

4D Modeling Adds Time Dimension

The 4D Computer Modeling Process integrates three dimensional CAD drawings with the fourth dimension, time, to improve communication, coordination, and planning of construction projects. The process can reduce coordination problems among subcontractors and between the owner's operations and construction. It can be used on both remodeling and new construction projects. Three-dimensional computer modeling has been available for more than two decades, and hardware and software advances are continuing to bring better and less expensive 3D computing capabilities to design consultants and constructors. For contractors, the key advantage of an available 3D electronic model is its easy modification before any physical work takes place on the construction site. A fourth dimension, time, is added to these 3D models to animate the construction sequence and produce 4D Computer Modeling.

Nielsen Dillingham Builders, Inc. (NDBI) funded research at Stanford University's Center for Integrated Facility Engineering (CIFE) to explore the usefulness and practicality of 4D modeling. Members of the NDBI management team felt that construction schedule animation of a 3D model of a hospital would be a good tool to use to explain proposed construction sequences to hospital administrators and staff as well as to construction field personnel. Using PC-based software, the team created videos that visualize the sequence of construction from any angle over time. The 4D model enables project teams to explore and rapidly communicate several "what if" scenario alternatives, to coordinate the work of contractors, subcontractors and owner operations, and to optimize project performance before actual project execution. It reduces the need for physical mock-ups, saves time in layout and construction, and reduces field rework hours.

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