



Workshop SDCLib/C

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Workshop

- **Introduction**
- **Implementation – Part 1**
- **Coffee Break (10 min)**
- **Implementation – Part 2**
- **Open Questions**



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SDCLib - Overview

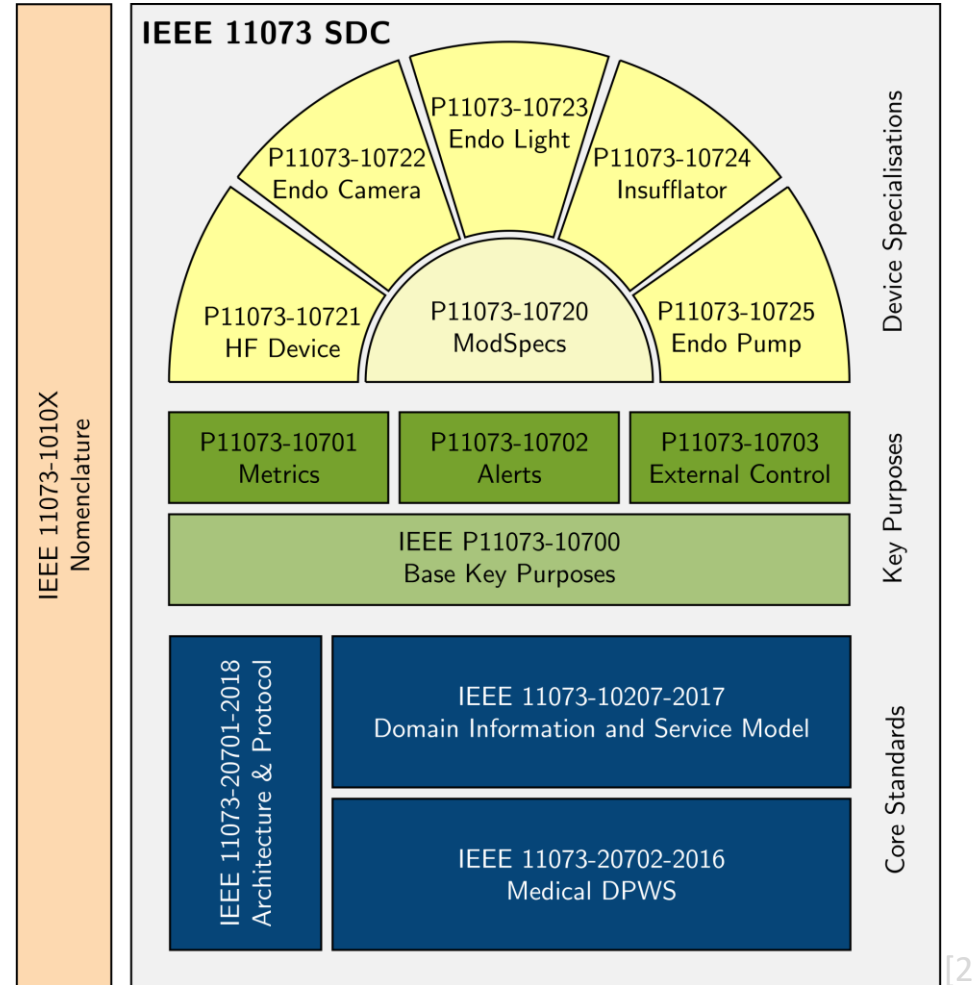
- **Available on github** [1]
- **C++11 Support required**
 - gcc (4.8.1)
 - Clang (3.3)
 - Visual Studio 2015+ (Testphase)
- **Operating Systems**
 - Linux
 - Raspbian
 - Windows
- **Dependencies**
 - POCO C++ Library (1.9.2) - Boost Software License 1.0
 - **XSDCXX (4.0.0) – GPLv2**
 - Xerces-C (3.2.2) – Apache License 2.0
 - OpenSSL (1.0.3b) – dual OpenSSL and SSLeay license



XSDCXX offers a dual license model.

