

The SiLA Connection



STANDARDIZATION IN LAB AUTOMATION

OCTOBER 2022

Ready to win a SiLA Observing Membership?

„Speak SiLA to me“

SiLA is giving away one-year Memberships, **each worth € 2'000** along with a chance of a presentation slot at the upcoming SLAS2023 (if you are present) and marketing opportunities through our social media channels and newsletter.

How to enter the contest:

- **Step 1:** Fill out the [google form](#) with your contact details and tell us your story - your experiences/products with SiLA (a few lines in advance)
- **Step 2:** Send us your story, approximately 350 words, by mail to info@silastandard.org. The best stories will be selected by a jury of three SiLA Directors and even if your story is not going to win a membership, you and your team will be rewarded with "speak SiLA to me"-shirts.

Deadline: November 15th, 2022

For detailed information find the SiLA bylaws on our [website](#) or contact info@silastandard.org.

See us at these events:

- **BioTechX Basel**
November 8-10, Basel, Switzerland
- **Future Labs LIVE US**
November 15-16, N. Carolina, USA
- **SLAS 2023**
February 26 - March 1, San Diego, USA
- **Future Labs Live**
May 31 - June 2, Basel, Switzerland

What is a SiLA Observing Membership? Our one-year limited Observing Membership comes with the rights and benefits of a Start-up Membership. This special membership offers a first glance on how the standard can benefit their business.

How is a SiLA Membership of benefit to you?

Joining SiLA as a corporate member gives you a voice in our SiLA Standard Working Groups to increase and develop the standard suiting your organizational needs. As a member you will get continuous access to all our resources and help to define the next generation of lab automation standards. A membership also gives you the chance to generate new contacts and new business opportunities!



Review of bioSASH hackathon September 29th-30th at Villa Rheinburg in Konstanz

The 4th BioLAGO-SiLA-AnIML-Serial Hackathon (bioSASH) took place on the 29-30th of September 2022 in Konstanz at the wonderful Villa Rheinburg. The Robotics Working Group focused on an exemplary implementation of the pick-and-place labware transfer feature for two different robotic arms:

- A [UR 3e](#) provided by [NEXT. robotics](#), equipped with an 8-Bot [lab-hand](#) gripper
- A [PreciseFlex SCARA](#) provided by [EQUIcon Software](#) and supported by [Brooks Automation](#)

The implementation was based on the [LabwareTransferController](#) feature definition by [EQUIcon Software](#) and executed using the [sila_python](#) library. The team achieved a modular solution which consists of a robot-agnostic, abstract interface defined by the SiLA 2 standard and a separate hardware interface to enable robot-specific communication. For the latter TCP/IP sockets were used according to the respective APIs of the robots.

The system design was conceptualized according to the architecture outlined in the Laboratory Automation Plug & Play ([LAPP](#)) framework. As such, the levels of the hierarchical decomposition of the workflow and the hierarchical levels of the control architecture were considered. For the two robots, different design approaches were taken:

- For the PreciseFlex arm the motion sequences (consisting of motion primitives) were implemented on the PC level and communicated sequentially to the robot controller in the form of motion primitives.
- For the UR, the motion sequences were programmed on the embedded controller of the robot and the communication from the PC level was limited to triggering these.

In line with the SiLA Robotics Working Group's [mission & vision](#)[LB1], a step was taken towards the standardization and democratization of lab robotics. The resulting code can be found on the SiLA 2 GitLab group: [sila_pick_and_place_example](#). The [project folder](#) on the SiLA GoogleDrive contains the conceptual and technical presentations, as well as device documentations.



The bioSASH hackathon series is a partnership between BioLAGO and SiLA supported by the European Commission via the DIH-Hero project Digital Innovation Hubs for healthcare robotics.

The second BioSASH team, led by Philipp Seitz from Vetter Pharma and Burkhard Schaefer from Splashlake, worked on the topic of planning, execution, and documentation of lab workflows, as well as cloud connectivity. During the hackathon, the team implemented a fully orchestrated digital lab workflow.

The user would use a barcode reader to scan a sample. Based on the sample ID, a LIMS system (in our case SAP QM) would be queried to determine the analysis to perform. The appropriate method was pushed to a plate reader, which would measure the sample and return an AnIML document. The final document would then be pushed to an AnIML viewer for data review and sign-off.

During the two days, the team created a set of SiLA services that participated in this distributed workflow: an ERP adapter, a barcode scanner, a plate reader, a data review service, and an orchestrator to drive them. We even had a real plate reader from Byonoy and the Splashlake AnIML Viewer available. All services were deployed on DigitalOcean VMs in the cloud. You could now even talk to them using the cloud-based Universal SiLA Client. The team was thrilled to experience how quickly standards-based integration using SiLA and AnIML worked.



