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Carl Franklin

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Richard Campbell

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Rob Tiffany on Windows Mobile
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[Music]

Lawrence Ryan: Hey, Rock heads! Grab a Heini and listen up! It's time for another stellar episode of .NET Rocks! the Internet audio talk show for .NET developers, with Carl Franklin and Richard Campbell. This is Lawrence Ryan announcing show #384, with guest Rob Tiffany, recorded live, Thursday, September 25, 2008. .NET Rocks! is brought to you by Franklins.NET - Training Developers to Work Smarter and now offering SharePoint 2007 video training with Sahil Malik on DVD, dnrTV style, order your copy now at www.franklins.net. Support is also provided by Telerik, combining the best in Windows Forms and ASP.NET controls with first class customer service, online at www.telerik.com, and by Data Dynamics, makers of ActiveReports.NET, simple, powerful and cost effective reporting for Windows Forms and ASP.NET web applications, online at www.datadynamics.com. Support is also provided by CoDe Magazine, the leading independent magazine for .NET developers, online at <http://www.code-magazine.com>. And now, the man who just landed in Amsterdam after being 9 miles high for six hours, Carl Franklin.

Carl Franklin: Thank you very much. This is Carl Franklin in a hotel room in Amsterdam in the Netherlands. I'm here of course at the SDN Conference which we will be covering a future show of .NET Rocks. Richard is not here. I'm doing the intro by myself from my hotel room. It is a Thursday morning, very bright and early just before the show has been published. I'm not going to talk about my experiences in Amsterdam yet, only to say that the show that we do from SDN is going to be Rated R. That's all I'm going to say. It is not going to be a show that you want to play when the kids are around. That said; let's get right into Better-Know-a-Framework.

[Music]

All right, so I'm talking about a namespace today which is in WPF, Windows Presentation Foundation. It's called System.Windows.Navigation and navigation is a great feature of WPF. Think of it just like ASP.NET but with state. So, one of the greatest things about ASP.NET and about web programming is this ability to just link to URIs or URLs of other content, but what if that content could be a XAML file or it could have an IFrame with embedded HTML

content. There's basically a navigation Window class that derives from Windows in WPF and it gives you all those great features of navigation that you know and love with some more stuff that you can't do in ASP.NET and in JavaScript, you know, easily hiding the back button, for example, but anyway, I just want to point that out, the System.Windows.Navigation namespace and the Navigation Window class use that as base class for navigable Windows Presentation Foundation Forms.

So, you may be asking yourself, "Carl, you're in Amsterdam. Where is Richard?" Well, he actually didn't make it to Amsterdam this year or to Sofia, Bulgaria. He's okay. There's no medical emergency or anything like that, but he did have an issue that was important enough for him to stay home so he'll be back doing intros with me happy and peppy and bursting with love in a couple of weeks.

Hey, have you signed up for the .NET Rocks TechEd Europe sweepstakes yet? Are you participating? It's so easy. Just go to dotnetrocks.com/barcelona, answer a stupid question about one of last week's shows and you could win next Tuesday a Tom Bihn Brain Bag, the best bag in the world which by the way I have my Brain Bag here in Amsterdam and everybody is like, "Ooh. Wow. That's amazing. Look at that." You would not believe that it's 5 years old. It just looks brand new. So, the anyway, the best backpack for carrying around a laptop. It's made of steely fabric. Also, the winners of those Brain Bags will go into a pool and we'll pick one at random on October 20th and that winner will get airfare, hotel, and admission to TechEd Europe Developer, November 10th through the 14th in Barcelona, Spain, so this is a great thing. If you want to go this year or next year, it doesn't really matter. Just go to dotnetrocks.com/barcelona and play along. What have you got to lose, huh?

My friends at Infusion are still hiring. If you're looking to get out of your current job, maybe the economy in your area isn't so good and you want to go to Dubai maybe for a little while and party in that town and do some great work. How about New York City? Would you like to go to New York City for a year and work with some really creative people? Live in Manhattan? They're going to put you up in an apartment in Manhattan rent free for a year. On top of that, you'll get a New York City salary. What have you got to lose again? Hey, this is just one of the great things that we do for you here at .NET Rocks! If you are interested in either of those things, send an email to me at carl@franklins.net.

Our guest today is Rob Tiffany. He is an Architect at Microsoft focused on delivering the best possible Windows Mobile solutions for his customers. His expertise lies in combining wireless data

technologies, device hardware, Windows Mobile software, and optimized server infrastructures together to form compelling solutions. Prior to his current role, Rob was a Senior Technical Product Manager for Windows Mobile in Microsoft's Mobile and Embedded Devices division where he focused on growing the mobile developer ecosystem. He was also responsible for planning and running one of Microsoft's largest global developer conferences. Prior to joining Microsoft, Rob founded one of the industry's first mobile device management companies. Welcome Rob.

Rob Tiffany: Hey, hey, hey. How's it going?

Carl Franklin: It's going great. You know why?

Rob Tiffany: Why is that?

Carl Franklin: This is the last show of the day, man.

Richard Campbell: Last show of the day.

Rob Tiffany: Outstanding. Good deal. Got to love it.

Richard Campbell: So, obviously a mobility guy, but it's such a huge line like where is your specialty? What do you work on most of the time?

Rob Tiffany: Well, you know, I guess it has changed over the years. These days I work on just kind of big block type stuff. In the past, it's gone from the nitty-gritty heads down device, manipulating the device, UI, that kind of stuff, compact framework, SQL Server compact, lots of line of business applications for some of our biggest global customers, you see a lot of that, but the team I have been on also does a lot of work for one of the mobile operators around the world to give them custom home screens. You've kind of seen the evolution of Windows Mobile over the years and.

Richard Campbell: Sure.

Carl Franklin: Yeah.

Rob Tiffany: One of the biggest things that mobile operators are interested in is differentiating their devices and so you get stuck in that rut of every mobile operators having the same looking Windows Mobile device as the other one and obviously that doesn't increase their specialness or their revenue per user to get people to come to them versus somebody else.

Richard Campbell: Right. So Microsoft actually does this customization work for them?

