



Hanselminutes

Hanselminutes is a weekly audio talk show with noted web developer and technologist Scott Hanselman and hosted by Carl Franklin. Scott discusses utilities and tools, gives practical how-to advice, and discusses ASP.NET or Windows issues and workarounds.

## Text transcript of show #181

September 25, 2009

### Monomania - Mono, MonoTouch, MonoSpace, and MonoVS with Joseph Hill and Scott Bellware

Scott chats with Mono Product Manager Joseph Hill and Monospace conference organizer and continuous learner Scott Bellware about the state of Mono. Is Mono competition or diversity? How hard are cross platform apps? Can you really write apps for your iPhone in C#? Where can you learn more about Mono?

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**Lawrence Ryan:** From [hanselminutes.com](http://hanselminutes.com), it's Hanselminutes, a weekly discussion with web developer and technologist, Scott Hanselman. This is Lawrence Ryan, announcing show #181, recorded live Thursday, September 24, 2009. Support for Hanselminutes is provided by Telerik RadControls, the most comprehensive suite of components for Windows Forms and ASP.NET web applications, online at [www.telerik.com](http://www.telerik.com). In this episode, Scott talks about Mono with Joseph Hill and Scott Bellware.

**Scott Hanselman:** Hi, this is Scott Hanselman and this is another episode of Hanselminutes. This is a Mono episode of Hanselminutes and I've got two interesting people on today. We've got Joseph Hill, project manager for Mono. Thanks for coming on, Joseph.

**Joseph Hill:** Thank you.

**Scott Hanselman:** And we've got the legendary Scott Bellware, the internationally known .NET and Ruby-dandy and Bon Vivant. How are you, Scott Bellware?

**Scott Bellware:** I'm very good, thanks Scott.

**Scott Hanselman:** Thanks for helping me organize this, Scott. I really appreciate it. You have a conference coming up focusing on Mono called Monospace. Where can people learn about that other than on the search engines?

**Scott Bellware:** Well, the website is [monospace.us](http://monospace.us), and we have a twitter feed and blog feed as well where we're slowly leaking some news as things go on.

**Scott Hanselman:** Okay.

**Scott Bellware:** I guess most people are talking about Monospace on the social networks though; that would probably be the best place to sort of keep an ear to the ground.

**Scott Hanselman:** And when is the conference?

**Scott Bellware:** The conference is on October 27, which is a Tuesday, to October 30, Friday, which is the day before Halloween.

**Scott Hanselman:** Okay. Is the conference focused entirely on Mono?

**Scott Bellware:** The significant focus, I would say the majority of the focus is Mono but this is really a conference with two parts. The first part is two days of in-depth tutorials, an immersive tutorial; and the second two days are an open space format or an open format much like the way we did Kaizen Con in Austin last year and I think the Seattle ALT.NET Conference is a little bit of the same thing last spring

as well. The idea is to spend two days learning new things, really sort of going deep on things that you haven't had a chance to get exposure to before, and the following two days you can spend time sort of honing that understanding or drilling that understanding in by using the open space format to do that. But this is one that also allows for anything so I expect the participants to put any subject they want into this schedule and that can most definitely leave the subject area of Mono. So I expect they will talk about Open Source on .NET badly, inclusive of Mono and inclusive of MS-PL. We also have some MS-PL content in the tutorial track as well. I know that Glen Block more than likely or possibly, I'm not sure of the likelihood of this, but I know he's working it out with COM and do a talk on the Managed Extensibility Framework and I think he might actually even do that on a Linux distro to show the Mono guys some of the developments that are going on from the Microsoft side in Open Source, in MS-PL, that can benefit and have an effect on Mono development. So I'm hoping that this really, this conference like the conferences of the previous three years are going to be an opportunity to both can learn a number of things and to cross pollinate ideas and make both broader and deeper knowledge for the betterment of our understanding of software development and app development on .NET and CLR and Mono-like engine.

**Scott Hanselman:** So people who aren't familiar and maybe for our non-native English speaking listeners, the word you're saying, MS-PL, is Microsoft Permissive License which is Microsoft's very simple and fairly liberal Open Source license. So when we say MS-PL, we're talking about Open Source software from Microsoft. So you're focusing on Mono at the conference, but also you're anticipating some MS-PL, some Microsoft Open Source topics as well, like you said MEF, the Managed Extensibility Framework.

