

IBM Podcast

[ MUSIC ]

MATHENY: Welcome to this IBM podcast, Using Model-Driven Development Approach for Multi-core Platforms. I'm Angelique Matheny with IBM.

This podcast focuses on the challenges unique to multi-core application developers and the emerging model-based approach to address many of the key concerns, such as identifying the number of cores, increased processing bandwidth versus power consumption and dynamic load distribution. While most systems development verticals are relevant, examples from telecommunication device development will be used as illustration.

And joining us to discuss this important topic today is Atilla Bilgic, Director of System Engineering at Infineon, and also professor at University of Bochum in Germany. Hi Atilla, welcome to the podcast. Thanks for joining us.

BILGIC: Hello, Angelique. Thanks for the nice introduction.

MATHENY: Atilla, let's just jump right in. Our first question. Multi-core technology has proven vital for enterprise server IT and multimedia workstation markets, all

require relatively large processing bandwidth. Are the gains realized from using multi-core in the embedded devices and equipment comparable to the enterprise IT segment?

BILGIC: The main perspective, the impact on the embedded markets using multi-cores would be much larger than we see today in the IT and in the workstations area. For the embedded market that would be mainly driven by the power consumption -- better said, by the savings in the power consumption we have to do in the future devices.

As of today, most of the embedded processes run at the maximum speed consuming quite a large amount of power. In the future, we will see much more applications such as the iPhone requiring many more MIPS at a more [varied] power consumption level.

And here, the usage of multi-core processor might give us a way to achieve a higher number of MIPS or a decent number of MIPS required for all these applications at a moderate power consumption.

MATHENY: Currently multi-core applications are developed with a little bit of awareness of the MC technology. The majority of the core usage is controlled at the platform level. Is there any benefit to the application playing an active role in core selection?

BILGIC: Yes, actually there is a big difference again in the embedded market especially if you go to the mobile market compared to the enterprise market as we see today. In the embedded market, there's is legacy, but there is also always a chance to create something new.

Again, in recent times we've seen smart phones coming to the market like the ones from RIM, like the iPhone, again, but also like the [end road] system from Google. So in these markets we will have regularly the chance to almost start from scratch and have a big impact on the way the software is programmed.

Additionally, we have a lot of software components that are not driven by applications, that are driven by standards, especially getting into the mobile phone segment where the telecommunications union do the specifications, where we will have a chance to develop new software with every new generation.

So that means here we have to take care that we really make use of the multi-core architecture right from the beginning, right from the beginning of writing the first lines of code.

MATHENY: So is there any advantage of using model-driven approach for multi-core application development over

traditional source code centric development?

BILGIC: The biggest problems that humans -- or at least all the programmers we have today -- are not able to think in a multi-core system. That is, to think in parallelism. We are all trained to think in sequential code. That means we're not capable to really deal with massive parallelism.

And for this I think the humans will not be able to, at least not in the near future, to directly code for a multi-code architecture. So here model-driven development can give us a big step forward. It will enable us to do an efficient programming on the multi-core architecture.

MATHENY: Atilla, are simulation and virtualization at model level useful for successful multi-core system development?

BILGIC: Simulation is an important task we have to do in the beginning in order to prevent a lot of bugs we would build into the system we would have to test in the field afterwards. The simulation is a key to increasing the quality, to increase stability of our software products.

For that reason, that will have a big impact for the more complicated systems we expect in the future. With LT, the long-term evolution, that's the next generation to mobile

communication, we expect to have an always-connected service and always-connected device that will enable us to completely new world of services.

And these services, they will come with a very large complexity in the software we have to program. Here, simulation will be one of the key technologies we have to use in order to ensure the high quality of our products in the field.

MATHENY: And our last question today, do you see model-driven development more popular for multi-core system than its uncore counterpart?

BILGIC: Actually, yes. That goes to the similar reason why we have in the previous question; that is, most of our programmers are not used to, are not trained to think in parallelism. For that reason it is extremely complicated for them to efficiently use a multi-core platform.

Here, the model-driven development can really help us a lot, especially for multi-core systems. For the uncore processes we used up to several years ago also in the workstations and personal computers, that wasn't that necessary.

It could give us some advantages, but it's nothing

comparable to what we expect to see in the market for the multi-core systems. Here it is really these model-driven developments that lay one of the fundamental technology bases to sufficiently use multi-core architectures.

MATHENY: Atilla, thank you so much for sharing your time today to discuss using model-driven development approach for multi-core platforms. This was very informative and we really appreciate it.

BILGIC: Thanks.

MATHENY: That was Atilla Bilgic, Director of System Engineering and also Professor at Bochum in Germany. If you're interested in more podcasts like this one, check out the Rational Talks to You podcast page at [www.ibm.com/rational/podcasts](http://www.ibm.com/rational/podcasts). This has been an IBM podcast. I'm Angelique Matheny. Thanks for listening. Keep tuning in as IBM Talks to You.

IBM Podcast

[ MUSIC ] [END OF SEGMENT]