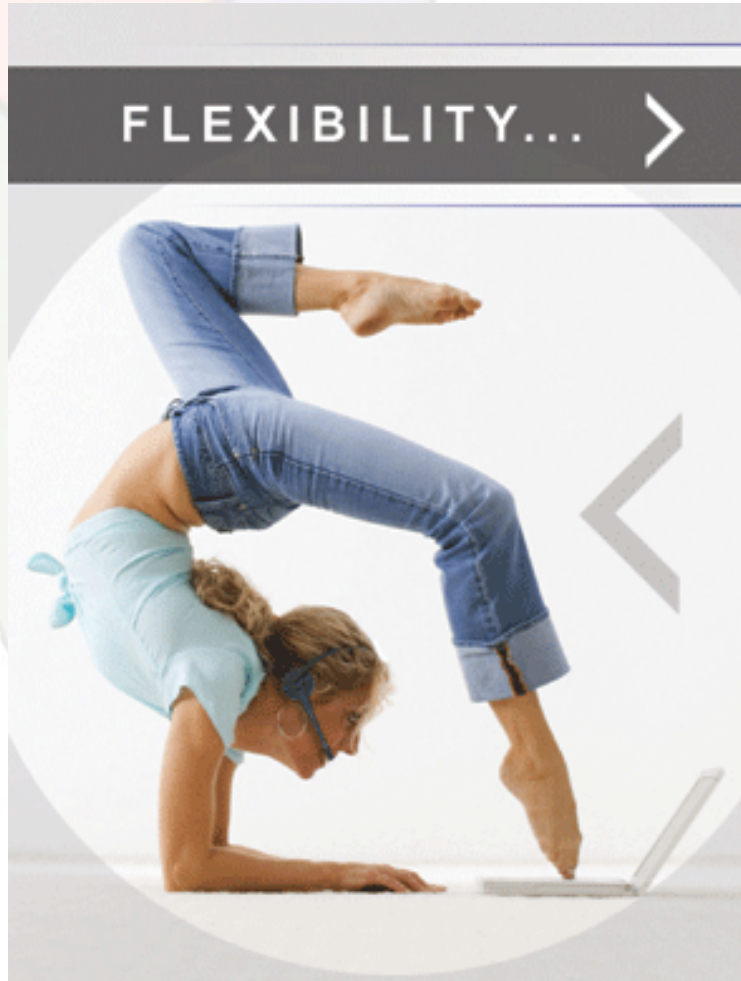


Project Timelines

- When should 3D CAD begin?
- What aids the 3D CAD process?
- What hinders the 3D CAD process?
- Who is involved in the process?



Flexibilities of 3D CAD



- What can be changed in the visualization?
- What additional costs can be incurred?
- Renderings vs. Animations – which is best



