How NVIDIA and Devcon built a cutting-edge workspace

Owner & General Contractor | NVIDIA and Devcon | Case Study

PlanGrid

In 2015, the Bay Area construction experts at Devcon teamed up with NVIDIA, the pioneering AI computing company, to build NVIDIA's state-of-the-art corporate campus in Santa Clara, CA. The design-build project, nicknamed 'Endeavor,' is comprised of approximately 500,000 square feet of open office space betwen two levels under a single roof, and a central atrium called 'The Heart'—a massive common area for all of NVIDIA's departments.

The project is leveraging cutting-edge technologies to craft this unique structure, from NVIDIA's Iray—a rendering technology that generates photorealistic imagery—to PlanGrid. While PlanGrid has been Devcon's field standard for years and is often used to collaborate with owners, NVIDIA has taken that collaboration on PlanGrid to a whole new level to ensure that every detail of its innovative design comes to life.

Problem

The hyper-collaborative workflow on Endeavor began with Devcon's discovery of construction apps seven years prior; they were already ahead of the game when they put tablets in the hands of their field staff. They wanted to provide a system where the field trusted that they were always working from the current set.

The GC started to purchase iPads in 2010, and tried to implement multiple methods of digital drawing collaboration. At first, they used PDF readers, which were slow on mobile devices and complicated to use. Then they tried mobile versions of apps that had been beneficial for their office team. Yet again, they struggled to gain field adoption because the apps were too complex.

Solution

Several years passed before Joe Tan, Devcon's Technology Director, discovered PlanGrid. After meeting with PlanGrid's CEO, Tracy Young, he decided it was the perfect fix for their blueprint management struggles. Devcon tested PlanGrid on several projects and instantly found several key benefits.
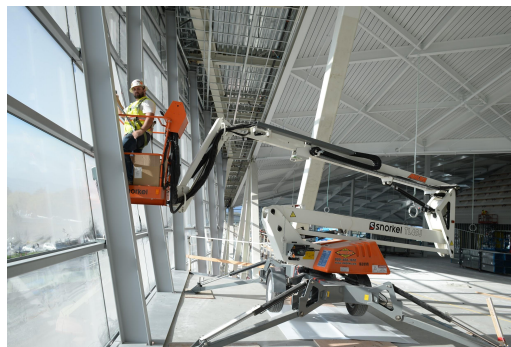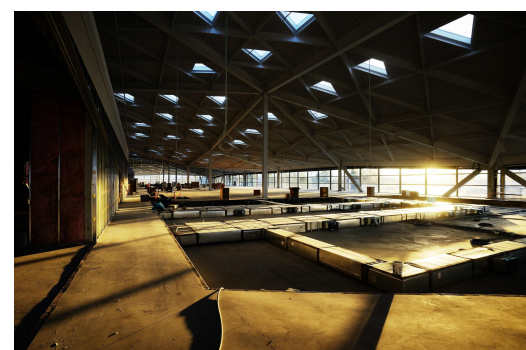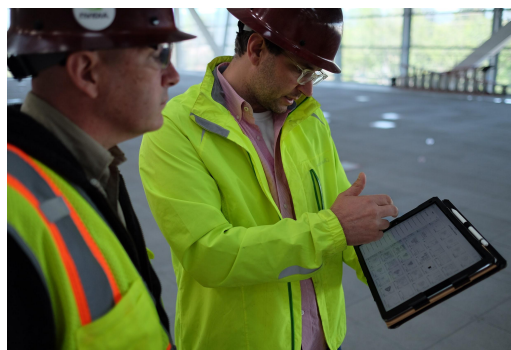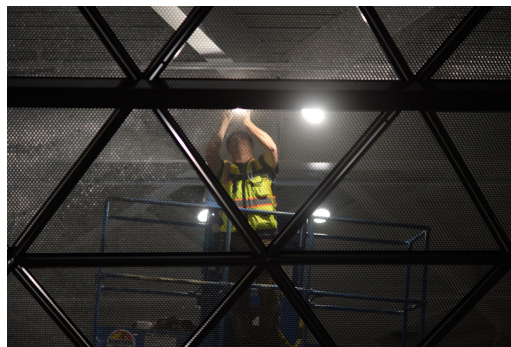
First, they noticed that PlanGrid's speed on mobile devices was unmatched by any of the other apps they'd tried. It was so simple that even their technology-averse field team wanted it, and they were able to learn how to use it with little or no training.

