OPC-UA for the Pharma Industry

As with most major industry sectors, the pharmaceutical industry is awash with its own specific jargon, often used in everyday parlance only by ultra-specialist experts.

April 2024

Of course, this is no bad thing and is certainly nothing to criticise. Any industry that produces niche, but vital products will often develop its own phrases. Almost like a secret way of communicating, it is only natural, almost a by-product of innovation.

However, as the largest independent provider of pharmaceutical serialization solutions, advanco recommends that every so often, we should revisit the fact that the pharmaceutical sector should do all it can to foster an environment defined by accessibility and openness.

In that vein, it is sometimes worth reminding ourselves that not everyone is familiar with specific phrases relating to the pharma sector. Certainly, it can do no harm to focus on specific terminology every so often and provide a basic overview of what it is, and why it is important for pharma.

One term that, despite being in existence for some years, is only now becoming particularly relevant because of the advent of Industry 4.0., is OPC-UA. Therefore, as Industry 4.0. continues fuelling the relevance of OPC-UA, it is worth reminding ourselves of what it is, and why it is important.

However, before we examine OPC-UA itself in detail, let us look at the OPC Foundation and Open-SCS, and advanco's role within both organisations.

The OPC Foundation.

The mission of the OPC Foundation is to manage a global organization in which users, vendors and partners collaborate to create data transfer standards for multi-vendor, multi-platform, secure and reliable interoperability in industrial automation.

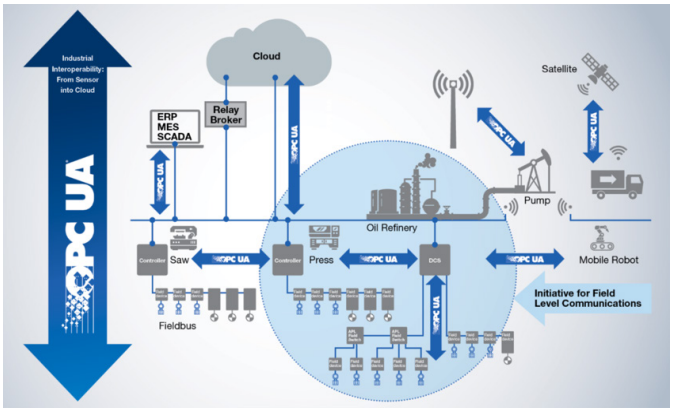
To support this mission, the OPC Foundation carries out a number of tasks, including creating and maintaining specifications, ensuring compliance with OPC specifications via certification testing and collaborating with industry-leading standards organizations. These standards are directly linked to OPC-UA as the main tool of achieving the industry standard of harmonization.

Advanco is a strong supporter of the OPC Foundation and is a full member.

Furthermore, advanco is a founding member of Open Serialization Communication Standard (Open-SCS) which is part of the OPC Foundation. Open-SCS was set up to facilitate the functional interoperability of serialization-solutions to seamlessly integrate operations and business processes across organizations and regulatory bodies. It also concentrates on aligning with other industry groups and standards when appropriate.

What is OPC-UA?

OPC-UA stands for Open Platform Communications Unified Architecture.



It is a data exchange standard for industrial communication, either by machine-to-machine or PC-to-machine integration. However, a crucial point is that this open interface standard is wholly neutral. This means it is independent of the manufacturer or system supplier of the application, of the programming language in which the respective software was programmed, and of the operating system on which the application is running.

The biggest difference to previous versions is that machine data can not only be transferred, but also semantically described in a machine-readable way. OPC UA provides access to a wide variety of data in both vertical and horizontal directions. The spectrum ranges from OPC UA components directly integrated on the devices and controllers or machines and systems to so-called gateways and aggregating servers.

One of the reasons that OPC-UA is now so important is that Industry 4.0. is providing OPC-UA with a new lease of life and an opportunity to really show the full extent of its services.

OPC-UA and Industry 4.0.

Advanco often speaks about the importance of Industry 4.0. because it has opened a whole new era of hyper-connectivity, encouraging pharmaceutical packaging lines to become much more integrated and factories to become smarter, all powered by the cloud.

Faced with such sophisticated connectivity, OPC-UA really proves its worth by solving one of the central challenges of Industry 4.0 and the industrial Internet of Things (IIoT). This is by providing an answer to how to standardize the exchange of data and information between devices, machines, and services, even from different industries.

Why is OPC-UA an important component of the pharma sector?

The spread of OPC UA is progressing as a global interoperability standard that supports manufacturing and manufacturing DX (digital transformation).

When you consider how heavily influenced the pharma sector is by technology, it becomes clear to see why OPC-UA is gaining such importance within the sector.

To simplify the implementation of data integrity, OPC UA — which supports digital signatures — is being adopted for this purpose. OPC UA provides secure connection and data transmission, which is one of the reasons it is recommended for communication technology for Industry 4.0.

Pharmaceutical manufacturers are increasingly attaching great importance to safe and secure manufacturing. By understanding how the OPC-UA framework can be used, they have started to become reliant upon it as a way of ensuring that production data has not been manipulated, proving that products have been produced correctly.

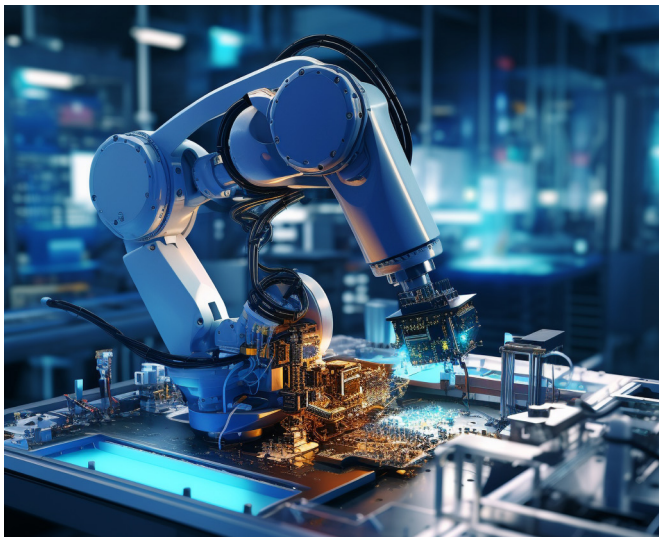
OPC-UA: Encouraging openness within pharmaceutical serialization solutions.

We should also return to the "openness" theme we have already touched upon.

Advanco has long argued that the pharma serialization sector needs to be much more open and transparent as a way of overcoming some of the sector's existing challenges.

Some pharma serialization solutions can be complex, inflexible, and unable to efficiently meet constantly evolving global and regional serialization requirements. Some providers will install specific software which can only be used with their hardware. When this happens, the pharmaceutical company risks losing flexibility and the ability to either expand or adapt its manufacturing capabilities because of vendor lock in. In turn, this will likely lead to a loss in profitability – something that no pharmaceutical company can contemplate in the current economic climate.

Therefore, because OPC-UA is such a platform-agnostic and manufacturer-agnostic solution, it has strong credentials as a core component of the serialization sector – both now and in the future.



Conclusion.

OPC-UA, despite being established for many years now, is really coming into its own as we continue pushing into the Industry 4.0. era and beyond.

Like the conductor of a symphony orchestra, it allows multiple components of the pharmaceutical supply chain to communicate freely, no matter what the platform might be, and regardless of the manufacturer who developed it.

Such functionality should be applauded. The whole point of the life sciences and pharmaceutical sector is to develop the medications and solutions needed by us all to live a healthy life, so by encouraging open communications, OPC-UA should be seized by us all, for the good of us all.