
Wilkes-Barre/Scranton International Airport Avoca, PA

Seth Glinsky

Forrester Construction No Experience 3/20/06

Q1. What is the main reason to why you are not using 4D modeling on your projects?
A1. 'The major reason we are not using 4D modeling on our jobs, is because the costs and the time involved with training employees will not be beneficial to the overall process. We use Fast Track construction, so the time that we would spend on planning and designing the model would only take away from the time we could actually be building. Speed and getting the job done is our priority

Q2. Would your employees be open to trying out/learning 4D modeling?
A2. Yes, they would be.

Q3. What jobs would you use 4D on if you used it?
A3. If we took on larger jobs, we would definitely focus the planning and modeling on larger projects, but since our target range of projects vary from $2-$20 million dollars. Anything larger than 20 million would definitely be considered for modeling

Q4. Would you like to see more opportunities for training or seminars in 4D modeling?
A4. 'As of now we have weekly training classes that we can introduce new techniques, technologies or what's new in the construction industry. A large percentage of the contractors that we work with have worked their way up through the ranks and are not very proficient with computers. This may cause some conflict between parties. Though it would be worth while if there were more seminars about 4D modeling.

Q5. Would you use a 4D modeling company or firm and have them model the building for you?
A5. 'We would if the price is right. If it came down to the owner requested a building model as part of the bid package, then yes defiantly we would make one. We would spend $1000 on a $1Million project.


Wilkes-Barre/Scranton International Airport Avoca, PA

Mera Faddoul
Jacobs 6 Months Experience 3/6/06

Q1. How many buildings has your company modeled?
A1. 5 Buildings

Q2. What program did you use to model the building?
A2. Commonpoint – NavisWorks

Q3. Did the owner of any of your buildings influence your decision in using 4D Modeling?
A3. Definitely, we also approach owners and convince them to use 4D modeling on their buildings. Owners mainly find out about 4D modeling through word of mouth.

Q4. How long did it take to model the building?
A4. The model the courthouse, it took between 40 and 80 hours. The model was made from 2D to a 3D model through extrusion. But the model really depends on what you want to show in the model. If you are looking for something to show during a weekly meeting of areas of the building that need to be focused on, it doesn't have to be too complex. You model on the level to how much you want to benefit from the model

Q5. In what stage did you model the building?
A5. All buildings have been modeled Mid-Construction, and noticed results immediately.

Q6. Where do you feel 4D modeling is best suited?
A6. Contractor would benefit the most, and CMs. The general contractor is the key user.

Q7. What was the main risk your company had before you started?
A7. The main risk was, what 'ARE the benefits of modeling'. Time and money were the driving force otherwise, sinking time and money and not seeing any benefits immediately was the major concern. We started to model rooms only first and small issues on the job site. After we proved that modeling worked and actually helped out, we applied it to larger issues.

Q8. Are there any improvements you would like to see with the software you used?
A8. NavisWorks is too user friendly. There needs to be a lot more content, restraints and be a little more complicated. Work from 4D model to devise the schedule instead of adding a schedule into the 3D model. Add more real time editing tools

into the model space so one can do minor changes on the fly instead of re-importing the model from VIZ or other 3D programs.

Q9. Was there any training or seminars presented by the program developers?
A9. There was no training from CommonPoint – NavisWorks, but technical training would be more useful than how to use the program as is. Learning how to make models more useful and more informational rather than making them pretty. Better use of 4D modeling is what we're after.

Q10. Would you help other companies with 4D modeling?
A10. We definitely would advise others on how to use; the industry could not work otherwise if everyone helped their selves. We would help, but try to keep our competitive edge at the same time.

Q11. Do you feel that 4D modeling will 'take away' from the jobs of estimators and schedulers?
A11. This is more of a way to improve the scheduling/estimating department.


Wilkes-Barre/Scranton International Airport Avoca, PA

David Epps **BIM Spc/Proj Eng**
Holder Construction **1 Year Experience** **3/10/06**

Q1. How many buildings has your company modeled?
A1. Right now we have one building fully modeled and 3 or 4 are in progress now.

Q2. What program did you use to model the building?
A2. GraphiSoft Constructor and NavisWorks

Q3. Did the owner of any of your buildings influence your decision in using 4D Modeling?
A4. We (Holder) presented to the owner the service for an extra cost, and were impressed and accepted the model.

Q5. How much did it cost to model the building?
A5. $80,000

Q6. In what stage did you model the building?
A6. After the construction documents on the Data Center, pre construction documents for all the other buildings.

Q7. Where do you feel 4D modeling is best suited?
A7. The Architect should make the model. 2D to 3D is most conventional, but making it 3D initially and making 2D plans from that would be best.

Q8. What was the main risk your company had before you started?
A8. There were not many risks at all. We were very excited to start using the programs. The company backed us all the way. Our only regret is not using it earlier.

