Open Source Automation Development Lab (OSADL) eG

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April 10, 2013. The Open Source Automation Development Lab (OSADL), an international consortium to support the use of Open Source software in the industry, informs about its community project SIL2LinuxMP that aims at the certification of Linux-based systems to be used in safety-related environments.

Background

Linux-based computers have been used increasingly in the machine industry and in general embedded systems for around the past 15 years, and they have gained widespread acceptance. This has required and still requires efforts to overcome two important hurdles: i) deterministic responsiveness (real-time capabilities) and ii) certifiability to permit the use of Linux in safety-critical environments. The first requirement was considered resolved at the 2006 Kernel Summit in Ottawa when priority-inheritance mutexes were accepted in the mainline kernel, and the provision of a Linux RTOS was declared as a goal. Unlike the real-time requirement, a solution to the second requirement, safety certification, cannot be provided by Linux kernel developers, rather it must be driven by application integrators. This is because safety properties depend on the entire system and not on the Linux kernel alone, and so this requires an overall approach based on individual requirements. Although a number of successfully certified Linux systems are in use worldwide, they are the result of custom one-of-a-kind certification procedures that were very involved and complex. A solution is needed to make Linux certifications simpler, faster and less economically risky. If this final hurdle can be overcome, Linux-based computers will be universally available for embedded systems of any kind.

Will it ever be possible to certify Open Source software in a standardized way?

Yes. In close collaboration with specialists of German TÜV Rheinland and TÜV Süd and many other safety experts, a concept was developed how to certify Linux-based computers at Safety Integrity Level 2 (SIL 2) according to IEC 61508 Ed 2 2010. Certifications based on derived standards and later requalification at SIL 3 are planned. This is a two-phase approach, in which generally applicable as well as individual material will be provided. To produce the generally applicable material, it was advisable to initiate and define a community-based project so that work results would be made available under a compatible Open Source license. OSADL agreed to organize such a project which was named SIL2LinuxMP, and it was launched last

year in a kick-off meeting. This meeting took place in Cologne, Germany, at TÜV Rheinland, which will also participate as a project partner and handle certifications upon successful completion of the project.

Letter of Intent

In recent months, a Letter of Intent was developed for SIL2LinuxMP in close collaboration with potential participants; it defines the modalities of the community-based approach. The basic principle requires that companies sign a binding commitment to participate, provided that a sufficient number of other companies do so as well. Having made this Letter of Intent available, the project has entered its next stage. Some companies returned signed Letters of Intent just a couple of hours after its release. If the project can enter its next stage as envisaged, first Linux-based systems will be certified using the OSADL SIL2LinuxMP approach by 2015.

How to participate?

Die URL for downloading the Letter of Intent from the Internet is:
https://www.osadl.org/SIL2LinuxMP-Letter-of-Intent

Please send any questions regarding the project to this email address:
safety@osadl.org

About the Open Source Automation Development Lab (OSADL):

The Open Source Automation Development Lab (OSADL) started its activities in summer 2006 and is organizing since then the development of Open Source software to be used for industrial production and in industrial products. Among others, OSADL is acting as a "purchase community" of Open Source software, i.e. membership fees are used to develop Open Source software projects that the majority of the members is requesting for or agreeing to. In addition, OSADL provides support with practical and commercial aspects of using Open Source software in the industry. This includes subexhibitor booths at relevant trade fairs, seminars and workshops, legal assessments and collaboration with academia. Current OSADL software projects focus on real-time and safety-critical Linux, real-time Ethernet and other special drivers for the Linux mainline kernel as well as virtualization and development tools.

The OSADL member companies employ altogether more than 100,000 people, generate a sales volume of more than 100 billion euros and are machine companies, manufacturers of automation hardware and software, semiconductor companies, Open Source software service providers and user associations.

More information at: http://www.osadl.org/

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