Autodesk University 2012

# The Very Latest in Cool Technology from Autodesk® Labs

Scott Sheppard – Program Manager, Autodesk Labs
Shaan Hurley – Technologist, Autodesk Labs

**AC2232** At Autodesk® Labs, we preview exciting future technologies for architecture, engineering, and construction; manufacturing; media and entertainment; and other industries. The technology we work with is too new to be a product but can be used to gather valuable customer feedback for evolving projects into possible future products. In this class, we will show some of the latest and greatest technologies available on Autodesk Labs, explain how Autodesk provides these free technology previews to customers, and show how you can get the very latest in technology to help shape the future of our products and services. This is your opportunity to see where Autodesk might be going with new technologies.

## Learning Objectives

At the end of this class, you will be able to:

- Understand the purpose of having an Autodesk Labs
- Find and try technologies you can preview for yourself
- Use multiple ways to provide feedback to help shape the future of Autodesk products and services

## About the Speakers

**Scott Sheppard** has worked for Autodesk for 20 years depending on if you count acquisitions and dot coms. As part of software development, Scott has worked on HOOPS, Heidi, ***WHIP!***, Volo View, Buzzsaw, and Autodesk Labs technology previews like Autodesk Freewheel, Project Draw, Project Showroom, and Project Twitch. Scott is currently a Program Manager for Autodesk Labs. Scott earned his undergraduate degree in Computer Science from the University of Louisiana at Lafayette and a Master's of Science, Computer Science degree from Arizona State University (ASU) in software engineering.
scott.sheppard@autodesk.com, It's Alive in the Lab, Scott Sheppard (Facebook), Autodesk Labs Scott (Twitter)

**Shaan Hurley** has been a passionate user of Autodesk Products, first as a customer and now as a Technologist in the Office of the CTO. Shaan has been with Autodesk since 1998 and currently works with Autodesk technologies in Autodesk Labs as well as most of the products that Autodesk develops. Recently Shaan researched remote controlled copter aerial imagery capture in remote Northern Kenya. Shaan was trained as a mechanical designer and used many of the Autodesk products as a customer prior to joining Autodesk. When not blogging, Shaan spends most of his time speaking with customers, gathering feedback, and working on research projects that help shape future product development.
shaan.hurley@autodesk.com, Between the Lines, Shaan Hurley (Facebook), ShaanHurley (Twitter)

## The Purpose of Autodesk Labs

### Charter

Autodesk Labs, part of the Office of the Chief Technology Officer (CTO), is home to innovative new technologies and collaborative development. Its mission is to involve you, the customer, in the progress of design technology solutions. We're not a beta program (although Autodesk does have an active beta community), or a usability team, because the technology we work with is too new to be a product. The user feedback that you provide to Labs is really on product ideas, while they're still in an early conceptual stage.

The various divisions within Autodesk explore and develop technology that is commercially relevant to customers in design – whether they're involved in architecture, manufacturing, civil engineering, movies, games, or other industries. Through an online forum, Labs provides the public with free, early access to prototypes, technology previews, and experimental web services. We engage users in a conversation about new technology and product concepts to understand what has value in their world. Ultimately, Labs is a reflection of Autodesk's commitment to connecting with new and existing users to enable direct feedback that leads to better products and services.

### Track Record

Shaan Hurley first had the idea for Autodesk Labs in June 2006. So far the process has been working. There have been a few technologies that were either ahead of their time or did not resonate with the Autodesk Labs community:

- Visual Search
- Autodesk Design Review® Digital Pen Integration

On the other hand, there have been many success stories where technologies have graduated into other forms. Early ones include DGN import, Autodesk Impression, Inventor LT, AutoCAD WS, Autodesk Homestyler, and various file translators. Some recent ones include:

- Project Galileo Online – Autodesk® 360® Infrastructure Modeler software
- Project Vasari
- Corridor Solids for AutoCAD® Civil 3D® software
- eTransmit for Revit® software
- Bridge Modeler for AutoCAD Civil 3D
- Vault Plugin for Bentley® MicroStation®
- LaunchPad for Autodesk® Product Design Suite® software
- Structure Generator for Revit
- Project Storm – Autodesk 360 Structural Analysis for Revit
- Point Cloud Feature Extraction for AutoCAD Civil 3D

# Technologies You Can Preview for Yourself

## Active Technology Previews

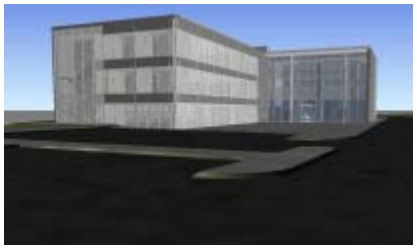
Here are some technology previews that are active on Autodesk Labs now.