Rob Tiffany: Well, it's a combination. We used to do a lot more and we have a team that will work with OEMs. Also, I don't know if you're familiar with all the stages that happen after we release Windows Mobile like a new version. It's a ROM image that goes on to the device and so we give it to OEM and they do a bunch of -- ostensibly, they're just going to create the device drivers to plug into all their special hardware but then they do a whole lot of other customizations to it above and beyond what we give them and then when they hand it to mobile operators, they're not just going to release it to the wild unlocked which most of them are. Well, it depends on what part of the world you are in but usually when they hand it to mobile operators, the mobile operators spend time and they do other customizations to make it further unique for them and so sometimes either the team I'm on, I'm on a mobile vertical team, a global practice in worldwide services that kind of sit between Microsoft Services and Mobile Communications Business which does all the Windows Mobile stuff, sometimes we help them do unique home screens. There's this team inside MCB that helps them like maybe you saw Team Mobile released six months ago a new phone called the Shadow and they wanted to have a unique home screen that have My Faves on it and things like that. It's probably one of the most different home screens we had done and so we helped them build that. More recently, if you've seen the HTC Touch Diamond or Touch Pro or the new Samsung Omnia, you'll have seen real radical departures from the standard look and feel that we provide with all these 3D touch gestures being able to flip things around.

Carl Franklin: So, is this your response to the iPhone?

Rob Tiffany: You know, we've been doing this all along and that's a very common thing. I know lots of people say that's your response to the iPhone. Obviously, we've been doing this -- obviously we've had the Pocket PCs since 2000 and then we kind of evolved into the Smart Phone.

Carl Franklin: I just mean the whole touchy kind of things that you were just -- the Samsung, for example, you know, that you were just describing.

Rob Tiffany: Well, you know, actually in that case, it's 100% the same. In both cases, with Samsung and with the HTC Touch Diamond, those guys did all that work themselves.

Richard Campbell: Yeah, that was what I was thinking. I have a Touch Cruise. I've had a Touch Diamond. I mean I've played a bunch of different phones. They seem to have a whole chunk of



software that's distinctly theirs that runs on top of mobile. It's like a shell extension, really.

Rob Tiffany: That's exactly right and they rolled their own on that one so that was 100% all their stuff. We didn't help them at all on that.

Carl Franklin: So I didn't realize that phone manufacturers could do that. I thought the OS was the OS and you got what you got.

Rob Tiffany: Yeah and that's why a lot of people say, "What's the big deal? When you launch a new rev of Windows, the next day I can buy it on a Dell or an HP. Why is it when you come out with a new version of Windows Mobile, I have to wait four to six months or longer in some cases to get it?" and that's the reason. Everybody spends time customizing it and doing their little thing to it before you get it into the marketplace so that's why there's always that big lag. Obviously, we work really hard to try to shorten that lag time.

Carl Franklin: Do you have any kind of -- I mean, you know, you look at something like the iPhone or the Touch or with all the great graphics and stuff and just a reduction in the number of things that you have to do to get things to happen which is my biggest peeve about Windows Mobile, just on standard stuff, right?

Rob Tiffany: Sure.

Carl Franklin: But you look at that stuff and you think, "Well, they must have some kind of WPF kind of light, Silverlight kind of thing going on there." Do you supply any of those kinds of graphics libraries at that level?

Rob Tiffany: What we've had over the years, the earlier Pocket PCs had this thing called the Game API which lets you talk directly with the frame buffer. We deprecated that. We put in Direct 3D Mobile, kind of a subset of DirectX. I wouldn't say a lot of people ended up using that and then you have GDI, you have some ways to do Alpha blending. Again, a lot of people don't realize that Windows Mobile is just a unique implementation of Windows CE.

Richard Campbell: Right.

Rob Tiffany: So, when you build a Windows CE image, it's kind of like a la carte menu, "Yeah, I want this, I want that," yada, yada. So the mobile operators, actually, they have their work cut out for them. If they're not using Direct 3D Mobile, they are just doing a lot of stuff with GDI, they're doing a whole lot of P/Invokes oftentimes to pull off some of the cool effects to get the alpha blending and that 3D look to happen.

Carl Franklin: Really?

Rob Tiffany: Yeah, interesting stuff.

Carl Franklin: It sure would be nice to have a sort of WPF-like on the phone.

Rob Tiffany: You're not the first person to say that. We get that a lot from our developers. If you go back in time and you kind of look at the original Pocket PC and moving forward, that look and feel while it's evolved, particularly with our developer tools, you know, we have a lot of .NET compact framework developers out there, and when they open up Visual Studio and see all of these controls, they kind of look a lot like the controls they had with VB 3.0.

Carl Franklin: Yeah.

Rob Tiffany: Pretty flat, not terribly interesting, and so we're working on a lot of different things to jazz that up. A long time ago, the reasoning behind that was we didn't have good processing power, we didn't have any graphics acceleration of any kind; we had very little memory. So, it made more sense to kind of just have more of a flat UI and not try to dazzle too much, but today obviously that's changed and so a lot of the chipsets do have graphic accelerators and of course you're seeing a lot of other things like accelerometers and GPS and all kinds of things.

Richard Campbell: Well, I look at it like the Touch Diamond resolution. It's just staggeringly good.

Rob Tiffany: Oh yeah, it's great. It's great. We announced -- you may or may not remember at MIX last spring, we announced Silverlight for Windows Mobile and so the folks are working on that but the first release of that will be an in-browser experience.

Carl Franklin: I wonder if anybody knows that if they didn't go to MIX?

Rob Tiffany: Yeah, they know it.

Carl Franklin: Yeah?

Rob Tiffany: But the mobile area is definitely kind of a small subset and not everybody is in that club or chooses to be.

Carl Franklin: Right.

Rob Tiffany: So you're right, the word is probably not as widespread as we'd like.



Carl Franklin: So tell me just a little bit about Silverlight for mobile.

Rob Tiffany: Well, it's going to be running in -- it's actually going to work exactly like what you have on the desktop except that it's just going to be smaller.

Carl Franklin: Programmability wise, it's pretty much analogous to the compact framework?

Rob Tiffany: Exactly, yeah. Now, a lot of people asked, "Oh, I want WPF for devices," which is not something we're working on at this time. I hear a lot of people say, "Hey, I want to use the compact framework for all the Gatsby applications, but I want the UI to be WPF for Silverlight," and that's not what we'll be delivering out of the gate. So, initially, it will be that in-browser experience kind of sandbox in there but all the other stuff is definitely on the radar and we've got a number of teams who work on the different, you know -- here in Redmond, you got just the core CE team that's been working on the kernel and things like that and then you have higher level teams that are working on Windows Mobile or Pocket Outlook or all the different apps. In India, in Hyderabad, we have kind of the mobile developer center where we had recently, at the beginning of this year, moved the compact framework team there. The SQL Server compact team had already been there I think since about 2005 and then the Visual Studio for devices team that does all the plug-in work to let you build device applications, the emulators, all the tooling, that kind of stuff, they're there as well. So, all those guys work together to get this stuff out the door. It's that team, primarily the .NET CF team, that's working on the Silverlight stuff. So, pretty crazy.

