March 15, 2020

Flyer

SPECTARIS e.V.
Werderscher Markt 15 | 10117 Berlin

Your contact:

Birgit Ladwig
030 / 41 40 21-31
ladwig@spectaris.de

Machine integration throughout the lab workflow: A new standard for the smart laboratory

Goal: Key competitive benefits

The efficient networking of machines, automated systems and processes is the key to securing advantages in an increasingly competitive laboratory market. This applies equally to the users of analytical and laboratory equipment as well as to manufacturers.

According to a study carried out by McKinsey[1], up to 50% of costs can be cut and up to 70% savings achieved in terms of delivery times through digitalization and automation in quality laboratories. This puts real-time approvals for processes and products within the grasp of laboratories. Alongside a considerable reduction in the effort involved in documentation and testing through the automatic capture of results, other factors also play a major role. The elimination of human errors, for instance, and reduced variance in test sequences lead not only to improvements in quality but also to greater forward visibility in terms of planning personnel resources, processes and material consumption. One basic prerequisite is the highest possible degree of connectivity across all equipment, systems and processes. All this is equally applicable to other industrial and research laboratories in the fields of analytics, biotech and process industries.

The interdisciplinary and cross-company SPECTARIS 'Networked Laboratory Equipment' working group has taken up the challenge of promoting the standardisation of interfaces in laboratories to serve the industry. The objective of the working group is the creation of a manufacturer-independent open standard, which comprehensively takes on board the requirements of various branches, disciplines and business processes, and is sustainable and adaptable to future requirements in the field of digitalization and automation.

[1] McKinsey&Company: "Digitalization, automation, and online testing: The future of pharma quality control"

March 15, 2020

Flyer

The challenges of Lab 4.0

Current laboratory infrastructures comprise many highly specialized items of apparatus from a variety of manufacturers. Multiple interfaces and data formats aggravate the networking of pieces of equipment among themselves and their integration into existing IT infrastructures. This, though, is the most important prerequisite in consistent digitalization and efficient automation. At the moment, what is lacking is a comprehensive, efficient and robust solution!

Notwithstanding that, partial successes have already been achieved. For example, Ethernet in combination with TCP/IP is increasingly establishing itself as the fundamental communication infrastructure. Standards for data formats such as JCAMP[2], AnIML and Allotrope are already well advanced. Standards, such as SiLA, specializing in the automation of individual pieces of laboratory equipment and addressing less industrialized market sectors, are gradually gaining ground.

However, according to association members, requirements for a cross-brand, industrially viable and future-proof technology have not yet been sufficiently addressed. There is still a lot of catching up to do in order to take full account of today's demands and there is work to do in following up on emerging developments.

Working group approach

Particularly in industrial automation and the process industry, OPC UA has won through over recent years to become the worldwide standard. This is reflected in the fact that more than 750 reputable manufacturers subscribe to this standard, which is embedded in thousands of products supporting OPC UA. As a result of its widespread use, OPC UA is well-defined, very highly adaptable, proven in practice and the focus of ongoing further development. This already comprehensively encompasses aspects, such as cyber-security, which are only now entering public consciousness.

The laboratory market is increasingly aligning itself with industrial automation processes and the adopted approaches, thereby profiting from the many decades of experience already gathered. The associated benefits have been collated by the SPECTARIS 'Networked Laboratory Equipment' working group, resulting in the decision to adopt OPC UA as the standard technology for networking equipment, systems and processes in the

[2] JCAMP (Joint Committee on Atomic and Molecular Physical Data): The JCAMP format is an international exchange format in the field of spectroscopy.

laboratory. This not only facilitates connectivity in the laboratory but also enables integration with typical industrial infrastructure.

