

IBM Podcast

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MATHENY: Welcome to this IBM podcast, Effectively Developing Automotive Electrical Electronic Systems. I'm Angelique Matheny with IBM.

Without doubt, the importance of in vehicle electronic systems is growing rapidly. Up to 90 percent of all automotive innovation is based on in vehicle EE systems and their embedded software, as some analysts state. Not surprisingly, automotive manufacturer and suppliers worldwide are putting a greater emphasis on EE engineering and EE process and data management.

Joining us today is Brett Hillhouse, worldwide automotive leader with IBM Rational. We'll become acquainted with the IBM Rational Software Platform for Automotive Systems which effectively supports an integrative and comprehensive automotive EE engineering and data in process management. So welcome to Brett. Hi, Brett. Welcome to the podcast. Thanks for joining us today.

HILLHOUSE: Thank you. I appreciate the opportunity.

MATHENY: Let's just jump right in. You're working with

Rational's automotive customers all over the world. What's the major trends and challenges which our Rational customers face today?

HILLHOUSE: I think outside of, you know, some of the obvious macro economic and financial issues that are going on within the total automotive community, the thing that I'm hearing the most that is effecting them from this electronics area is just trying to go manage this increasing pace of complexity that's just growing very quickly within the automotive development community. And it's really being driven by what you said, just an explosion of electronics and software going in vehicle. So that's one area.

Probably another one that I see, though, is also related to that is that it means that multi-discipline management is a very tough issue for them. How they get their various organizations working together, and whether those are organizations that are designing different elements of the vehicle such as power train and chassis and body.

But it also means how do I get the electrical, mechanical software engineers working together as well. And that's a very complex environment, something that requires sometimes organizational change and certainly process change in order to support that fully.

And then finally, there are also a lot of new standards that are being pushed out there. And some of them are based upon safety standards such as ISO 26262. There are automotive specific standards for development that help with interoperability such as OnStar.

There's also a lot of it just around compliance that the OEMs might have on their tier one's for things such as [vice] or CMMI level 3 compliance and that's to show that they're certified, they have standard processes and ways of dealing with their...and methodology for dealing with requirements in the generation of their design.

And even finally, there's even new pressures really on security based upon the connected vehicle. There's more and more threat of being able to hack into the embedded systems on a vehicle, and that's just a new field for automotive is to actually put active security around the vehicle and not allow an easy access. It's also a new area that they're trying to focus on now, and there's some new work being done on with FAE.

MATHENY: So, Brett, how is Rational addressing these three trends or any trends?

HILLHOUSE: I think there's a number of things. You know, to manage the complexity, there's a lot of things that we're

doing to help. One of them, though, is just a realization within Rational that based upon all the various tools that these clients are using are really causing them, you know, perhaps the number can be as much as 300 to I heard one client tell me he had over a thousand different tools in his electrical and electronics area.

And so, being able to manage that environment also means you need to have a development platform that can integrate with all those various tools. And it needs to be at depths more than what you typically get just with a document management.

That's one thing that Rational has done is we've realized that that is a critical success factor and we've really built our platform from the ground up to be an integration platform and to work with third parties.

It also means that not only are you not locked in just with Rational, but it also means that you can use what you already have. Often times with their 300 or 1,000-plus tools, many of these are going to be best in class. Some of them home-grown that have very specific functionality based upon that tier one or that OEM. And they do not want to be able to get rid of that functionality. So it's important that we can work with what they have, and that helps manage some of the technical complexities that they have within their environment.

I think another one that we're helping them with then is around the multi-discipline design. And part of that is being able to understand the various data elements that they have coming from those various disciplines.

So how do I understand, for instance, on a single ECU on a vehicle, what are the various requirements that are against that particular ECU? And what are the various electrical and electronic models that are coming from their PCB design or coming from the cable and wire harness design tool? What are those that are related to that ECU? What are the software elements and the software components that might be utilized on that ECU or across the function on a vehicle?

All of these things need to be able to be related. And we have a very unique approach to building out a true data backbone that understands the metadata inside of those models and understands, therefore, how I actually interrelate those various models.