PlanGrid also has a simple user experience that allows for fast navigation between sheets. The detail callout hyperlinks auto-populate upon the first upload, so the field can look into details and use the recent sheets button to flip back in seconds. This workflow would be practically impossible on paper prints or using mobile software with complicated interfaces.
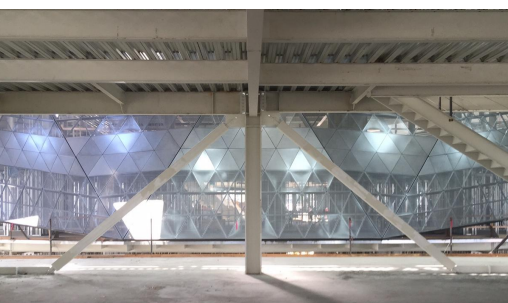
PlanGrid

> *"I like the tool that does one thing really well, not ten things at 60%.*
> *PlanGrid gives everyone the right information, instantly—that's huge."*
> – **Rob Benson**, Architect, Devcon

> *"I saw PlanGrid on the superintendent's iPad, and had to have it.*
> *Compared to messing with PDFs, it's a no-brainer."*
> – **Jack Dahlgren**, Semiconductor Operations, NVIDIA

Implementation and usage

Devcon started to use PlanGrid in 2014, and their first large PlanGrid project was Levi's Stadium, home of the San Francisco 49ers. Although Devcon was early in rolling out PlanGrid, there were already about 80 PlanGrid users spread across the general contractor, owner, and subcontractor teams. Devcon quickly found that involving everyone in PlanGrid—especially the owner—was a pivotal part of their success.

> *"PlanGrid has higher adoption by the field team than anything else we've seen. It's just so fast and easy, everyone loves it."*
>
> - **Joe Tan**, Technology Director, Devcon

From there, PlanGrid usage spread like wildfire, and everyone involved with Levi's Stadium implemented PlanGrid on their next projects. Today, 215 people at Devcon use PlanGrid on almost every project. A highly collaborative firm, Devcon always invites their owners, developers, architects, and subcontractors to join PlanGrid. And it's increasingly common for owners and subs to ask for PlanGrid upfront.

As for NVIDIA, they had no previous solution to communicate with their GCs at this speed. During construction, they would take pictures with their phones, attach them to PDF's with markups created on the desktop, and send to the GC via email. Post-construction, their facilities team had a hard time finding the latest drawings for specific issues, despite having volumes of PDF and paper drawings for everything. "It was a mess," Jack admits.

Working with Devcon, they quickly noticed PlanGrid's value. Now, the owner can serve as a second set of eyes onsite. If a member of NVIDIA's construction team sees any issues on the jobsite, they can mark that issue up on the current set, snap a photo, and add details for Devcon to review — and it's done in a matter of minutes. NVIDIA currently has a team running PlanGrid for the Endeavor project, and they plan to expand usage. The ability to quickly find information on anything related to the building, from design to operations, is invaluable.

