

# SDC Overview

Service-oriented Device Connectivity –  
A quick walkthrough



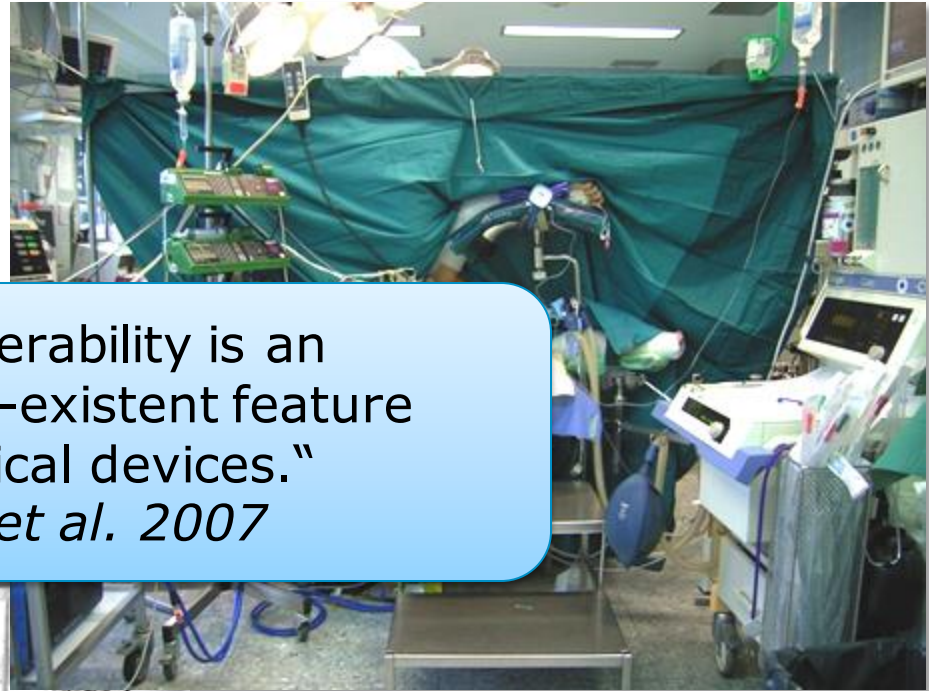
# History and origins

## The operating theatre – past and nowadays

1956



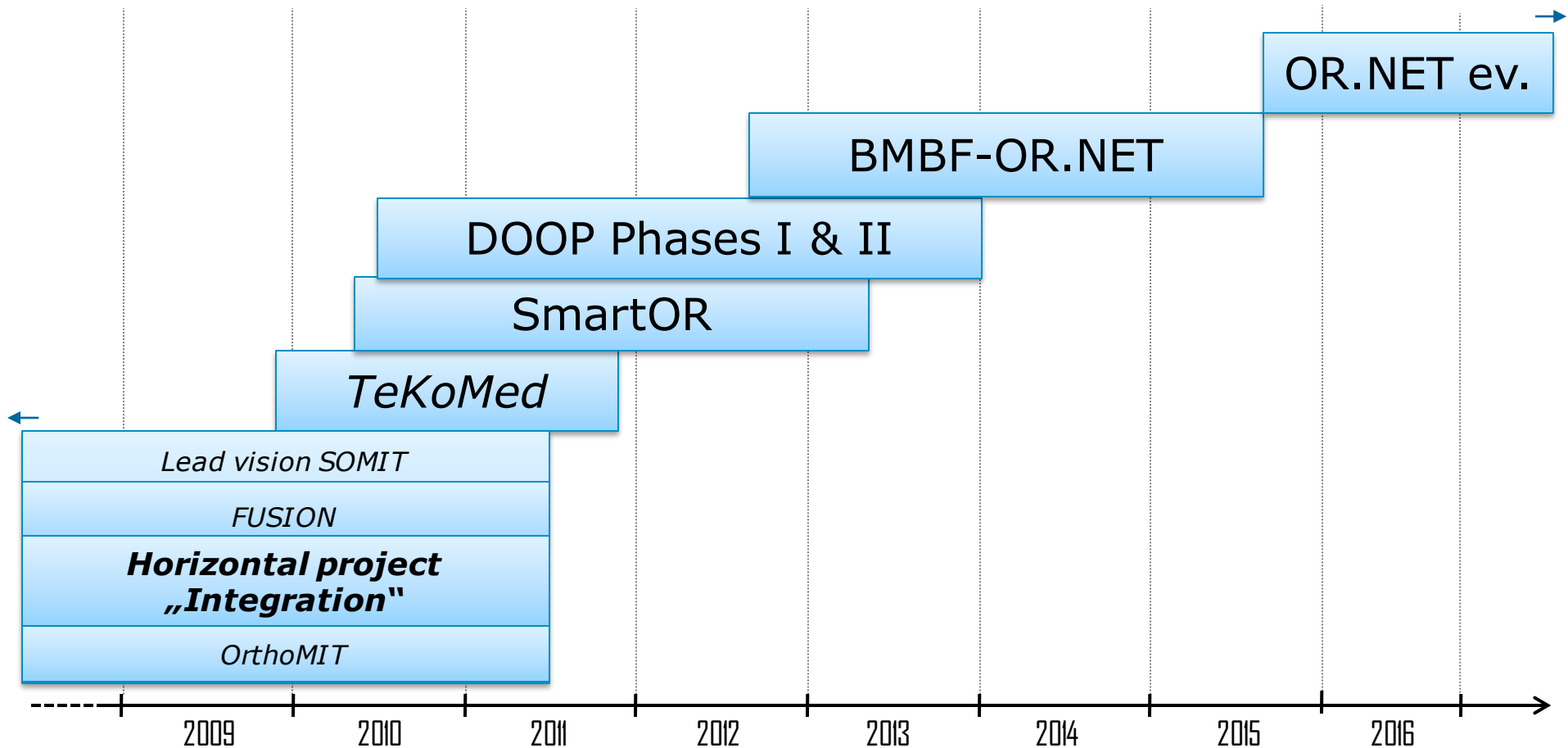
„Interoperability is an almost non-existent feature of medical devices.“  
*Lesh et al. 2007*