And so I can take an ECU from one product line and add it very quickly to a new product line that it might not have been designed for initially, and it might have a different baseline of requirements and a different baseline of designs, but because I have this data backbone approach I can actually understand all those relationships and be able to quickly make the changes and add it into a new program.

So I think this multi-discipline, especially the data backbone approach, is something that we're very uniquely offering to our clients.

And I think another one is probably around just model-driven support in general, to help with some of these standards, for instance, in getting a very common and global process that you can put in place. And whether that to support auto star development or support safety standards or CMI, we do a very nice job of doing that. And it's not just doing it from a model driven approach from being able to model everything, but also being able to capture all of the process steps.

And I think we have a pretty, very deep program project management capability that understands as those tasks are being completed really being able to record that and have full traceability of those artifacts and the processes and just giving also finally much better program visibility to the overall manufacture and how they're doing and whether they're going to be on time for this particular development program or not.

MATHENY: And so the IBM Rational software platform for automotive systems, this is what you're talking about, what you're offering our clients.

HILLHOUSE: Yes. So the Rational platform that we're offering is very specific to automotive, but it also leverages everything that we've developed for our various industries. So it has a very broad capability, but it's also based upon open standards. So it can be extended for individual companies. It can be used to integrate their various in-house and home-grown platforms as well.

So we offer that, it has a tremendous amount of functionality across program management. It has the data backbone that we were talking about, the process management.

It has very great capability for helping you with compliance to standards so the traceability is a key element. All the way down to the work in process layer.

And then finally, it comes along with that, then, is all of this has integrated reporting, integrated visibility to the program management. It has built in metrics capability so that as you're going through the program, as you're developing and doing the work, you're actually getting real-time updates on the platform because it's integrated...

...including even as I start to add third party capability to it, even that can take advantage of the Jazz platform in our interoperability to get you a real seamless view of where you are in a program at any point in time.

MATHENY: Brett, our last question today. What would you recommend to automotive manufacturers and suppliers? How should they start? What are some first steps towards an integrated EE engineering environment?

HILLHOUSE: That's a great question. It's a loaded one. I think I've given up on trying to predict walking into a client, though, exactly where it is that they want to start or should start. One of the things I have seen quite often is that they often pick up on something that they have a clear pain against, something that they haven't done well in the past and realize that they need to now. And that is very specific to each individual company.

But I will say that one of them that I see quite often is that program and project visibility that I was discussing. We had one tier one just state very bluntly that, you know, we know exactly when we're going to finish each program. It's going to be 30 days late. And whether it's a 30-day program or a 90-day program or a six-month program, we'll finish it 30 days late.

And they wanted to get their hands around why. And so just being able to manage the day-to-day task and understand when some of their EE engineers are really just overbooking themselves or overcommitting or not realizing that when they're being asked to change something on a specific

program, what the impact is to common elements that go across multiple programs. So that's one area I often see companies picking up on.

Another one might be just trying to get a common global process. And again, that can be around compliance issues to making sure I'm going to be able to adhere to ISO 26262 standards or whether I'm trying to get CMMI level three certification, those types of things.

What I will say is that with the work that my team has been doing, one of the things I would highly suggest is just to sit down and have a workshop with us. One of the things that we do is whether it's a half a day workshop or a multi-day workshop, just to go through the entire V with the client and to help understand where do we see specific gaps that they might have and share with them what we're seeing from a best practices perspective elsewhere in the world where companies are focusing on those areas.

And so while we're not necessarily solving the problem and it's not even necessarily a technology discussion, much more of a process discussion about where are those specific areas that we think we can help. So I think the workshop approach is important to address what are the right places for us to work on together? And that would probably be my key suggestion on where to start.

MATHENY: Brett, thank you so much for sharing your time today. We really covered a lot, and we really appreciate you being here. That was Rational's Brett Hillhouse talking about effectively developing automotive EE systems.

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We'll post a link to our brochure titled, A New Approach to Automotive EE Engineering Lifecycle Management, Managing Engineering Data and Processes Using a Single Source of Truth. Be sure to check it out today. This has been an IBM podcast. I'm Angelique Matheny. Thanks for listening. Keep tuning in as Rational Talks To You.

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