SDCLib - Overview

SDCLib/C
(Provides MDIB access)



SDCLib/C
(Provides MDIB access)

SDCLib/C
(Stack)

[2]

ReferenceProvider / ReferenceConsumer

- Interoperability of SDC-Stacks is measured by testing the ReferenceParticipants during the Plugathons (PAT)
- The results are publicly available at: <https://confluence.hl7.org/display/GP/Community+Events>
- „Reference“ Specifications can be found here:
<https://confluence.hl7.org/pages/viewpage.action?pageId=113676845>

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Implementation – Part 1

○ Learn:

- About the internal structure of the SDCLib/C (walkthrough)
- How to **setup** the SDCLib/C
- How to **integrate** SDCLib/C into an own (CMake) project
- How to **setup** an **SDCProvider**
- How to **discover** SDCProviders on the network
 - With the SDCLib/C
 - With DPWS Explorer (<http://ws4d.org/dpws-explorer>)
- How to **provide** metrics to other SDCParticipants



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Coffee Break (10 min)

We continue at:

10:xx

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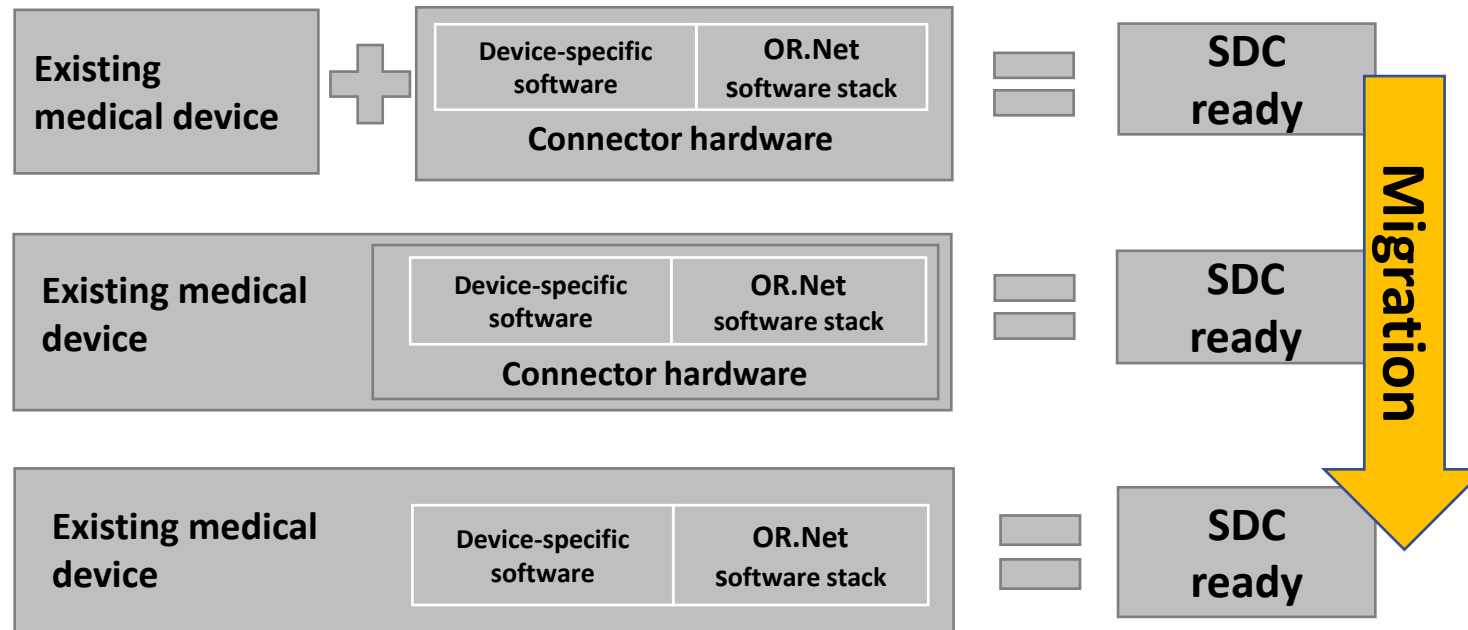
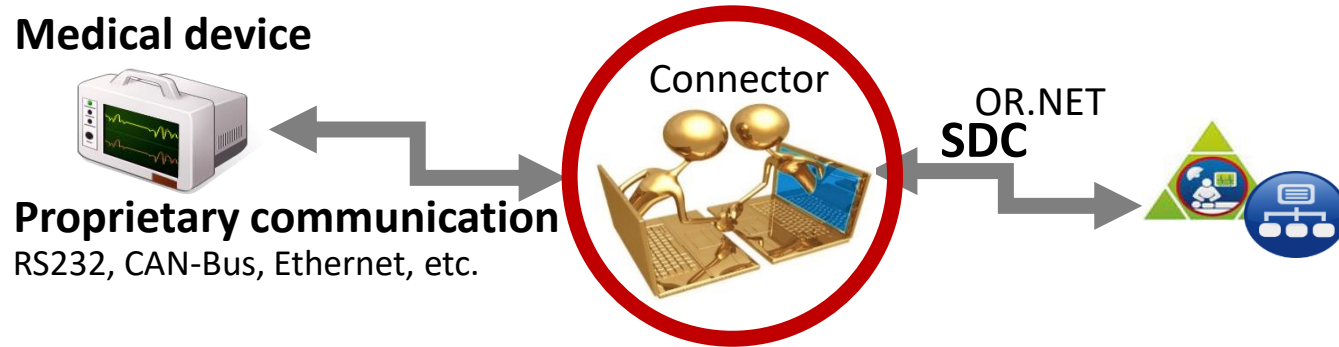
Implementation - Part 2