**Augmented Reality for Showcase**

Augmented Reality provides the ability to overlay semantically in-context information (graphics, text, video, sound) on to a live video feed of the real-world in real-time. You can visualize Autodesk® Showcase® 3D models in the real-world as viewed through your web or video camera.
http://labs.autodesk.com/utilities/showcase_ar

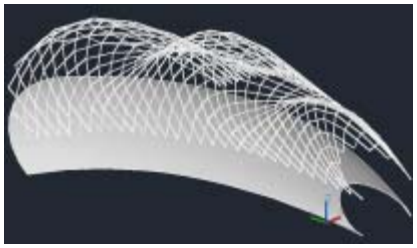
**AutoCAD Isometrics WS**

AutoCAD® Isometrics WS is an Autodesk® 360 service for creating, storing, viewing, and sharing isometric drawings. You can design and collaborate on isometrics across multiple platforms - desktop, web, and mobile devices - with full DWG™ reliability and compatibility. Simply upload PCF files and then generate isometric drawings without running any desktop software for isometric generation. You can easily share and view the isometrics with your colleagues through the AutoCAD WS web and mobile applications.
http://labs.autodesk.com/utilities/isometrics



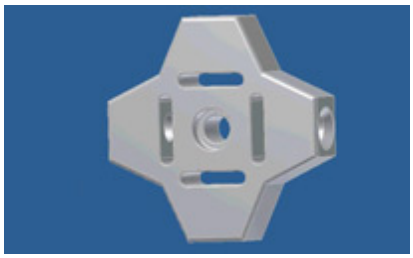
**BIM Coordinator for AutoCAD Civil 3D and Revit**

The effective organization of project data in shared or related coordinates is essential to effective collaboration across disciplines and good quality project information. BIM Coordinator for AutoCAD® Civil 3D® and Autodesk® Revit® software assists project team members with building and site grids. The technology preview aids in the smooth and error-free exchange of your model data.
http://labs.autodesk.com/utilities/bim_coordinator



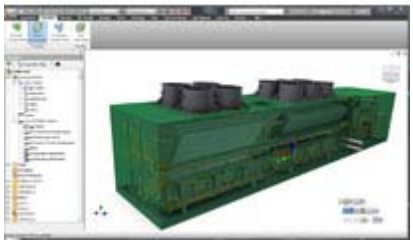
**DesignScript**
DesignScript is a unique language that helps designers build and analyze complex geometric models that would be difficult to model with interactive techniques. This type of exploratory design is best served by a scripting language that is designed for exploratory programming. DesignScript is intended to be used by designers with little previous programming experience. It is much less rigid than conventional programming languages and is completely integrated into the host geometry application (currently AutoCAD).
http://labs.autodesk.com/utilities/designscript

**FABmep Import for Revit MEP**
FABmep Import for Autodesk® Revit MEP software enables you to import Autodesk Fabrication FABmep models into Autodesk Revit MEP, providing round-tripping capabilities for as-built/record drawing purposes.
http://labs.autodesk.com/utilities/revit_fabmep



**Feature Recognition for Inventor**
Use Feature Recognition to convert neutral 3D CAD models, such as STEP, SAT, or IGES solids, into full-featured Autodesk® Inventor® models. Feature mapping can be executed automatically or interactively as needed to maintain design intent.
http://labs.autodesk.com/utilities/feature_recognition

**Inventor Fusion**
The Autodesk® Inventor® Fusion Technology Preview showcases intuitive direct manipulation capabilities for ease of use, provides direct modeling for rapid design changes, and unites direct and parametric workflows within a single digital model created in Autodesk Inventor.
http://labs.autodesk.com/technologies/fusion

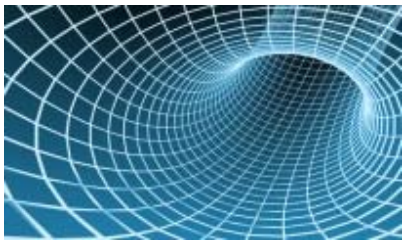


**Inventor Simplification Technology Preview**
Inventor Simplification provides a new and easy way to simplify parts and assemblies for downstream consumption. The shrinkwrap feature was added to Autodesk® Inventor® software several releases ago. Since that time we've collected feedback on various ways to improve the workflow. We think we have a much better way to simplify models and wanted to share it with you as soon as possible.
http://labs.autodesk.com/utilities/inventor_simplification

