

CC-Link Partner Association

# Global Activity Report

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**Towards CC-Link IE and PROFINET Interconnection**  
Development of common specifications will allow communication  
between different industrial networks

## Powerful Cooperation for the Era of IIoT and Industry 4.0 Towards CC-Link IE and PROFINET Interconnection Development of common specifications will allow communication between different industrial networks

The CC-Link Association (CLPA) announced the formation of a cooperative relationship with PROFIBUS & PROFINET International (PI) in November 2015, aiming to strengthen the interconnectivity of the industrial open networks developed by the two organizations. Technical specifications on the mechanism to connect "CC-Link IE" promoted by CLPA and PI's "PROFINET" will be jointly developed to make it possible for equipment and devices on both networks to communicate with each other at production sites. A major advantage for users will be the free choice of devices and equipment to suit the user's needs without restrictions due to incompatible networks.



Joint Press Conference of CLPA and PI in Tokyo

Press conferences were given in both Japan and Germany. Executives of both CLPA and PI took part to explain this cooperation. The major impact of cooperation between these two organizations, until now considered rivals, drew press officials to participate in the press conferences in both Japan and Germany.

The main focus of the conferences was that CLPA and PI will jointly develop common communication specifications for connecting CC-Link IE and PROFINET. As CC-Link IE and PROFINET have different standards, it is currently impossible to directly connect PROFINET compatible devices to a CC-Link IE network, or to connect CC-Link IE compatible devices to a PROFINET network. However, if common

specifications for a gateway that connects both are defined, limitations due to the difference in standards will be removed, allowing a dramatic increase in users' freedom to select devices.

At the press conference, CLPA Chair-

man Fumihiko Kimura (professor emeritus at the University of Tokyo) spoke to the effect that "Asia's CLPA and Europe's PI will join hands to contribute to the world's manufacturing industry," emphasizing that the effect of this cooperation will be



Many press officials also participated in the press conference in Germany

global. Also, PI Chairman Karsten Schneider said that “equipment vendors will no longer need to develop two versions of each device for CC-Link IE and PROFINET compatibility,” maintaining that there will be significant benefits for vendors as well as users.

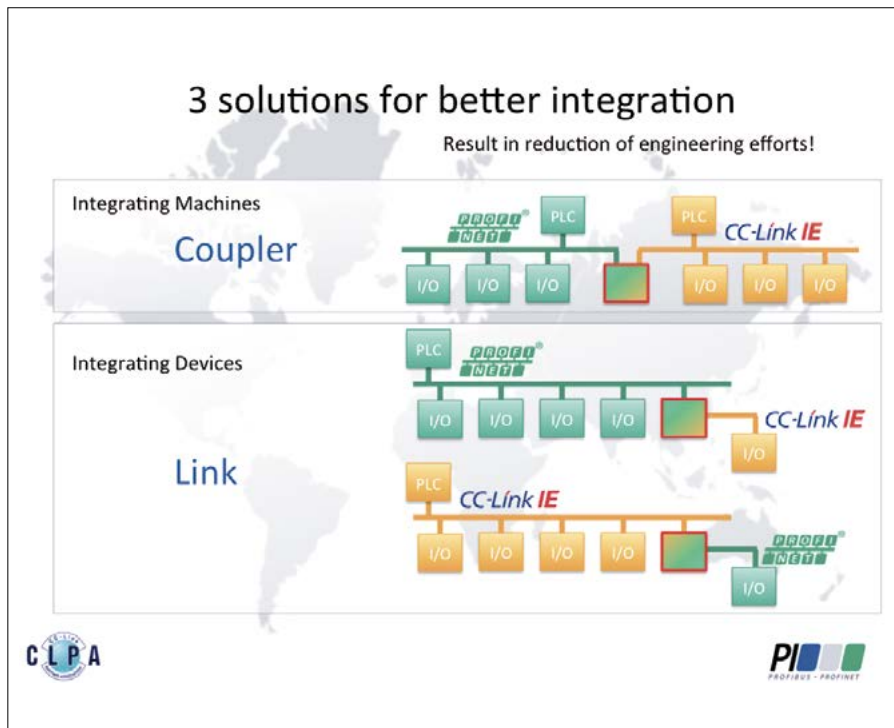
**"Times have changed"**

While CLPA and PI have developed different standards for many years, a major reason for them to aim for the interconnection of both networks is to allow “solutions in line with the user’s actual conditions”.