Carl Franklin: Okay. So in terms of stuff that's there and that's not there, first of all we don't even know when we're going to see a beta, do we?

Rob Tiffany: You never know. I don't have anything to announce at this time.

[Laughter]

Carl Franklin: No, I do never know, you're right about that.

Richard Campbell: You never know. The problem I have with the Silverlight model is that it's largely driven on the sort of web services style mode where we're going to be making steady calls back to get different pieces of it. This is certainly not a technology well suited to a mobile that's not 3G, that's not always connected. As soon as you're in the disconnected state, I can see that app really sort of falling down.

Rob Tiffany: I think that's why you hear so many developers in our community asking for that kind of offline Silverlight or WPF-like type of scenario because clearly more people building for mobile devices are building disconnected, you know, occasionally connected applications that can get data. They are aware of the network, they can pull down, do synchronization when the network is there and you can keep on track and work offline without the network.

Richard Campbell: Right.

Rob Tiffany: You also hear people, you know, you've talked about things like Google gears out there which they are trying to address that same problem of how do you do offline for something that is always connected typically and I always hear people saying "Hey, why don't we take SQL Server CE, SQL Compact, and build that into some kind of global cache?" and things like that. I don't know that we're doing any of that stuff, but I can hear that line of thinking because that's obviously, you know, that's a pretty standard model we have for most of our kind of rich, occasionally connected apps is we have so many different ways that Windows Mobile connects and the .NET CF runtime connects to a lot of different packages in the Enterprise and stuff like that and then having that little database on there is definitely key to that offline experience, no question about it. So I think a lot of what I do these days, I spend a lot of time talking about a lot of big picture stuff. Well, customers, I spend a lot of time with customers telling them best practices around mobile development. We have a lot of people who -- you know, I think we are our own worst enemies sometimes. When we're marketing, we say, "Do you know how to do Visual Studio on the desktop? So you're automatically a device developer," because it's the same thing. It's VB, it's C#, it's all the same. It's a subset.

Richard Campbell: So then you spend all your time saying, "Well, yeah, not really."

Rob Tiffany: Well, yeah, not really. Yeah, the problem is, is you have a bunch of people building for big fast desktops or servers with lots of memory and processing power and they bring those same skills or lack of skills or arguably lazy programming and not caring about memory management or things like that. They bring that over and then they build giant fat bloated things.

Carl Franklin: Want to hear the ultimate irony? I have an AT&T tilt and it's running Windows Mobile 6.0 and everything on it is fairly snappy except for the phone applet. It's a phone! You press a button and it's like press, ping... It takes that long to register that you've actually pressed a button sometimes.

Rob Tiffany: Boy, that's just not good.

Richard Campbell: It's funny though.

Rob Tiffany: I hate to hear that.

Richard Campbell: Can you talk a bit about the kind of mobile apps people are building with the compact framework like what are people using their phones for? I mean there's already so much stuff that comes from the carrier. What is it that people are writing themselves?

Rob Tiffany: Right and keep in mind, everything you see on that phone usually out of the box from the carrier, most of it is all C++ with the exception of -- have either of you downloaded or used the mobile version of our Live Search maps application?

Richard Campbell: No.

Carl Franklin: I haven't used the mobile version, no.

Rob Tiffany: You should download it. A lot of people talk about how much they love having Google Maps on their device, on other devices like the iPhone and other things or you can get it on Windows Mobile. Again, maybe we're not doing a good enough job marketing, but we've had something that does everything that that does plus a whole lot more for quite a while and it's a super responsive app. It calls into all the Virtual Earth stuff to get your mapping, it does traffic, does movie, show times, it does finding the cheapest gasoline, just tons of stuff. We did an acquisition of a company called Tell Me a while back to do voice recognition stuff on the server side and so you can fire up this app and talk to it and on search like say where you are, what you want to search for, and you can talk to it and sends it back. It does a great job of interpreting what you're saying and doing search based on that and the great thing for compact framework developers is that this app was written in a compact framework. A lot of people assumed it was in C++ and so it's a great showcase app to show you what's possible and how powerful an app you can build with .NET CF.

Richard Campbell: Huh. livesearchmobile.com.

Rob Tiffany: Something like that.

Richard Campbell: Yeah, tough domain name.

Rob Tiffany: Yeah. If you're on your mobile device and you bring up IE mobile and you click on the Windows Live link, you kind of get a bunch of links for Hotmail and MSN and stuff like that, but one of

them will be for search and if you click on that, it will say, "Hey, download interactive maps," or something like that. Anyway, you click the link and you can download a CAB file. It's free. I think it's only a few hundred K and you can install it on your device and it does everything you're used to doing with Google Maps on the device plus a whole lot of other stuff and it's totally managed.

Richard Campbell: Nice.

Rob Tiffany: The original version was actually written in .NET CF 1.0 just way back when just to make sure it had compatibility with all the devices and it still just run great. The most recent one is targeting 2.0. So, yeah, great example app to show people what's possible.

Richard Campbell: The question is can I get the source?

Rob Tiffany: Well, I don't know about that.

Richard Campbell: I see. Now, you're being difficult.

Rob Tiffany: I know, I know, I know. Probably not, probably not get the source.

Carl Franklin: Do you guys still use the term Windows CE? Is it still a product?

Rob Tiffany: It sure is and we do. There's always confusion around that if you think of Windows CE is the real operating system, the core. The great thing about building Windows CE, you can target so many kinds of devices, appliances.

Carl Franklin: This portion of .NET Rocks is brought to you by our good friends at Telerik who bring you this special message. What's more important for your web applications? High performance on the server or on the client? How about footprint? Number of server requests? There are so many potential bottlenecks that can drag your application performance and of course there is no universal solution for them. The good news is the guys from Telerik understand the complexity of that problem. When building their UI components, they isolate every probable source of performance loss, then they apply respective solution for different products, different scenarios, and even different browsers. The techniques vary dramatically. As a result, you the developer receive out of the box highly reliable components that are optimized in every aspect of their behavior. I'm sure you'll be interested to learn more about the various performance boosting techniques for web applications. Just go to telerik.com/topperformance for details and live demos.

One of the very first shows we did was with Nick Landry and he laid down the fundamentals about Windows CE. I guess it's a pick your features kind of operating system. When you're in OEM, you go to Microsoft and you say, "We want a Windows CE implementation with this, that, this, this, this, and this," and you get this sort of custom OS, right?