**Maximo Integration for Revit**

The Maximo® Integration for Autodesk® Revit® 2013 products helps extend the value of a Revit building information model (BIM) into the operations phase of the building lifecycle. Richly attributed data about building assets, developed in Revit during the building design and construction phases, can be published directly into Maximo during commissioning or at building "handover." The Revit asset data can be exported in the COBie data specification, if desired. The BIM/3D asset data can be viewed inside Maximo, in context with Maximo applications and processes.

http://labs.autodesk.com/utilities/revit_maximo



**Mesh Enabler for Inventor**

As shipped Autodesk® Inventor 2012 software can import mesh data from CATIA® files. In addition to CATIA files, Autodesk® Inventor® 2013 software can import mesh data from STL® files and from JT® files. The Mesh Enabler for 2013/2012 adds the ability to post process the imported mesh data to convert the mesh features to Inventor Base features. The resulting Base features can then be used for further operations including drawings and measurements.

http://labs.autodesk.com/utilities/inventor_mesh

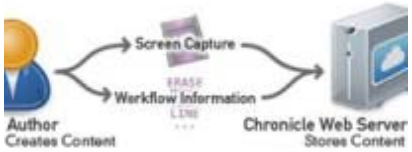

**Plugin of the Month**

The “plugin of the month" is brought to you by the Autodesk Developer Network (ADN). The plugins provided are free and simple productivity enhancing tools that streamline the use of our design applications. The plugins are developed by Autodesk or by other ADN members. All of the plugins come with full source code to show what goes on inside. These samples are not "out-of-reach" for someone wishing to invest in learning and using our Application Program Interfaces (APIs). Hopefully you are inspired to create your own plugins.

http://labs.autodesk.com/utilities/ADN_plugins

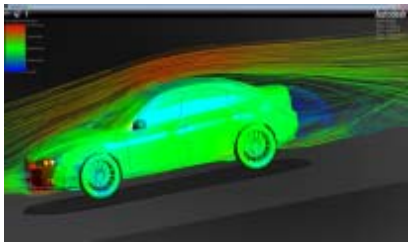
**Project Artoo for AutoCAD Map 3D**
Project **Artoo** for AutoCAD® Map 3D® 2013 software helps you perform geometry cleanup operations on geospatial data stores to improve the quality and accuracy of your geospatial data. The cleanup tools in Project Artoo help you correct common errors that can be introduced during digitizing, importing, surveying, scanning, and drafting. With Project Artoo, you can perform cleanup operations on FDO-connected data stores, including SDF, SQLite, Esri® SHP, and geodatabase files, as well as Microsoft® SQL Server® and Oracle® databases.
http://labs.autodesk.com/utilities/artoo

**Project Basejump for AutoCAD Map 3D / AutoCAD Civil 3D**
Project **Basejump** for AutoCAD® Map 3D® 2013 and AutoCAD® Civil 3D® 2013 software provides functionality that enables users to access Microsoft® Bing® web mapping services (WMS) maps. With Project Basejump, AutoCAD Map 3D and AutoCAD Civil 3D software users can access Microsoft Bing data including aerial imagery, road, traffic, and other information within an AutoCAD environment.
http://labs.autodesk.com/utilities/basejump



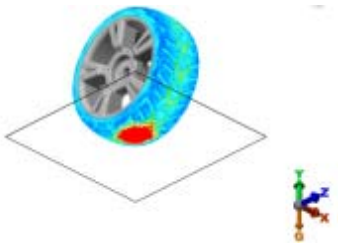

**Project Chronicle**
Project **Chronicle** allows you to capture, share, and learn from software workflows. The plug-in lets you capture workflows from within the application. The Chronicle system records the timing and details of workflow information – the mouse clicks and typing, the tool and settings being used, along with a continuous video screen and voice capture. Captured data is then uploaded to a web server where other users can view a video of the workflow and see a timeline marked up with all the command usage information. In essence, Chronicle allows software experts like you to showcase expertise for other users to view and learn from your real-world expert examples.
http://labs.autodesk.com/utilities/chronicle

**Project Factory.Modz() for Inventor**
Project **Factory.Modz()** is a physics-based technology preview for factory animation that enables you to bring your machine line layouts to life and clearly articulate the working intent of the layout to your clients and stakeholders. It helps you to visually communicate your ideas by animating the movement of material and people inside your facility. It is easy to use, does not require CAD expertise, and you can be up and running creating your first animation in less than 5 minutes.
http://labs.autodesk.com/utilities/factory_modz