Q8a.
A8a. It's hard to quantify the benefits of 4D modeling, and even harder to get tangible results. Need hard proof of effectiveness, there are too many programs out on the market to choose from, so there is no industry standard. Really looking forward to 5D modeling as the industry standard. The most forward thinking will benefit the best from this technology.

Q9. Are there any improvements you would like to see with the software you used?
A9. RevIT – Needs 5D capabilities
NavisWorks - Needs to try and program into it what people want, it's very user friendly and large files load quickly.
Graphisoft – Loading models takes a long time. Generates to many large files.

Q10. How did the subcontractors react to this software?
A10. The subs loved it, especially the younger guys. One of their own subs actually developed their own 4D MEP model.

Q11. Is there any piece of advice you would give other companies about 4D modeling?
A11. "There's a wave coming, and it's gonna be sink or swim" It's slow now, but it's going to climax really fast.

Q12. Do you feel that 4D modeling will 'take away' from the jobs of estimators and schedulers?
A12. The Precon guys will be affected directly, but this will more facilitate their work. But the old fashioned way will always be around, never fully switch over. Everyone will have their own par in modeling the building, and nothing will be replaced by it.

Charlie Yetter **Senior Vice President**
Trammel Crowe **One Time Application** **3/7/06**

Q1. How many buildings has your company modeled?
A1. 1 – Shirlington Condos

Q2. What Programs did you use to model the building?
A2. Penn State modeled the model and used NavisWorks

Q3. How did you come about 4D Modeling?
A3. I Visited PSU, and saw the power of 4D modeling through Dr. Messner. Had a recovery schedule developed but it was hard to visualize the schedule, so asked PSU to make the model and help visualize the schedule. The key is the fast the building is complete, the faster you can start gaining money. This was the most important factor and drove the process.

Q4. In what stage did you model the building?
A4. 55% the way through the concrete framing, and backfilling, 20% overall project

Q5. How much did the building cost?
A5. Less than $10,000, having PSU helped cut costs greatly.

Q6. How much money or time did you save?
A6. The cost to bring the project up to speed was pretty steep, but in the overall scheme of things, there wasn't much money lost. Money spent wasn't out of contingency, only to bring it back up on track.

Q7. Where do you feel 4D modeling is best suited?
A7. Modeling should be used on every project, as soon as it's designed by the architect make the model, even have the model made by the architect. But use the model to derive the schedule, and have the language to provide the model. Make 4D part of the bid package as well.

Q8. What was the main risk your company had before you started?
A8. Did not know it existed before Penn State. Don't really see 4D modeling as a risk, just a new tool to use and manage construction.

Q9. Are there any improvements you would like to see with the software you used?
A9. The Dollar amount!! Need to have the 5th dimension programmed. The program needs to estimate model materials.

Wilkes-Barre/Scranton International Airport Avoca, PA

Q10. Is there any piece of advice you would give other companies about 4D modeling?
A10. You will be left behind if you don't get with the times. Trammel Crowe will be using the software via 3rd party company or firm.

Q11. Do you feel that 4D modeling will 'take away' from the jobs of estimators and schedulers?
A11. Jobs will be redesigned; contractors will still have to use their own schedules and developed their own schedules. Both subs and architect need to work on same level enhances schedules job.


Wilkes-Barre/Scranton International Airport Avoca, PA

Jim McAllister Vice President
ISEC No Experience 3/21/06

Q1. What is your stand on 4D modeling?
A1. I haven't seen much of it; we're a subcontractor and see 4D modeling used more by Architect and CMs to help their client. Use 4D as a tool in presentation and, "why should the owner select you" tool. It separates you from the competition, and can show understanding of the owners needs.

How we are a part of the whole deal is we review the specs and keep updating the technology between the market and the architect or CM. Always updating the specs. Don't really see the need for 4D modeling.

Q2. Would you be open to using 4D modeling with a CM?
A2. Yes indeed. I feel it would be easier to talk about all aspects of a job w/o a 4D model.

Q3. Did you know that there are many more applications to 4D modeling than just presentations, such as regaining lost time on a schedule?
A3. Well then it's a lot more useful in that matter. I do not know much about this topic, but I'm definitely learning things now. I would like to see more opportunities to go to seminars about this topic now.

Q4. How would you react to working with a CM and 4D?
A4. This sounds like a very easy way to visualize complex jobs. We do a lot of work with finishes and you talking about the Jacobs courtroom visualization, 4D would really help out our cause. We are working on a hospital right now and renovating 4 rooms and being able to visualize the ¾" thick renovation schedule.

Q5. How much would you invest in education on 4D modeling?
A5. I wouldn't mind personally educating myself and taking the initiative to investigate the software and what's out there. I would start out small on any real application and learn from there. As far as the company goes, that's another issue.

Q6. Would you use a 4D modeling firm or company to make any models?
A6. We would like to keep our options open.


