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German Carmakers Back PROFINET

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Summary

A consortium of Germany's top carmakers recently announced their commitment to use Profinet as the preferred industrial networking solution in the future. As with last year's announcement by General Motors to back EtherNet/IP, this commitment will help to boost Profinet's visibility – not only the automobile industry – just as the first Profinet-compatible I/O-level components are appearing on the market. At the same time, as industrial Ethernet solutions mature, battle lines are again being drawn along automation's classic geographical demarcations.

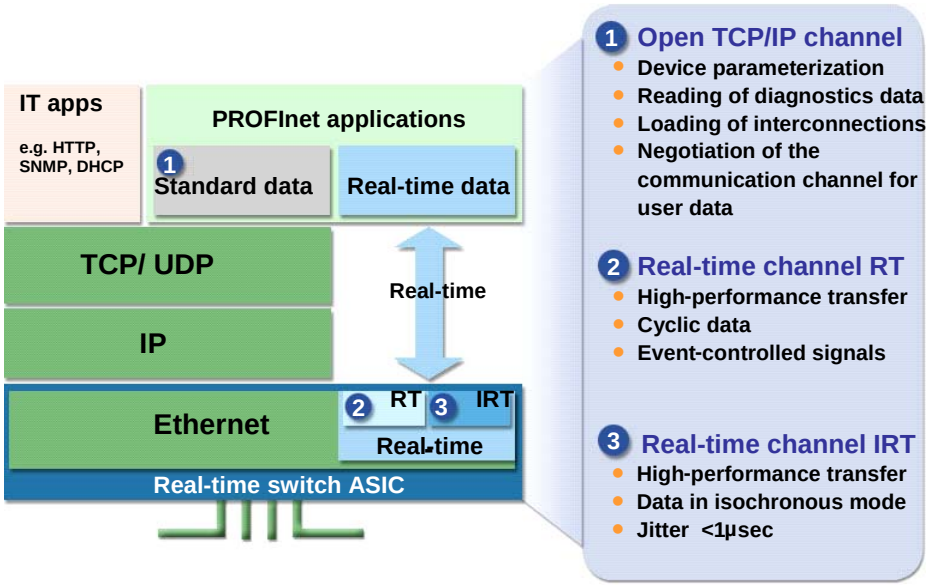
Automobile manufacturers tend to be industry pioneers, so the AIDA commitment is likely to boost the acceptance of industrial Ethernet in other industries.

Analysis

The announcement was made during Profibus International's press conference at the SPS/IPC/Drives show in Nuremberg, Germany. Surrounded by representatives from Germany's top four automakers Audi, BMW, Daimler-Chrysler (for the Mercedes Car Group) and Volkswagen, Profibus Chairman Edgar Küster announced the agreement to a gathering of journalists and analysts. In a position statement released the same day, the four companies agree to commit to use Profinet as a preferred solution in the future, once the "Profisafe" personal safety profile is available (expected in Q3/2005).

According to the position paper, the commitment applies to applications in which the use of the Profinet promises technical advantages as well as business benefits, providing some flexibility for individual plants to make the ultimate decision on their own. The implication is that Profinet will be preferred over other conventional and Ethernet-based industrial networks

at both the controller and the device levels, which should help reduce the cost of maintaining multiple, incompatible industrial networks.



Profinet Offers Three Levels of Performance, the Highest of Which Depends on a Real-time Switch ASIC

The planned integration of safety-related information in Profinet was the most compelling argument for the commitment, according to AIDA members. German car manufacturers often use a 2-bus strategy – either Profibus or Interbus for discrete control and Safetybus p to network safety components. To provide a migration path from legacy Profibus and Interbus networks, proxies will be available from several suppliers. Plans are also underway for Pilz, a supplier of safety controllers, to migrate its popular Safetybus p to an Ethernet-based system via gateways to all established systems. It is unclear at this time which of the available safety protocols Pilz will support on Ethernet. In addition to its own Safetybus p standard, these could include Profisafe on Profinet and possibly other solutions such as CIPsafety on EtherNet/IP.

The 4-company consortium known as "AIDA" (in German "Automation Initiative of Domestic German Automobile Manufacturers") was founded with the goal of eliminating the coexistence of multiple, dissimilar industrial networks in factories after hard lessons learned during the fieldbus wars of the 1990s. AIDA recognizes that the full value proposition of industrial networks is not being achieved by the current situation of multiple hierarchies, master/slave architectures and low bandwidth networks. The

use of multiple solutions leads to compatibility problems that result in higher integration, training and operational costs, which ultimately adversely affect a manufacturer's bottom line. AIDA further recognizes that the time is ripe for a technological paradigm shift – the chance to migrate to a proven, ubiquitous medium that is flexible enough to support the various legacy communications protocols and "tweakable" enough to adapt to some specific application needs. Despite initial skepticism, Ethernet, together with its industrialized variants, has turned out to be the only network medium on which every automation supplier can agree.

For their commitment, AIDA members expect a positive return in terms of business benefits. These include a unified networking concept based on Profinet to reduce short-term engineering, development and integration costs as well as long-term costs in ongoing operations. ARC believes the biggest savings will result from standardized, ubiquitous communications tools that allow everything from development applications to field devices to communicate seamlessly with one another, thus eliminating a major cost built into current automation architectures.

Industrial Ethernet Battle Lines Drawn

AIDA's commitment to Profinet is the perfect counterpart to General Motor's announcement a year ago of its plan to introduce a common network architecture based on ODVA's EtherNet/IP. This effectively divides the western hemisphere into two camps: Profinet in Europe and EtherNet/IP in North America. This is not surprising considering these two networks' main backers are Siemens and Rockwell Automation, the market leaders in these regions. More interesting now will be the battle for dominance in Asia, which is currently a toss up as Asian automation suppliers haven't yet committed to a particular industrial Ethernet camp.

GM's plan calls for the elimination of one network layer by connecting existing device-level networks directly to EtherNet/IP. Ironically, these device networks also include Profibus networks installed in GM's European plants, which will be integrated via proxy into the EtherNet/IP architecture. For legacy Interbus-S, a popular network in many German car plants, Profinet already has a solution ready. Interbus' main backer, Phoenix Contact, rejoined the Profibus club last year after a long hiatus and promptly announced the first proxy module to connect legacy Interbus-S

networks to "backbone" Profinet networks, thus preserving generations of its installed base.

Automobile manufacturers and their suppliers tend to be industry pioneers that exert influence over other industries, so both of these commitments are sure to spur interest in unified Ethernet architectures elsewhere. Other viable industrial Ethernet options such as Modbus TCP, EtherCAT, SynqNet and Ethernet Powerlink are vying for users' attention, mostly in the motion control performance niche. However, not all variants are based on standard Ethernet.

The AIDA announcement at the SPS/IPC/Drives show coincided with announcements for 70 new Profinet-compatible products from 24 different suppliers. Commitments of this sort from the industry are sure to boost the acceptance of industrial Ethernet at all levels of the manufacturing enterprise as end-users learn to get the most out of industrial Ethernet's value proposition.

Recommendation

The German auto industry's commitment to Profinet is a clear signal to suppliers that industrial Ethernet is here to stay. For end users, developing and implementing comprehensive automation architectures based on open standards that define manufacturing processes, equipment, and network infrastructure is essential to optimize production processes and drive down manufacturing costs.

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