**Scott Bellware:** There was a little bit about digression into jargon, when I said MS-PL I guess I was referring to some of the Open Source development, some of the Open Source frameworks on the development side and the dev stack that are built by Microsoft. So Microsoft Extensibility Framework is an MS-PL or -- yeah, an MS-PL product and ASP MVC is MS-PL as well, it's an unofficial Open Source license as per the -- what is that, buddy, the OSI?

**Scott Hanselman:** Yeah, Open Source -- is that OSI, Open Source Initiative.

**Scott Bellware:** Yeah, OSI.

**Scott Hanselman:** It's the people that recognize whether something is really Open Source, Joseph?

**Joseph Hill:** Yeah, that's right.



**Scott Hanselman:** Let me take this direction. Why would I care about Mono, Joseph? I'm a .NET programmer and I do all my work at the Microsoft's CLR. Why would I want to go at this conference, and why would I want to start using Mono other than to try something different as concept?

**Joseph Hill:** Oh, that opens a whole can of worms.

**Scott Hanselman:** Uh-oh, uh-oh.

**Joseph Hill:** The short version and traditionally it's that we have these .NET skills and you don't want them to be tied exclusively to Microsoft platforms. So that's one common answer and I think we can probably delve into that pretty deeply, and then some of the other answers on the side are that we do a lot of .NET development off of Windows and a lot of that can be extremely relevant to .NET developers, that we've developed a lot of libraries that are fully managed that developers can take advantage of in Windows and some of those are being adopted like the Mono.Addins framework we have which had some overlap with MEF that Bellware was listing earlier, but provides some separate functionalities as well. We have our Mono developed IDE which is Visual Studio-like. Visual Studio developers would be very comfortable in it, but it actually runs very well on Linux, Windows, and Mac and really it's, like Scott said, it's broadening of knowledge. There's a lot to be learned from the cross pollination there.

**Scott Hanselman:** Wouldn't you say that kind of historically, and historically of course in the internet is maybe the last few months or last year too, but historically that Mono development hasn't exactly been easy for the person who lives inside of Visual Studio. For the Windows Visual Studio person, they're going to spend a little more time at the command line or a little more time in an IDE that maybe isn't Visual Studio?

**Joseph Hill:** This is extremely true. Yeah, this is definitely true.

**Scott Hanselman:** I mean, Mono isn't exactly a slam dunk is what I'm saying and it's very exciting and powerful, but from a tooling perspective it's not incredibly easy.

**Joseph Hill:** Well, like you said, historical in internet terms. I mean, when I got into it, which was in 2003, it was okay, first download the Mono sources and spend a few things thinking how to build that and bootstrap up from there. In the past year too we've gotten a lot closer to, I mean at least if you go to the Mono website you can get a virtual machine or a live CD that has everything pre-configured so that in the simplest case, particularly like if you take an ASP.NET website, you could publish your ASP.NET

website to a Linux server from directly within Visual Studio as is. So the story has gotten a lot better. But yeah, I mean there's always a level of comfort that people have to figure out if they're willing to come up to. Now that said, I think it's a good segue into part of what we've been focused on doing within the Mono team in the past year which is to really improve the story for the Visual Studio developers and we have some tools for Visual Studio that are currently in preview form and we're opening up more and more, we'll be launching it actually very soon because they're starting to become quite complete, but what we've done there is create an add-in for Visual Studio that tries to remove that last layer of complexity that you refer to so that really it is truly as simple as okay, build this, run it in Mono, run it remotely on a Linux server in Mono and ultimately be able to remotely debug from within Visual Studio directly to a Mono application running on a Linux box.

**Scott Hanselman:** And this is what we're calling colloquially MonoVS? Is that kind of the codename we'll call it for now?

**Joseph Hill:** Yeah, that's MonoVS. If you want to see about it on twitter, if you're looking for the hash MonoVS hashtag, so that's the short form.

**Scott Hanselman:** Okay.

**Joseph Hill:** There's still some debate on the final name, but MonoVS is growing on me so it could just be that.

**Scott Hanselman:** Uh-hmm. And this plugs into Visual Studio as a native add-in, as a Windows add-in. It's custom to Visual Studio. Is it an add-in that's - what is it doing? Is it shelling out? I mean, how does this thing making Mono feel as convenient as doing regular .NET development?