Rob Tiffany: That's exactly right.

Carl Franklin: It's amazing. I remember about that.

Rob Tiffany: Yeah. He's still Active Mobile MVP.

Carl Franklin: Active Nick.

Rob Tiffany: Yeah, yeah, so I guess.

Carl Franklin: Just don't take him to Caesars Palace in Vegas.

Richard Campbell: Yeah, none of that now.

Rob Tiffany: I have to keep a leash on that guy sometimes. He's pretty crazy.

Richard Campbell: He's a little unruly.

Rob Tiffany: Yeah, I'm sure he wants to hear that. Anyway, he's the one doing all that high performance computing stuff in New York these days I think.

Carl Franklin: Yeah.

Rob Tiffany: Yeah, Windows CE, you're right. He had this tool called Platform Builder and it's like this a la carte menu. Here's 10,000 -- well, I'm exaggerating, but hundreds or thousands of different choices of what you want your operating system image to look like and so it's super granular so you can build the tiniest thing that sits in the EPROM or whatever all the way up to set-top boxes or IPDT TV technology media room that a lot of people are using, FIOS and some other technologies is based on that, and then Windows Mobile just happens to be an implementation of CE. So a lot of people think is that dead or is that something else and they are actually the same. When you're running Windows Mobile or you're running CE, you're just running a special specific build of series or a whole bunch of checkboxes you check and UI stuff to create a Windows Mobile image is what you get and so it's always underlying. CE kind of runs out ahead of Windows Mobile in some ways as far as they're blazing ahead. They've got Windows Mobile CE 6.0 right now R2, whereas, Windows Mobile 6.0 and 6.1

still runs on top of CE 5.0 and so they're just kind of blazing ahead and we play catch up with them but then on the Windows Mobile side we'll build things that they don't have like we created all the Outlook Mobile in the PIM and all that. We had a whole object model to give it that and more of a standardized Bluetooth stack and some other things and sometimes those will wind up back in CE as well. A lot of people are using CE to build VoIP desktop phones and things like that. So it's an interesting relationship but they're all kind of together. All those teams work closely together so it's not like they're in silos or anything like that.

Carl Franklin: Okay. So the Windows Mobile 6.0 as you say is an implementation but it also leaves a lot for customization as we were talking about for this telephone manufacturers to do your thing.

Rob Tiffany: That's right.

Carl Franklin: So I'm imagining that in my case, the HTC tilt or the AT&T tilt, whichever you want to call it, is that phone applet doesn't come with Mobile 6.0, does it?

Rob Tiffany: A basic phone applet does, but you're right. With different operators and different OEMs, they will look different from phone-to-phone. The actual guts is generally the same underneath though.

Carl Franklin: I'm just trying to find blame, you know? Trying to find something to throw mud at!

Rob Tiffany: From phone-to-phone, the implementations are different. The CPU and memory is different, the bus speed, all kinds of things. You know, it's a blessing and a curse the way we approach the market for Windows Mobile when you have someone like Apple who owns every, you know, the end-to-end experience.

Richard Campbell: The entire stack.

Rob Tiffany: Yeah, they can build the most optimized stack, whereas, we've kind of followed the PC model and I'm a PC by the way, but anyway...

Carl Franklin: Hey, I am a PC as well.

Richard Campbell: Apparently, we all are.

Rob Tiffany: Outstanding. That's great to hear. Anyway, since we've gone the PC route, it's a free for all. We decided let's go with choice, let different, you know, Samsung, HTC, Sony Ericsson is going to come out pretty quickly with one of the coolest phones you've ever seen that just right there with the Touch Diamond, a real another kind of strong

competitor to the iPhone where they've customized it beyond belief. It's going to be this whole tiled panel-based interface with Touch and the panels are 3D and you move them around and they maximize, minimize, just amazing stuff. With that choice and with the different people building it, sometimes we do see variations in quality, there's no question about that, and we have testing processes and the battle is always about, a lot of times, the battery life is one of the key things and so you see people tweaking in and around that. I can use a slower CPU to get a better battery life. Lots of people want more RAM but keeping RAM static alive takes a lot of battery. A lot of people don't realize that.

Carl Franklin: Yeah.

Rob Tiffany: There are a lot of variables that go into that and so we've gone the choice route. We think that while no question the iPhone is a compelling platform, you can't help but notice how often it is, but we think that a lot of people call for us to do the same thing. A lot of people say why don't we just build the Microsoft phone. A lot of people say buy HTC. I hear that all the time, but Steve B. has kind of clearly articulated that he thinks that's a limiting model as far as how big a market share we could get over time.

Carl Franklin: I do too. I mean you're basically putting all your eggs behind one vendor when you could let them compete and let them strengthen themselves.

Rob Tiffany: Right.

Richard Campbell: That's what cultivates innovation is that competition.

Rob Tiffany: Yeah and so this innovation, we do a lot of cool things for .NET CF developers in Visual Studio to help them because when we used to have that same form factor with the pocket PC, you could always guarantee that there is going to be that size. I mean as soon as we threw that to the wind and said, "Let's let the manufacturers innovate," they have different screen sizes, shapes, all kinds of crazy stuff. Obviously, that made it harder for developers or you found developers writing different code bases to target different models of phones which is definitely not what we want. So, we've done a lot of work in the last couple of versions of Visual Studio with things like docking and inquiring and some other tools that are in there to help you build an app that can modify itself, run out of a square screen like a Treo or you're Tilt and also when you flip your Tilt screen and pull out the keyboard it goes from portrait to landscape, have your application reflow itself perfectly on the fly. We've done a lot of work so that compact framework developers can build rich apps that can adapt

themselves easily to those different screen sizes, resolutions, things like that.

Carl Franklin: Hey, just out of curiosity. Have you heard about Boston Power, boston-power.com? They have the sonata battery technology that supposedly in 30 minutes lets you charge a notebook to 80% capacity from zero.

Rob Tiffany: Wow, that's awesome.

Carl Franklin: It also lasts like they're saying that you can have your laptop on all day and charge it at night.

Rob Tiffany: Wow. That's amazing.

Carl Franklin: And they have the same batteries available for cell phone manufacturers.

Rob Tiffany: Uh-huh. That's good stuff. We need to give those guys a call.

Carl Franklin: Yeah, definitely.

Rob Tiffany: No doubt about it.

Carl Franklin: I don't know about you guys, but certainly the manufacturers of these devices do.

Rob Tiffany: Certainly.

Carl Franklin: Because battery is like the big problem, isn't it?

Rob Tiffany: It is.