○ Learn:

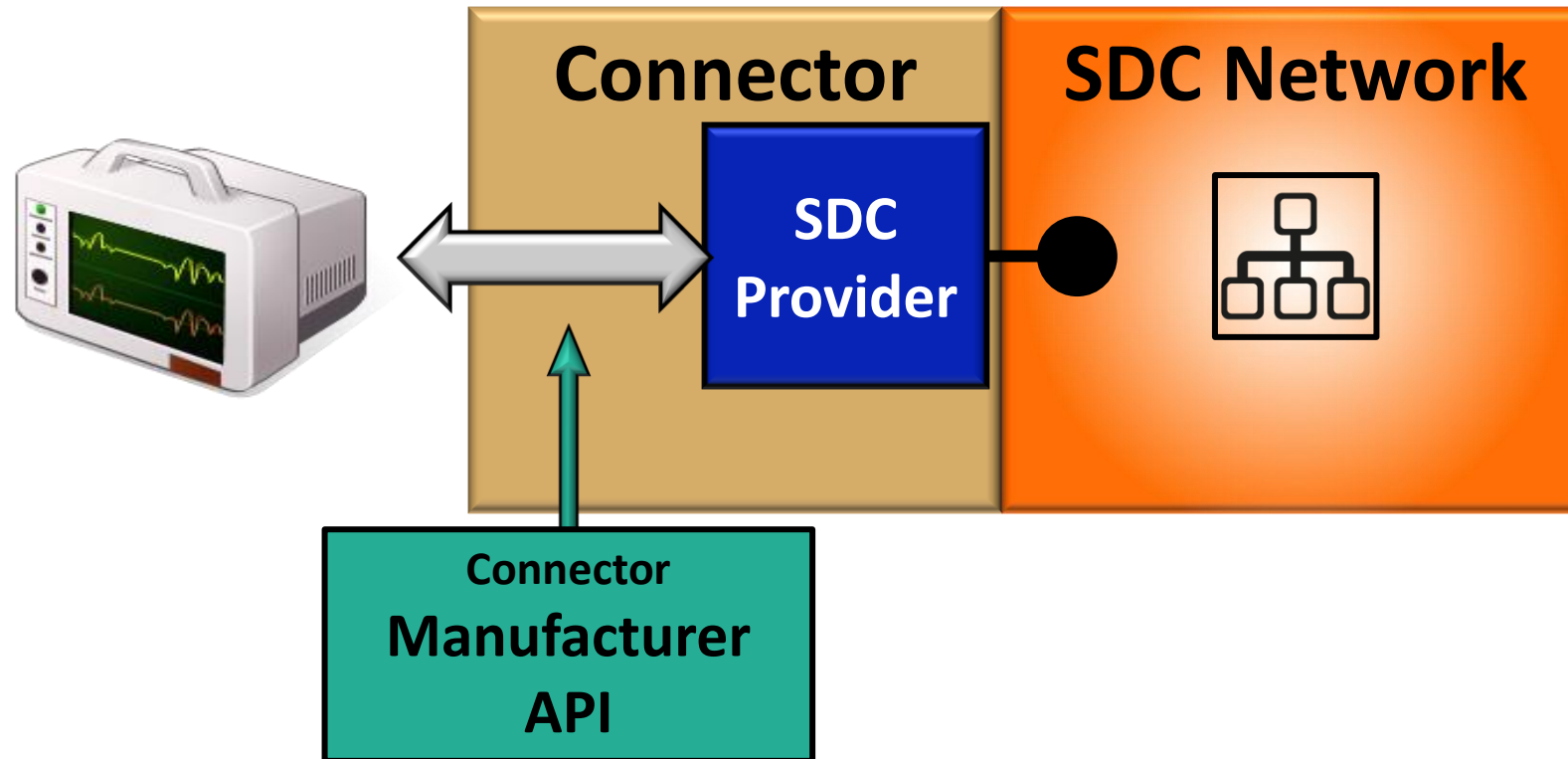
- The concepts to migrate your device to SDC
- How to map data to and from SDC
- About some pitfalls
- Implementation – Part 2