**Joseph Hill:** So it's a normal add-in. If you've ever installed an add-in into Visual Studio, you're probably familiar with the term. I mean, you know, you say something is an add-in, it has a specific connotation and that's what this is and in fact Novell joined the Visual Studio industry partners program so that we could really get hooked into the Visual Studio ecosystem. As I've heard it referenced to few places, what it comes down to is making Visual Studio developers as comfortable as they can be in their native environment because Visual Studio is in an integrated environment and developers expect an integrated development experience. So that is what it tries to provide. We add the menus to the menu bar and context menus where they make sense and it tries to achieve a couple of goals. I mean, we want to expose the features. The developers believe they need to correct from within Visual Studio, but beyond that we were trying to guide developers through the process of getting an application running on Mono. So each of the features are, you know, you can get to



them where they make sense, but beyond that we've arranged everything so that if you didn't know where to get started before, you'll know exactly where to jump in now. So there's a list of features and it starts with the Mono Migration Analyzer, which prior to the Visual Studio tools, has been the tool that we host on the website. It's just a standalone Win Forms app today, but we have integrated that in Visual Studio so that what you can do is you can say analyze my application that I'm developing here and it will compare everything you're calling in .NET to everything that's available in Mono and give you warnings just like you would expect other warnings to show up in Visual Studio where you can double click and say go to this call, and if you're calling a method that doesn't exist in Mono yet then you will be able to correct it right there, or if you're dependent on native libraries and you're doing P/Invoke you'll get warnings that say, hey, you need to be aware that this is method may not exist on your target platform so you can address it.

**Scott Hanselman:** How often does that happen? I mean, I think that's a real question that people want to understand about Mono. So you use the term P/Invoke and this means calling into a native library. So for example I can't be on Linux running a .NET application under Mono and then say I want to contact something in Kernel32.dll, I can't touch the operating system and that's what a virtual machine is for, but I think what people wonder is they're thinking about going to Mono there, I think they're afraid that they might start moving in there and then discover that there's some whole section or some whole API that they just don't have, they don't have access to, it doesn't even exist. What's the surface area like?

**Joseph Hill:** So that's the great thing about the Mono migration in libraries, it's you can take that and point it at the compile to happen and quickly start to answer those questions and begin breaking down the problem. So first, to speak to surface area aside from Kernel32, we'll get into that in a moment, but the first question is really whether or not the method that you're calling, even if it's a .NET, the method that exist in Mono, clearly we lag because we're following implementation of the release. We don't generally try to get too far ahead of the curve. So we're missing things like big parts of the .NET 3.0 APIs so you're not going to have WCF or Workflow or WPF, and in .NET 3.5 we're just wrapping up our LINQ to SQL implementation. Beyond that the surface area doesn't look so bad. We actually have a pretty complete story. If you're doing ASP.NET, our ASP.NET story has been complete for quite a while and if the .NET AJAX has run quite well, thank you for that being MS-PL.

**Scott Hanselman:** Yeah.

**Joseph Hill:** The same story with ASP.NET MVC, we supported that from the day it was released.

**Scott Hanselman:** Really. So it's just sort of a couple of hours for you to get MVC to work on Mono?

**Joseph Hill:** Well, so actually what happened is for a while we didn't know what the license was. We just sort of stayed away from it. And then as it got close to the final release, the binaries were moved. They have previously been a restriction in the license that said you can't run these binaries off of Windows, and when that license restriction was removed and lead up to the final MVC release we started testing against the binaries, and then luckily when the final release happened and it was MS-PL, we already hit the ground running.

**Scott Hanselman:** Very cool. Scott, how much time have you spent with Mono personally? Because you're hosting a Monospace Conference, an open space conference based on Mono, how much time have you spent with it? Have you been using the Mono Analyzer and MonoVS at all?

**Scott Bellware:** I haven't been using Mono because I'm not really porting anything from my .NET work into Mono.

**Scott Hanselman:** Uh-hmm.

**Scott Bellware:** The focus of my work in Mono hasn't really been too terribly -- what's the word, it's an ex word, not extenious but...