Carl Franklin: I mean if you think about it, if you had more battery, you could have more OS, you could have a richer, better, faster, you could have a faster machine first of all because it isn't that we can't make devices that are faster. We can. They'll just suck down the batteries so the manufacturers decided to trade off power for long life.

Rob Tiffany: Sure, like you saw what Apple did with their first release of the iPhone. It was only run on GPRS and Edge. There is a big reason for that. You know, at least then you have Steve Jobs actually to its credit, a lot of people hate micromanagers but that's exactly what he is and we've seen what's happened with the 3G iPhone versus the original Edge-based one. The battery life just went down the tubes really fast and that's another factor, you know. It's the memory, it's the backlight, it's the network stack, your data networks, all those things go together to eat battery life and they all take kind of a total attack on your OS and so you're always kind of playing that game and so 3G and even more than 3G, turning devices on Wi-Fi, turn those on, they



just suck the life out of your battery. So it's clearly a huge problem that everybody is facing that has to be solved.

Richard Campbell: The most epic battery consumption I've seen on my Touch Cruise was using the 3G with the GPS at the same time to look up restaurant locations while we were driving and the phone was physically hot and you could watch the battery tick down.

Rob Tiffany: Oh, I believe it, I believe it. It's brutal, it's brutal.

Carl Franklin: Yeah.

Rob Tiffany: But we've got a lot of opportunities for compact framework developers. Our platform, you know, our latest version of Compact Framework is 3.5. We added LINQ to it. We've got compression in there now. We've got kind of a subset of WCF in there.

Carl Franklin: Because Lord knows the people who wrote my telephone dialer applet really need LINQ;

[*expletive!*]

[Laughter]

Rob Tiffany: You got that right. That's for sure. Probably not so much.

Carl Franklin: That's what it is. That's why it's so slow. They're running LINQ queries.

Rob Tiffany: Yeah, yeah, that's probably it. Oh man, but when you're trying to teach the desktop developers to get good mobile developers, you almost a lot of times promise we give people all the rope they need to hang themselves and they do. I probably spend a lot more time trying to teach people what not to use like. For instance, I'll see companies build stuff and they are talking to the local SQL Server compact database on there and they're wondering why it's so slow, why is it so slow to pull that data back and paint the screens. It goes back to some demo they saw where we were in Visual Studio and we were dragging and dropping in the IDE and data binding to a grid and they thought, "Wow. That's cool. That was easy." So, under the hood, they are using data adapters and data sets and data binding grids and guess what? As it turns out, that's probably about the slowest way on the planet to do database access on a device, if not anywhere for that matter. I'll hear people say -- well, one of my rules of thumb, I spend a lot of time trying to help customers optimize the performance and memory use into their mobile applications with WCF and they'll come back and go,

"Well, if you didn't want us to use that, then why did you put it in the platform?" and I hate that, but they kind of have a point.

Carl Franklin: Slap.

Rob Tiffany: Yeah and so there's definitely lots, you know, there's oftentimes several ways to skin the cat and so it's finding out what's the best way. Don't use reflection. There are just abstract methods. A lot of real cool OO purist stuff, you should discard a lot of that on the device and get closer to the metal is the real takeaway to try to wring every bit of performance you can out of there and then always be cognizant of memory management and don't do things that are wasteful. A lot of people just blindly, you know, they'll do the dataset thing and then they will cache tons of datasets and then they wonder why their apps are running out of memory. The compact framework does some interesting things differently than the big framework does because of we have a lot less memory. Those little jetsam stuff that I think gets under memory pressure, it will do what is called code pitching and basically it's just throwing away that compiled code and you're going back to interpret it again. It's kind of like a self-preservation thing. It's trying to stay alive and keep you from running out of memory and I think back to one of the biggest projects I was on, the big company that was doing a lot of route drivers and everything and they build this huge app and it was really slow, that means it is obviously using tons of memory, it had hundreds of screens and hundreds of forms and things like that and I remember having a meeting at our Mobile & Embedded Developer Conference in Vegas one year and showing it to a couple of the GMs, a GM for Windows Mobile and a product unit manager at that time for the compact framework, and the real takeaway in the early days was the compact framework team really didn't know that people were going to try to build giant, really huge enterprise apps. They were really surprised to see what people did and they would make comments...

Richard Campbell: People are crazy!

Rob Tiffany: I know, totally crazy, and they are making comments, you know, like you think back to when we are building VB and access apps in the early 1990s or something on a 486 with 4 meg of RAM and you hear the disk grinding away with the page file and stuff like that. If we had something like that on the device, I'm sure you just hear this grinding away as we're code pitching or garbage collecting the whole time, but you just can't hear it or see it. We've done a lot of things with the compact framework over time to optimize memory and performance so you can build bigger and bigger apps but it's still just basic kind of patterns you really have to follow if you're going to build something that's just truly huge; and we



have some customers, we've got a customer that's got an app that's got like 360 forms on it.

Richard Campbell: In a mobile app?

Rob Tiffany: Yeah.

Carl Franklin: It's crazy.

Richard Campbell: Oh my God.

Rob Tiffany: Well, some people say, "Well, the mobile device is actually the next computer," and instead of building little tiny apps that are just kind of stepchild to the big one on the desktop, some companies are saying, "No, we're making this device a first class citizen in our network and the way we do business."

Carl Franklin: Hey, I just want to give a shout out real quick to our friends at Data Dynamics who make ActiveReports.NET among other really awesome things. ActiveReports.NET is great because it allows you to just build your reports with the Easy Editor, embed them right in your application, provide PDF and HTML output, give your end-users a Report Editor, royalty free of course, a great Access report upsizing Wizard and all these for a price that isn't going to break the bank. ActiveReports.NET from Data Dynamics, go check it out now at datadynamics.com.

You know, there's a new term for the class of phones that have internet access and they have these little mini keyboards, right? "CrackBerry."

Rob Tiffany: There you go, CrackBerry.

Carl Franklin: If you go to YouTube actually and do a search for CrackBerry Love, one of my friends in New York did a video, a music video on a song called [CrackBerry Love](#).

Rob Tiffany: Outstanding, I love it, I love it. People are addicted to them like crack.

Carl Franklin: Yeah, "My thumbs are getting numb, my thumbs are getting numb," that's the line of the song.

Rob Tiffany: I think somebody needs to come out with like Typing Tutors for some keyboards, you know, I'm doing 30 words per minute on my phone. You see it every time you're on a plane, you're sure to see that.

Carl Franklin: Yeah, that's true.

Rob Tiffany: In airports.