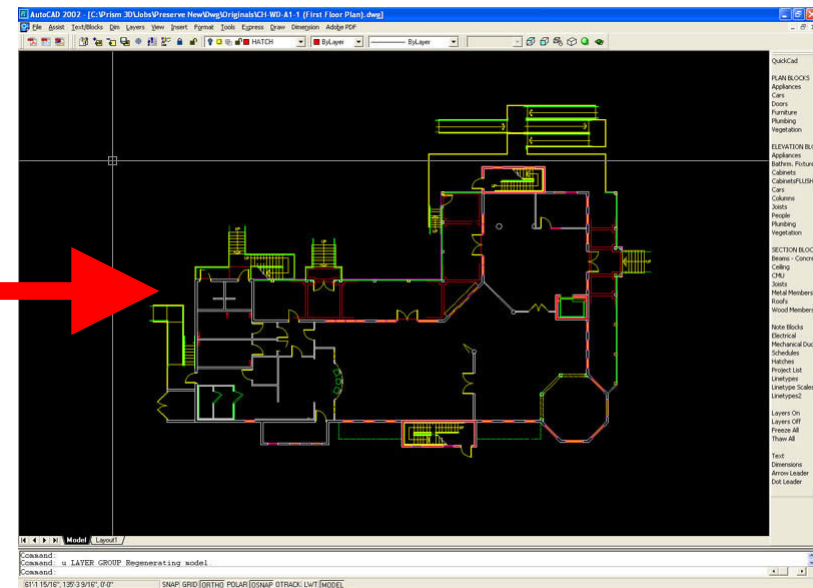
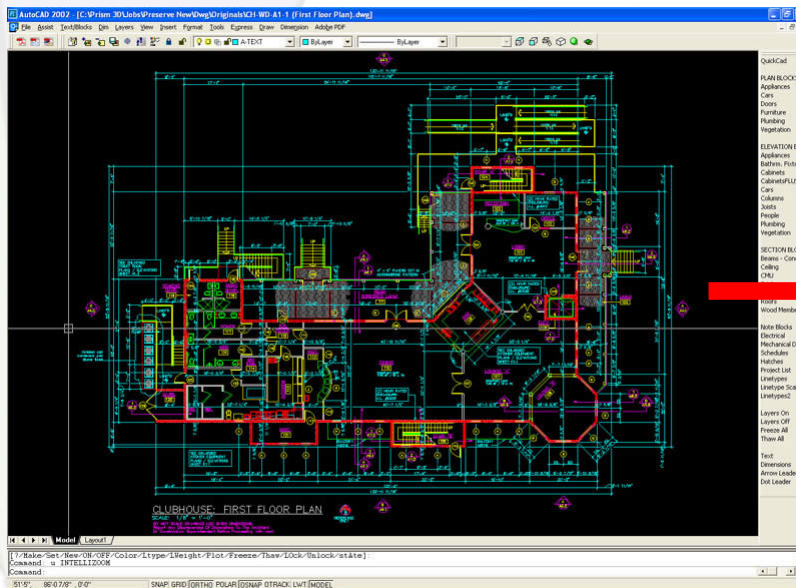
How 3D CAD Works

**There are five major steps
in the 3D design process**

**CAD Conversion
Modeling
Texturing
Lighting
Animation Scripting**

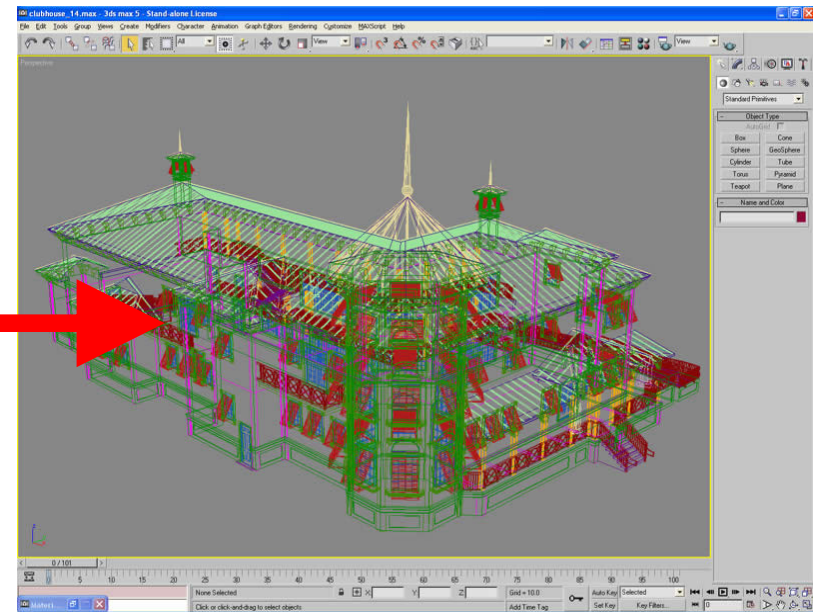
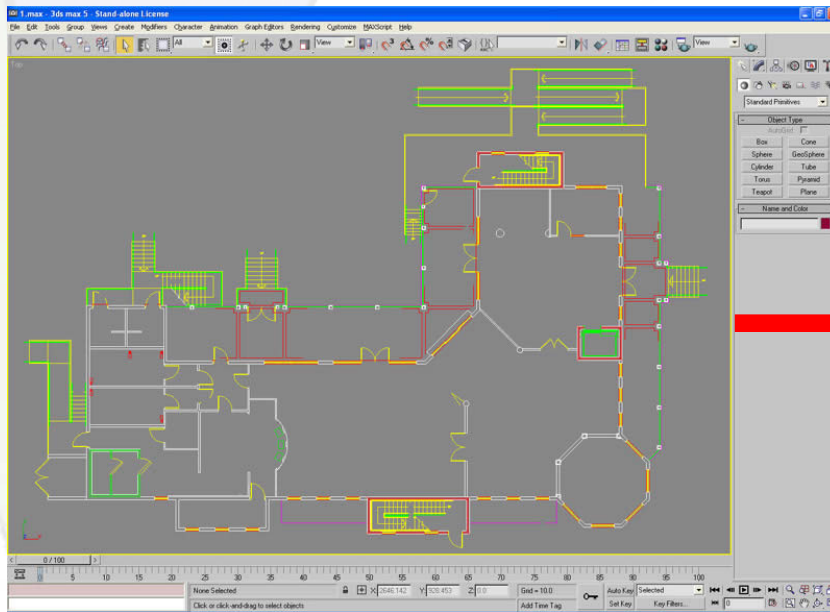
CAD Conversion

