10 Useful (and Cool) Forge-Powered Applications
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Autodesk

Learning Objectives
- Discover Forge.
- Learn about the capabilities of the Forge APIs.
- Get inspired to use Forge in your own applications and workflows.
- Learn about the many ways Autodesk can help you improve your productivity.

Description
Join Forge connoisseurs Jim Quanci and Stephen Preston on a lightning tour of Forge-powered web applications that are “in production” today. Through live demos and videos, you’ll discover the amazing applications that Forge customers and partners are building. And, along the way, you’ll pick up some interesting ideas for how Forge can help you. You’ll discover a range of applications—from internal company tools to SaaS applications—in a range of industries. The class will examine as many demos as possible in 60 minutes, so we can’t guarantee that we’ll show exactly 10 apps. But we can guarantee that the apps will be useful and cool (and, in some cases, amazing).

Speaker(s)
Stephen Preston is Senior Business Development Manager for the Forge platform at Autodesk. He develops business models, pricing and go-to-market strategies for all Forge services. Before that, Stephen led the global Autodesk Developer Technical Services team – the Autodesk engineers helping customers and partners discover, learn and use Autodesk platforms.

Jim Quanci is Senior Director for Developer Advocacy & Support at Autodesk. With more than 30 years of engineering and design experience, Jim Quanci has spent the past 25 years developing relationships for Autodesk with leading technology partners around the world. He oversees an international network of over 4000 software partners – ISVs, Consultants, and Autodesk customers - who customize, complement and extend Autodesk Cloud, Mobile and Desktop technologies. He is currently leading creation of a new cloud-based ecosystem of partners leveraging Autodesk’s Forge web services platform. Prior to Autodesk, Jim worked at Sun Microsystems and General Electric. With a BS in Mechanical Engineering and an MBA in International Marketing, Jim is a frequent presenter and consultant to leading design and engineering software firms on software development technologies applied to design and engineering.
Introduction

At the time of writing, the Forge platform consists of the following APIs:

- **Data Management** – Provides read/write access to data stored by customers using Autodesk Forge-based SaaS products, including BIM 360 Team, BIM 360 Docs and Fusion 360 Team. (Obviously, each user must grant your application access to their data). Also allows your application to upload data to a private storage area (called the Object Storage Service – OSS).

- **Model Derivative** – Extracts data from design files and allows translation between different file formats. Data that can be extracted includes thumbnails, object data, and geometry (meshes and textures). Supported formats and possible inter-format translations are listed [here](#).

- **Viewer** – A highly customizable zero-client (WebGL) interactive 2D and 3D large model viewer. To view a design file in the Viewer, it must first be 'translated' using the Model Derivative API.

- **Design Automation** – ‘Headless’ versions of AutoCAD, Revit, Inventor and 3ds Max running on a server that allows batch (i.e. without user interaction) processing of design files to either modify the original design or to extract data from the design.

- **Webhooks** - Webhooks allow your application to register for notifications of events you want to monitor. Your application is notified of events to which it has subscribed via a POST request sent to the Callback URL you specified at the time you registered the webhook. For example, you can register a webhook to call back a URL when a file is modified within a BIM 360 project or folder.

- **BIM 360** – An extensive set of APIs allowing automation of tasks within the BIM 360 products.

- **Reality Capture** - Convert digital images into high resolution textured meshes, dense point clouds and orthophotos.

- **Token Flex** – Allows Customers with Enterprise Business Agreements to access Autodesk Token Flex Usage Data to generate reports on consumption, usage, and contract details.

In this class, we will run through a quick-fire series of demos showing how these APIs have been combined to create powerful web-based workflows and applications. The demos are all either commercially available now or are intended to become commercially available soon.
Applications

We’ve selected a set of Forge-based applications that cover a range of industries and that solve a range of customer problems. The purpose of this class is not to ‘sell’ you one of these applications – it’s to show you some of the many workflows that can be improved by making use of Forge.

Here are the applications, listed in the order we demonstrate them:

Archistar.ai

Archistar.ai has developed a cloud-based land development analysis application that enables investors to quickly evaluate and calculate return on investment for various building scenarios. They use the Forge Viewer to enable rapid visualization of various design scenarios and mixes of space – residential, commercial, retail, mixed and so on.