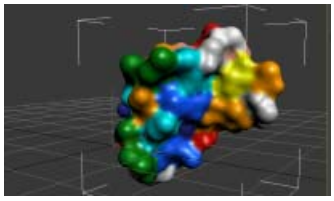


**Project Falcon**
Project **Falcon** simulates air flow around vehicles, consumer products, buildings, or other objects of your choosing in a virtual wind tunnel. Results update almost in real-time in response to changes in wind-direction and speed. Visualization tools including 2D and 3D flow lines, result planes, and surface pressure shading enable interactive exploration of aerodynamic phenomena. Drag force and drag coefficients can be optionally displayed as measures of performance.
http://labs.autodesk.com/utilities/falcon

**Project Geppetto for 3ds Max/Design**
Project **Geppetto** is a research project that explores making it easy, fast, and fun to add crowds to 3ds Max® scenes. Project Geppetto is a data-driven animation system that offers high level control of plausible human animation. Architects, engineers, and designers can use Project Geppetto to enrich the context of their presentations with realistic human activity. Project Geppetto comes with a set of animations and characters for use in common public settings like sidewalks, hallways, lobbies and plazas. Project Geppetto is the first crowd technology to offer both ease of use and high quality results.
http://labs.autodesk.com/utilities/geppetto



**Project Hydra for Simulation Multiphysics / Mechanical**
Project **Hydra** is compatible with Autodesk® Simulation® Multiphysics 2013 and Autodesk® Simulation® Mechanical 2013 software and includes: improvements to the Parametric Design Studies (PDS) feature, import temperatures from Autodesk CFD, new fast Subspace with AMG solution of dynamics analyses, inquire results by part, improvements to the Drop Test Wizard (DTW) feature, and rerelease of the GPU-enabled AMG Solver (AMG-MF).
http://labs.autodesk.com/utilities/hydra



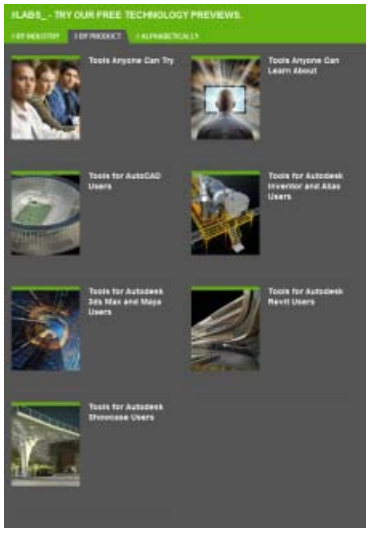
**Project Sci-Viz for 3ds Max**

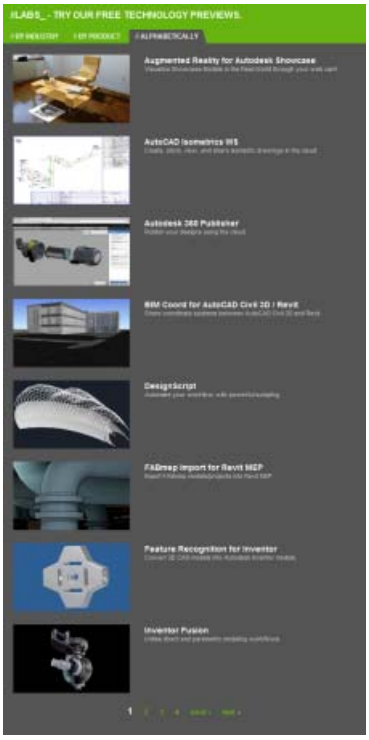
Researchers from the Olson Molecular Graphics Laboratory at the Scripps Research Institute and from UCSF have made freely available a number of cutting edge scientific visualization tools such as the Embedded Python Molecular Viewer (ePMV) and most recently AutoPack. Project **Sci-Viz** for 3ds Max provides a Python engine and API for Autodesk® 3ds Max® software that enables ePMV and AutoPack / AutoCell to run from within 3ds Max 2013.

http://labs.autodesk.com/utilities/sciviz

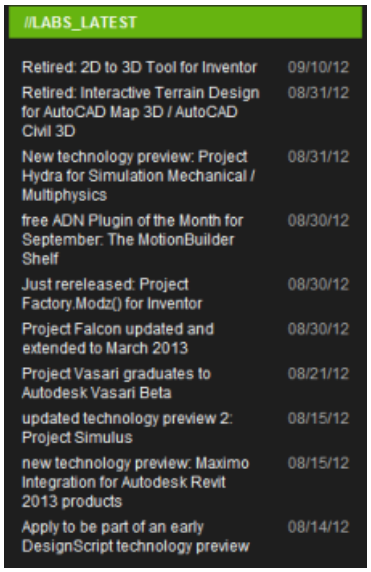
## Locating New Technology Previews To Try