Wilkes-Barre/Scranton International Airport Avoca, PA

Jake Hawes **Chief Estimator**
Clark Construction **Just Started** **3/7/06**

* Clark Construction just started to implement 4D modeling, very well read and working with operations now. Though much of this is still in the works.

Q1. How many buildings have you modeled?
A1. No complete buildings yes, mainly rooms and partials.

Q2. What programs did you use?
A2. Graphisoft Constructor. Used separate scheduling program. There is no major dependence on Graphisoft now either, we will start our own department in Clark, and will refer back to Graphisoft if any major issues come up.

Q3. Why did you wait so long to start using 4D Modeling?
A3. Fear of the unknown, the costs and training, contractual relationships and data sharing were many of the points that held us back. Using this program as a tool to address risks and problems, and trying to make the program risk free were what we would like to do. Also the company mentality was another hold back.

Q4. What are some improvements you would like see with 4D software?
A4. A lot more in terms of estimating, this is a powerful tool but need to be refined, and getting it out of the box and start using it, difficult to start using. *Is it really necessary to have an overly detailed model?*

Q5. Where do you feel 4D modeling is best suited?
A5. The GC would benefit the most from 4D, there is less risk dealing with the time scheduling side of the business. The CM could get the best out of 4D modeling in huge industrial planning, like chemical plants or oil refineries. Design/Build firms benefit from fast track construction, working with the client up front to find out how long it will take to build, then define budget from there, take out loans, have tenant move-in and show client the accuracy of an on the fly design. (Design build technically doesn't have time to model)

Q6. How will you present these models to your subcontractors?
A6. Weekly meetings like foreman's or GC meetings would work the best. This would be where the models would be most effective. There would be one-on-ones for exclusive training and model analysis.

Q7. Do you feel that 4D modeling will take away from the schedulers/estimating job?
A7. The schedulers and estimators job will be more redefined. There will be a capability to do more work, so how could anything be taken away? Design/Build

companies will take work form the GC on a small scale, but on large scale operations, DB will find it very helpful financially.

Q8. What piece of advice could you offer to non-users of 4D?
A8. Be open, research, is there a benefit for your company, proceed with caution, be gradual yet aggressive


Wilkes-Barre/Scranton International Airport Avoca, PA

Matt Bruchey **Project Engineer**
BE&K **No Experience** **3/23/06**

Q1. What is the main concern behind not using 4D CAD/Modeling?
A1. Finding someone that knows how to use it or training the rest of the people to use the software. Great to have, but to have someone very proficient in it.

Q2. Do you feel that it would be beneficial to your company/job?
A2. Absolutely, form a broader point; it's easier to show someone visually how to build something or how to translate at schedule. Use visually aided schedule, not as in-depth as 4D with foremen.

Q3. Would your employees be open to trying it on certain jobs?
A3. Sure would. Some of the older guys, not so much.

Ind Ques Vis aided schedules: diagram of what's going on, for different processes of construction. Foremen can walk in and see where the work and what kind of work is going on in areas of the building. Everything to hand sketches to computer 'SureTrack', power point presentations.

Q4. Would you like to see opportunities for training in 4D CAD/Modeling?
A4. Seminars, defiantly would go to,
Go to day programs where you get to *use* the program instead of listen to the

Q5. -Would you like to see the development of a professional 4D Modeling Firm as a buffer between the Architect and CM/GC? Would you use such a firm on your projects or jobs?
A5. As long as it is cost prohibitive, more complex projects. Be dependent on them at first but slowly devise their own department to make their own 4D models. At first yes, over time no.

Wilkes-Barre/Scranton International Airport Avoca, PA

Mark McGaughan **Vice President**
Facchina-McGaughan **No Experience** **3/23/06**

Q1. What is the main concern behind not using 4D CAD/Modeling?
A1. Not required by owners to much. GC will only include it if necessary. Money issue is pushing it. If you have 80K, with 4D, and other guy that does not, his bid is 80K cheaper. Extra expense. As soon as 4D is quantified and making this a requirement and actual value efficiency in saving and outlay of cash.
The operator, schedule in house as part of company, they know how to do it, if take on 4d then you need to hire people that know or hire a company to do so.

Q2. Do you feel that it would be beneficial to your company/job?
A2. I would love to for the benefits to the project, saves on screwing things up. But the work is prohibitive. As soon as the owners demand this you wait till then

Q3. Would your employees be open to trying it on certain jobs?
A3. Would be open but mainly cost driven.

Q4. To what kind of jobs would you most likely apply it?
A4 Any at all. 4D is universal. If you have the capability, then just straight up use it. Otherwise it's a waste.

Q5. Would you like to see opportunities for training in 4D CAD/Modeling?
A5. Only if it's part of the job costs.

Q6. Would you like to see the development of a professional 4D Modeling Firm as a buffer between the Architect and CM/GC? Would you use such a firm on your projects or jobs?
A6. Use in house not consultant rates. "Follow the money"