SDC Migration



SDC Migration



SDC Migration – Datamodel Translation

- **Most manufacturers use their own internal data-representation and already provide an API to remotely interact with their devices**
- **A translation (mapping) between the manufacturers data-representation and SDC has to be implemented**
- **What kind of data and how it actually needs to be represented to other SDC Participants is part of modelling your MDIB (see DevSpecs)**

SDC Migration – Message Exchange Pattern Mapping

- **Some manufacturer protocols only support certain kind of Message-Exchange-Patterns(MEP)**
 - F.e. Only Request-Response, no „push-updates“
 - Full-State Updates (periodically)
- **SDC makes use of the Publish-Subscribe MEP**
 - Participants can subscribe to certain values and are notified as soon as this value changes
 - They no longer need to periodically pull the data to see if something has changed
- **For some Manufacturers the need of additional „MEP mapping“ may arise inside the Connector**

Migration Pitfalls (may not concern you)

○ **Datatypes: Roundtrip errors**

- Be aware of roundtrip errors when translating data from and to SDC and using C/C++ casts especially when casting from / to different ranges. Example:
 - „Legacy“ Bus-System represents value some kind of „QualityIndex with 1byte (0-255)
 - Manufacturer API says: „This represents a value between 0 and 1.“
 - Problems start if these values will later be settable and set by other SDC-Participants and be validated

○ **MEP: As described above some device protocols update their data periodically. Do not just forward this data as an MDIB update unless you want to trigger „periodic EpisodicReports“**

- Every MDIB Update sends out an EpisodicXYReport (EpisodicMetricReport, EpisodicAlertReport, etc.)
- If you just forward the periodic device updates to the MDIB you will trigger these episodic reports **periodically**. That is not prohibited but may be unnecessary network and participant load
- A better solution would be to check if something has actually changed to justify the EpisodicReport

Implementation - Part 2

○ Learn:

- The concepts to migrate your device to SDC
- How to map data to and from SDC
- About some pitfalls
- **Implementation – Part 2**



