

Autodesk Architecture, Engineering & Construction DevCamp Classes

June 6-7 (DevLab June 8) Boston

Track Color Key

Keynote Speech

Autodesk Revit App Development for Beginners and Intermediates

Autodesk Revit App Development for Intermediates and Experts

Autodesk Infrastructure Technologies

Cloud/Mobile Technologies

Other Autodesk AEC Technologies

Business

Track	Class Number	Session Title	Presenter	Session Description
Keynote Speech	0-1	Autodesk AEC: Where we are today and where we are going	Jim Lynch, VP, Autodesk AEC Division	
Keynote Speech	0-2	Going to the Cloud: Hear why and how from the co-founder of an AEC focused software development company that has gone there already	Jordan Brandt, Co-Founder Horizontal Systems, Autodesk AEC Cloud Business Development Manager	
Autodesk Revit App Development for Beginners and Intermediates	1-1	Autodesk Revit API Overview and What's New in 2013	Sasha Varsanofieva, Autodesk Revit Platform Technologies Product Manager, and Scott Conover, Autodesk Software Development Manager, Autodesk Revit API	An overview of the new capabilities of the Autodesk Revit 2013 API and functional areas to take into account when porting applications from previous versions of Revit. Attendees will receive a broad understanding of the new capabilities of the Revit 2013 API and their applicability to customer problems. For those who are new to the Revit API, this course will also give you an idea about what Revit API is capable of today.
Autodesk Revit App Development for Beginners and Intermediates	1-2	Stepping Stone: Autodesk Revit API for Non-Programmers	Saikat Bhattacharya, Autodesk DevTech Consultant	If you are a Revit product user, wish to increase productivity and automate tasks, and are new to computer programming, then this class is for you. There is a plethora of resources available online for you to get started with the customization of Revit, but a lot of the material is designed for experienced programmers. In this session, you can simply walk-in with no prior programming knowledge or experience. We start by reviewing the benefits of customization, build our first working plug-in from scratch in couple of minutes using Visual Studio Express and then cover detailed explanations of the underlying general programming concepts as well as Revit specific programming concepts. We will be working with the Revit .NET API and the C# programming language. This class will also provide a quick overview of SharpDevelop as a tool to quickly create macros in Revit.
Autodesk Revit App Development for Beginners and Intermediates	1-3	"Snapshot" of the Autodesk Revit User Interface (UI) API	Saikat Bhattacharya, Autodesk DevTech Consultant	Have you wondered what all in the Revit's User Interface (UI) can be customized to reflect your or your company's needs? How can a plug-in be strongly integrated with the Revit UI - extending beyond the triggering of it using the command in the External Tools drop down list? This class aims to take a snapshot of the Revit user interface and provide an overview of all customization possibilities of this UI using the API. We shall cover the customization possibilities with ribbons, Quick Access Toolbar, progress bars, task dialogs, replacing Revit commands with custom commands, etc. using the Revit 2013 API. After attending this class, you should have a fair understanding of the possibilities of customizing Revit user interface and be able to better integrate your plug-ins in terms of the look and feel of Revit.
Autodesk Revit App Development for Beginners and Intermediates	1-4	Let's face it: New Autodesk Revit 2013 API UI Functionality	Jeremy Tammik, Autodesk DevTech Consultant	Following up on the snapshot of the Autodesk Revit User Interface provided by the preceding session 1-3, we take a deeper look at the new user interface and add-in integration functionality provided by the Autodesk Revit 2013 API. The new features include control of the one-box disciplines and when an add-in is available, assigning commands to keyboard shortcuts and moving them to the quick access toolbar and replacing an existing Revit command with an own implementation. The Options dialogue supports custom extensions using arbitrary WPF components, and an add-in can subscribe to Revit progress bar notifications. A WPF control enables embedding and controlling a Revit view inside an add-in dialogue for preview purposes, and the new drag and drop API provides control over drag and drop into Revit.
Autodesk Revit App Development for Beginners and Intermediates	1-5	Autodesk Revit Schedule and View API	Harry Mattison, Autodesk Revit Principal Engineer	Revit 2013 has a major expansion of the Schedule and View API. This introduces API for Schedule and Elevation views as well as many methods and properties that apply to all views. Learn how to create and modify these views in this class to help document and display your Revit model.
Autodesk Revit App Development for Beginners and Intermediates	1-6	Meet the Expert: Autodesk Revit Family Creation	Steve Campbell, Autodesk Revit Content Project Manager, and Mikako Harada, Autodesk AEC DevTech Manager	Mastering Autodesk Revit Family creation is a key to the success when using Revit. The same is true for Autodesk Revit programmers. The use of Family API is largely analogous to the UI. Using Family API without fully understanding how Revit Family works may lead to a bumpy road later on with your programming tasks. If you know how much you can get using the Family, the possibility is infinite. This session offers a unique opportunity to hear from the family content expert, and ask questions you may have.