**Scott Hanselman:** Sophisticated?

**Scott Bellware:** I haven't done a whole heck of a lot with it yet. I have Mono development on my MacBook and I've been working with it working on a website built on Mono, or helping a friend with a website working on Mono and it's just like working pretty much. From my perspective as a developer, the experience is pretty much just like everything else I've done in .NET building web forms application. So I'm not really sure that there's a whole lot to say about it beyond .NET development. The reason I'm hosting Monospace, the reason why I hosted conferences for the last two years and this will be the third year in Austin, for me it's a really great way to concoct a circumstance where I can be around the people that have things that I want to learn. Mono is more for me something that I really understand and more. I really want to understand more of the possibilities running .NET on platforms that are not only Windows. One of the great example would be iPhone. So I'm hosting the conference not because I'm an expert, but because I want to have some time with some experts.

**Scott Hanselman:** Oh, that's an interesting idea. So I think this brings up an interesting point as well. I'd be interested in what both of you have to think about this. So people who might be listening to this they might say, well, Scott just asked another Scott --



you're the other Scott, by the way, I heard someone just asked Bellware tell me about your expertise in Mono and here you are saying I'm not much of an expert. I'm organizing this conference because I want to talk to experts. I think that's really an interesting way to talk about community because so often we have this sense of, I mention this before on a webcast, that authorship equals authority, and here you are as a proclaimed not expert in Mono but you put together a Mono conference and this is kind of the new generation of community, isn't it? That, you know, why should you have to be an expert if you're going to have an open space conference and you want to bring people in? This isn't a conference where Bellware talks to us about Mono, right. You're, in this case, the catalyst.

**Scott Bellware:** I am not teaching at this conference. I'm not presenting at this conference. I'll certainly do, certainly share any knowledge that I have with people at the open space if they want it and if it's appropriate, but this is a conference from -- I mean this is really selfish from my perspective. I like to spend some time sitting at the seat of masters and being a student and learning something that's just way outside of my current knowledge set and this is just a way to do that, and I think a lot of people organizing, reaching all conferences in .NET probably get the same kick out of it. I can't imagine that the guys organizing the conference -- I can't remember the name of it, the conference in Tennessee that's becoming quite popular, the one up in the Great Plains, not the Great Plains but the Great Lakes one, I mean I'm pretty sure those guys are the same...

**Scott Hanselman:** Codemesh?

**Scott Bellware:** Where it's just a great chance to provide a space where you can be near the people who want to be your teachers.

**Scott Hanselman:** Yeah, definitely.

**Scott Bellware:** And of course when we share - you know, because that's my goal, when I shape conferences like this I'm specifically creating a conference that's structured for teaching and learning in an interaction with experts rather than a conference that's geared at commercial, more commercial imperative. Like we don't really have -- obviously this will come out Mono and it will come out some of the Microsoft Ms-PL products, and it will come out Open Source and the CodePlex guys are coming down to talk and engage in Community Edition Open Source, but really this is about getting an opportunity to be in a conference style that is really built from the ground up in its DNA to be about learning and teaching.

**Scott Hanselman:** Hey everybody, this is Scott coming at you from another place and time. No doubt you probably bump into testing tasks now and then in your work and you know writing functional test is

probably not your favorite thing. It's kind of difficult. It takes time and the results can be dubious. Well, get ready to start liking tests, thanks to Telerik. With the new WebAii testing framework, building web automation tests is a breeze. You've got code automation with advance ASP.NET AJAX and Silverlight applications. You can write a single test, have it execute against multiple browsers at once. You benefit from a Rich API, there's LINQ support, integration with Visual Studio unit testing, also NUnit, xUnit, and MbUnit, not to mention the free wrappers for a Telerik RadControl for ASP.NET AJAX and Silverlight all shipping with Telerik's new testing tool. One of the best features, the WebAii testing framework which is developed by ArtOfTest, is absolutely free. If you're already hooked on WebAii testing framework, start using it right away. Go to [www.telerik.com](http://www.telerik.com) for more info. Thanks a lot.

Joseph, the CodePlex foundation has started up here and you guys are involved, or Miguel is involved at least. There's this relationship between Microsoft and Mono that I think is great, and of course I work for Microsoft so you can't trust me really to say anything I suppose. It seems like Novell and Mono are getting a lot of hassle from the Open Source guys lately. We see on Miguel's blog, he is getting a lot of people just not being very pleasant about the relationship that you guys have with Microsoft. As a Microsoft guy inside, I feel like you're really trying to change things and include a lot more Open Source. What we're doing is we're pushing it at every chance we can to Open Source things. What does it feel like from the other side of the evil partnership on the Novell side?

