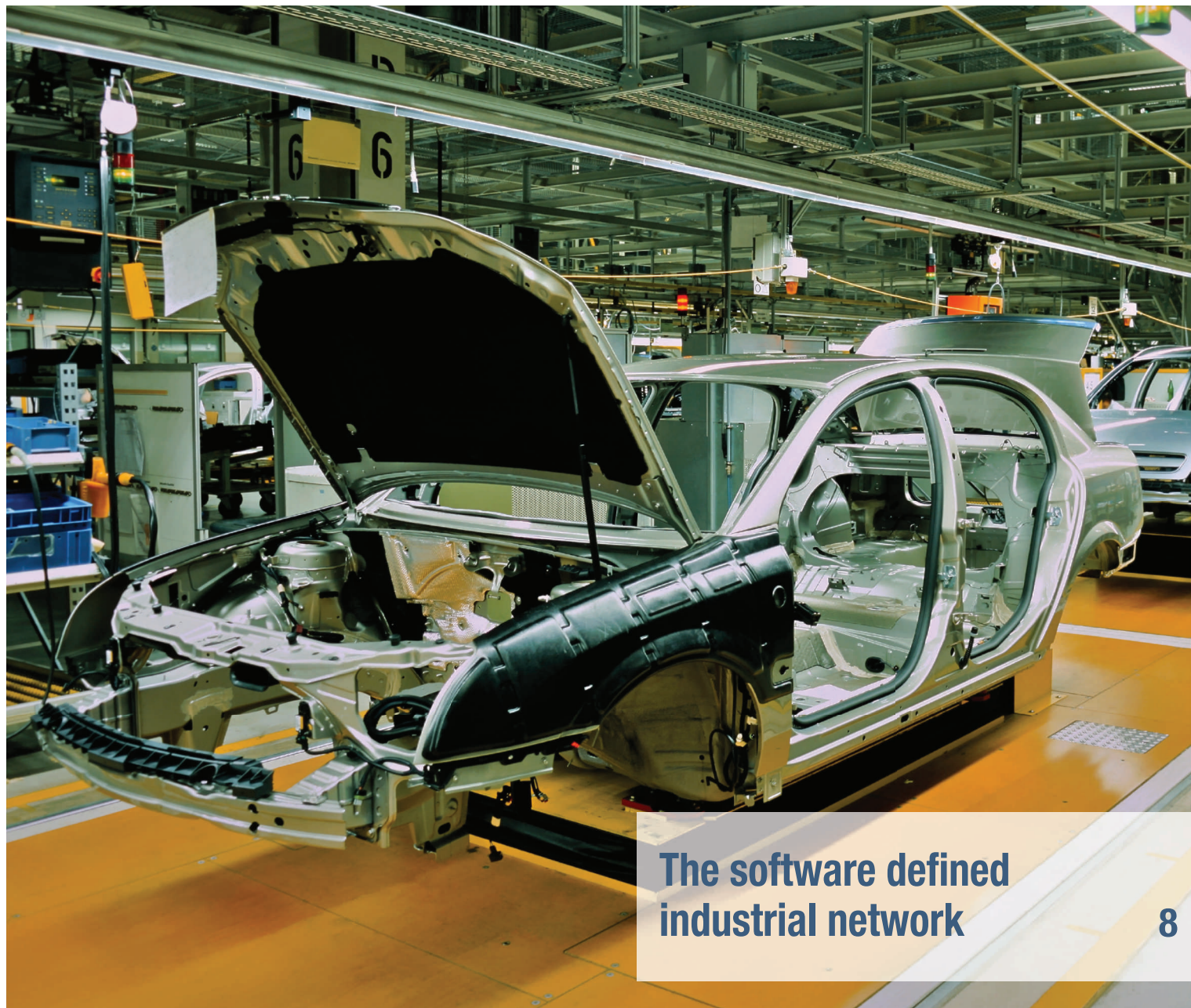


# industrial ethernet book

The Journal of Industrial Network Connectivity



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# Growth of Industrial Ethernet

An estimated 25 percent of new industrial communications nodes connected in 2012 were based on Ethernet technology, with a further 7 percent based on the newer safety technologies, according to IHS Technology.

ETHERNET HAS REACHED THE MAINSTREAM realm and is starting to become commonplace in the industrial environment, with wider knowledge and understanding of the technology boosting growth opportunities.

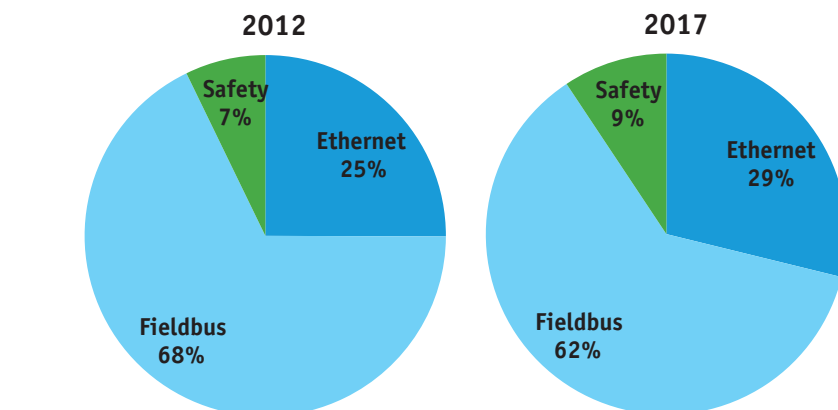
IHS Technology forecasts that through the year 2017, about 29 percent of new nodes will employ Ethernet while safety-based technologies will account for 9 percent. While Ethernet certainly offers more modern technology, the usage of fieldbus is likely to continue long into the future.