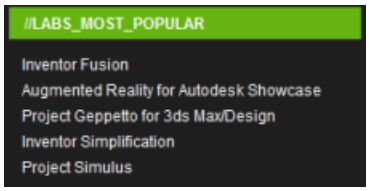
Technology previews come and go. The Autodesk Labs site (http://labs.autodesk.com) has a menu pull down of all active technology previews. In addition, on the home page, technology previews can be listed: alphabetically, by industry (i.e., AEC, MFG, M&E, ENI, Consumer), or by product (e.g., AutoCAD, Inventor, Revit, 3ds Max).

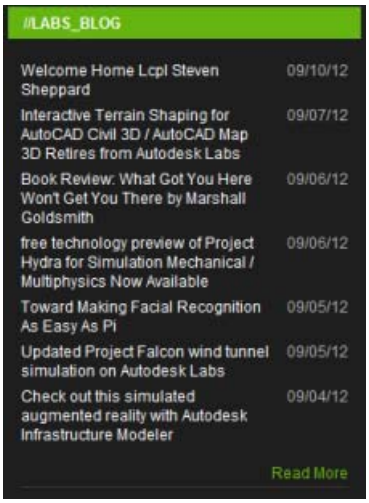




The home page also features sections on what's new, what's popular, and what's being blogged about.



## Ways to Provide Feedback

After downloading/installing/running an add-on or trying a service, there are a variety of ways you can provide feedback on technologies you have previewed.


Each technology preview has an associated email address. The basic form is labs.*@autodesk.com. The address is actually an alias for a distribution list. The distribution list includes a product champion from the team that delivered the technology to Labs, developers, testers, and marketing people. Scott and Shaan are am all of the lists to make sure no emails that you send us go unanswered.


Some technologies have discussion forums (http://discussion.autodesk.com). Unlike when you send us an email, when you post your feedback on the forum, it can be seen by everyone using the technology - not just the employees on the email distribution list. Using the discussion forum helps create a community in that your questions may be answered by other users instead of just employees.


Some technology previews have their own Facebook presence. In addition, Scott (http://www.facebook.com/scott.sheppard) and Shaan (http://www.facebook.com/shaan.hurley) have Facebook accounts where we post regularly. We welcome your Likes and comments on our walls.


Some technology previews have their own Twitter accounts. Scott (https://twitter.com/scottsh115/) and Shaan (https://twitter.com/ShaanHurley) have Twitter accounts where we tweet about technologies. We are always happy to see replies and reTweets.


Scott authors *It's Alive in the Lab* (http://labs.blogs.com) – one of the most prolific blogs at Autodesk. Shaan authors *Between the Lines* (http://autodesk.blogs.com/between_the_lines) – the most popular blog at Autodesk. We eagerly respond to comments on our blogs.


Many technology previews have videos on YouTube. These are normally part of the Autodesk Channel (http://www.youtube.com/user/autodesk). Often a set of videos is grouped into a convenient play list. Videos take some effort to produce so teams appreciate a high volume of views and additional comments that you post. For people without YouTube access, Labs site pages have links for downloading the videos.


Some customers find social media like Facebook and Twitter to be less professional than other forms of communication. For the serious minded, in addition to Scott (http://www.linkedin.com/pub/scott-sheppard/1/390/a39) and Shaan's (http://www.linkedin.com/in/shaanhurley) individual accounts, Autodesk Labs has two LinkedIn groups: a Customer Council which is by-invitation-only and an Autodesk Labs group that anyone can join. Admission to the Customer Council is based on usage of technology previews with a large volume of insightful customer feedback.

Regardless of what method you use to contact us, thanks for all of the feedback. Trying a technology preview, liking it, and not telling us, is the same as not trying it.

## Feedback Analysis

Our goal is to respond to feedback within 24 hours. We hit this goal almost 100% of the time. Sometimes we simply thank you for your feedback, but often one of the team members has an answer. Sometimes we ask follow up questions.

Each month we look at the volume of downloads/site visits and the amount of feedback we have received for each technology preview. Our primary consideration is the sentiment behind what you tell us, but volume is also part of the story. The quantitative and qualitative metrics guide our efforts in terms of whether we retire, graduate, or extend a technology preview when it ends. It's all based on the feedback.

## Conclusion

We make technology previews available for free via Autodesk Labs. All we ask is that you try them and provide feedback. Your experience truly shapes the future of our technology.