Carl Franklin: I've got to admit, I mean as you consolidate more and more of your information that's accessible in this little thing, then you're naturally going to be using it and depending on it a lot more and I think that's just what happens.

Rob Tiffany: Oh, no doubt about it.

Carl Franklin: Never mind the whole communication phenomenon that it seems like everybody is walking around just oblivious to what's going on around them, just typing furiously with their thumbs.

Rob Tiffany: I heard that in England, in London, they're having problems. People are so looking down as they're walking through the city streets texting that they're literally walking into light poles and stuff like that.

Richard Campbell: It was just in the news that there was a fatality in Florida where a kid walked into traffic.

Carl Franklin: Oh, that's horrible.

Rob Tiffany: Oh my gosh; that's unbelievable.

Carl Franklin: Horrible.

Richard Campbell: Is this a new version of the whole using your Walkman on the train tracks thing?

Rob Tiffany: Yes, I think it is.

Carl Franklin: Wow, sure.

Rob Tiffany: I think it is and it goes back to the whole CrackBerry thing. I mean you're right. People are heads down. You know, the phones are exploding and they're becoming more powerful. I mean they're like a little computer. Email was the first killer app for that. Everybody is getting their Push email whether it's from us or BlackBerries and it's just going from there and so after that, it's like line of business is the next big thing. I've been doing a lot of business apps on the phone for probably since the beginning of the decade but I think it's only now really taking off.

Carl Franklin: Do you really think? That's quite a jump though from texting your friends to line of business apps while walking down the streets, running into the cars and stuff though.

Rob Tiffany: Yeah, that's a good point.

Carl Franklin: Is that really where people want to do their work?

Rob Tiffany: Yeah, you're probably right.

Richard Campbell: Again, I'm still stuck on this what is the logical custom app for a mobile phone that doesn't already come in the phone?

Carl Franklin: Well, you know what though? I mean when your FedEx guy or UPS guy comes and delivers a package and hands you a little device and you get a little pointer on it, that's a...

Richard Campbell: He's got a dedicated device for that and I'd buy that. I'm talking about what do you need on your phone?

Rob Tiffany: Well, it depends on who you are. You're right, consumers need something different than enterprises and we do work with guys like FedEx and UPS. Actually to bring it to life, one of the things I've done, you can download it from the Microsoft download site, was an app that's called Mobile Line of Business Accelerator. I did one in 2006 and then we just did another one this last spring which basically was kind of to jumpstart people on compact frameworks, SQL CE, merger application with SQL Server, that whole deal tying into the backend and so what I did was I built a sample app which was just a supply chain management app where you would log into the device, you can be an order taker, you place an order and then you synchronize and then you might have a warehouse picker who's got a *ruggedized* Windows Mobile device like from Symbol or something like that with a bar code scanner or an RF ID reader and they would see the order come in and they would go pick the items in the warehouse and the bins and stage them and then you go and then there will be another role on this app for the forklift driver who might have a vehicle mounted device like a CE device, you see a lot of those, and he'll go to the staging area and he'll load the stuff up onto the truck and then the last roll would be the delivery driver and the stuff you'd see for the delivery driver might be something like calling the map point web service to show them the directions and route optimization to get to their customers they need to visit. It might have things like signature capture for proof of delivery, digital manifest, maybe be able to print something to a Bluetooth printer. You know how like every time when you go to an airport and you return to your car and you see those people, they usually have big giant ruggedized device getting your information and they have a lot of times a Bluetooth printer on their belt that they can print out with thermal pages like that and so to make it real for a lot of people, I built that app. It's a fully working app. It's easy to get running and then you get like 5000 lines of code, hundreds of pages of documentation to, say, "Hey, you can take this to learn from it or you can use it for a jumpstart for your

own efforts," things like that, and then we updated it this last spring to add some of the new functionality that you've got with .NET CF 3.5, SQL CE 3.5, things like that. So we added in LINQ to it. We added -- what else we did? We did sync services for ADO.NET to do synching with SQL 2008 instead of merge replication. Gosh, what else? Oh, another cool technology we have, a lot of people don't know about this, we came out with a Store and Forward technology. In addition to people synchronizing their devices with their databases over the year, there is also this need for kind of lightweight messaging and there are some people who roll their own or they use their parties to kind of get to that message queue-like store and forward where -- I mean imagine it this way. For instance, I built an app on my device and I need to call a web service. The reality is that wireless networks are inherently unreliable so there's a 50:50 chance or whatever depending on where you are that that web service call is actually going to fail and so with our store and forward technology for WCF in .NET CF 3.5, it utilizes Exchange Server 2007 and what it does is we have our direct push email so emails get pushed to you on the fly. It's all built into the OS and built into Exchange Server and so what we decided to do was piggyback over this reliable protocol and so the scenarios are really interesting from your device. Instead of calling web service directly, what you do is you call it through the store and forward mechanism and what basically happens is your web service call, your SOAP stuff, goes into the outbox of Outlook Mobile and then when the device knows that you have network connectivity, it's going to send it on to Exchange Server kind of like a message queue. So, you're going to get that reliability -- it's only going to happen when it can reach it and you have that whole kind of underlying "Ack Nack" kind of thing so making sure -- because a mail server is very similar to a message queue server anyway. So that gets you across the wireless networks into your data center and then we use Exchange Server 2007 because in that version, we introduced something called Exchange Web Services and so they're basically coming out at the back of Exchange Server and on to your Windows Server, your final destination of where you want to make that call to, a WCF call. It goes out there and makes it on to its server and executes whatever code on the server, whatever work you want it to do. Likewise, you can do, you know, it's not an automatic request/response like a web service, it's more asynchronous so you'd have to write the code to respond back, but what is interesting is the scenario opens up. Very few things in the world can find a device and what I mean by that is the only way I can reach the device is like to call it or I can send text message to it, but with our Exchange direct post technology to get this pushed email, well, Exchange always knows where your device is.

Richard Campbell: Wow, that's interesting because it's very hard to push data to a device.