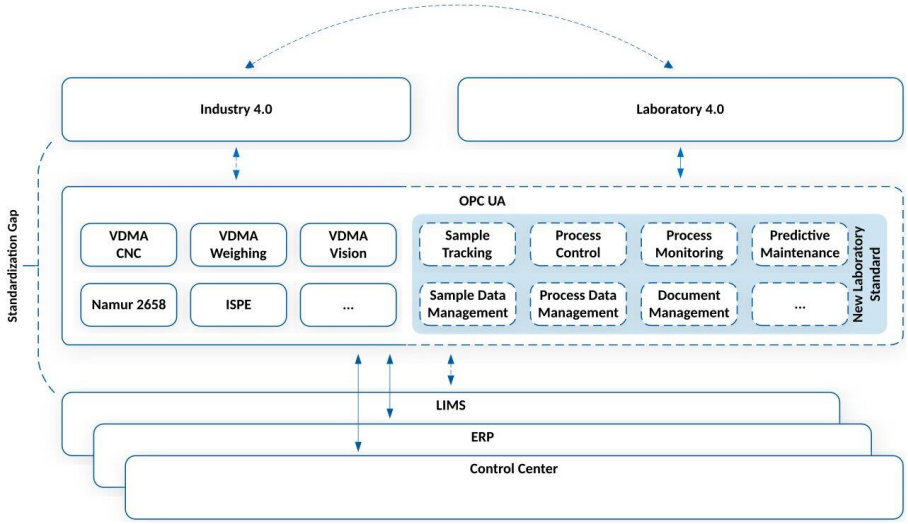

Fig. 1: Integration of SPECTARIS activities into existing laboratory environment

Schedule

Based on these requirements relating to a suitable standard, the working group has compiled a roadmap to promote achieving their objectives. This includes planning for an OPC UA-compliant interface definition and the implementation of a reference. Publication as a registered OPC UA Companion Specification is intended at a subsequent stage but this aspect was not included at this juncture due to legal framework conditions which still require clarification.

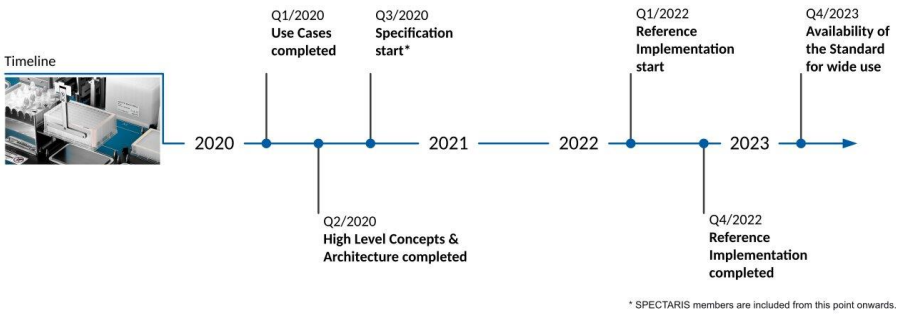

Fig. 2: Schedule for implementation of proposed standard

March 15, 2020

Flyer

Administration & opportunities for involvement

The working group offers various forms of involvement and cooperation with the network. These are scalable to cater for the capacities and capabilities of participating companies and range from simply monitoring the activities of the group, to providing feedback through to active cooperation in shaping the standard.

Interested companies or individuals are urged to contact Birgit Ladwig using the above contact link.

Further information and a more detailed whitepaper is available here: www.spectaris.de.

SPECTARIS is the high-tech industry's German association and represents more than 400 businesses, mainly SMEs, in the fields of analysis, bio-engineering and laboratory technology, medical technology, consumer optics and photonics. The industry association 'Analysis, bio-engineering and lab technology' brings together around 90 manufacturers whose products are deployed in laboratories in food processing and quality control, environmental technology and material testing as well as in pharmaceutical, chemical and medical laboratories.

March 15, 2020

Flyer

Members of the SPECTARIS 'Networked laboratory equipment' working group

2mag magnetic emotion
Agilent
analytikjena An Endress+Hauser Company
BRAND
DÜPERTHAL
elementar EXCELLENCE IN ELEMENTS
GERSTEL
heidolph research made easy
Hettich
HIRSCHMANN
HNP Mikrosysteme
INFORS HT WIR BRINGEN LEBEN IN IHR LABOR.
infoteam software
IPI InProcess Instruments Gesellschaft für Prozessanalytik mbH
Julabo THE TEMPERATURE CONTROL COMPANY
KNAUER
Labotect Labor-Technik-Göttingen
KRÜSS
LAUDA
memmert
Miele
NETZSCH Proven Excellence.
SARTORIUS
SCHMIDT HAENSCH family owned since 1864 150 years of quality
SHP Steriltechnik AG
SIGMA
SLabS smart lab systems INTGROUP
TECHNISCHE UNIVERSITÄT DRESDEN
Systec the autoclave company
vacuubrand