**Joseph Hill:** From our perspective, I really believe in what Miguel said which is he is going to focus on the possibilities. You know, too much of Open Source is enough versus the mentality and I think the actions that Miguel has consistently taken have been, where I can make people more open and Microsoft in particular, that benefits everybody and that's much better for the community users and developers than trying to draw a line in the sand. So what's interesting is Miguel has taken a lot of flack and I'm sure it's probably taking its toll on him. You know, there are a lot of personal attacks.

**Scott Hanselman:** Right. Well, people are saying he is not really an authority in the Open Source community because he isn't in bed with Microsoft.

**Joseph Hill:** Yes, certainly. Some people are, but you know what? What really surprise me as I went through and look at it, he had a more recent blog post that sort of held up the palm for peace there, peace offering if you will, and there were very limited attacks actually I think coming back at him versus a lot of people that say I really get what you're doing and I think it's great that Microsoft is clearly becoming more open, and I think Miguel deserves a lot of credit for it.



**Scott Hanselman:** Uh-hmm.

**Joseph Hill:** Though from my perspective and of course particularly with my background, I mean I was a .NET developer before I join Novell, I've always believe that there's potential life there and there's a potential in Microsoft as a great software company, and there's potential in the .NET Framework being available to all developers and this is definitely furthering some good goals.

**Scott Hanselman:** Did you think that this is competition? I mean, is Mono just flat out competition or is it filling...

**Joseph Hill:** Yeah, I mean I'm sure, yeah, I think clearly there's a lot of competition. We would love to win over some .NET developers, but I guess it's about finding where we have mutual interests and growing the pie as they say. You know, when we make the platform better, we both win.

**Scott Hanselman:** Do you think that's the case, Scott?

**Scott Bellware:** I don't personally – I've always been aggravated, I think, a little bit by a number of folks in Microsoft, certainly not everybody, who sort of subconsciously or pre-consciously feel that the word competition is necessarily a negative and I see it as very much a neutral force. It can either lead to bad outcomes or good outcomes, and I tend to see competition naturally as something that's really grand because it gets people -- it blows up the dust out of a pipe. It's just the letter G out of the way. It gets people thinking, and it gets companies innovating, and it gets productivity improve and it makes us call out the question, our form of belief and come up with the next generation at least. So yeah, I think it's absolutely competitive, but my definition of competition is 100% positive. I mean, it's just kind of like saying, yeah, it increases profit or increases opportunity. Productivity and competition go hand-in-hand.

**Scott Hanselman:** So it's just a given, it's just of course. So clearly in your mind though the world will be a lesser place without the Mono option.

**Scott Bellware:** The world is a lesser place without diversity of any kind.

**Scott Hanselman:** Wow, you should put that on T-shirts, Scott. That was beautiful. Did you just come up with that?

**Scott Bellware:** No, but you know I'm...

**Scott Hanselman:** I just had a little tear, just a tear right down on my face.

**Scott Bellware:** I'm a firm believer on the value of diversity and I believe in diversity because every time I come face-to-face with diversity in my life, it's very challenging and it's often painful. I know when I come face-to-face with those experiences that that experience is showing me a place in my life where it's time to stretch out and grow, and that's part of what competition does. It doesn't freeze the diversity and through diversity we both broaden and deepen our ability.

**Scott Hanselman:** Well, speaking of competition and as if it wasn't confusing enough for the average Joe out there, really if you're coding C# or VB you're in a good position right now because you can create a whole diverse series of applications. Joseph, can you talk a little bit about MonoTouch and what that means to the average Windows C# or VB developers out there.

**Joseph Hill:** Of course I love to talk about MonoTouch. This has been really dominating part of my life for the past several months and particularly in the past two weeks since they launched the MonoTouch product. So MonoTouch is, for those who don't know, it's a Mono for the iPhone and that's I think, I hate to use a cliché but I mean it's sort of game changing. You know, there's the iPhone itself being reference as that quite often. The iPhone development platform, prior to MonoTouch, was essentially Xcode and Objective C. With MonoTouch, what we did is we've opened up the platform to .NET developers and of course this is attractive to people who are really attached to C# and they want to use those skills to develop iPhone apps. But it has even been very attractive to people who have already bit the bullet and learn Objective C just because C# and Mono offer some advantages over the current toolset that's available.