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Autodesk Revit App Development for Beginners and Intermediates	1-7	Autodesk Revit Server and its API	Mohit Mehta, Autodesk Revit Server Principal Engineer, Michael Brian Lee, Autodesk Revit Server QA Analyst, and Adam Nagy, Autodesk DevTech Consultant	Autodesk Revit Server enables a group of team members who are geographically wide spread to access and modify the same Revit model through WAN or wide area network, allowing them to work together on the same project in a seamless manner. In this session, we give you the overview of Autodesk Revit Server product feature, including Autodesk Revit Server Administrator, followed by what's new in the 2013 release. We'll then introduce you to Autodesk Revit Server REST API. We'll discuss what REST is, and what is involved using REST API. We will demonstrate sample applications, and show you what is possible, and give you an idea about what you might want to do.
Autodesk Revit App Development for Beginners and Intermediates	1-8	Publish Your Apps at Autodesk Revit Exchange Store	Mikako Harada, AEC Workgroup Technical Lead, Autodesk Developer Technical Services	Autodesk Exchange Apps store for Revit is open for business with the 2013 release. The Apps store provides an unique opportunity for 3rd party developers to reach Autodesk AEC customers and a way to grow your business. In this session, we will focus on the technical side of publishing your application in the Apps store. We will go through the store submission process, and review the app guidelines you will need to follow to publish your applications in the store.
Autodesk Revit App Development for Intermediates and Experts	1-9	Interoperability Case Study with Autodesk Revit, AutoCAD Civil 3D and AutoCAD	Miroslav Schonauer, Autodesk Senior Technical Consultant, Autodesk Consulting	The presenter will share his experiences capturing requirements, designing and developing cross product applications and workflows. This includes creating Autodesk Revit Shared Coordinates (location) from given location/rotation/units from an AutoCAD Civil 3D model, involving Autodesk Revit and AutoCAD APIs. This is crucial to spatially coordinate Autodesk Revit exported 3D DWGs brought into AutoCAD Civil3D (or any AutoCAD based product), as well as for export coordination to Autodesk Navisworks. The install-only download of the resulting tools, for which the crucial aspects of source code will be analysed and shared with participants, is in pipeline to be available on Autodesk Labs.
Autodesk Revit App Development for Intermediates and Experts	2-1	Managing Autodesk Revit Links with the 2013 API	Diane Christoforo, Autodesk Revit Senior Software Engineer	This class will detail what software developers can do with linked Autodesk Revit files with the 2013 API. Attendees will learn: <ul style="list-style-type: none"> • How to create Autodesk Revit link types and instances. • How to check and modify the parameters of links. • How to use the ExternalFileReference class to read data about the various types of external files, including Autodesk Revit links. • How to use the TransmissionData class to modify the links in a closed Revit document. The class explains common pitfalls when working with links, and how to avoid them. The presentation concludes with an overview of a larger Autodesk Revit link API application - the eTransmit addin, which allows users to move an entire package of Autodesk Revit files while maintaining all link relationships.
Autodesk Revit App Development for Intermediates and Experts	2-2	Autodesk Revit IFC Export Open Source Customization	Angel Velez, Autodesk Revit Principal Engineer	This session will cover the IFC export open source project started in Autodesk Revit 2012. We will have a brief discussion on both open source and IFC, and show how to extend the default implementation to add or change functionality to export using the Autodesk Revit API and .NET. We will also look at examples of existing customizations to see how customers have already modified the IFC code for their specific needs.
Autodesk Revit App Development for Intermediates and Experts	2-3	Asynchronous Interactions with the Autodesk Revit API	Arnošt Löbel, Autodesk Revit Senior Principal Engineer	The presentation focuses on API tasks that require asynchronous interactions with Autodesk Revit. Typical workflows include a modeless dialog triggering actions in Autodesk Revit, interaction with an independent third-party system, or a work-thread attempting to deliver results to an Autodesk Revit model. Usual API practices are not sufficient in those situations. Instead, specific coding patterns need to be followed in order to make your application error-free and robust. Three such patterns will be explained in details and demonstrated on examples utilizing both Idling events and the new ExternalEvent API.
Autodesk Revit App Development for Intermediates and Experts	2-4	Core Autodesk Revit API Frameworks Explained	Arnošt Löbel, Autodesk Revit Senior Principal Engineer	A good understanding of core frameworks in the Autodesk Revit API is a prerequisite when developing well behaving external applications for Autodesk Revit. Among the most important ones, the following frameworks play key roles in most applications: i) External commands, ii) Transactions and regeneration, iii) Events & Callbacks, and iv) Updaters. The platforms have been around for many releases, yet there are still facts about them which may not be completely understood. This session summarizes the necessary basics, but also sheds some light on the behavior normally hidden under the hood. Knowledge acquired during this class will help Revit API developers to build more efficient, safer, and robust applications.
Autodesk Revit App Development for Intermediates and Experts	2-5	Autodesk Revit Materials, Physical Properties and Compound Structure API Basics	Steven Mycynek, Autodesk Revit Principal Engineer	This session is a discussion of new physical property data available in Autodesk Revit 2013 and how it can be queried, created, modified, shared, and applied in the API. Thermal and structural properties will be discussed along with their use in materials, compound structure, and user-content. gbXML material issues and pre-defined thermal property libraries in standard construction materials will also be discussed. Attendees will leave the session with a complete understanding <u>how to manage material and material property data from a database, import, and export perspective</u> .

