



## Autodesk AutoCAD APIs: Meet the Experts

Stephen Preston – Autodesk Inc.

Albert Szilvasy – Autodesk Inc.

Kean Walmsley – Autodesk Inc.

Lee Ambrosius – Autodesk Inc.

Tekno Tandean – Autodesk Inc.

**DV1338** Back for the 5th successive year! Our panel of hardcore ObjectARX and AutoCAD .NET experts from our AutoCAD software development team are ready to answer your programming questions. If you are writing plug-ins for AutoCAD software, then this is the perfect forum to get to know the people who create the APIs you work with as well as your fellow programmers who use those APIs. Come and ask questions, add your expertise to the discussion, or just listen and learn.

### Learning Objectives

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

- Answer those AutoCAD programming questions that have been bugging you for so long.
- Get to know your fellow AutoCAD programmers and members of the AutoCAD engineering team.

## Welcome to the GeekDome!

Another year, another Meet the Experts panel – bringing you some old favorites and some new victims (*oops – I mean panel members*). We have two members of the AutoCAD Architects team, one of the AutoCAD development team's top programmers, and our AutoCAD API documentation guru.

However, this class isn't just about the panelists. It's about you. Yes - this is your chance to meet the panelists and pose your questions to them – but it's also your chance to meet a roomful of really experienced AutoCAD programmers, and to share some of your own expertise. (The majority of our audience usually has between 5 and 20 years of AutoCAD programming experience). So don't just sit and listen:

***Ask questions ... contribute to the discussion ... make some friends.***

You can ask about anything you like, so come prepared with your questions about all things AutoCAD. You can even ask them about future AutoCAD features (although they may decline to answer ☺).

***Remember ... This class is only as good as the questions you ask!***

## The Panel

Our panelists this year are:

- [Tekno Tandean](#)
- [Lee Ambrosius](#)
- [Kean Walmsley](#)
- [Albert Szilvasy](#)

The main purpose of this handout is to tell you a little about the panelists, so I asked each of them to answer the same questionnaire. This is what they said (starting with me):

### Stephen Preston (Panel host)

#### *Job title*

Senior Manager, Developer Technical Services Worldwide.

#### *Biography*

Stephen has been a member of the Autodesk Developer Technical Services (DevTech) team since 2000, starting as a support engineer and now as global manager for the Developer Technical Services Worldwide team – part of the Autodesk Developer Network team. In those roles, his responsibilities have included supporting the AutoCAD APIs, including ObjectARX and AutoCAD .NET, as well as AutoCAD OEM and RealDWG technologies. Stephen started his career as a scientist, and has a Ph.D. in Atomic and Laser Physics from the University of Oxford.

*What did you work on for the AutoCAD 2014 release?*

The ADN DevTech team don't normally work on AutoCAD core code. It's our job to make sure that the Autodesk product teams consider and understand the needs of 3rd party developers. Fortunately, with people like Kean, Albert, Lee and Tekno, the AutoCAD team doesn't need convincing of the importance of exposing good APIs. However, I will take credit (on behalf of the ADN team) for the success of the Autodesk Exchange store – which I consider to be a core feature of AutoCAD, even though it's not in-process to the product. My team is responsible for stocking the store with apps – that means persuading 3rd party developers to submit apps to the store, and then testing and publishing those apps.

*Which AutoCAD feature have you worked on that you're the most proud of?*

See my last answer.

*What is the most embarrassing mistake you ever made as a programmer (that you're willing to admit to)?*

Not programming, but programming related. I used to have a Blackberry – one of the devices that had two characters per key and tried to guess what you meant to type based on just pressing each key once. It was good enough that I began to trust it. My team was holding an ObjectARX class and we had a few places free, so I emailed our AutoCAD engineering team to ask if anyone was interested in 'free ARX training'. I didn't notice that my Blackberry had translated that into something else until someone emailed me back to point out I'd just offered everyone at our San Rafael campus the chance to attend 'free sex training'. That was a particularly well-attended class.

*What is your favorite AutoCAD API or developer feature?*

The Autoloader feature (originally created by Fenton Webb from the DevTech team) has really simplified our task of creating installers for AutoCAD apps on the Exchange store. Without that we'd be messing about with some pretty tedious custom installer actions in order to write even simple demandload settings to the AutoCAD registry. I like any features that allow programmers to spend more time doing what we want to do – solving problems.