Arkio

Arkio has built a Virtual Reality (VR) app that allows a team to collaboratively perform mass modelling with team members wearing VR goggles and with other team members using tablets. They have also taken VR a step further using Forge to enable customers to pull Revit models out of BIM 360 into their VR experience for checking sightlines, shading and even enabling modifications to the Revit model while in VR (leveraging Forge Design Automation for Revit) – changes that are saved back to BIM 360 for the broader design team to review.
CADShare

CADShare has used the Forge Viewer to create a web-based parts identification and ordering system for large equipment manufacturers. Allowing customers to order spare parts by simply clicking on a 3D model of the machine simplifies and speeds up the ordering process, and significantly reduces ordering errors.
Reconstruct

Reconstruct is a construction management app on the cloud that allows you to easily mix photos (stills and 360 panoramas), point clouds and BIM in a single interface. A timeliner allows the user to easily compare photos, point clouds and BIM against each other and over time – changing the visibility and transparency of the various data types to quickly identify potential problems or to answer questions about what happened in the past. Reconstruct also makes management of what can be a flood of data easy – automating the collection and organization of the photos, point clouds and BIM. Reconstruct leverages the Forge Viewer, uses Forge Data Management and Model Derivative APIs – as well as seamless integration with BIM 360 using the Forge BIM 360 API.

EarthCam

EarthCam has a long history of leasing and setting up cameras on construction sites. They take care of leasing space (say) on a building across the street from the construction site, installing cameras, setting up internet connections, moving cameras on the construction site as construction progresses and more. They give construction companies an easy way to track progress on the site from any browser, on any device, and without customers needing to worry about the logistics of managing cameras and what can be thousands of photos – including stills and 360 panoramas – over time. EarthCam uses Forge Viewer, Data Management, and Model Derivative APIs to place photos “in context” of the BIM model – making it easy to see what may be missing, what may be wrong, or what needs to be done tomorrow or in the next week or month. EarthCam is also integrated with BIM 360 so one can always seamlessly see photos in context of the latest version of BIM.
Cadcraft

Cadcraft specializes in building online product configurators. Two different configurator experiences are shown – an elevator control panel design configurator and a glass shower enclosure sales configurator. Both configurators use the Forge Design Automation API for Inventor to take the results of the web configuration experience and automatically generate designs as well as fabrication and assembly details. The detailed design is created as an Inventor assembly, from which design and manufacturing documentation is output as PDF and DWG files. These configurators dramatically reduce time from initial customer engagement to product delivery while eliminating mistakes and reducing engineering time invested in each quote and sale.
IMAGINiT

IMAGINiT is an Autodesk Platinum Partner and Forge Certified Systems Integrator. They have used the Forge Design Automation API for Inventor to build a web-based drainage system sales configurator for their client, Advanced Drainage Systems. By bringing the design and review process closer to the customer, they have reduced up-front design time by 70%.

Blackbird Industries

Blackbird Industries use the Forge Design Automation API for Revit to create Shedmate – a web-based configurator for designing custom built sheds. They also use the Data Management and BIM 360 APIs to upload those designs to a BIM 360 project.
BamCore deliver factory cut, customized wall framing and paneling made from sustainably harvested bamboo. They have created a Forge Viewer-based web application that provides onsite assembly instructions to simplify and speed up the installation process.

CADD Microsystems is an Autodesk Platinum Partner and Forge Certified Systems Integrator. They were contracted by Autodesk to developer a Model Checker add-in for Revit, which had become one of our most popular Revit add-in downloads. (Get it here). They are now porting this to a web application that uses the Design Automation API for Revit and BIM 360 API to allow BIM 360 users to perform those same advanced model checks on Revit files uploaded to their BIM 360 Projects.
Further reading

Visit the Forge Developer Portal ([http://forge.autodesk.com](http://forge.autodesk.com)) to find out more about Forge in general.

Browse our library of Customer Success Stories ([https://forge.autodesk.com/customers](https://forge.autodesk.com/customers)) to find more examples of how Autodesk customers are using Forge to improve their productivity.

Watch the recordings of our Forge Partner talks webinar series to see our partners discuss how they use Forge to solve common industry problems ([https://forge.autodesk.com/partnertalks](https://forge.autodesk.com/partnertalks)).