**Scott Hanselman:** So apparently it's reasonably easy to make an iPhone application even though you're using Objective C because there's an app for that. Whatever there is, there's an app for that. What is the benefit of me writing the application in a .NET platform?

**Joseph Hill:** Well, there are a few. I mean, one is of course it's .NET is comfortable for many people. I mean, like I said if you already have bit the Objective C bullet, it's really are you comfortable with the syntax? We bring C# 3.0 to the iPhone so when I say the syntax I mean you get...

**Scott Hanselman:** Really? Like LINQ?

**Joseph Hill:** LINQ, yup. We have LINQ to XML with several examples always from the fire already and everything else below that depends on say the caricature Lambdas and your generics, etc. We also have garbage collection. You don't have that in Objective C on the iPhone.



**Scott Hanselman:** Wow. And I understand though that you don't have the ability to do what we call JIT-ting, Just-in-Time Compilation on an iPhone. That's something that's -- it's not that it has taken the impossible but it explicitly called out that you can't do kind of code generation and just-in-time interpretation on an iPhone. So how did you get around that since .NET by code works the way that it does?

**Joseph Hill:** Right. I mean, it is the licensed restriction of software technical restriction. The Kernel enforces it.

**Scott Hanselman:** Oh, the Kernel enforces it, okay.

**Joseph Hill:** Yes. So I mean I guess what it comes down to is that you can generate code but you can't execute it because it can't change. You're not allowed to change the memory that you write to to be executable. So in this one there's a lot of languages and virtual machines from being able to be put on the iPhone. The way we get around it is Mono has a feature which is full ahead-of-time compilation. This would be similar to engine in .NET except Engine isn't really full ahead-of-time compilation. But in the case of Mono, we can actually take a .NET executable and pile the whole thing down to make it an executable. This means that basically every path, it could be jitted, jitted in advance. Now there are a couple of features that mean you're can't have access to such as Reflection and MEF fairly. I think that depends on MEF.

**Scott Hanselman:** Okay.

**Joseph Hill:** But you still get a pretty, complete set of .NET functionality without that.

**Scott Hanselman:** So what underlying library are you talking to? I mean, this isn't Win Forms, right. I mean, that would be weird.

**Joseph Hill:** Yes. It's CoCo.

**Scott Hanselman:** It's CoCo.

**Joseph Hill:** So let me just tell you maybe I should take us back and talk a little bit about what the development experience is actually like.

**Scott Hanselman:** Yeah, let's do that because we understand that this is back-up for second count like have a reset in the sense of the whole talk. So Mono itself is an Open Source implementation of the CLI that allows you to take, you know, write the C# and the code that you know how to write now and the libraries that you know how to write now and it will work on non-Windows systems. MonoVS is the name we're using for the add-in that plugs into Visual Studio and makes it really easy for you to do this in the

environment you're comfortable with. Monospace is the conference that's Scott is holding in October, and now we're talking about MonoTouch which is the ability to compile .NET applications targeting the iPhone. Maybe you can explain that we're not necessarily doing this in Visual Studio, right.

**Joseph Hill:** A quick interjection here. You know, we're often talking about C#, I guess that's where we get called but I think it's important to note too that VB.NET is in place here as well, and from what I understand...

**Scott Hanselman:** That's a good point.

**Joseph Hill:** And from what I understand, it's that people have got IronPython and IronRuby running on the Mono implementation of the runtime as well.

**Scott Hanselman:** Thank you for keeping me on. You're absolutely right.

**Joseph Hill:** But to take all that back into the context of what I think you're asking with MonoTouch, it's MonoTouch is an SDK and it runs on a Mac so that's probably the place to start. So with MonoTouch we've included all the tools. I mean, if you wanted to do iPhone development with Visual Studio on the command line, your experience would be a part of Visual Studio maybe in parallels or whatever and write in some C# and then compile it and then switch over to your Mac and use the tools that we provide there. But that's really not the best development experience and it's not really what we design the experience to be.