*iOS, Android or WinRT?*

I have an Asus Transformer tablet running Android 4 which has sat unused in my desk drawer for half a year, and I'm considering buying a Nexus 7. I have an iPhone and iPad that I use every day. I've so far managed to avoid installing Windows 8 on my computer, and I've not used a Windows RT device at all. That said, as a programmer, I'd choose Visual Studio/.NET every time over Xcode/Objective-C or Eclipse/Java (although the latter two are gradually catching up).

*What do you like to do on your computer when you're not working?*

I'm (at least partially) working whenever I have my computer, iPhone or iPad switched on: I manage a global team, so I have email arriving in my inbox all the time. I've been trying to wean myself off gaming because it was sucking up too much of my spare time, so at the

moment I'm mostly browsing my favorite websites, reading Kindle books or listening to Audible books.

*You're working late to submit your work before code cutoff – what food should we order into the office for you?*

Fish, chips and mushy peas – from a proper fish & chip shop. And wrapped in newspaper so the chips are nice and sweaty. But you can't get that in the US, so I'll settle for chicken in black bean sauce with shredded duck fried rice from my local Chinese takeaway.

*Describe how you go about writing an algorithm to solve a problem – the process you go through to solve the problem?*

My starting point is always to try to find out if someone else has solved the same problem already. That usually means a few Google searches. If I have to solve the problem myself, then I try to break it down into atomic chunks, solve each part, and then link everything back together. I'll usually flesh out the class structure and general logic flow with lots of ToDo comments first, and then go back and write the code. Recently, most of my coding has been learning a new technology or programming language (for example REST or Objective-C). That adds complexity because I have to learn the capabilities of the new technology as I go – and usually find myself refactoring code again and again as I learn simpler ways to achieve the same result. Setting yourself a problem to solve is the best way to learn – it's when you have to fix something that doesn't work that you really start to understand the technology. Following tutorials is a good way to get a quick overview, but it doesn't give you the same insights because the code in the tutorials always works first time.

*What's the most recent gadget or gizmo you've bought?*

A Roku box - to replace my Apple TV which doesn't have an Amazon Instant Video app. And a waffle iron.

*Do you play Minecraft?*

No. I'm trying to cut down on gaming (even 'educational' gaming) – partly because of the time it takes up and partly because I damaged my wrists during my days of raiding in WoW. The most recent game I bought was Crusader Kings II – strategy games are easier on the wrists.

*What is your greatest sporting achievement?*

As a student at Oxford, I was inter-collegiate four-legged pub crawl champion. Many people can run fast, many people can drink a lot of beer, but few people can do both at the same time ☺.

**Tekno Tandean**

*Job title*

Code Monkey

### ***Biography***

Tekno has been a member of AutoCAD development team for 17 years. He has been involved in various projects from the birth of ObjectDBX/ARX, COM API/OLE Automation, .Net API, DXF, eTransmit, CUI, Multi-line attribute, SubD mesh, 3D surfaces, in/on-canvas tools, performance, security, and cloud development.

### ***What did you work on for the AutoCAD 2014 release?***

Connected Desktop feature (Design Feed, Cloud Sync) and Security

### ***Which AutoCAD feature have you worked on that you're the most proud of?***

Proxy resurrection. There were some fundamental issues from the original implementation and I tried to fix it without patching previous AutoCAD releases.

### ***What is the most embarrassing mistake you ever made as a programmer (that you're willing to admit to)?***

CUI & Workspaces.

### ***What is your favorite AutoCAD API or developer feature?***

.Net API. Although I was involved with other API (C++/COM), it's so much easier to use the API, and the design of the framework is solid and fixes many issues with C++/COM API.

### ***iOS, Android or WinRT?***

iOS since my brother works for Apple ☺.

### ***What do you like to do on your computer when you're not working?***

Reading, reading, reading online resources while playing online poker and watching recorded TV shows in background. Human brain isn't a single CORE.

### ***You're working late to submit your work before code cutoff – what food should we order into the office for you?***

Indian Food. Always yummy and filling and also the smell of food will force everyone right away to kitchen area so that we can eat with other folks.

### ***Describe how you go about writing an algorithm to solve a problem – the process you go through to solve the problem?***

First I need to understand the problem completely. From it I can most probably map it to a general problem with well-known algorithms commonly used to solve it. If it is such case, do experiments with different algorithm with real data to pick which one will be better. If problem is not well known, most probably I will consult my college text books, online resources and brain storm with my super bright colleagues. The motto is always to benchmark the algorithm with real data to ensure it works in real life with customer data.

