North American User Conference 2006

- ◢ **Three-day conference in Plymouth, Michigan**

- ◢ **Over 40 companies attended**

- ◢ **Technical sessions and workshops**

The latest advancements and industry trends in software control development were discussed throughout technical sessions and workshops at the 4th biennial dSPACE North American User Conference. The key topic was production code generation tools. The event, held May 2-4, 2006, in Plymouth, Michigan, was attended by more than 130 participants from over 40 different companies – representing a wide and diverse cross-section of the embedded electronic controls industry.

The complexity that is inherent with the development of embedded control products is not hindering the competitive desires of global manufacturers to incorporate these hot commodities into their product lines.

OEMs from a growing number of industries – including automotive, aerospace, robotics and industrial automation – are seeking embedded control solutions to deliver state-of-the-art features and functions in their end products. While the development of embedded systems is multi-

▲ *A 2007 GMC Yukon, with TargetLink inside, was on display at the User Conference.*

> *"As a fairly new dSPACE user, I felt that the 2006 dSPACE User Conference was a great way to share ideas with the dSPACE user community, talk with members of the dSPACE GmbH team, and learn more about some of the new dSPACE products."*
> **Julien Parouty, Engineering Specialist, General Dynamics Land Systems**

▼ *The growing demand for software development tools was the topic of a panel discussion hosted by Paul Hansen of The Hansen Report.*

faceted, the process can be greatly simplified with the use of flexible, integrated software development tools. This was a recurring theme at the conference. The event was attended by more than 130 participants from over 40 different companies – representing a wide and diverse

cross-section of the embedded electronic controls industry. In our participant feedback survey, all respondents said they would recommend this event to their colleagues. Participants included: ASAM, Bombardier, BMW, Caterpillar, DaimlerChrysler, Delphi, Detroit Diesel, Eagle RTEC, Eaton Corp., EnSoft Corp., FEV Engine Technology, Ford Motor Company, Freescale, General Dynamics, General Motors, GKN Automotive, Hitachi America, IAV, John Deere, Magna Drivetrain, Lawrence Tech University, MSC, Moog, Motorola Automotive, Nissan, OSC Embedded Systems, PACCAR, PolySpace, Raytheon, Reactive Systems, Ricardo, Siemens VDO, Software Beret, The MathWorks, TRW, Vector Cantech, Visteon, WTI and Xerox.

Keynote Speech

The three-day conference kicked off with a keynote speech delivered by dSPACE GmbH President and CEO Dr. Herbert Hanselmann, who talked about the significant

growth and influence that dSPACE has had in the world of developing embedded control systems over the past 18 years. Introducing the key topic of the conference, automatic production code generation, he noted that he was involved in the research and development of code generation tools since 1981.

In 1999, Dr. Hanselmann said dSPACE unveiled its first commercial software product for automatic code generation from Simulink. The product, TargetLink, has since been used in a large number of vehicle production programs for powertrain, chassis, body software and numerous other applications. Currently, he said there are more than one million vehicles on the road with TargetLink inside.

The first vehicle to have TargetLink code on board was the Nissan Sentra CA 2000. Dr. Hanselmann reported that Nissan was able to reduce its development time to 60%, and it only took the project team 3 months, from start to finish, to generate production code using TargetLink. TargetLink has been in the marketplace for the past seven years. In that timeframe, Dr. Hanselmann said the product

> *"I learned not only about capability which is coming online, but also about capability in equipment I already had that I didn't know about."*
> *Rory Johnson, Senior Engineer,*
> *GKN Automotive*

has been successfully used to generate up to 80-100% of the algorithm code in a wide range of vehicle production projects. Among the many cars with TargetLink code on the road today are the Chevrolet Suburban, Avalanche and Tahoe, GMC Yukon and Yukon XL, Jeep Grand Cherokee and Commander, Volvo S80, Jaguar XK, Ford Mondeo and Galaxy, plus several models from Mercedes, Nissan, BMW, Porsche and other OEMs.

In conclusion, Dr. Hanselmann expounded on the growth and progress that has occurred within the company's other product lines, and emphasized that the company is committed to spending money for ongoing research to continue improving and perfecting its product offerings. "dSPACE has a long-standing reputation for being

> *"Excellent coordination with vendor displays! It was nice to attend a function where the conference content and suppliers were so well integrated. Awesome technical content and facilities!"*
> *John Glab, Controls Engineer, Ford Motor Co.*

◄ The conference featured 20 technical presentations and four workshops.

innovative and reliable and we want to keep it that way," he said.

Panel Discussion

Paul Hansen of The Hansen Report – the world's foremost expert on automotive electronics – moderated a candid panel discussion on ways to improve product quality and time-to-market through the use of compatible electronic control unit (ECU) development tools.

"Real productivity gains can be achieved with highly integrated (development) tools, but these are not a magic bullet to reaping benefits," said panelist James Kolhoff, Director of Software Development for GM Powertrain. He explained that use of tools requires training and organi-

▲ The 2006 North American dSPACE User Conference was held at St. John's Conference Center in Plymouth, Michigan, USA.

zational acceptance and cooperation – not just internally, but with affected suppliers as well.

The panel agreed that achieving integration at a systems level is critical to achieving efficiency and quality.

"You have to have processes in place to facilitate the utilization of tools and technologies," said panelist Salim

> *"I was very impressed by the 2006 User Conference. It was very interesting to learn from applications across different fields and industries and to gather new ideas and viewpoints."*
> **Alexander Bauer, Senior Design Engineer Converter Control, Bombardier**

Momin, Director of the Virtual Garage Lab for Freescale Semiconductor, Inc. "That is the key." The panelists also talked about the need to perform validation in a cost-effective way, and agreed that advanced tools, such as automatic code generation, can deliver big payoffs.

In conclusion, the panelists concurred that ECU development will not slow down as long as new customer and market requirements demand more sophisticated features and functions. The greatest challenge is figuring

▲ *The User Conference concluded with a 9-hole golf scramble at the St. John's championship golf course.*

out how to build a flexible compute platform that supports interoperability for tools.

Other executives who served on the panel discussion were Mark Thomas, Director Electronic Systems, Detroit Diesel, and Dr. Hanselmann, dSPACE GmbH.

Presentations, Workshops, Exhibits

A total of 20 presentations were given by dSPACE users, providing direct insight into how the embedded electronics industry is evolving within their own organizations. Users shed light on the internal ECU challenges that their companies have encountered, and the gains that their design teams made using dSPACE ECU development solutions.

New to the conference this year was a series of workshops on automatic code generation and model-based testing, hardware-in-the-loop design considerations, rapid control prototyping and calibration, and effective test automation techniques.

The workshops provided opportunities for conference attendees to delve into highly technical areas with dSPACE engineers.

Another new addition to the conference was an exhibit hall. Featured on display were two production vehicles, a 2007 GMC Yukon and a 2006 Jeep Grand Cherokee, utilizing ECU code generated from dSPACE's TargetLink. Special thanks to our first-time exhibitors: ASAM, The MathWorks, IAV, PolySpace, OSC Embedded Systems, Reactive Systems, FEV, Freescale and EnSoft.

dSPACE extends its sincere thanks and appreciation to all user conference participants.

▶ *dSPACE, Inc. Applications Engineer Chris Pasztor demonstrates the virtual vehicle, supported by a mid-sized HIL simulator, a multi-processor, MotionDesk and ControlDesk.*