The SiLA Connection

STANDARDIZATION IN LAB AUTOMATION

DECEMBER 2020

SiLA direction for 2021 and beyond

As the year draws to its close, it is time to reflect on the last period. Braving the challenging conditions, our community continues to grow, with more members and new developments (see page 2).

We have been working hard on updating the strategy for SiLA to benefit the community. SiLA enables automating and digitizing scientific laboratories through free and open systems communication and data standards. Whether you are a scientist, an integrator, or a supplier: SiLA helps you to future-proof labs, offering end-to-end integration by connecting instruments to informatics systems, lab systems to each other and people with their data.

We are convinced that SiLA will help every lab with their digital transformation programs. Researchers can work in laboratory environments that integrate distributed instrumentation, software and services and can trust that their data flows as required. Science is moving into clouds and SiLA makes labs cloud-ready. We see SiLA as a pioneer interconnecting clouds and cloud labs.

To achieve our vision, it is key that the SiLA 2 standards are fully functioning and technically attractive propositions to integrators and vendors.

We acknowledge that success of SiLA depends on accessibility to end users and easy adoption by everyone. It must be easier to set up and maintain than current integration methods. We recognize that this requires good documentation and reference implementations for engineers, and starter kits for end users. The consortium will continue to support this through these strategic measures:

- **Technical Development and Support**: Develop a SiLA 2 based method to connect instruments globally in a cloud, and facilitate the formation of working groups to develop quality feature set definitions for device and data classes
- **Partnership and Alliances**: Continue to work with others that facilitate end-to-end integration, provide the infrastructure for digital laboratories and are active in providing data standards.
- **Leveraging our members' networks and relationships**: Work together with our members and beyond to share success with using SiLA and other relevant standards. By working together, we increase our chance of success and achieving our vision.
- **Increase visibility and awareness**: SiLA's scope is global. We want to generate awareness of the advantages that standards bring and demonstrate these, showcasing the tangible benefits so that everyone can see from themselves what is possible, not the in the Lab of the future but today.

We encourage input from members, supporters and the community via our events, or info@sila-standard.org. Until then, we thank you all for your support during this challenging year and wish you a peaceful end of year!

In this issue

- **NEW SiLA cloud connectivity**
- **See you at SLAS 2021 virtual**
- **Report on Analytica 2020**
- **Report on 2020 User Meeting**
- **Farewell to Max**

Meet us at these events:

- **SLAS 2021**
  Jan 25-27, virtual
- **Smartlab Exchange Europe**
  Jan 26, virtual
- **Future Labs Live**
  June TBC, virtual
- **Lab.Vision 2021**
  postponed to 2022

Update on SiLA Cloud implementation PoC

siobra

At the start of October, SiLA started work with Siobra on the SiLA cloud implementation PoC.
Here we present an update to this work and explain how laboratory suppliers and users can benefit.

Modern software development increasingly benefits from the use of cloud environments. This provides easy horizontal scaling capabilities and managed services. However corporate environments generally include a regulated security policy to ensure safety and continuity.

The establishment of a connection from a cloud-application (e.g. a SiLA Client) to a local device or service (e.g. SiLA Server) is an important capability in IoT (Internet of Things) applications, while at the same time respecting the security aspects.

Having a general solution for such a "reverse channel" would enable such scenarios. And the SiLA cloud connection proof of concept answers this question. The figure right outlines the situation: The lab environment is protected by a firewall and only allows outgoing connections.
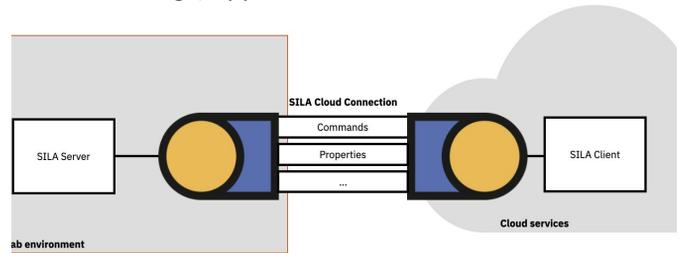
The cloud environment on the other end provides secured endpoints that are available through public network infrastructure. The SiLA cloud connection opens a virtual channel from the lab into the cloud.

The benefits of this approach are:

- **No additional infrastructure** needed for device vendors and lab environment

- **Easy to develop** – same technology stack. Cloud functionality can be added as lib for each language platform. Once added, can be used transparent for any feature

- **Standard gRPC and HTTP/2** protocol connection handling and security models can be used

The SiLA client within the cloud acts as a gRPC server, so in terms of gRPC layer client and server switch roles. For the SiLA protocol it separates the connection layer and the application protocol. The gRPC connection opens a bi-directional stream and SiLA messages for operations are sent in both ways.

This approach makes it easy to connect to the cloud, meeting the same security requirements for the connection, such as authentication and encryption of the data. It also meets the protocol buffer messages specification and serialization to ensure interoperability between different platforms and vendors.

The Cloud SiLA client endpoint can be public HTTP/2 gRPC server endpoints, using standard TLS certificates for secure connections. For lab device vendors, this makes life much easier as there are no special requirements for the lab components.

The proof of concept enhances the SiLA standard where needed. The java reference implementation includes working examples for all aspects covered by the SiLA cloud PoC. The cloud PoC specification and reference can be found at https://sila2.gitlab.io/sila_base/ and https://gitlab.com/SiLA2.

Use cases – new opportunities: using the cloud connectivity, it is now easy to connect SiLA devices to the cloud. This opens many new opportunities. Cloud based services can be used to process image data and store data in central data lake. Workflows can be controlled from the cloud. Browser-based user interfaces might access lab devices through cloud connections. Third party data science and workflow products running as cloud services can now be used together with SiLA devices in a standard way.

