

SiLA 2: The Next Generation Lab Automation Standard

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Introduction

SiLA's mission is to establish international standards which create open connectivity in lab automation. SiLA's vision is to create interoperability, flexibility and resource optimization for laboratory instrument integration and software services. It is based on standardized communication protocols and content specifications. SiLA promotes open standards to allow integration and exchange of intelligent systems in a cost-effective way.

SiLA 2 is developed using open communication protocols that are well established and defines a thin domain-specific layer on top of these, consisting of common concepts and a vocabulary / taxonomy to allow for easy accessibility, even to SMEs.

Technology Description

SiLA 2 runs over HTTP/2 and uses Protocol Buffers to serialize payload data. As SiLA does not want to "reinvent the wheel", it relies on the wire format specified by gRPC.

SiLA Specification

The SiLA 2 specification is separated into two main parts: Core and Mapping. They define SiLA 2 design goals and rules, Feature specification, development and balloting process, error handling, security and authorization. As Features will be built on top of this, SiLA 2 is both stable and flexible in one.

Key Design Principles

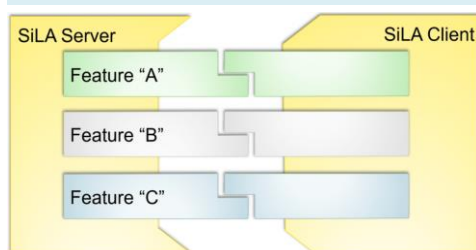
- Clean separation of concerns (data and transport) established through separation of the specification.
- Being explicit in everything, being strict in all specifications.
- Having complete type safety
- Encapsulate complexity as much as possible.
- Based on existing standards for interoperability of systems. Only define what is needed for the laboratory domain on top.
- Message-driven architecture capable of handling network interruptions.
- Accessibility for a wide range of users. Easy to understand for programmers, scientists and SMEs.
- Features are to be defined easily.
- Custom extensions possible.

Conclusion

SiLA is not only a technical standard but an organization creating and supporting a living community of dedicated people who believe in the great value of standardization.

SiLA 2

- Your base for Lab Digitalization
- Based on proven Internet-of-Things (IoT) / Lab-of-Things standards
- Service-oriented modular architecture
- Ensures Data Integrity
- Lightweight to implement
- Human read- and understandable
- True Plug & Play allowing simple integration
- Reference implementations available in Java, Python, C++ and C#
- Simply define own Features
- Real end-to-end communication
- No license fees, no royalties



TECHNICAL NOTE