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Autodesk Revit App Development for Intermediates and Experts	2-6	Geometry API in Autodesk® Revit® (TBD)	Scott Conover, Autodesk Software Development Manager, Autodesk Revit API	In Autodesk Revit 2012, we introduced new powerful tools to the API for geometry analysis, calculation and display. In this lecture, you will get an introduction to the new API toolset and see examples and recommendations on their use. One set of new APIs offers the ability to create three-dimensional construction geometry. Others include new analysis tools such as Boolean operations, extrusion analyzers, and room and space geometry calculators targeted towards specific kinds of problems and calculations. This class will also highlight some new geometric capabilities related to specific entity types such as construction parts, walls, point clouds, and energy analysis. New material around 2013 geometry API enhancements will also be included.
Autodesk Revit App Development for Intermediates and Experts	2-7	The Autodesk Revit MEP API	Jeremy Tammik, Autodesk DevTech Consultant	This session provides an overview of the Autodesk Revit MEP API and its new Autodesk Revit 2013 features, including access to routing preferences, programmatic selection of pipe sizes, materials, fitting types, calculation of pipe and duct friction factors, handling of viscosity and density at specified temperatures, duct and pipe sections supported by the new MEPSection base class, access to spare circuit values and retrieval of more localized user-visible display strings for enumeration values.
Autodesk Revit App Development for Intermediates and Experts	2-8	Extensible Storage	Jeremy Tammik, Autodesk DevTech Consultant	Store your application data in the Revit model using native Autodesk Revit API extensible storage. Extensible storage can be used to replace the old technique of storing data in shared parameters. Access can be restricted to read-only or invisible to other applications. You can define a class-like schema data structure and attach instances of it to any Autodesk Revit element. Schema-based data is saved with the model and uses a higher-level, metadata-enhanced, object-oriented data structure. We look at the underlying concepts and real-world techniques, including simple and advanced sample applications demonstrating how to create a schema, read, update, and delete extensible storage data on Revit elements and handle versioning issues when upgrading and extending an existing schema.
Autodesk Infrastructure Technologies	3-1	AutoCAD Civil 3D Surface .NET API	Augusto Goncalves and Partha Sarkar, Autodesk DevTech Consultants	In this class we will cover what is available since the AutoCAD Civil 3D 2012 release of the Surface .NET API and how to use it when dealing with vertices & triangles, volume calculations and other surface specific operations. In 2013 release, there are some new and exciting functions which we can use to make our code even more complete. Prior knowledge of AutoCAD Civil 3D .NET programming is required.
Autodesk Infrastructure Technologies	3-2	Exploring Interoperability between AutoCAD Civil 3D and Autodesk Inventor	Augusto Goncalves and Partha Sarkar, Autodesk DevTech Consultants	Autodesk recognizes that customers are using more than one application with suites. At times, there are some challenges that we face in sharing data & model between multiple applications. In a hypothetical scenario, we tried to explore the possibilities of sharing AutoCAD Civil 3D data with Autodesk Inventor. In this class we will show you how to read data from AutoCAD Civil 3D object and extract the geometry to recreate equivalent in Inventor sketch curves in a synchronized mode. Prior knowledge of Autodesk Civil 3D .NET programming is required and of Inventor API is recommended.
Autodesk Infrastructure Technologies	3-3	AutoCAD Civil 3D COGO Points .NET API In-Depth	Isaac Rodriguez, Autodesk Senior Software Engineer	This session provides an in-depth look at the new COGO Points .NET API available in AutoCAD Civil 3D 2013. The presentation shows how to work with COGO Points, Point Groups, and Queries through the API, as well as, how to use User Defined Properties for COGO Points.
Autodesk Infrastructure Technologies	3-4	Meet the AutoCAD Civil 3D API Experts	Nick Zeeben, AutoCAD Civil 3D Product Manager, Isaac Rodriguez, Autodesk senior Software Engineer, and Partha Sarkar and Augusto Goncalves, Autodesk DevTech Consultants	This session will have two parts. In the first part, we will take you through the exciting new UI functionalities in AutoCAD Civil 3D 2013 and then dissect some of the Labs and ADN Plug-in of the Month tools. In the second part, you get an opportunity to share your feedback, comments and ask any questions to 'AutoCAD Civil 3D Engineering' team members.
Autodesk Infrastructure Technologies	3-5	AutoCAD Map 3D Industry Data Model API	Simon Dellenbach, AutoCAD Map 3D Senior Software Engineer	In this session, you will see how to extend existing industry data models and create new ones in AutoCAD Map 3D (embedded) and AutoCAD Map 3D Enterprise and how to complete them with FeatureRules.
Autodesk Infrastructure Technologies	3-6	Creating a custom control for the Mobile Viewer	Daniel Du and Partha Sarkar, Autodesk DevTech Consultants	Do you browse maps on mobile devices such as iPad, iPhone or iPod Touch? Do you use the Mobile Viewer on your mobile devices to browse MapGuide maps? The Mobile Viewer was introduced in Autodesk Infrastructure Map Server 2012, enabling you to browse your map on the go. This class will show you how to create a simple custom control for the Mobile Viewer, helping you getting started turning the Mobile Viewer into an efficient task specific tool.
Autodesk Infrastructure Technologies	3-7	AutoCAD Map 3D - The Industry Model Data Access Layer and its Query Framework	Simon Dellenbach, Autodesk Infrastructure Map Server Software Engineer	The Data Access Layer (DAL) in the AutoCAD Map 3D Industry Model API (formally known as Topobase) allows you to operate on industry data model independent of the underlying database. And its Query Framework removes the need to prepare SQL statements. Samples and demos with various commercial databases will complete the session.