> *"10 years from now, our facilities team will need all of this building info. And they'll continue to update PlanGrid. Before, it was a total mess."*
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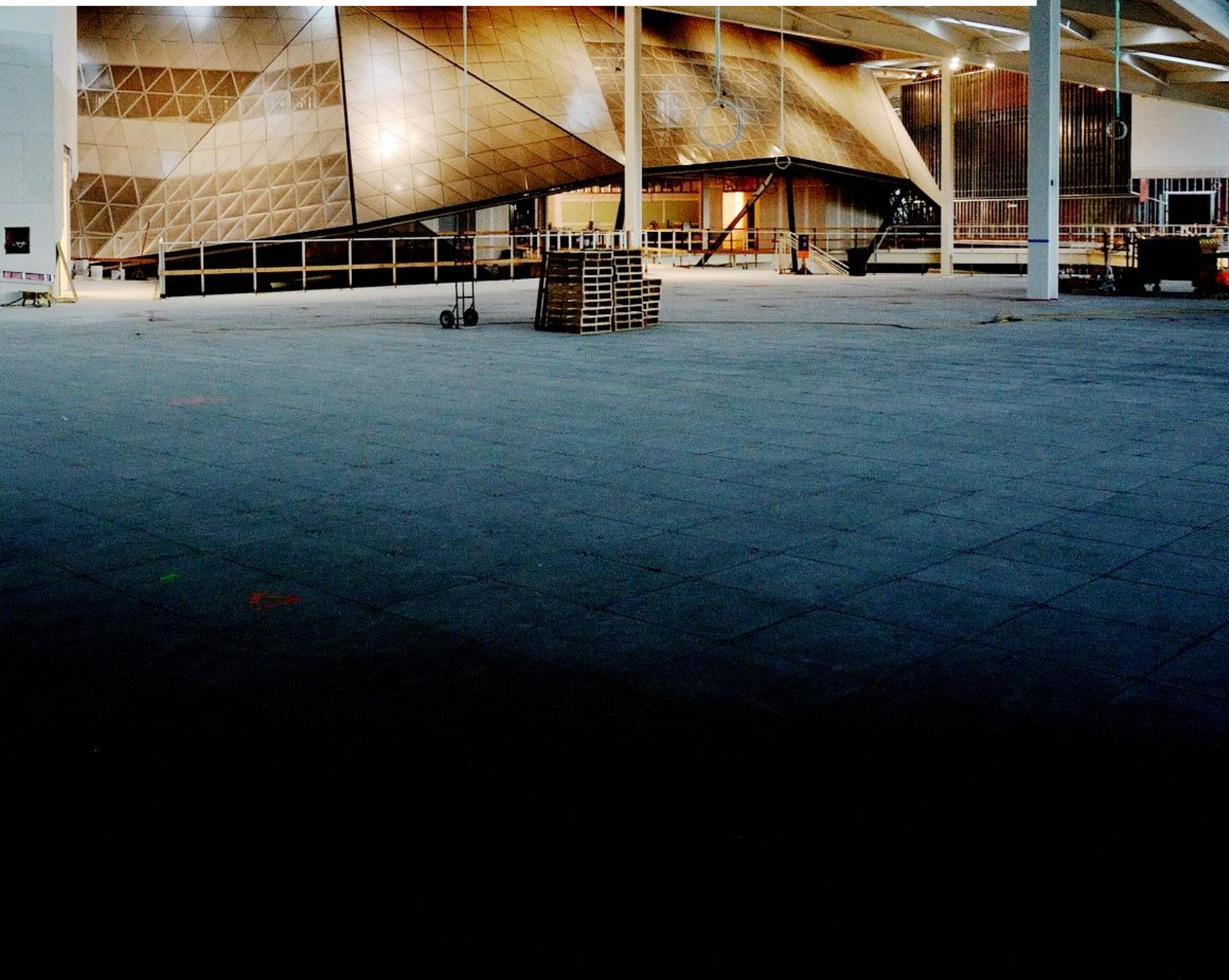> – **Jack Dahlgren**, Semiconductor Operations, NVIDIA

Usage during bid phase

PlanGrid has transformed the way Devcon's PMs or PEs manage the bid phase, conveniently placing bid documents from multiple jobs in the palm of their hands.

This facilitates remote reviews on the go with team members, and relieves the burden of transporting physical copies of plans to stakeholder meetings. Additionally, the annotation features allow for the sharing and tracking of notes on constructability. Especially for design-build projects, construction document clarifications can be tracked and issued to the design team as "issues" similar to how a punch list are issued to the field team as part of project close out.

"The chat support is amazing. Their response to questions are instantaneous. PlanGrid support is the best in the business—without a doubt. Everyone loves it."

- **Joe Tan**, Technology Director, Devcon

Usage on Endeavor

Endeavor, which will be ongoing until late 2017, is a complex build permitted in a fast-track fashion with multiple rounds of regulatory approvals that required constant updates to the construction documents. When construction began, there were 1800 drawings issued to the team, and by the time that construction completes, there will have been over 6,600 drawing sheets issued for construction via PlanGrid. With so many changes, the cost and effort to keep everyone on the current set would have been daunting. Fortunately, the entire project is on PlanGrid, so the owner, GC, architect, and many of the subs and consultants are easily kept on the same page.

Here are some of the ways Devcon and NVIDIA have been utilizing the app:

Sheet viewing
Responsible for the initial PlanGrid integration with Egnyte, their file storage system, Devcon quickly pulls drawings into PlanGrid directly from the cloud when the set is updated. This way, everyone on the project is able to archive their drawings without having to search through file and folder hierarchies to access a sheet.