Today

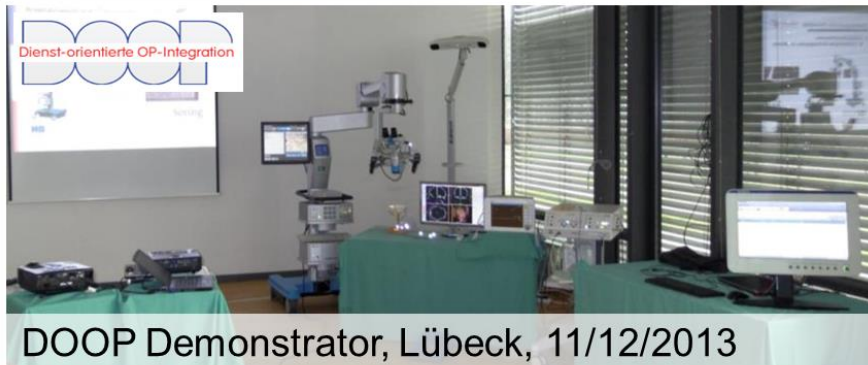
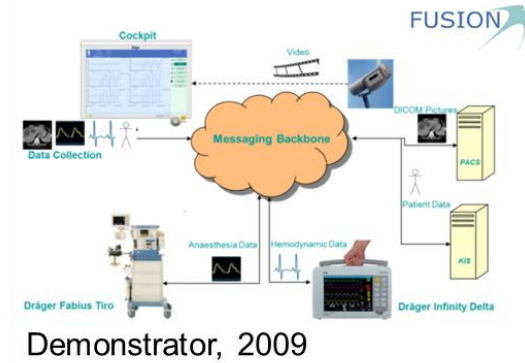
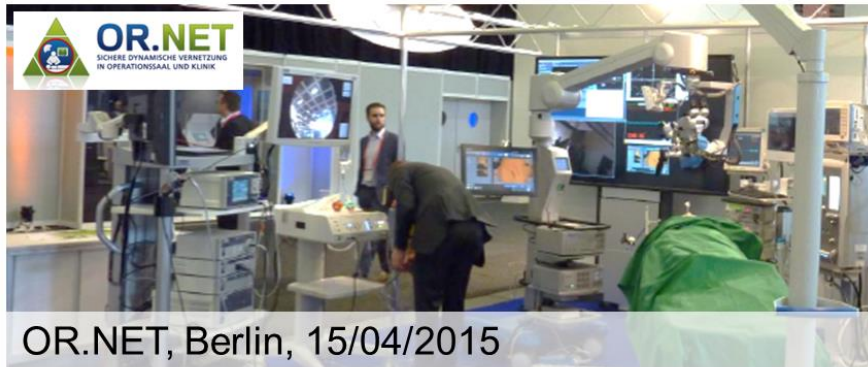
# History and origins