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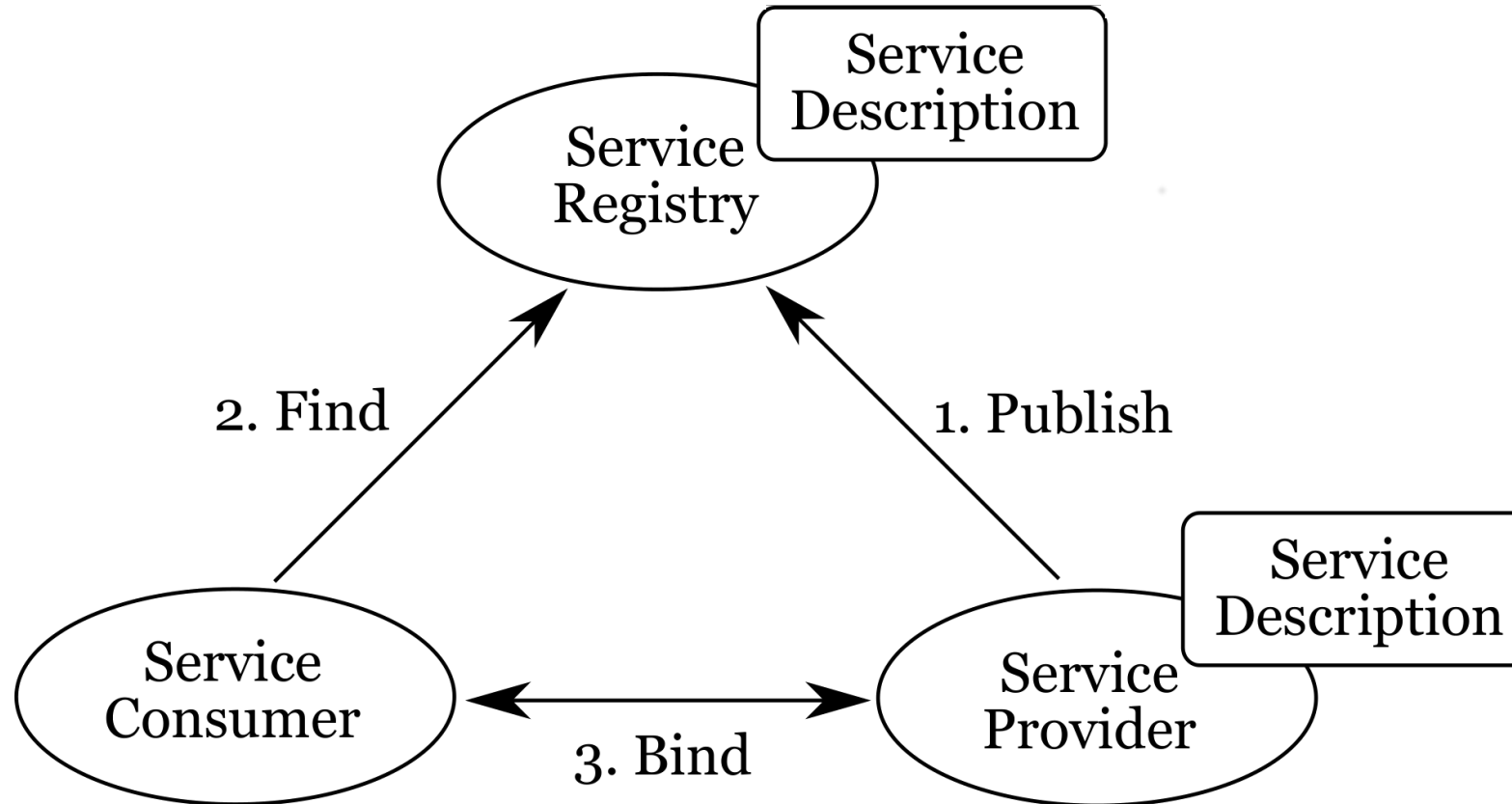
Questions?



Any Questions?

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SOA – Service oriented architecture



MDIB

