



# Synchro Software and Microsoft take construction planning to new heights



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Director of Product  
Management,  
Synchro Software

## Microsoft HoloLens and Azure enhance Synchro's industry-leading solution

Synchro Software's 4D construction-modeling solution was already state-of-the-art before they started exploring Microsoft's cutting-edge augmented-reality and cloud technologies. "For general commercial contractors, Synchro software is used for digital construction planning and operations. At the core is a 4D engine that can simulate construction processes," says Greg Demchak, Director of Product Management at Synchro Software.

"The software imports 3D CAD/BIM models of construction projects, and then lets you link those model objects to detailed project schedules, known as Gantt charts," says Demchak. "So when you add the time dimension, you get a complete 4D run-through of the project from beginning to end."

## First step: connecting Synchro with HoloLens

Integrating HoloLens with Synchro came about almost serendipitously. "I was invited by a friend to this private Microsoft hackathon event for HoloLens. So I took a team and we just hacked all weekend. We tested everything we could, including integrating our dimensional environments into HoloLens," says Demchak.

This led to a pivotal discovery. "The integration was almost seamless," says Demchak. "We were already building a mobile app for Synchro using a gaming engine typically used for building dimensional worlds for games. Turns out, HoloLens has a really tight integration with that gaming engine. So we were able to get that working pretty quickly."

## 4D construction simulation made immersive

Pulling the Synchro experience into HoloLens has been a game-changer. Users can now “digitally rehearse” 4D construction projects with a high degree of accuracy and detail. The HoloLens overlays the dimensional Synchro graphics on the jobsite, and the user can watch as structures are built and systems are installed across the timeline.

Early users have been amazed. “People love this. It’s so cool to watch them move their heads around and walk inside the model at one-to-one scale, which usually blows them away because it’s the first time they can actually feel the scale of what they’re working on,” says Demchak. “But beyond the cool factor, it can help our customers win jobs. That just happened in the UK, where our customer used the HoloLens in their presentation and it helped them win a huge job.”

Through the immersive HoloLens experience, users get a much more impactful visual reference for what they’re building. “If you see it better, you’re going to do it better,” says Demchak.

## Mobilizing Synchro simulation with the help of Microsoft Azure

“We’re also looking at field applications,” says Demchak. “Inspectors could use it to check quality, validate the completion of tasks, and identify issues in the field in real-time. We need to make it easy to interact with 4D models, and that means making apps that are intuitive. The mixed reality aspect of HoloLens gives us that opportunity.”

Synchro files are data-heavy, and require powerful processing to render and animate smoothly. But high-end workstations aren’t usually available in the field. So Synchro took advantage of Azure GPU-enabled Virtual Machines to offload graphics processing from end-user devices like tablets and HoloLens.

“When we use our mobile app or HoloLens in a remote situation, the experience is seamless. You can’t even tell you’re running the Synchro app on a cloud server and not on a local machine,” says Demchak.

## Leveraging data for business intelligence and machine learning

Over the course of a project, Synchro files contain growing stores of data that can be used for analysis and reporting purposes. “As field inspectors keep track of progress, the data just feeds into the Synchro project database,” says Demchak. “So we’re able to pull that data into Microsoft Power BI and run some analysis and produce visual reports that give business stakeholders a sense of progress.”

Synchro is also looking at Azure Machine Learning for future opportunities and capabilities. “We could start feeding data across projects into machine learning and start analyzing timelines, tasks, and other variables, and see what patterns emerge that could be useful in further improving practices and making business decisions,” says Demchak.

## Breakthrough innovation built on partnership

Partnering with Microsoft was key in the rapid progress Synchro has achieved in just this past year. “Working with Microsoft has been really good,” says Demchak. “They’ve been very supportive in advocating for us and involving us in multiple hackathons to really develop and advance our technology. Our team really enjoys the spirit of those events and the chance to work together with Microsoft people on getting real stuff made.”

## Opportunities

- Bring advanced virtual-reality/augmented-reality experiences to Synchro’s industry-leading 4D construction-modeling solution
- Extend the reach and functionality of the Synchro solution through cloud integration and processing
- Apply powerful business-intelligence capabilities to visualize project data for status reporting
- Exploring cutting-edge technology advancements for future enhancements to the Synchro solution

## Results

- Microsoft HoloLens integration brings powerful immersion into the Synchro 4D solution—users visualize project details with more clarity and certainty
- Microsoft Azure cloud processing lets users experience project files remotely—multiple users in different locations can work on the same file together
- Future plans are underway to integrate Microsoft Azure Machine Learning into the solution to analyze project data and learn new best practices

## Snapshot

- Organization: Synchro Software
- Industry: construction
- Location: London, UK, and Boston, MA
- Website: [www.synchro ltd.com](http://www.synchro ltd.com)
- Customer since: 2016