Further details are shown in our application note - available on our website and on request.

SLAS 2021 - we will be there! will you join us? this year may be the best time to do so….

The SLAS (Society for Laboratory Automation and Screening) has been a mainstay of the lab automation world and the flagship event at the start of the year has always been an important meeting point for the community. It is one which SiLA has been an enthusiastic supporter, and a regular exhibitor, as some of you will know.

Given the current conditions SLAS, like all societies, has made the difficult decision to run the event online, and SiLA is delighted to once more be part of the event.

The experience at the first virtual Analytica in October has shown us that such virtual events, while they lack some the immediacy of a face to face meeting, have some hidden advantages: not everyone has the budget to travel all the way to San Diego, and not everyone has the time to spend several days at a show. We now realize, even more than ever before, that lab scientists and managers have busy working and home lives. Joining a quality event such as the SLAS 2021 show online, may be the ideal opportunity not available before.

The SLAS team are providing a tried and tested online platform with video chat. The opening hours on Monday 25th January are an extended 8am to 8pm Eastern Time (14h - 02h CET) and we will be there to meet and greet you. We therefore strongly encourage you to join us ONLINE wherever you are in the world!

We will have update material on the standard and use cases and case studies.
Don't forget that many SiLA members will also be there. We look forward to meeting you online!

Review of analytica 2020 – and our first virtual SiLA booth!

The biannual **Analytica** show normally takes place in Munich Germany. And with 30,000 visitors, it is easily the largest show in the analytical instruments calendar. Having been deferred from March to October this year, it was our first experience of a virtual show as exhibitor. As the booth was open extended hours, one thing we immediately noticed was interest from around the world, from Asia in the morning, and the Americas in the evening.

This gave us an unparalleled opportunity to engage with audiences not yet benefitting from the SiLA standard. We were also invited to join the revived Digital Transformation where we presented two talks: **How a Digitalized Lab Should Look and Feel: An inspiration** by CTO Daniel Juchli and **SiLA standards in practice** by Patrick Courtney.

Digital SiLA Conference #11 – October 20th

This year's SiLA Conference was focusing on "users" and took place on October 20th as a fully virtual event. After a warm welcome, the Conference started with an opening presentation by Daniel Juchli, SiLA's CTO on "How a Digitalized Lab Should Look and Feel: an Inspiration" followed by a short summary on AnIML's track towards realizing its first official release.

Furthermore, presentation of industry use-cases of SiLA were given by Jonas Austerjost (Sartorius), Georg Hinkel (Tecan), Dale Charlton (Applied Scientific Technologies). Additionally, the academic KIWI project, which will be built on top open standards, was introduced by Mark Doerr and PhD students.
We are delighted about lots of interest from many new people, great discussions and nearly everybody stayed until the end.

For those of you who missed the event: Abstract and presentations (video links) available in the download section on our website https://sila-standard.com/downloads/#1598258865669-7cb1a644-9fc9

STANDARDIZATION IN LAB AUTOMATION   **DECEMBER 2020**

Did you miss out on our SiLA online events in 2020?
We have the recordings available for you!

Future Labs Live , July 22nd - Automation in the lab: what should and shouldn't be automated?
SiLA Director, Patrick Courtney moderating the talk.
https://www.terrapinn.com/conference/future-labs-live/Webinars.stm

Future Labs Live, August 13th - Automation & Workflow: What Should and Shouldn't be Automated?
Hear what SiLA Director and CEO of BSSN Software GmbH (AnIML) Burkhard Schaefer has to say.
https://register.gotowebinar.com/register/9148654033598513421

SmartLab exchange, August 26th - Applying SiLA & AnIML in the Lab of the Future – Case Studies and
Lessons Learned. Listen to SiLA Directors, Daniel Juchli and Burkhard Schäfer leading the panel discussion.
https://www.youtube.com/watch?v=_vn0DPPpKn4&feature=youtu.be

SiLA hackathon #20, September 9th - Quick intro to SiLA 2
This video was recorded during the first virtual hackathon. It gives a good and quick introduction to SiLA 2!
https://www.youtube.com/watch?v=HH-A8RyJvDU

Future Labs Live, September 28th - EU roadmap for industrial digitalization
Keynote by Yves Paindaveine from the European Commission and SiLA Director, Patrick Courtney
https://vimeo.com/user121643126/download/460603103/53b981b65f

SiLA Conference #11, October 20th - User stories and experiences
Moderated by SiLA Directors, Patrick Courtney and Robert Soeldner. Abstract and presentations (video links)
available in the download section on our website
https://sila-standard.com/downloads/#1598258865669-7cb1a644-9fc9

Digital Transformation Forum, October 22nd and 23rd
How a Digitalized Lab Should Look and Feel: An inspiration by CTO Daniel Juchli
https://youtu.be/1TuMsph16Es

SiLA standards in practice – example of digitalization by Patrick Courtney
https://youtu.be/EevgTJh4bt8

The SiLA team says Farewell to Maximilian Schulz

In October our Board Member Max Schulz has announced his resignation from the SiLA Board of Directors for personal reasons.

The SiLA Board of Directors would like to thank Max for his active participation in the SiLA organization, especially his contributions to the development of the SiLA 2 standard, and also as a member of the Board. Max always had great and practicable ideas and suggestions, which were very helpful to the SiLA organization.

The SiLA team wishes him all the very best for the future and hopes to stay connected through SiLA!

Follow SiLA on youtube! …
and don't forget to like and leave a comment!

FOR MORE INFORMATION

Visit us at www.sila-standard.org

Email us at info@sila-standard.org

Spinnereistrasse 38, 8645 Rapperswil-Jona

Call +41 55 210 01 19 (Switzerland)

Follow us on Twitter or LinkedIn