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Cloud/Mobile Technologies	4-1	An Overview of Cloud Computing	Gopinath Taget, Autodesk DevTech Consultant	Learn what cloud computing is all about, what kind of applications can be written for and run on the cloud, when it is suitable to use the cloud, when it is not. Learn about the popular commercial cloud service providers including Amazon Web Services (AWS), Microsoft Azure and Google App Engine and how to use them. Learn the similarities and differences between the cloud services they provide, the advantages of using one over the others and the coverage and sophistication of the APIs provided to use their cloud services. The class includes demonstrations and code review of sample cloud applications for Autodesk Revit, AutoCAD Civil 3D, AutoCAD and AutoCAD WS.
Cloud/Mobile Technologies	4-2	State of the Art of Autodesk Cloud and Mobile Apps	Gopinath Taget, Autodesk DevTech Consultant	Learn about current Autodesk cloud services, their capabilities and APIs. We will talk about and demonstrate AutoCAD WS, Autodesk 360, and Autodesk Photofly web services in depth. Demonstrations and instruction will be based on Microsoft Windows, Apple's iOS and Google's Android. The class will end on an exploration where these web services are going and - at a high level - where Autodesk's web services are headed.
Cloud/Mobile Technologies	4-3	Introduction to Mobile app development - Apple's iOS	Gopinath Taget, Autodesk DevTech Consultant	Learn about programming on iOS devices. Learn where you need to go and what you need to do to start programming on iOS. Learn about the SDKs important for graphics intensive software development including WebGL and OpenGL ES and how to get started working with them. This class includes a detailed "start to finish" look at development of a simple iOS mobile App with a basic user interface.
Cloud/Mobile Technologies	4-4	Introduction to Mobile app development - Google's Android	Gopinath Taget, Autodesk DevTech Consultant	Learn about programming on Android devices. Learn where you need to go and what you need to do to start programming on Android. Learn about the SDKs that would be important to a CAD developer like WebGL and OpenGL ES and how to get started on them. This class will also demonstrate creating a simple Android mobile App with simple user interface from start to finish.
Other Autodesk AEC Technologies	4-5	Introduction to the Autodesk Navisworks .NET API	Simon Bee, Autodesk Senior Software Engineer, Autodesk Navisworks	This session will introduce you to customizing Autodesk Navisworks 2013 using the .NET API. We will cover how to create add-ins that sit inside the product and allow you to integrate with your own programs. We'll also show how to automate the product to perform process-intensive and repetitive tasks, and how to embed the .NET controls in your own application to leverage the power of Navisworks. The session will include introductions to the new clash and timeline APIs.