**Scott Hanselman:** Okay.

**Joseph Hill:** So really what most people are going to see and experience when they work with MonoTouch is firing up Mono development on the Mac, and since Scott mentioned that I probably should interject that Mono development is really -- it supports multiple languages but it really works best with C# so while you can do VB if you have a real need to do that, your best worry is going to be C#.

**Scott Hanselman:** Okay. So you're saying C# really is kind of first among equals in a sense.

**Joseph Hill:** Yeah, correct. So C# is supported really well on Mono development and the Visual Studio developer opening up Mono development would be very comfortable with the experience. You're going to have your IntelliSense and project structure very similar to what you use to. In fact, Mono development supports the same solution in projects all format as the Visual Studio so you could even share code in that manner. But the experience for iPhone development is that we actually integrate to Apple's Xcode where it makes sense



because there is a lot of functionality that we depend on there.

**Scott Hanselman:** I see. So you're not trying to necessarily rewrite everything that already works.

**Joseph Hill:** Right. So your question was what is the UI and this isn't WinForms. It's not an iPhone clearly, that would be ugly. So what we actually do is we support the Interface Builder that Apple ships with the iPhone SDK, and Interface Builder is a designer. You would be comfortable with that experience. You have a toolbox and you drive controls on to a form that is the aspect ratio of an iPhone. It looks like you're designing on an iPhone screen, and at the end of that process you have what you want your UI to look like and those are several controls that, well, the way we access them in Mono development is that you name outlets which is a term from their designer world that basically you would go through name outlets to correspond with all the controls that you want to have access to and then you save your designer's file and you go back to Mono development and it will -- Mono development detects, it detects all the interfaces that you have created from within Mono development. It's kind of hard to describe but...

**Scott Hanselman:** It kind of reminds me of Model View Controller type of structure or what we used to call Document View back in the day, but the idea that you create your resources in one place, you prepare all of your user interface stuff, and then you go and you do all of your logic and then you hook up to each other.

**Joseph Hill:** Right. But I think the part that I fail to describe is that it's all is still very integrated to mono development. So from within Mono development you found, well, I had a new interface and it adds the ZIP file for you and you double click on that and you'll be pretty comfortable transitioning over to a designer that's running outside of the Mono development experience but still in it.

**Scott Hanselman:** Awesome.

**Joseph Hill:** And when you save your files, we automatically generate all of the partial classes like you would get it within the other designer kind of model that we're all comfortable with from ASP.NET or Win Forms designing.

**Scott Hanselman:** Uh-hmm.

**Joseph Hill:** So back in Mono development, you now have everything bound up nicely for you and all of your controls exposed, those .NET controls, and all the properties are exposed within there that you're going to have access to change. From there it's a pretty straightforward development process. If you wanted to, you could avoid the Interface Builder just

like you might have avoided Win Forms. If you wanted to build all your interfaces out from C#, you would be able to do that. Then on the next step is, of course, you build it and then you run it and, you know, like if you get our evaluation version today it supports all of these that we've discussed so far, all this integration all the way back to the iPhone simulator that Apple shipped for the SDK as well. So as soon as you hit run inside Mono development, it's going to fire up the simulator and watch your application for you and you can interact with it right there on the screen.

**Scott Hanselman:** Is there anything that you can't do? I mean, this isn't like a technology prototype. It's not like a, oh, look at this kind of thing. Somebody used to say it's like when somebody put together a prototype, it's like a three-legged dog, you know he's going to get where he's going but it's just hard to watch. Is this a toy or is this really can you really write an application in C# on an iPhone that looks like one?

**Joseph Hill:** This is a product so it's a little different than maybe some of the approaches that some of the cool things that we've done with Mono in the past. But no, I mean the entire experience is very streamlined and like I said I just describe it in the evaluation version. You can develop -- you know, you can get that for free. It doesn't have a time expiring thing and you could develop your application against the simulator. What the evaluation version doesn't support is actually deploying to the device. That's the product, but it supports all that in the end and you're paying for it so you should expect it to work.

**Scott Hanselman:** You're paying for it so I mean it's -- well, I mean that's going to be interesting. I didn't mean to actually do that but it sounds like you kind of step in the -- I think I made an indirect comparison against Open Source software that's like, hey, it works great. If it doesn't work, sorry, go figure it out. You actually emphasize that when you say, well, this is a product. I didn't mean to do that but it almost sounds like we're saying, well, this is a product so you really can expect it to work really well.