SiLA and bioLAGO are going to publish the professionally recorded presentations and talks on youtube during the upcoming weeks.

Follow us:

<https://www.youtube.com/channel/UCfrUPXKcM1uw4UGn-1k4QsQ>

New Book out now: Smart Biolabs of the Future

We would like to congratulate SiLA members, Sascha Beutel and Felix Lenk for the launch of their new book. A thank you also goes out to SiLA CTO, Daniel Juchli, who contributed a chapter on SiLA.

This book reviews the advances in data gathering and processing in the biotech laboratory environment, and it sheds new lights on the various aspects that are necessary for the implementation of intelligent laboratory architecture and infrastructure. The second part of the book is devoted to standardization in lab automation, in which readers will learn more about some regulatory aspects, the SiLA 2 standards and FAIR Data infrastructure.

Special offer : Get 20% off the printed book or eBook!

Enter the following coupon code at checkout on link.springer.com to for apply discount: **Y13xzwSS4MXM2F** - valid until **November 7, 2022**



«Interview» with SiLA Director, Dr. Patrick Courtney, recorded by SiLA Partner Oxford Global

Standardization in Lab Automation: Working Towards the Integrated Laboratories of the Future

Edited by Ben Norris on August 29th 2022. Click [here](#).

In this Insight article, we explore SiLA: the consortium for Standardization in Lab Automation and look at some of the opportunities and challenges presented in the vision for a fully integrated laboratory environment.

[SiLA 2 Training Videos](#)
available for free on youtube!

BioTechX Basel November 8th-10th

Wednesday, November 9th / 15:50pm – 16:10pm

Presentation: **Development of tools and ontologies for semantically annotated scientific data for AI and machine learning applications**

Speaker: SiLA member Dr. Mark Doerr, Senior Scientist, University Greifswald

Mark Doerr is going to speak about the team's successful implementation of a SiLA communication architecture to control a complex robotic screening platform as well as about the requirements and hurdles of metadata standardization (e.g. for machine learning applications) and much more.

Wednesday, November 9th / 17:25pm – 18:05pm

Panel Discussion: **The way forward with standards, data and insights**

Chair: Patrick Courtney, SiLA Director

For Pharma/BioTech/Academic/Government/Patient Groups – we have VIP guest passes for you. Please register [here](#).

6. IUTA-AnalytikTag – Schwerpunkt: Digitalisierung und Prozessanalytik am 10. November 2022



SiLA member IUTA invites to the 6th AnalytikTag in Duisburg, Germany.

Online Registration only: <https://www.iuta.de/analytiktag/>

Number of participants is limited, registration deadline: November 3rd, 2022.

FutureLabs LIVE US edition November 15-16 in Raleigh Convention center, North Carolina, USA

Following on the heels of the highly successful FutureLabs LIVE European edition which took place in Basel in June, SiLA partners "[Terrapinn](#)" are organizing the first US version LIVE, following the pandemic.

SiLA will be there again, participating in sessions, talks, and panels, showing how the future lab, the digital connected lab, works with standards like SiLA.

[Join us](#)

SiLA Director, Dr. Patrick Courtney moderates the session:

What have we learned? Best practices for data standardization and interoperability

Date/Time: November 15th, 12pm

SiLA Director, Burkhard Schäfer moderates the roundtable:

Instrument connectivity meets data management - generating value through standardized data and interfaces

Date/Time: November 15th, 1.40pm

SiLA is giving away 5 guest passes for your colleagues and peers to attend the event free of charge. [Contact us!](#)



Spotlight on the SiLA 2 Working Group

In the core working group, we recently started an initiative to check the interoperability of SiLA 2 framework implementations using a common set of test features. So far, libraries can check the compliance of their frameworks against a set of more than 150 and rapidly increasing automatically executing test cases testing the compliance of the server or client (and hence, the underlying framework) with the SiLA 2 standard. This has already helped to identify some potential improvements in some implementations and through an integration into the CI/CD pipelines, will help to guarantee compliance of the SiLA 2 implementations in the standard for future versions – regardless of the underlying programming language.

Update on Python

The Python implementation of SiLA 2 is almost feature-complete and well-received by its users. Recent updates focused on further improving the developer and user experience as well as fixing minor bugs which were discovered using the ongoing interoperability testing efforts.

Update on Java

SiLA Java recently has seen several major updates, mainly to simplify the development process of SiLA server and client applications. There has also been progress regarding interoperability with the other SiLA 2 implementations.