Fieldbus solutions have been around for decades. The technology has a huge installed base of existing devices and a large number of industrial experts mean that the technology is far from its twilight years. That being said, more users now understand the potential benefits that Ethernet can offer, including the potential implementation of the Internet of Things or pervasive sensing. While these capabilities are not limited to Ethernet, there are certainly benefits to utilizing Ethernet as the base technology.

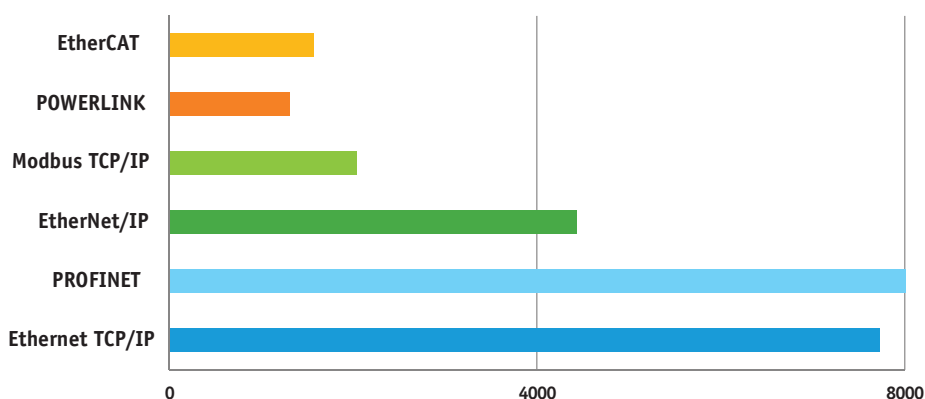
The Internet of Things is not a new concept, but the potential to individually identify every device on the network offers great benefits for industrial automation end users. The capability to gather large amounts of information from sensors and send it over the network means that users can react quickly to changes, improving efficiency, reducing costs, and perhaps most-importantly, reducing the likelihood of machinery failure. This ties into preventive maintenance, another big selling point for up-to-date industrial networks.

All this information generates massive amounts of data and this information needs to be transferred around the network for analysis, manipulation and storage. Older fieldbus technologies are not necessarily up to the task of transmitting large amounts of data, quickly, while newer Ethernet technologies can cater to this. This is one of the contributing factors to the growth of Ethernet. While Ethernet TCP/IP is the most common solution in industrial automation, this situation could potentially change as network load increases.

PROFINET and EtherNet/IP are the two major solutions offered in industrial automation. Both are supported by large vendors and are capable of catering for the above trends. The expansion of new nodes using these, and the other industrialized protocols listed in the figure, are mostly expected to exceed the growth rate for Ethernet TCP/IP. This is not to say that Ethernet TCP/IP does not have a place in industrial automation. In reality, it is



The world market for industrial Ethernet and fieldbus technologies (proportion by technology).



The world market for industrial Ethernet technologies by Ethernet technology (new nodes).

perfectly suitable for an application or product that is not subject to a harsh environment and does not require high-speed data transmission or determinism. There are regional variances of the adoption of these industrialized protocols. In Europe, Middle East and Africa, PROFINET is the most widely adopted technology. In the Americas, EtherNet/IP sees strong adoption.

PROFINET is driven by both Siemens and PROFI International, and there now is a lot of promotion around transitioning from PROFIBUS to PROFINET. Whilst PROFIBUS still sees strong adoption, there is a slow transition to the PROFINET technology. PROFISAFE is also administered by PROFI International and growth is strong for the technology. However, strong growth of this safety-based technology is not unique; these newer safety-based technologies are seeing strong growth across the board. EtherNet/IP, administered by the ODVA, is performing strongly with the backing of Rockwell Automation in the American market, and is also impacting regions where Rockwell has a presence, including EMEA.

Both EtherCAT and POWERLINK had more

than 1 million new nodes connected in 2012 and EtherCAT is now estimated to have edged ahead of POWERLINK in terms of new nodes connected. Both technologies are highly suited to motion-control applications owing to their high-speed and deterministic routing. EtherCAT in particular has the added advantage of OMRON supporting the technology in the Asian market, where the company is well established.

Overall, there is a trend toward wider adoption of industrial Ethernet. However, fieldbus technologies are not going to disappear overnight. The large legacy system base, as well as widespread expertise on these older buses, means it is entrenched in the market for industrial networking. Industrial Ethernet offers many benefits over some of the fieldbus technologies, and the gains in terms of efficiency and reduced cost are major drivers. Growth for the Ethernet technologies is certainly set to continue.

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