



## Reports of fieldbuses' usage disappearing are premature

*Although Industrial Ethernet is the clear future direction of the industrial network market it's also clear that it will be many years before we finally say goodbye to fieldbuses. Michael Volz, General Manager of HMS Industrial Networks GmbH in Germany, says fieldbuses will be popular for many years to come, but that Ethernet will gain ground where it has something extra to offer.*

We live in a world where rapid technological change is common. Smartphones seemed to take over from their talk-only predecessors in an instant. Digital cameras are now virtually ubiquitous. CDs and DVDs, so recently cutting edge technologies, are practically museum pieces. Tablets are taking over from laptops, which had replaced personal computers, which had ousted mainframes - all in a single generation.

So it was fairly natural to assume that Industrial Ethernet would quickly consign fieldbus to the pages of history. However, some years after the arrival of Industrial Ethernet, fieldbus is not only still with us, but actually still growing in popularity, although admittedly at a slower rate than Ethernet.

Analysis of HMS's activities and comparison with some respected market reports suggest that Industrial Ethernet installations are growing at 17% per annum, and now account for a third of all industrial networks. In contrast, fieldbus networks represent the majority of the installed base, and are growing at 7% - both far greater than the rate of growth of automation equipment in general.

HMS's Anybus range of gateways allows devices such as robots, sensors and controllers to be connected to different industrial networks – both fieldbus and Ethernet. HMS also notes that it sees little sign of network consolidation: Profibus, CC-Link and Modbus all remain popular choices, although there are regional variations. It is also important to note that HMS's focus is towards discrete automation rather than process or building control. Further there is evidence that the choice of fieldbus is often dictated by the earlier choice of PLC (programmable logic controller), rather than a free selection by the system designer.

Fieldbuses are excellent for transmitting I/O type data and it seems that people sometimes prefer to use them over Ethernet because they already know how to install, configure and maintain them. Their simplicity makes them easy to install and ensures their reliability, so it is not that the engineers are being lazy or overly conservative, but are picking the best solution for the task in hand.

System designers and users will naturally always want to retain existing systems and adapt them to new requirements. It is unrealistic to expect them to discard their investment in field level networks without good reasons. This is true of both plant operators and OEMs/machine builders engaged in serial production.

However they are happy to make the effort to switch to Ethernet if it offers significant benefits - such as its better abilities to handle process and IT data; its greater functionality, flexibility and speed; its ease of connectivity to higher level networks for business execution and planning.



While HMS's experiences show the enduring appeal of fieldbuses, they also illustrate the rise of interconnectivity of equipment within production environments. Until a few years ago many factories did not fully integrate all of their processes; instead they automated some machines or processes and had little or no communication between these separate 'islands of automation'.

Now there is a growing trend to integrate all the equipment, and further connect it to enterprise management systems. This is increasingly referred to as Machine to Machine communications, the Industrial Internet of Things, and Industry 4.0.

We now realise that the transition to Industrial Ethernet will be a long-term proposition. It is virtually impossible to accurately predict when Ethernet will become dominant; but it is likely that fieldbuses will still be viable options in five years time.

So organisations that support industrial network technologies, such as the CC-Link Partner Association (CLPA) are likely to continue to support fieldbuses while promoting Ethernet for the foreseeable future. The CLPA, for instance has made sure its Ethernet technology (CC-Link IE) offers significant technical advantages over their fieldbus options, most significantly its unique, industry leading gigabit capabilities which lead to high speed/high density data transmission.

Perhaps this is best illustrated by an example: In a modern automotive production plant, data relating to the models, options, trim levels, engine and transmission choices is shared around the assembly line so that significantly different cars are built side by side in response to actual orders received from the (often-global) distributor network.

This is a real-world example of Industry 4.0. The various production machines and processes are interconnected and also connected to the company's internal business systems, which in turn are connected to distributors' and suppliers' systems. In such a situation, it is easy to see why gigabit capabilities and Ethernet connectivity are not attractive, but essential.

However, it is notable that the automotive industry is a trend setter: where it automates, other industries will follow – eventually. For the foreseeable future, fieldbus and Industrial Ethernet are going to happily co-exist side by side.

#### **Photo Captions:**

**Photo 1:** HMS's Anybus range of gateways allows devices such as robots, sensors and controllers to be connected to different industrial networks – both fieldbus and Ethernet.

**Photo 2:** Accumulated number of nodes, FY 2014/2015.

**Photo 3:** Michael Volz, General Manager of HMS Industrial Networks GmbH in Germany.

**Photo 4:** John Browett, General Manager of CLPA Europe.



## About the CLPA

The CC-Link Partner Association (CLPA) is an international organisation with over 2,500 member companies worldwide. The partners' common objective is promotion and technical development of the family of CC-Link open automation network technologies. Over 1,500 certified products are now available from more than 300 manufacturers. CC-Link is the leading open industrial automation network technology in Asia and is becoming increasingly popular in Europe and the Americas. The CLPA's main initiative for Europe is the Gateway to Asia (G2A) programme, which helps European businesses develop their Asian business further. More details are at [www.cc-link-g2a.com](http://www.cc-link-g2a.com)

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