Rob Tiffany: Exactly and so your IP address is constantly changing. You're in and out of coverage, chasing cell towers, and so with Exchange we can find it so you could do a response or you could do a server initiated call, web service call, to a device and so think of it this way, instead of IP addresses being the endpoint, now a mailbox is the endpoint. So people with existing Exchange infrastructures, they could either add mailboxes or use people's mailboxes as endpoints or they can create dedicated mailboxes just for a device. A lot of companies like ruggedized devices, you'll see people sharing devices so maybe the device will have a mailbox. So you could do a server call to the device itself and so built into .NET CF 3.5, there's a listener. Obviously, the email that's containing the envelope and everything in it has it encoded especially and so when it comes into the mailbox, it's like, "Oh okay. This is an email to read. It's an email to execute code against." So the person doesn't see it but .NET CF 3.5 sees it and triggers whatever you needed to happen when that call came to the device and then since it's based on email, you can do interesting things like distribution lists, aliases. So I could now make a call to the west region or something like that and have a single call blast 10,000 devices or something like that. The final scenario there is kind of what I would call pseudo peer-to-peer. Since the mailbox is the endpoint, I can have a device and you can have your Tilt and I could make a web service call to your Tilt directly or kind of pseudo directly. It's going to go up to Exchange and then back down to your device, but the net effect would be the same and so scenarios where that might be interesting is if I'm using merge replication with SQL Server and SQL Server CE, to sync the deltas on my data, on my device like I placed an order and then I sync. Now that order is up on SQL Server but the guy in the warehouse doesn't necessarily know there's an order waiting unless he manually or whatever on some timer syncs with SQL Server. So, now I will couple that sync with a pseudo kind of peer-to-peer store and forward message that notifies his device programmatically. "Hey, there's a new order waiting for you. Go out and get it." Or if you wanted to build the next great mobile-based social networking platform, you know you might think, "Wow, the way I'm going to poke somebody else at my mobile social networking deals, I'm going to use store and forward peer-to-peer to do that kind of thing." So, a lot of interesting stuff around that and I'm even saying I talk to a lot of customers about it and they really light up when they hear the scenarios. People in the airline business are saying things like, "Wow, so you mean I could have someone out on the runaway when the plane is coming in the tarmac and they could send the store and forward message to Gate 27 in Terminal C so let them know programmatically that a plane is

coming and execute actions?" and just things like that. I'm even seeing customers who are Lotus Notes customers doing trials where they're buying Exchange 2007 just for this technology so they kind of use it as a mobile middle ware server.

Richard Campbell: Interesting, yeah. That was exactly the phrase I was thinking, mobile middle ware.

Rob Tiffany: Yeah, definitely, definitely. I think if I were to spend most of my time, in addition to helping people optimize apps is all the big things that Windows Mobile can connect to because I think it's like the Swiss army knife. It works great with a Microsoft stack but it works great playing well with others too in mixed networks and oftentimes we've all been in unfriendly companies where they are an Oracle shop, they are a Java shop, J2E, they hate Microsoft, "Oh, but for our mobile thing, we're going to make this exception and allow the .NET compact framework even though we know .NET is evil, IIS is evil and all that other stuff." You know, I mean we joke about it but I hear it.

Richard Campbell: Yeah.

Carl Franklin: Wow, it sounds like that's, you know, to get all the pushed email stuff working, it takes some considerable effort. What about using Instant Messaging?

Rob Tiffany: Well, you could, you could. The compact framework has always the ability to interoperate. There's this thing we've always -- it's been called the Pocket Outlook Object Model. So in addition to interacting with your contacts and mail and stuff like that programmatically from .NET CF, you can send and receive SMS messages.

Carl Franklin: I guess that's the drawback, isn't it, that it's not integrated with contacts and calendars and all that stuff.

Rob Tiffany: Sure, sure, but we've always had that SMS thing and you know it depends I think, I hate to say the word depends, but where you choose to use this technology depends on where you live in the world. In some parts of the world, text messaging is cheaper than making phone calls or anything else, so your app might choose to use that and then in other places, SMS message plans are really expensive, but maybe data plans are cheaper so you might choose to go the other route. So I think it just depends. It depends if you are here or Asia or Europe or, you know.

Carl Franklin: I should mention that in Show #327, Richard and I talked to Jonathan Goodyear on the Instant Messaging APIs. If you're interested in actual code that you can use to do that

Richard Campbell: SMS APIs.

Carl Franklin: Yup, SMS APIs.

Rob Tiffany: Excellent, excellent and it is pretty simple to work with that stuff, to send and receive SMS messages. In fact, you can find yourself doing crazy stuff like making your Windows Mobile device into a server. It's so powerful and has so many different ways to communicate. You could have things, you know, like a local retail place like a Starbucks or something and you can imagine scenarios where it receives SMS short codes that customers use and then it's a lookup on the local SQL C database to know that you want a certain kind of latte and automatically place your order for you and stuff like that.

Carl Franklin: It's actually one of the exact scenarios that Jonathan talked about in the show.

Rob Tiffany: Brilliant.

Carl Franklin: Just being able to walk into a store and it already knows like what your preferences are.

Rob Tiffany: Yeah, definitely.

Carl Franklin: Yeah, sort of smart stuff. So one other quick question tangentially here is the tablet PC under your jurisdiction as well or is that just a totally different? Is it something other than mobile because it really isn't?

Rob Tiffany: Yeah. It's totally different.

Carl Franklin: Okay.

Rob Tiffany: It's not, yeah.

Carl Franklin: All right. We can't let you go without giving us a little preview or hints about what's to come in Mobile 7.0. Is there anything you can talk about?

Rob Tiffany: I don't know what you're talking about. I've never heard of such a product.

Carl Franklin: Okay.

Richard Campbell: Nice. Oh no, no, no. We're not making any more versions of Windows Mobile. We're done.

Carl Franklin: Another scoop.

Rob Tiffany: I don't know what you've been reading on the internet about something like that. All I can say is the party line of course...

Carl Franklin: Well, seven comes after six, right?

Rob Tiffany: We're always working, right? We're always working on the next version and approving. Our latest version is 6.1. In fact, with your Tilt, you can go out to AT&T and download an upgrade to 6.1 which gives you threaded SMS, a bunch of other things. One of the biggest things that we have that no one else has because we're a better enterprise player is we have a 6.1 device, we have this new server called System Center Mobile Device Manager and so it kind of completes the equation. I can get my device to talk to all these assets in the enterprise but how do I manage those devices? You know, I just deployed 10,000 devices. How do I push software out to all those devices?

Carl Franklin: Yeah.

Rob Tiffany: I'm not going to sit there with active sync cradles and so Windows Mobile 6.1 has the client bits for mobile device manager which does some really interesting things. One of the things it does is it allows the device to join the domain which is something new so that your device truly is a first class citizen and so, you know, you put in a certain OU and then all of a sudden, there's objects that are popping up in Active Directory and so the whole group policy is what an admin would use to manage policies on desktop PCs. Now you can do it with devices since we can join the domain, your NNOU, you've got about 130 different group policies that can manipulate it, the security you can encrypt the entire device now with the AAS Encryption. You can do things. You can disable Bluetooth, the camera...