CC-Link IE, which is the only industrial Ethernet that has offers 1 Gbps broadband, is not only widely used across Japan and Asia, but also in the United States and Europe where PROFINET was developed, increasing its range at global level. Although its superiority has been highly valued by the industry, in reality, there are various industrial Ethernet standards other than CC-Link IE. As these cannot communicate with each other, the user must be aware of the differences in specifications whenever selecting devices and machinery. In cases such as expansion of an existing facility, the user is always constrained by the standards.

So far, CLPA and PI have promoted each network to expand compatible devices and users. However, for advanced users with a real desire for the development of manufacturing, it would be unwelcome for the framework of standards to become an impediment. “In the world of industrial IoT or “IIoT” and Industry 4.0, only working to spread individual standards will not provide benefits to users. It is necessary for us to steer in a more open direction. We believe that times have changed” ,said Global Director Naomi Nakamura of CLPA.

She continued, “Based on actual user situations, we will encourage users who aim for higher added value by combin-



"Coupler" and "Link" are envisioned as interconnection options for CC-Link IE and PROFINET

ing devices with different standards while maintaining the operation of conventional production facilities. That is the purpose of building this cooperative relationship between CLPA and PI and developing network interconnection.”

**Compatible Products Will Be Available as Early as 2017**

Two forms of interconnection are envisioned. These are the “Coupler”, enabling a sub-system with different standards to be integrated into the existing network system, and the “Link”, allowing a device compatible with one network to be directly connected into another network. In either connection configuration, data exchange by cyclic communication is possible between different networks. It is planned that data collection from equipment and devices will also be possible in both directions through the “SLMP” (Seamless Message Protocol) and “Acyclic” protocols used by CC-Link IE to connect various compatible devices.

To develop the specifications for interconnection, a joint working group has been formed by the member companies of CLPA and PI, and specific work has begun. Specifications are scheduled to be fixed by the end of 2016, after which the specification documents will be released to members of both CLPA and PI. It is expected that compatible products will be available sometime in 2017.

The world of interconnection is not necessarily closed to CC-Link IE and PROFINET. The participation of other industrial open network organizations has also been welcomed, with the potential to develop into a great wave not limited to the two networks.

Although the features of CC-Link IE are widely known not only to the users of CC-Link IE but to vendors and users adopting other network standards, it is not uncommon for them to hesitate before adopting CC-Link IE due to the problems of regions and connectivity . The support for CC-Link IE will further increase by eliminating this difficulty with interconnection.

# "Increased bandwidth through connection with CC-Link IE, to keep up with expanding data volumes"

## —What brought about the collaboration between PI and the CLPA?

**Schneider** Given the development of the industrial IoT and Industry 4.0, we've been discussing for a year or so how industrial networks can best contribute. The conclusion we reached was to aim for enhanced mutual connectivity of CC-Link IE and PROFINET.

CC-Link IE and PROFINET have emerged and developed in very different environments, aimed at different markets; this is why we feel they will complement each other. We consider a major feature of CC-Link IE to be its 1 Gbps bandwidth. While PROFINET also allows 1 Gbps as an option, from here on, when the entire manufacturing industry—not only production sites but also the management sector—is connected through networks, data volume will increase and bandwidth will become even more essential.

Elsewhere, one of PROFINET's strengths is its support for the process industries as well as FA. Through mutual connection, we will be able to offer new options to users in the process industries as well.

## —What are the advantages for partners and vendors?

**Schneider** Currently, if vendors offering CC-Link IE compatible products want to add PROFINET compatibility, or the other

**Karsten Schneider**  
PI Chairman



way round, they need to develop new communication interfaces for each network. Although there's almost no difference in control device function, the differing network standards require separate individual development.

If we can bring about mutual connection, a single device will be usable as an interface for both networks. This will throw the market wide open for both partners and vendors, enabling business growth.

## —How are you approaching the preparation and release of common specifications during 2016?

**Schneider** To be honest, 2016 is a pretty tight deadline, but we hope to make it happen in collaboration with the CLPA. The Working Group includes vendors who develop compatible products for CC-Link IE and PROFINET, so once the specifications are solid, market entry should take a relatively short time. An intimate working relationship between PI and the CLPA should be able to serve as a nucleus of future connections among other industrial networks.



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