Recent Developments in the Smart Laboratory Enabled by Standards in Laboratory Automation

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1. Introduction

New developments in informatics, robotics and instrumentation open up new possibilities in the laboratory, but their integration into lab practice remains a challenge.

SiLA standards (from the non-profit Standards in Laboratory Automation Consortium) facilitate scientific innovation by providing common ground for device communication and data exchange.

This poster explains how tools based on community-developed standards can support the smart lab, offering many benefits for end users. It shows results of new implementations from new and established players, from both users and suppliers.

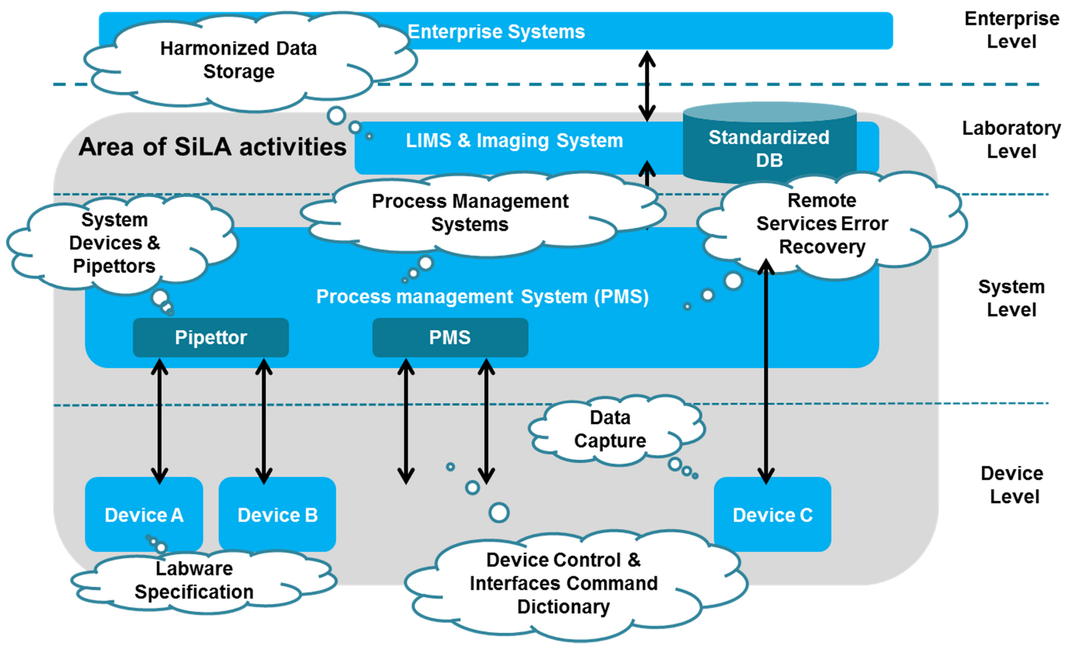
2. The advantages of standards

SiLA offers the following benefits:

- **Users**: flexibility through plug-and-play and increased platform uptime
- **Suppliers**: simplification of integration tasks and ability to focus on improved equipment functionality
- **Start-ups / New technologies**: faster time to market

Since 2008, SiLA has grown to over 1500 members. This includes many supplier and end-user organizations in the life sciences. A recent survey of members showed strong support for the view that **standards support innovation**.
(5.0 on a 7 point scale, N=36)

