DORNERWORKS

Embedded Systems
Engineering

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DornerWorks Releases Prototype ARINC 653 Hypervisor to Open Source Community

(Grand Rapids, MI) – DornerWorks, Ltd. has published the first installment of ARLX to the open source community. ARLX (ARINC 653, Real-Time, Linux on Xen), is a prototype implementation of the ARINC 653 standard using the virtualization technology of the open source Xen hypervisor along with a Linux-based domain as a system partition. By using a common hypervisor technology on multiple platforms, early application development can be done in a PC environment with relatively good modeling of the final target's behavior.

ARINC 653 - The ARINC 653 specification (Avionics Application Standard Software Interface) outlines requirements for creating a robust software environment where isolated domains of applications execute independently of one another. The domains are isolated both spatially and temporally.

DornerWorks was recently awarded a SBIR (Small Business Innovation Research) grant, US Navy SBIR N102-184: "Isolation Techniques for Untrusted Software". This work will start early next year to extend the prototype ARINC 653 hypervisor to address safety, security, and performance. DornerWorks will partner with Galois, Inc. to apply the formal methods proof-checking and key Digital Safety Consultants to address the safety artifacts (using FAA flight certification as a guide). Additional safety platforms for future revisions of ARLX include medical and banking industries – both of which provide real-time and safety-critical products and services to the clients they serve.

"DornerWorks is intrigued by the intersection of software and hardware in safety-critical applications," said Steven VanderLeest, Vice President of Research and Development at DornerWorks. "Our prototype ARINC 653 hypervisor leverages open source technology and thus gives us a vehicle to explore the current design space and study some of the most challenging questions in safety-critical domains such as aerospace and medical. Our work thus far, along with funding through the SBIR program, provides the opportunity to pursue three goals simultaneously: (a) evidence-based assurance of safety of operation, (b) evidence-based security of data, and (c) high system performance."

"This SBIR provides the unique opportunity to combine DornerWorks' extensive experience in safety-critical engineering and FAA certification requirements with Galois' expertise in statically verifying safety-critical and security-critical software via theorem

proving and model checking, towards the goal of a broadly available open source OS platform for avionics software and other applications where fault isolation is mandatory," said Laura McKinney, CEO of Galois.

About DornerWorks

DornerWorks is a premier provider of electronic engineering services for the aerospace, medical, automotive, and industrial markets. Founded by David K. Dorner with one aerospace client in 2000, DornerWorks has grown to a staff of over 50 and clients nationwide. Marking their 10 year anniversary, DornerWorks has been awarded one of the 2010 Michigan 50 Companies to Watch Award and the Bloomberg Business Weeks' ICIC 2010 Inner City 100 Award, where they were ranked 26th nationally. DornerWorks also received their AS9100, ISO 9001, and ISO 13485 quality certifications in 2010 and were recently honored as the third global Microchip Medical Design Partner Specialist. For more information visit: http://www.dornerworks.com.

About Galois

Galois' mission is to create trustworthiness in critical systems, tackling challenging Information Assurance (IA) problems that have significant impact on society, in areas like privacy, security, and safety. Galois was founded as a company bringing together computer science researchers, mathematicians and engineers to provide a unique R&D capability for our clients. Since 1999, they have been applying the latest computer science research to solve hard problems for our clients in software security, safety, productivity, and performance. For more information visit: http://www.galois.com.

The ARLX software is available on the Xen website: http://xenbits.xensource.com.