When starting with CAD drawings, we begin the creation process by taking all available data and discarding that which is not needed. When starting with hand-drawings we convert them to CAD drawings by scanning the images and tracing all pertinent features.



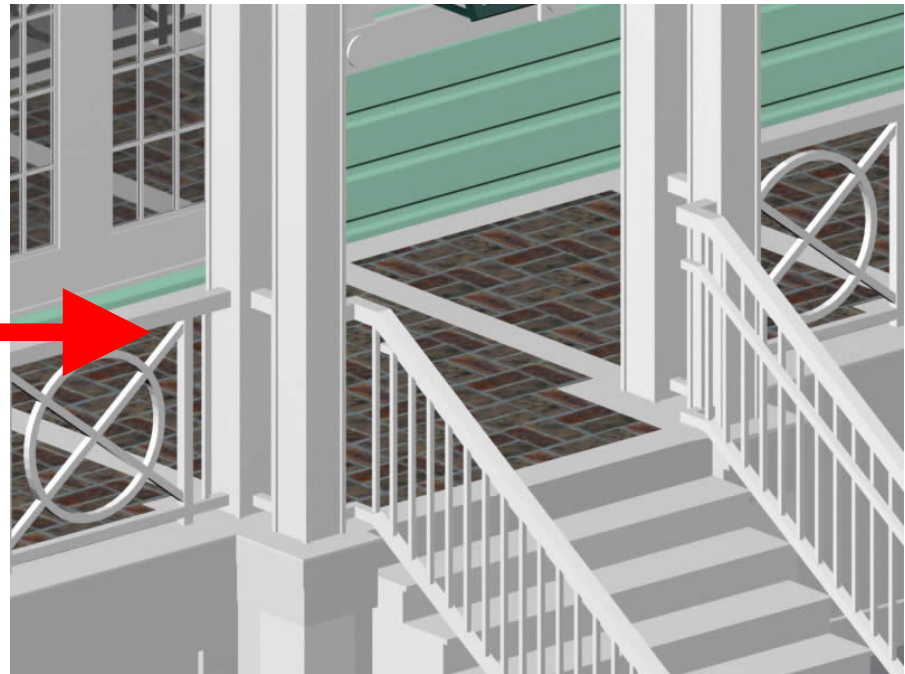
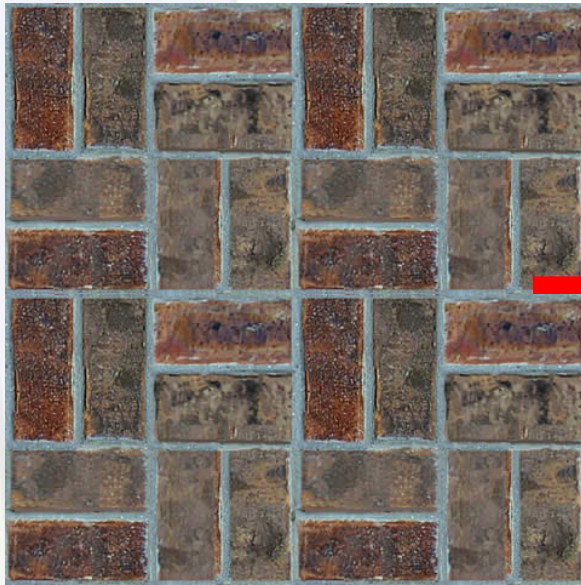
Modeling

We begin the modeling process by importing the CAD data into our 3D animation software. We build structures in our software much like they are built in the real world. We start with a foundation, build walls, insert doors and windows, add a roof, place trim features, etc.