Update on NuGet

No matter if you want to run your SiLA 2 Server on a Raspberry PI, any Linux or on Windows machines https://gitlab.com/SiLA2/sila_csharp will deliver you a C# implementation of the SiLA 2 Standard always up-to-date. You can either choose its NuGet-Packages on Nuget.org or check out the Repository and modify the code (License MIT). Especially the example implementations are a good point to start implementing own SiLA 2 Features.

These can take advantage of following optional Modules by Dependency Injection:

AnIML-Module

- Use the AnIML Data Model to generate valid AnIML Data or parts of it

Data Storage

- SQL Storage Module based on SQLite
- NoSQL Storage Module based on LiteDB

Web Frontend Module for SiLA 2 Servers based on Blazor Server Technology

- Server Management Interface
- Certificate Handling
- AnIML Data View
- User Management

IPC Module based on ZeroMQ (NetMQ)

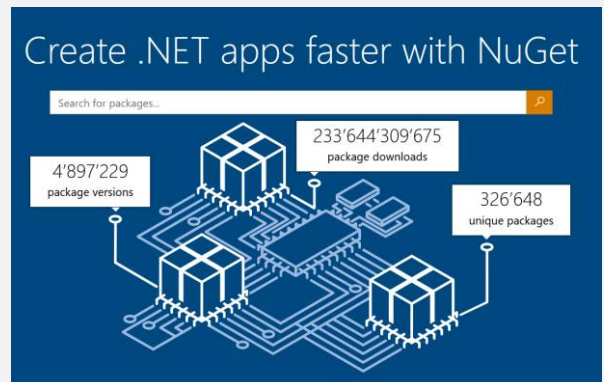


Illustration from NuGet page <https://www.nuget.org/>

There´s also a Web Application to find and display SiLA 2 Servers in a network for which is planned to execute the methods on those servers by dynamic Clients (Work in Progress) and a SiLA 2 Client Module to setup SiLA 2 Clients with few lines of code. All these Modules can be used by Server and Client.

Review of OxfordGlobal's SmartLab event on September 8th-9th

SiLA was delighted to be part of the SmartLab with a presentation of SiLA member Dr. Mark Doerr (University of Greifswald) on. **"FAIR data and machine learning in the wild - the academic KIWI-biolab project"**

You can access the presentation deck [here](#)

Presentation by zoom by Daniel Juchli on SiLA 2: enabling lab digitalization

Hear how SiLA enables the Lab of the Future through free and open systems communication and data standards, offering end-to-end integration by connecting instruments to informatics systems, lab systems to each other, and people with their data.

Review of SiLA hackathon at ELRIG DrugDiscovery 2022 on October 3rd in London

October saw the annual ELRIG UK drug discovery event taking place at the excel center in London. Two days of top-quality presentations, 130 exhibitors and 2000 delegates makes this a major event in the UK calendar. Not afraid to try something new, SiLA offered a mini-hackathon as part of the setup day, accessible to early arrivals, and the vendor community, presentations on SiLA, by Matt from Biosero and a technical session led by Mark of Unilever all led to much enthusiastic discussion. Next year ELRIG DD23 will be in Liverpool, 18-19 October.



Hackathon at Tecan Wiesbaden August 4th-5th

One of SiLAs strengths is its support for various programming languages (C#, C++, Java, JavaScript, Python).



Beginning of August, the library maintainers met at Tecan SCC in Wiesbaden to find a coordinated approach for ensuring interoperability between these implementations. The result is a unified testing and reporting strategy which will guide our community-driven open-source approach in focusing on bridging not only physical gaps, but also technologies.

Review of Lab of the Future event in Amsterdam, October 4th-5th (SiLA partner)