Other Autodesk AEC Technologies	4-6	Developing an application utilizing Autodesk Navisworks, a mobile app, and a cloud service: a case study for beginners	Simon Bee, Autodesk Senior Software Engineer, Autodesk Navisworks	This session will show you how Navisworks can be used in conjunction with cloud and mobile technologies. On a construction site, contractors take many photographs during the construction phase. Often this is with some form of mobile device - usually a smart phone. A common problem is in associating the photograph with the location on site where it was taken. Our case study shows how you can associate location data with the photograph itself and then use Navisworks as a spatial database where we organize the photographs by location. And intermediate storage of the photographs is in the cloud. This session is principally for those who have little or no mobile or cloud development experience and want to start including these elements in their applications.
Other Autodesk AEC Technologies	4-7	Introduction to the Autodesk Vault API	Doug Redmond, Autodesk Senior Software Engineer, Autodesk Vault	Autodesk Vault is the world-class data management solution for all your CAD files, including Autodesk Revit, AutoCAD Civil 3D and AutoCAD. Whether you want to jump in and start writing Autodesk Vault apps or just want to know what is possible, this class can be your starting point. The class will cover all the Autodesk Vault API capabilities from a high level and show you how to get started.
Other Autodesk AEC Technologies	4-8	Communicating with the Autodesk Vault Server through the API	Doug Redmond, Autodesk Senior Software Engineer, Autodesk Vault	Autodesk Vault isn't just a place to store files. It's a repository of rich design data for your applications to mine. This class will show you how to use Autodesk Vault's web service API to communicate with the Autodesk Vault Server. Since the server communicates through an open API, the possibilities are endless.
Other Autodesk AEC Technologies	4-9	Autodesk Project Vasari	Matt Jezik, Autodesk Senior Manager, AEC Conceptual Design Products, and Zachary Kron, Senior QA Analyst	Autodesk® Project Vasari is an easy-to-use, geometric and parametric tool for creating conceptual designs. It is currently available through Autodesk Labs. It supports performance-based design via integrated energy modeling and analysis features. Autodesk Project Vasari shares the same file format as Autodesk Revit as well as a subset of the full Autodesk Revit API with enhanced functionalities to make it more focused on conceptual design and analysis. In this session, we will show you what Vasari is through the demonstration, and shows examples of how to create a model while integrating analysis tool using API tools, including IronPython scripting examples.
Other Autodesk AEC Technologies	4-10	Green Building Studio and Building Performance Analysis	Barry Tsai, Autodesk Software Development Manager, Green Building Studio, and Ian Molloy, Autodesk Product Manager, Building Performance Analysis Group	Autodesk Green Building Studio (GBS) is the foundation used in Autodesk Revit and Project Vasari for the Autodesk 360 Energy Analysis feature. Using Autodesk's Green Building Studio's API enables you to create powerful applications and web services that deliver region and industry specific building performance analyses users of Autodesk Revit and Project Vasari. You can also enable your existing application to pull information from Green Building Studio for a variety of uses including code compliance, green certifications, utility energy efficiency programs, building portfolio solutions, and more. This session will demonstrate how to use the Autodesk Green Building Studio SDK to quickly create an application to submit and retrieve regional and industry tailored building performance analysis results to meet your specific customers needs