### ***What's the most recent gadget or gizmo you've bought?***

A2DP/AVRCP bluetooth device to stream itunes/spotify to my car.

*Do you play Minecraft?*

No.

**Lee Ambrosius**

*Job title*

Principal Content Learning Developer

*Biography*

Lee Ambrosius has been with Autodesk, Inc for about 6 years on the AutoCAD product team. He currently works primarily on the CAD administration, customization, and developer documentation. Lee has authored a number of AutoCAD related books under the For Dummies brand and been a technical editor for a number of other AutoCAD related books over the years.

*What did you work on for the AutoCAD 2014 release?*

I no longer work on product features, but on the developer documentation that ships with the product (AutoLISP, VBA, ActiveX, and .NET), along with the documentation that is part of the ObjectARX and RealDWG SDKs.

*Which AutoCAD feature have you worked on that you're the most proud of?*

The feature that I would have to say that I am the most proud of is the developer documentation and delivering our first integrated Help with Visual Studio 2010/2012 since it no longer could be in CHM format. Other than that, it is taking the developer documentation to a continuous development cycle so updates can be delivered beyond just the main release.

*What is the most embarrassing mistake you ever made as a programmer (that you're willing to admit to)?*

You should never be embarrassed about something you have done, consider it a learning experience for something you might not want to do next time. The only moment that really comes to mind is trying to demo a project that was written for 32-bit on a 64-bit platform, and not realizing until after about 10 minutes of debugging and trying to get it working. Things happen to everyone, it is how you overcome the situation in the end that matters.

*What is your favorite AutoCAD API or developer feature?*

My favorite API has and will always be AutoLISP paired with ActiveX. It is great for simple solutions, and is portable for the most part between multiple releases without needing to be recompiled.

*iOS, Android or WinRT?*

I have used all three, but WinRT is my favorite. I have enjoyed the experience that Microsoft has delivered with a single core across Windows Phone, Windows RT, and Windows 8. All three are important though in the current mobile landscape.

*What do you like to do on your computer when you're not working?*

When I am not working, my time on computer is often limited to writing books or catching up on current events.

*You're working late to submit your work before code cutoff – what food should we order into the office for you?*

Guacamole and chips is what I would want. I do not like anything really heavy or something that I have to worry about getting cold while I am rushing towards a deadline.

*Describe how you go about writing an algorithm to solve a problem – the process you go through to solve the problem?*

When I approach a problem, I typically am more concerned about the What and Why than the How. So most of my problem solving is done through flowcharts and sticky notes. After I have everything figured out, I then approach the How part of the solution using the appropriate language.

*What's the most recent gadget or gizmo you've bought?*

My latest gadgets that I have purchased are a Windows Pro and Windows RT device. By the time I get to AU though, I am hoping to have purchased an Xbox One as I am a large gamer at heart.

*Do you play Minecraft?*

I did go through a period of time playing Minecraft on the Xbox 360, since I do not care for gaming on a PC. All of my kids do play it across just about every device possible, PC, Xbox 360, Kindle, iPads, and iPods.

*What do you like to do outside of work, and away from a computer or gadget?*

I can typically be found training for a 5K, 10K, or half-marathon distance run at any time of the year. This year I decided to mix things up a bit by buying a bike and competing in a duathlon (Run/Bike/Run). Running and biking help to clear my head when I am currently stuck on trying to solve something.

**Kean Walmsley**

*Job title*

Software Architect, AutoCAD Product Line

*Biography*

Kean has been with Autodesk since 1995, working for most of that time in a variety of roles – and in a number of different countries – for the Autodesk Developer Network organization. Kean's current role is as a Software Architect for the AutoCAD family of products, and he continues to write regular posts for his popular development-oriented blog, "Through the Interface". Kean currently lives and works in Switzerland.

*What did you work on for the AutoCAD 2014 release?*

My main focus for 2014 was working with the internal AutoCAD-based product teams to make sure their issues were addressed within the platform.

*Which AutoCAD feature have you worked on that you're the most proud of (and why)?*

I suppose it depends on your definition of “worked on”, but the work I’ve done to support the AutoCAD .NET API probably fits that category. This has turned out to be an incredibly important product capability.