3. What is SiLA & SiLA 2?



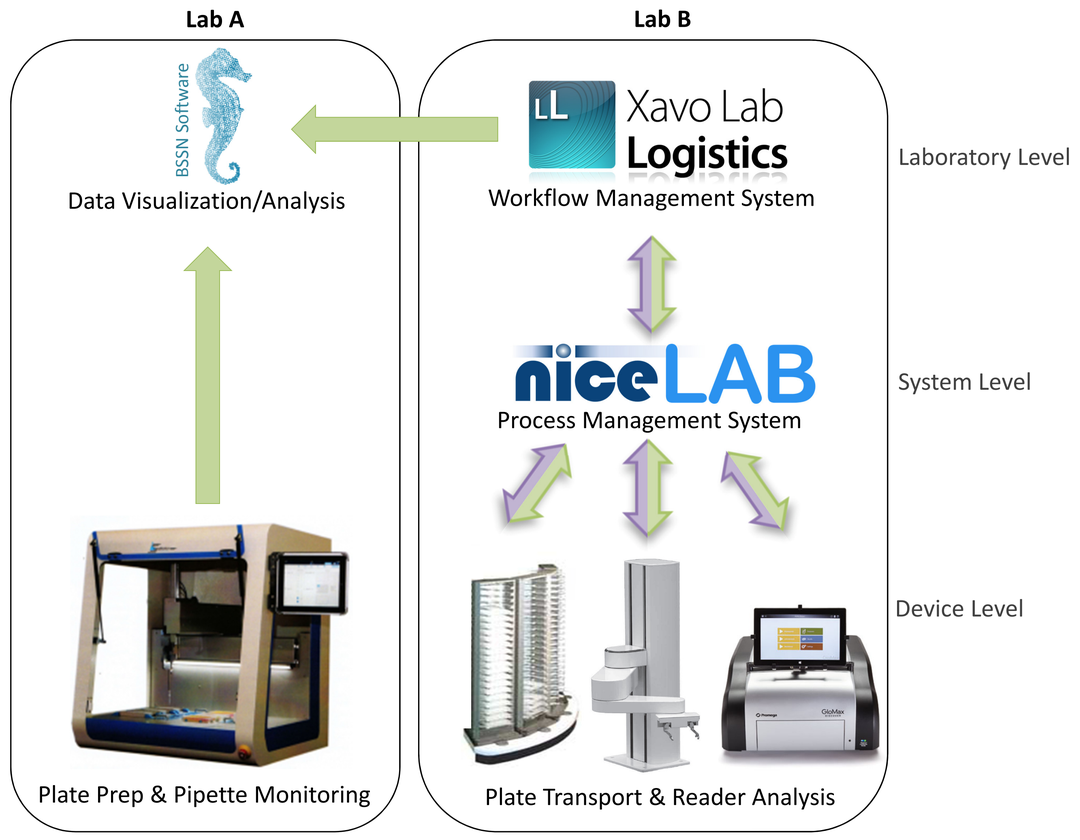
SiLA's standards landscape (above) targets the following areas:

- Device Control
- Pipettor
- Process Management System
- Data, based on AnIML (Analytical Information Markup Language) using XML to format raw data, metadata and results
- Command Dictionary
- Labware

With the successful deployment of SiLA 1.x, a backwards-compatible version 2 is in preparation, with proof-of-concepts scheduled for Q4 2016 and public release slated for mid-2017. SiLA 2 will be based on a number of changes, including a focus on features rather than devices, to afford end users plug-and-play interoperability while remaining free and open.

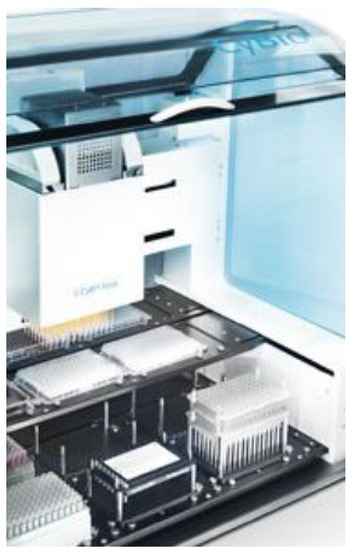
4. SiLA demonstrated at MIPTEC 2016

During Basel's MIPTEC 2016 exhibition, SiLA members demonstrated interoperability of devices and software from different vendors. The application showed how SiLA enables a new level of data integrity and quality assurance as plate reader data from one lab was seamlessly integrated with pipette monitoring QC data from another lab.

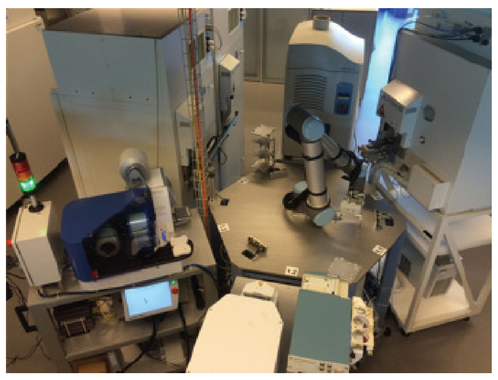


5. New user utilization of SiLA in 2016

SiLA standards are being used by many end-users. New systems were presented at the SiLA conference in September 2016 demonstrating reduced cost, decreased integration time and satisfied customers!



Partially-automated IVD platform at Fraunhofer-IPA



Collaborative Robot at Novartis

Facility for automated cell culture and screening

6. How to get involved

- Join SiLA as an individual or as an organization
- Get involved in the working groups
- Training offered at SiLA basic and developer levels
- Tech Day in-person exchanges offered worldwide

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Check out http://www.sila-standard.org

References and acknowledgements

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Next meetings:

Lab Automation & Robotics	8-9 November 2016, Berlin/Germany
SLAS2017	4-8 February 2017, Washington D.C./USA
PITTCON 2017	5-9 March 2017, Chicago/USA