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Business	5-1	Cloud/Mobile - Why and When?	Jim Quanci, Autodesk Developer Network Director	You keep hearing how Cloud/Mobile is changing the software industry. Unsure how it applies to your customers? Unsure what is possible? Unsure what questions to ask your customers to understand what your opportunity is with a Cloud/Mobile offering? Unsure what to ask your engineering team to learn and prototype based on Cloud/Mobile technologies? Come to this session to get answers to these and more questions - as well as a chance to expand your view of what is possible by seeing a number of Cloud/Mobile apps from Autodesk and members of the Autodesk Developer Network. Much of this class was originally presented as part of Autodesk DevDays 2011.
Business	5-2	Dancing with the Elephant - Maximizing the Value of Your Relationship with Autodesk	Jim Quanci, Autodesk Developer Network Director	This class is for commercial software developers and independent consultants that want to get maximum leverage from their partnership with Autodesk. Is your business taking advantage of all the resources Autodesk makes available to its software development partners? Does your team know how to work with - and take advantage of - the various teams at Autodesk including engineering, marketing sales and Autodesk Authorized Resellers and Distributors? Do you know the directions your business might take that lets you ride the elephant - and those that risk the elephant stepping on you by accident? Come to this class and learn more. This typically small class includes up close and personal needs analysis and consulting.
Business	5-3	Autodesk Mergers & Acquisitions - Opportunity or Danger?	Jim Quanci, Autodesk Developer Network Director	This class is for commercial software developers and independent consultants. Hear some Autodesk M&A history, learn what Autodesk values - and does not, and get tips on how to position your business to benefit - and not lose - from Autodesk M&A activities.