*What is the most embarrassing mistake you ever made as a programmer (that you're willing to admit to)?*

The nature of the externally-focused development work that I do probably means my mistakes tend to be quite visible. I also push myself to post on a regular basis, which occasionally means something unfortunately gets out there that’s sub-optimal or not best practice (for instance, using P/Invoke rather than a native API that I’d overlooked). No biggie in the general scheme of things, but still. I also occasionally forget things that I’ve posted before and when Googling a particular problem I find some code I’d written 5+ years ago that does exactly the same thing.

*What is your favorite AutoCAD API or developer feature?*

Overall I’d say AutoCAD .NET. That said, at the moment I’m probably most excited about the JavaScript API and the possibilities this will bring over time for cross-product and –platform development.

*iOS, Android or WinRT?*

Yes!

*What do you like to do on your computer when you're not working?*

Reading about current affairs. Watching movies and TV shows.

*You're working late to submit your work before code cutoff – what food should we order into the office for you?*

Sushi, please. Healthy, easy to eat, largely odourless and very, very tasty!

*Describe how you go about writing an algorithm to solve a problem – the process you go through to solve the problem?*

It depends on the language and environment (which is often, although not always, driven by the type of problem I’m solving). I usually Google to determine the current “state of the art” but then the approach differs: if working in a language with a REPL (LISP, F#, Python, etc.), then I’ll probably start small and work outwards. Otherwise I tend to start large and work inwards. Would like to do more TDD, though, which I could imagine might change that behavior somewhat.

*What's the most recent gadget or gizmo you've bought?*

Answering this question, I now realize I haven’t actually bought any new hardware for myself in months! I bought my wife a new notebook (a basic Sony Vaio), some back-up storage and a



USB enclosure for the hard-drive from her old HP notebook (which died). But that's all very functional. I need to go and buy some new toys!

*Do you play Minecraft?*

No, but my boys love Eden (a similar game that they got into through a friend of theirs). I'm pretty intrigued by the Tinkercad -> Minecraft workflow I saw a month or two ago, though.

*What do you like best and least about AU?*

Best: meeting and interacting with people, experiencing the passion and excitement for (Autodesk) technology.

Least: the jetlag, the lack of daylight, the general fatigue of spending a week in Las Vegas. The flight back from AU is the only one I ever sleep on, these days!

**Albert Szilvasy**

*Job title*

Software Architect

*Biography*

Albert has been with Autodesk for 16 years and worked in various roles within the AutoCAD development organization. He has been involved with .NET and JavaScript APIs, preparing AutoCAD for the Mac and Cloud and performance profiling and optimizations.

*What did you work on for the AutoCAD 2014 release?*

Most of my time was on projects that will only ship in a future release so I can't talk about them yet.

*Which AutoCAD feature have you worked on that you're the most proud of?*

I worked on the project to refactor AutoCAD functionality along the GUI vs. non-GUI (command line interface) boundary. AcCoreConsole.exe is a visible, shipping manifestation on Windows. This enabled us to port to the Mac and create new offerings in the Cloud.

*What is the most embarrassing mistake you ever made as a programmer (that you're willing to admit to)?*

I've made so many mistakes that I don't get embarrassed anymore. Only those who don't work make no mistake. Everyone makes mistakes all the time but we have a system of checks and double-checks to make sure that we discover those mistakes before we ship.

*What is your favorite AutoCAD API or developer feature?*

.NET API. Easier to learn than the C++ API and more powerful than Lisp or VBA.

*iOS, Android or WinRT?*

I'm afraid it has to be \*and\*. The only one that you can ignore is WinRT for now but I suspect that will not last.

*What do you like to do on your computer when you're not working?*

I try to stay away from the computer when not working. I read the news and pay the bills: that's it.

*You're working late to submit your work before code cutoff – what food should we order into the office for you?*

Dessert. A strawberry and chocolate cake, or those strawberries dipped in chocolate would be nice. I'm a incurable chocaholic.

*Describe how you go about writing an algorithm to solve a problem – the process you go through to solve the problem?*

I first try to solve it the simplest possible way that comes to my mind. I'm intentionally minimalistic, no frills. Then I try it out and embellish it if necessary.

*What's the most recent gadget or gizmo you've bought?*

An FM radio. It turns out that streaming public radio is still somewhat unreliable. A little FM radio works.

*Do you play Minecraft?*

No, but my son plays for both of us. Does that count?

*What music do you listen to?*

Of course, it depends on my mood but recently I've been listening to Dead Can Dance while working.