**Scott Bellware:** Right, yeah.

**Scott Hanselman:** Both Mono and MonoTouch are things that are in production and people are doing real work on these things today.

**Joseph Hill:** Yeah.

**Scott Hanselman:** I mean there are apps I can get with MonoTouch that are in the apps store?

**Joseph Hill:** You know, I don't know if there are MonoTouch once on the app store today because of the length of time for the approval process and we just launched MonoTouch like I said two weeks ago



and we had the beta program only running a short time before that because this is actually all a very aggressive production. So within the beta program, we didn't get out the license to build as per a go live license like you'd be familiar with. So we don't have that, but it's probably worth pointing out a little bit of the history of how MonoTouch came to be which is that we license Mono to various companies for various purposes when they need to have a commercial license of Mono rather than just the ones provided by the Open Source licenses, and in one particular case a game company called Unity licensed Mono for use in their game engine which they have for Windows Mac, the Nintendo Wii, and ultimately the iPhone.

**Scott Hanselman:** Really. Mono on the Wii?

**Joseph Hill:** Correct. We actually offer Mono on the Wii so if there are any Wii developers out there, give us a call. We care for Wii port of Mono as well.

**Scott Hanselman:** Wow. So Scott, we need to have a Mono on the Wii talk on MonoSpace. Get on that.

**Scott Bellware:** Are you going to do the talk?

**Scott Hanselman:** It sounds like I'm going to have to since it's an open space conference.

**Scott Bellware:** I think it would be interesting to talk about whether or not we should have some people who would actually talk about doing a game development session at MonoSpace. So the program is still under development and I know we'll see that.

**Scott Hanselman:** Yeah, definitely.

**Joseph Hill:** There has been a lot of interesting games with Mono. Before we go off on the tangent, that might even be the place to go. Let me go ahead and get to the point of the Unity story which is that Unity licensed Mono for some of the iPhone about a year ago and so they have a few hundred apps in the app store that have Mono in them already. So while we don't have the MonoTouch stuff, they're displaying them using Mono and using the technology and in fact I actually saw an announcement yesterday that I think buy the top 100 apps on the app store that were produced by Unity.

**Scott Hanselman:** Wow. Well, this is the thing though. If you're doing it right, you're not suppose to know. I mean, this has always been the thing. Whenever I use an application and discover that it's running .NET, and I never even thought about it until I kind of stumbled upon it using some introspective developer tool, I always realize that, oh, okay, good, this is success. Whether the application is written in Tickle or whether it's written in Mono or whether it's

written in Delphi, it doesn't matter as long. As it's a great app, people don't care. I think it's just the developer and us that wants to go into the app store and search for the word Mono and then get the list of all the different applications that are...

**Scott Bellware:** I think you're completely correct, and yeah, our goal and particularly with MonoTouch is we want an app that looks like it belongs on the iPhone and that's why we made a lot of the decisions we made. I mean, originally when we start talking about Unity I started getting tons of emails every week that were how do I get Mono on the iPhone? And the answer was, oh, unless you're producing a game engine, we don't really have a useful port for you. You can go get Unity and you can make an app that looks like a game.

**Scott Hanselman:** Yeah.

**Scott Bellware:** But there's really no story for how do you make an app that looks like an iPhone app, and MonoTouch I mean that's what we did, we bound all the native APIs or a significant portion of them and that's why you use the Interface Builder. So at the end of the day, yeah, users shouldn't know.

**Scott Hanselman:** Very cool, very cool. Well, Joseph and Scott, thanks a lot for giving us kind of an overview of the Mono ecosystem. It sounds like there's a lot of interesting stuff. We didn't have a chance to talk about Moonlight, the Mono on Silverlight. People can learn all about that, is it [go-mono.com](http://go-mono.com)?

**Scott Bellware:** Correct, yeah. That's probably the shortest URL and they can get Moonlight at [go-mono.com/moonlight](http://go-mono.com/moonlight).

**Scott Hanselman:** Very cool. They can learn about MonoSpace at [monospace.us](http://monospace.us). This has been another episode of Hanselminutes and I'll see you again next week.