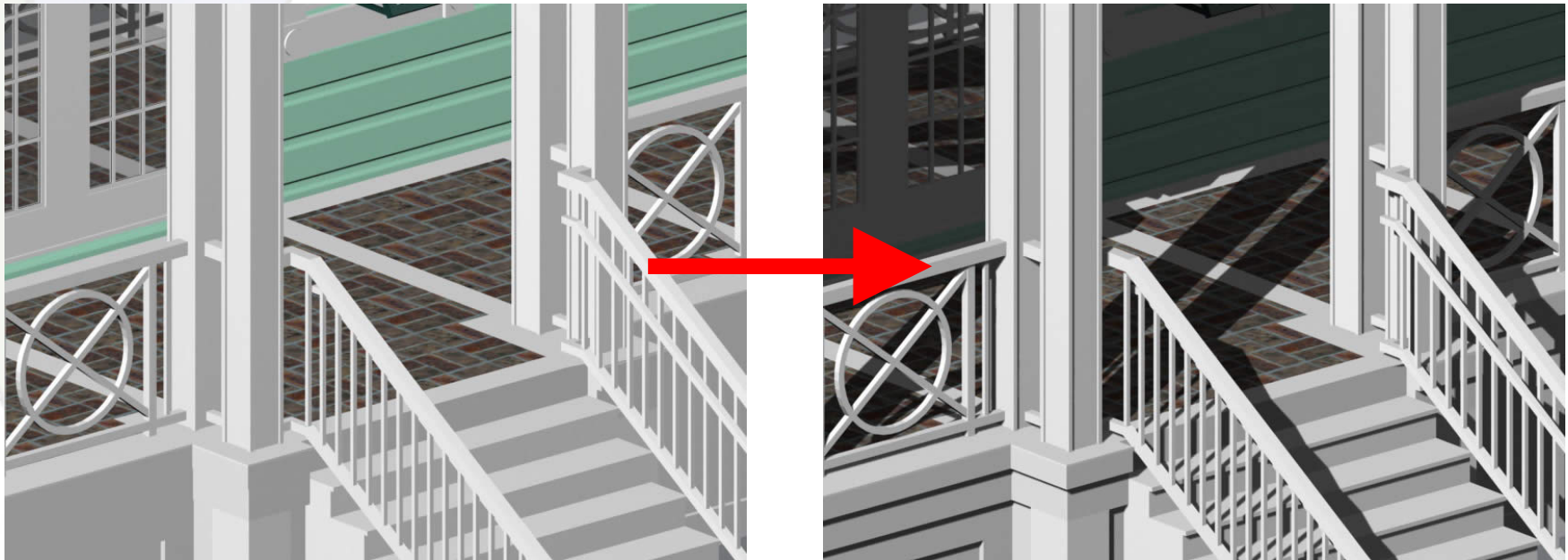
Texturing

Next, we texturize our models using actual photographs from the material samples our clients provide or using images from our library of thousands which will match closest to the materials to be built with. In the example below, we use a simple paver image to replicate exactly what the front porch of our clubhouse will look like.