Devcon has invented their own PlanGrid workflows to update the team on the project's progress. Aside from issuing new plans, they also issue full-size sketches (SK's) and RFI's, rather than the typical 8x11 attachments, as organized additions to the full set of drawings. Using PlanGrid's automated versioning, they simply slip new plans, sketches, and RFI's over the old ones so everyone knows what's current.

Devcon also uses PlanGrid to create mid-project as-builts for their superintendents. This way, the superintendents are able to see general snapshots of this large project. They'll repeat this process during closeout with NVIDIA.

> *"It's a huge productivity boost to not second guess our work. Everyone gets the information in their hands as they're working."*
>
> – **Alex Beardslee**, Superintendent, Devcon

Linking, tagging, and sheet compare
Like many teams on PlanGrid, Devcon takes advantage of PlanGrid's automatic linking for quick navigation between relevant sheets. They also manually add links to schedules (i.e. door, window, and finish schedules). Now that PlanGrid has developed universal attachments, this process will become even simpler, since they can link directly to excel, CAD, and many other files.

PlanGrid organizes Devcon's sheets with automated tagging by discipline, which is a critical timesaver on a project this size. Devcon goes one step further to create custom tags to organize by volume and specialty. Since they have 11 volumes on the project, this drastically simplifies the process of finding the correct sheet from the correct set. In addition, they use PlanGrid's sheet compare tool to overlay two drawings to compare changes.

Progress photos, punch lists, and offline mode
With PlanGrid, Devcon is able to track photos of deficiencies and corrections at every step of the project in an archive. Every picture taken onsite automatically backs up to PlanGrid's desktop application to make the process completely seamless between the field and office.

Devcon is currently starting their punch list process, experimenting with color coding and customized stamp techniques to streamline the procedure for their owners and subcontractors. For their interior work, where there are even more details that need fine tuning, PlanGrid's punch tool will provide major efficiencies.

Although everyone onsite has cellular plans or WiFi on their tablets, there are areas of Endeavor with poor connectivity, such as the garage at 'The Heart' of the building. Thankfully, PlanGrid drawings are pre-rendered and fully usable offline, so they can work at full speed and sync everything as soon as they have a signal.

Subs and consultants

Many of Devcon's subcontractors and consultants use PlanGrid onsite. A lot of them use PlanGrid internally like notebooks, collaborating on the same project as the general contractor, which makes it easy for them to access the current set quickly and communicate with greater context.

The mechanical sub, for instance, uses PlanGrid for markups and attaching shop drawings. The drywall sub uses it for everything, especially markups. The audiovisual and IT consultants performs all of their own functions on PlanGrid as well, from markups, to punchlists, to field reports.

Superintendents

Tasked with keeping the project moving forward, Devcon's superintendents rely on PlanGrid to improve field productivity and visibility. For complex jobs with many changes like Nvidia's Endeavor, PlanGrid has been critical in keeping everyone on the same plans—something superintendents used to battle with on most jobs.

With shared plans and project documents, superintendents can do a lot of real-time check-ins with subs in the field—they often attach photos or issues to plans, and get instant feedback. This is also important for design-build projects where they constantly review new designs by trade, which used to be scattered across digital and print versions.

Over the past 6 months, during the tenant improvement (TI) phase, PlanGrid has proven its strength, allowing superintendents to easily flip between multiple plan sets they need to manage in parallel.

Results

After several years, Devcon has been able to implement PlanGrid on a large scale, using the app to hyper-collaborate with trades, owners, and architects with the unique workflows they invented. They're in the process of growing 215 PlanGrid users to 300, and use the app on almost every project as their sole field communication platform.

"It's pretty obvious that PlanGrid will pay off. Unlike other software investments, you don't have to do thorough calculations to justify it. It addresses such a significant pain point. We're committed to PlanGrid because it makes us a better company."
–Joe Tan, Technology Director, Devcon

3x faster in getting documents to the field

It used to take up to three days to get drawings to field team for each new issuance, now it takes one

225lbs of paper in a complete set vs. 1lb for a tablet

Teams in the field now have everything they need on a tablet, instead of carrying around an 11 volume set

"We collaborate using PlanGrid on most of our projects. It's the best improvement to our work I've seen in 20 years. Everyone should have it."
– **Alex Beardslee**, Superintendent, Devcon