Carl Franklin: This is all in 6.1.

Rob Tiffany: This is in 6.1 using this new server product that we just released in the spring because it's been a big pain point in the enterprise is our customers keep saying, "Okay, that's great. You can do all this cool stuff but how do we manage all these devices?" So that's our answer. You can do software distribution pushing software devices. We just use WSUS to do that. We also have this cool Mobile VPN that allows your device to be connected to your corporate network all the time using this super optimized Mobile VPN that even works well over slow things like GPRS and it does a fast reconnect, maintains a virtual session, a virtual IP so no matter where you go it can always connect to you so then now you can bring up the web browser and see internal like expense reports so whatever different internal internet sites.



Carl Franklin: Okay.

Rob Tiffany: So, a lot of functionality there.

Carl Franklin: So let me ask the question again in a different way.

Rob Tiffany: Sure.

Carl Franklin: So the next version, whatever it's called, should Apple be scared?

Rob Tiffany: Very scared.

Carl Franklin: Yes! I knew it.

Rob Tiffany: Yeah, yeah. We're working on some secret sauce out there.

Carl Franklin: Not too secret anymore, is it? Thank you very much.

Rob Tiffany: Breakthrough UI.

Carl Franklin: Great.

Rob Tiffany: Definitely. Cool stuff.

Carl Franklin: Awesome. You had to wait until the end of the show to drop that nugget on us but...

Rob Tiffany: Of course.

Carl Franklin: That's okay.

Rob Tiffany: But you know; we got to leave you waiting, right?

Carl Franklin: Are there any other resources for developers other than the standard Windows Mobile homepages on Microsoft that people should be made aware of maybe in the third party community?

Rob Tiffany: Definitely, yeah. Aside from MSDN and our TechNet stuff, we've had this great third party community kind of underground type guys. They have a website called OpenNET CF and they are a bunch of mobile MVPs who've kind of led the way getting in front of our compact framework team oftentimes wrapping more native device APIs with managed wrappers so that developers could do things that they could never do otherwise. So the OpenNet CF are some of the smartest guys out there and you can go to their site and download all kinds of code and frameworks so it will allow you to do just some really crazy stuff in your devices that normally you would have to do in C++.

Richard Campbell: This is opennetcf.com?

Rob Tiffany: Yeah or .org actually probably. Actually they have it both because they have a .com now because they've turned into a gold partner as well. They're doing some poking around on that too.

Richard Campbell: Ah okay.

Carl Franklin: Of course if you don't know anything about development from mobile in Visual Studio, there is a toolkit for, well, is it built into Visual Studio now, the mobile toolkit or is this still an add-on?

Rob Tiffany: Still an add-on.

Carl Franklin: All right. So there is a toolkit that you can get that allows you to create a new mobile application that you can deploy to a mobile device or a mobile website.

Rob Tiffany: Well, the website was an add-on but the device development, compact framework and all that has been fully integrated into Visual Studio since 2003.

Carl Franklin: Oh, that's right, that's right. Yeah, so the website is an add-on and it comes with a nice little emulator so that you can emulate. You don't actually have to have a device to develop software for it and you can deploy the applications. It's like when people ask the question, what can you do in the compact framework, the question should be what can't you do because you can...

Rob Tiffany: That's exactly right.

Carl Franklin: It's basically a stripped down version of the .NET framework.

Rob Tiffany: It's amazingly powerful for how small it is. A lot of the overloaded methods maybe didn't have quite as many different things like that. Obviously, there is a lot of stuff we didn't need. Obviously, you don't need ASP.NET remoting or a whole bunch of obvious type stuff.

Carl Franklin: But I remember you didn't have serialization in there for a couple of versions and then you did add it.

Rob Tiffany: That's true. Right, we do have that. Thank God for that.

Carl Franklin: Yeah, that's really good especially I know a lot of people who are using the sockets API with these PDAs using Wi-Fi to

communicate with servers around warehouses or whatever.

Rob Tiffany: Oh yeah.

Carl Franklin: Very nice and clean and stripped down, and without serialization, you can't really do all that much with sockets.

Rob Tiffany: Oh yeah, I think the coolest new stuff as far as reaching out to big enterprise things is -- and I'm going to start doing a series actually on my blog. It's called Windows Mobile Connects and who knows how long. It will probably go on for months. Every day I'll talk about a different thing that you can connect to using the compact framework in Windows Mobile, but obviously you've always been able to consume just normal web services. Now we have the store and forward. We have merge replication, easy to do sync with SQL Server. We now have the new part of the sync framework, we have sync services for ADO.NET so now I can use sync with SQL 2008 with this new technology but since it is a provider model, we can start breaking into enterprises where we can't get into before where I need to sync with Oracle or sync with VB 2.0, and then scenarios where maybe I need a helper, you know, BizTalk is a great helper to give me access to other things. That great adapter framework, when you have BizTalk, it allows my Windows Mobile devices to reach out to ASP, JD Edwards, PeopleSoft, Sybil, TIBCO, you know, mainframe servers through host integration server, so it's totally ready for primetime and can get just about anything either directly or maybe with help through BizTalk so really cool stuff there.

Carl Franklin: That's great.

Richard Campbell: You mean a real piece of middle ware, not just Exchange?

Rob Tiffany: Exactly, exactly.

Carl Franklin: Oh, man.

Rob Tiffany: But you might find yourself, you know, you can do your own mash-up. I think the real value in this at least with BizTalk is its adapters.

Richard Campbell: Absolutely.

Rob Tiffany: And then you may have heard, there's another kind of a BizTalk adapter thing where you're not really using BizTalk, the full thing. It's integrated into Visual Studio where you can see, like if I want to reach into the HR module in SAP and call a BAPI, Visual Studio can "gen" all that code and then expose it on the other end where I can get at it maybe as a web service or something else, something

friendly. So, a lot of neat stuff out there. It's really awesome. It will really help...

Richard Campbell: It's impressive.

Rob Tiffany: Yeah, definitely, definitely, definitely.

Carl Franklin: All right, Rob, thank you very much.

Rob Tiffany: Hey, it's been my pleasure.

Carl Franklin: Rob Tiffany. Do you have a blog, Rob, that we can advertise?

Rob Tiffany: Y e a h , y e a h . It's blogs.msdn.com/robtiffany.

Carl Franklin: Excellent. Thanks Rob.

Rob Tiffany: All right. Thank you. Thanks for having me.

Carl Franklin: You bet. And we'll see you next time on .NET Rocks!

[Music]

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