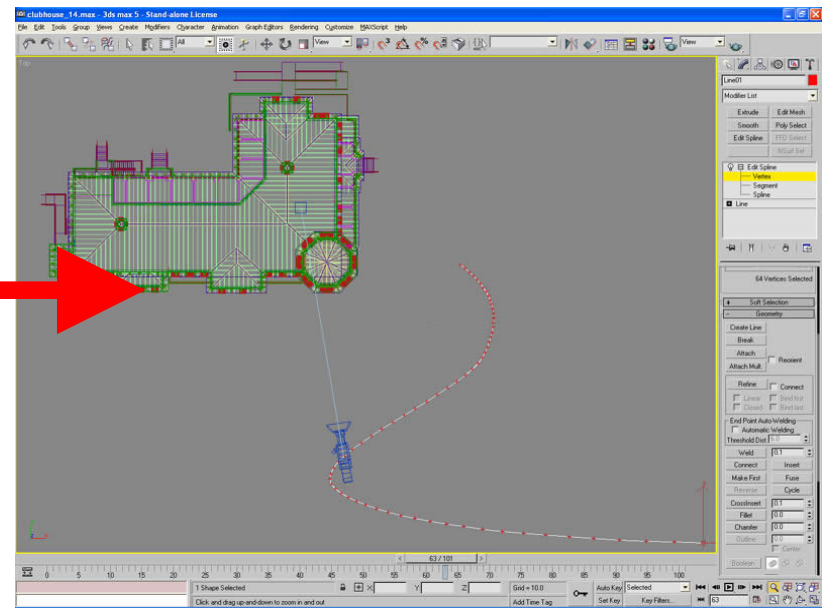
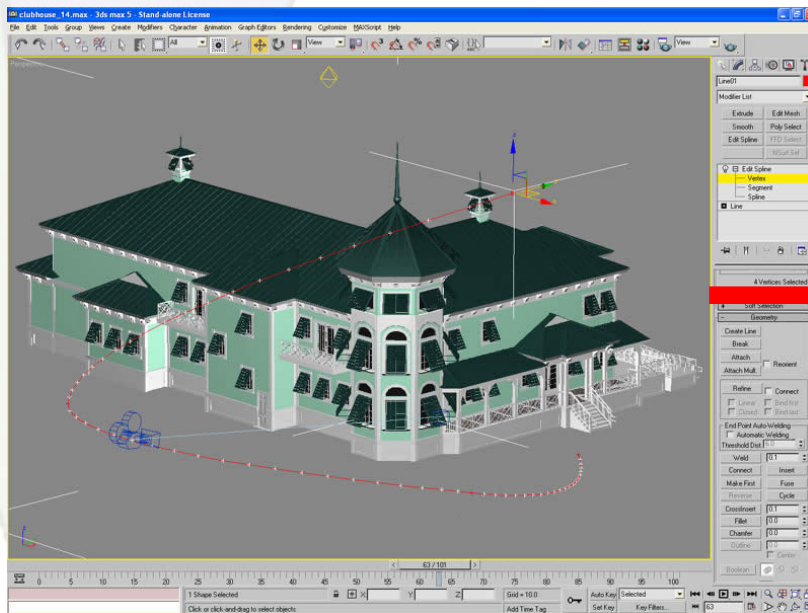
Lighting

And then we say, 'Let there be light.' By carefully placing light sources throughout our scenes, we add the final ingredient needed for photorealism. With our 3D software we are able to achieve true photometric lighting and exact shadow simulation. We can show you what your interior scene looks like when lighted with three 100-watt light bulbs or what your exterior scene looks like at 3:42pm in Chicago.



Animation Scripts

When a project calls for animation, we must place cameras in our scenes as we would in the real world. Capturing the project from just the right angle is critical in creating the desired atmosphere and showing all of the key elements. In the images below, you can see a line displaying the path the camera will follow to capture the sequence of images necessary to create an animation.



Costs of 3D CAD

- Sample projects and costs
- Discussion of cost vs. scope of services



EXTERIORS

This is an example of where 3DAS blurs the line between virtual and reality.



In addition to the creation of a structure, as shown in the previous image, this scene includes virtual terrain, landscaping, and other elements such as cars (rather than superimposing completely onto a photo). This adds to the complexity of the scene and results in more work.





Whether your design is commercial or residential, 3DAS can provide you a perfect glimpse into the future of your project.



Our models are meticulously crafted and include every detail specified in the architectural drawings. Nothing is overlooked!



This is an example of a project where the client needed aerial photography so that that the 3D scene could be superimposed in an actual photo. Aerial photography is an example of an additional service that can be provided.



This is an example of a project where there were only 3 different building types (including a clubhouse). When identical models are copied, the overall cost is greatly reduced, rather than creating each building uniquely. This is also an example of superimposing a 3D scene with satellite imagery. These were two of many images rendered for this project.

INTERIORS



3DAS produces stunning, photo-realistic interiors that blend the boundary between real and virtual. Using the latest in 3D technology, we can take advantage of a relatively new process called 'radiosity', the bouncing of light. Notice how the colors in the room bounce onto the white ceiling.

We produce interior scenes with such precise detail and accuracy, you can see the actual furniture and décor that will fill your interiors. The furniture in this scene is custom made to show exactly what the model home would look like.





3DAS creates images that instill emotion and make indelible impressions. Our goal is nothing less than true photo-realism with each scene.





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