Open source in machine manufacturing: Friend or foe?

automotion spoke with Dr. Carsten Emde, Managing Director of OSADL about open source in automation, potential for the future and "open innovation".

automotion: Dr. Emde, "open source" has become a very hot topic, especially since the Hannover Messe trade show. Can you understand all the excitement?

Dr. Emde: Absolutely. Use of open source software is probably one of the most dramatic paradigm shifts that has ever occurred in industry. What companies used to keep locked up in a safe is now available online! And there are good reasons for this.

automotion: Would you mind giving us a definition of "open source", to clarify the official meaning of the term for our readers?

Dr. Emde: Legally, the terms "open source software" and "free software" both refer to the same type of software license. What all open source licenses have in common it that the licensee has unlimited freedom to use the software as follows:

- Use
- Analyze
- Distribute
- Modify

Points 2 and 4 require that the source code be made available, since unlimited analysis and modification are not possible without it. Open source code is therefore

a necessary requirement, but that alone is not sufficient for the license to be called "open source".

automotion: **So, is all "open source" software the same, or are there differences?**

Dr. Emde: The conditions of the various open source licenses are generally very similar with respect to use, analysis, and modification of the source code. The conditions are specified in the Open Source Definitions of the Open Source Initiative (http://opensource.org). There are important differences in how the licenses handle distribution of applications created using the source code. Some licenses require that any changes or additions to the software are subject to the same license as the original software. This license condition is called "copyleft". It is part of the GNU General Public License (GNU GPL), for example. On the other hand, the Berkeley Software Distribution (BSD) license has no such condition. It allows completely unlimited use of the software.

automotion: **Is there anything that a company needs to consider if it uses open source software for its own operations, but doesn't distribute it in products or in any other way?**

Dr. Emde: In that case there wouldn't normally be anything special to consider, since any special requirements in the contract would only apply if the software were distributed further. But - as always - it is a good idea to read through the license agreement carefully before deciding to use any software. Some manufacturers may make claims in interviews and advertisements that

"Use of open source software is probably one of the most dramatic paradigm shifts that has ever occurred in industry."

software is "open source", while in reality the license conditions do not qualify it as open source. In this case, the license is binding. The misleading statements can sometimes be considered as a violation of competition laws, but do not have any effect on the license conditions.

automotion: **What are the most important things to consider for a company who uses open source software in its products and distributes it to customers?**

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Dr. Emde: The license agreement should always be read carefully, and any requirements it specifies must be followed. These can include the requirement to make the source code and any changes made to it available in a specific way. In some cases it can be helpful to consult a lawyer who specializes in open source licenses. Assistance is also available from interest groups such as the Open Source Automation Development Lab (OSADL).

automotion: **What concrete benefits are there for machine manufacturers who use open source software?**

Dr. Emde: Open source results in "open innovation". It allows different competitors to develop basic technologies together, while marketing the resulting products competitively. By avoiding unnecessary parallel development and providing direct access to source code, considerable cost savings are possible.

automotion: **Isn't it possible, though, that valuable know-how is lost in this process?**

Dr. Emde: No, definitely not. There are clear guidelines that define what source code must be made available, and what is exempt. We expect that there will most likely never be machines that use 100% open source software. It is clear that control programs and graphical user interfaces containing unique production processes and specific know-how will continue to be proprietary. Nevertheless, an open source operating system such as Linux and an open source communication protocol like POWERLINK can still be used.

automotion: **So you believe that open source technologies will shape the future?**

Dr. Emde: Yes. Clearly. Open source is one of the ways to achieve "open innovation". In using open source >>

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software, machine and system manufacturers will follow in the footsteps of automobile manufacturers who develop innovative components such as motors, and then go on to compete with each other on the market with the automobiles featuring those components. Many important innovations would never have been possible without this "networked added value". Without open source, the Linux operating system, which has come to support more architectures and more controllers than any other operating system, would never have been developed or perfected as it has.

Open Source Automation Development Lab eG

The Open Source Automation Development Lab (OSADL) is a registered cooperative whose goal is to encourage and facilitate the use of open source software in machine manufacturing, in the automation industry and in embedded systems. Among other functions, it acts as a "buying syndicate for open source software", which means that software favored by the majority of members is commissioned using OSADL resources. Any company worldwide can become a member. Detailed information about OSADL activities can be found under :
www.osadl.org

ETHERNET
POWERLINK
open source technology

www.ethernet-powerlink.org
www.sourceforge.net/projects/openpowerlink

Personal profile:

Dr. Carsten Emde has spent 20 years as a software developer, system integrator and software consultant for industrial computer systems. Since founding the OSADL in 2005 he has been its managing director.