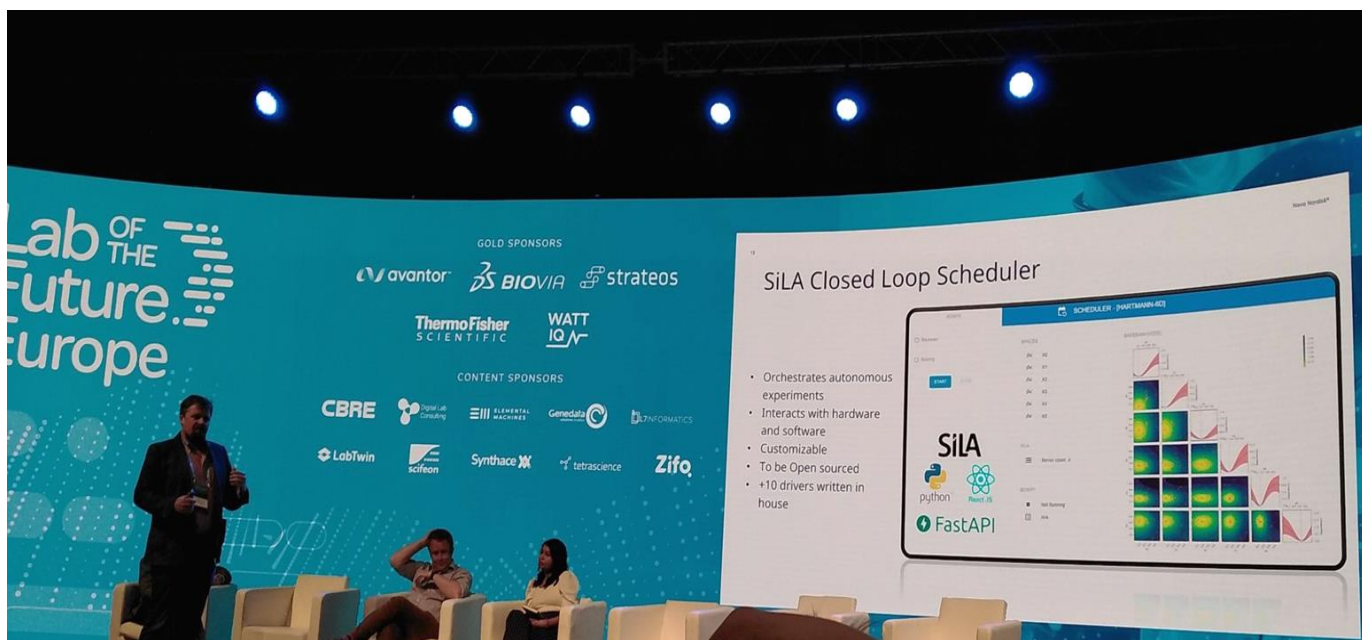
The light and airy Beurs de Berlage was the welcome venue for the Lab of the Future event at the start of October. Over 300 delegates from across the biopharma industry descended on Amsterdam to exchange the latest thinking & experiences.

Standards was a topic all through the first day, so it was very appropriate that the SiLA session: Interoperability Standards as an Enabler in the Digital Lab of the future. The room was standing room only to hear Andrew Mitchell from Unilever and Burkhard Schaefer of Splashlake closing with a panel involving James Love of Novo Nordisk.

The conference closed with a great session on robotics and automation and delegates were treated to an energetic presentation by James Love of Novo Nordisk highlighting their work, and of course SiLA is part of their architecture.



See you next year on September 26-27, also in Amsterdam, with a Boston event planned for March 9-10!



Status of the SiLA Robotics Working Group by Adam Wolf

The SiLA Robotics Working Group (SRWG) continues its journey on the path towards standardized plug & play lab robot integration. The bi-weekly meetings facilitate open brainstorming discussions and exchange, and also define concrete work packages. Keeping a short-midterm horizon by addressing low hanging fruits ensures that tangible results are achieved, while scouting for futuristic approaches opens more long-term, futuristic perspectives.

The feature unification endeavor progressed by defining a [structure of namespaces](#) including stubs for present and future lab robot capabilities. As a first step, to address the specific use case of labware transfer, a [proposal](#) by [EQUIcon Software](#) is being worked on. This use case was also targeted during the 4th BioSASH hackathon.

While working on a unified lab robot interface, lab automation integration frameworks are studied in a broader sense. SiLA – serving as the backbone by implementing device communication – has to be extended and integrated with other elements of the stack. Similar to how [AnIML](#) complements SiLA in terms of data, suitable solutions have to be identified and adapted in terms of workflow representation. The SRWG facilitates discussions in this topic, both within its bounds and by interfacing with other initiatives, such as the Laboratory Open Protocol ([LabOP](#), formerly PAML) group. Special focus is laid on robot-specific ontologies both in the context of labware and of lab devices. With the help of these, teaching free robot integration is [conceptualized](#) as a part of the Laboratory Automation Plug & Play ([LAPP](#)) concept.

#Speak SiLA to me – add this hashtag on LinkedIn and mark @SiLA...
...and we will reward you with a cool shirt!

SLAS 2023 San Diego Convention Centre from 25th February

With a cold winter coming, the prospect of a little California sun is always a welcome one. The annual SLAS conference arrived in San Diego on February 25th until 1st March 2023. SiLA will once more be there to meet and greet friends from North America and beyond, with a booth, and tutorial session on the morning of the 2nd full day, Tuesday February 28th. Hoping to see you there!



FOR MORE INFORMATION

Visit us at www.sila-standard.org

Email us at info@silastandard.org

Spinnereistrasse 38, 8645 Rapperswil-Jona, CH

Call +41 55 210 01 19 (Switzerland)

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