## Research and development activities

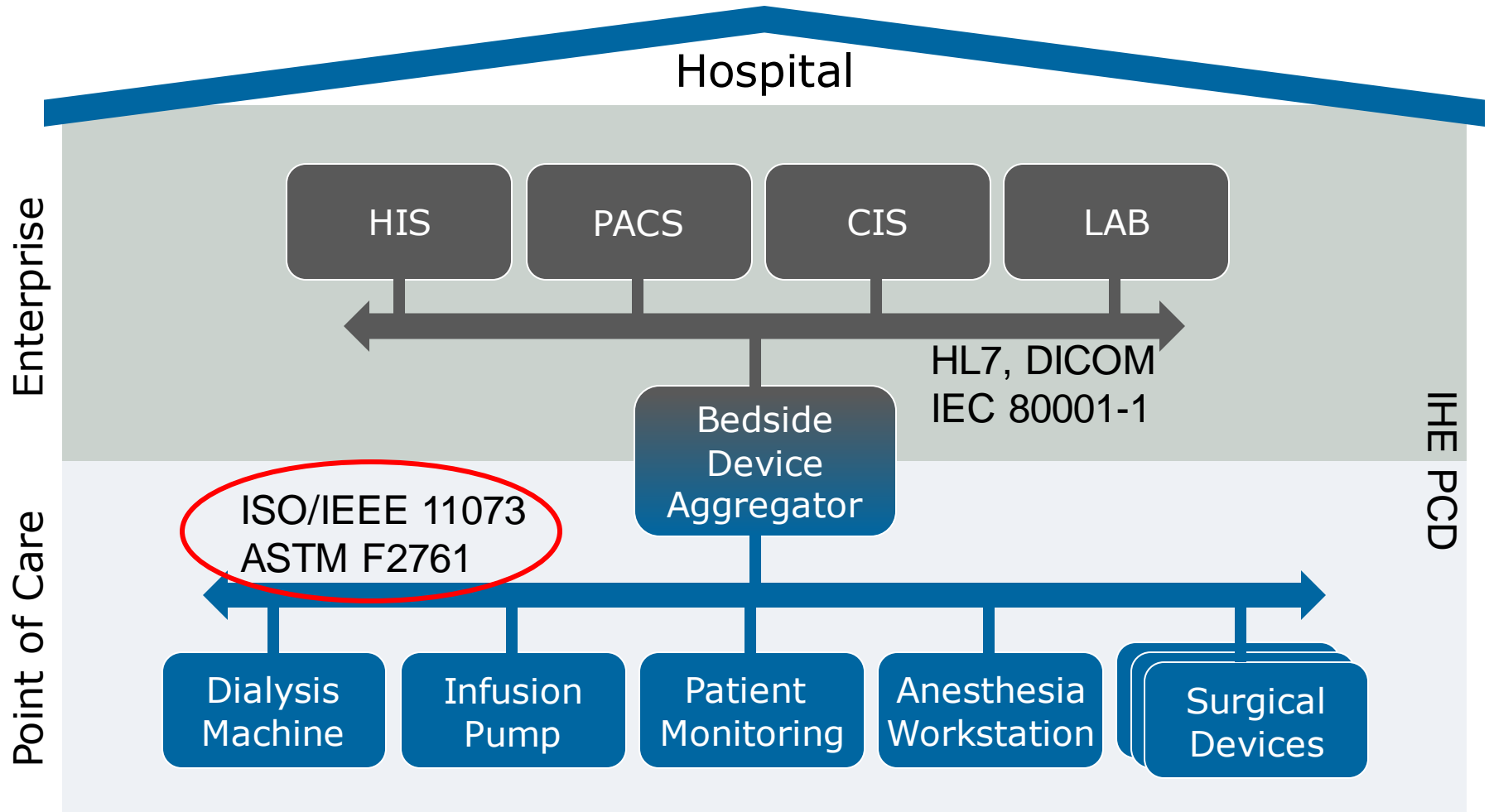


# History and origins

## Public demonstrations



# SDC Classification



# SDC

## Design goals

Interoperable medical devices in clinical environments  
with the capability to

exchange physiological  
and technical  
information between  
communication endpoints

safely control each  
other from remote

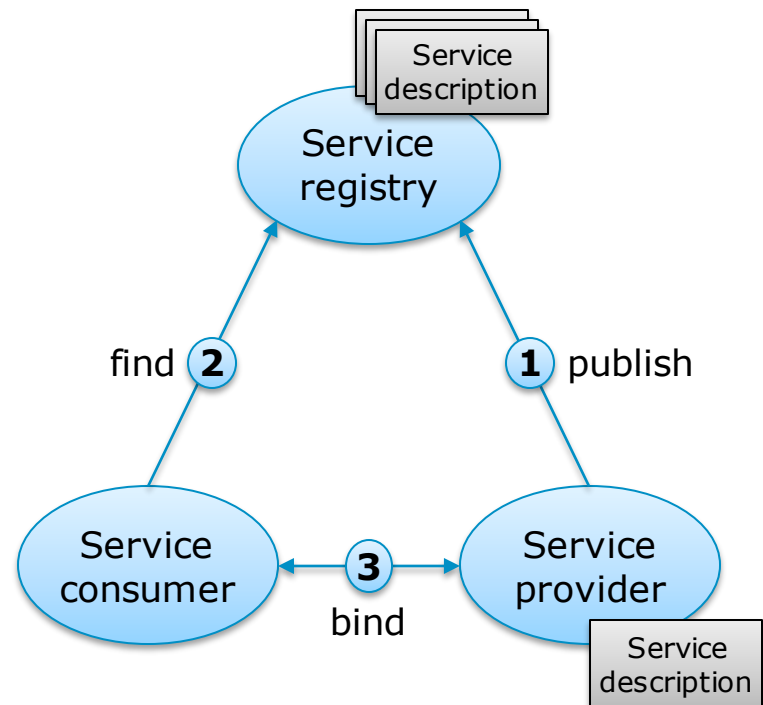
run without  
tight coupling

# SDC

## Conceptual model

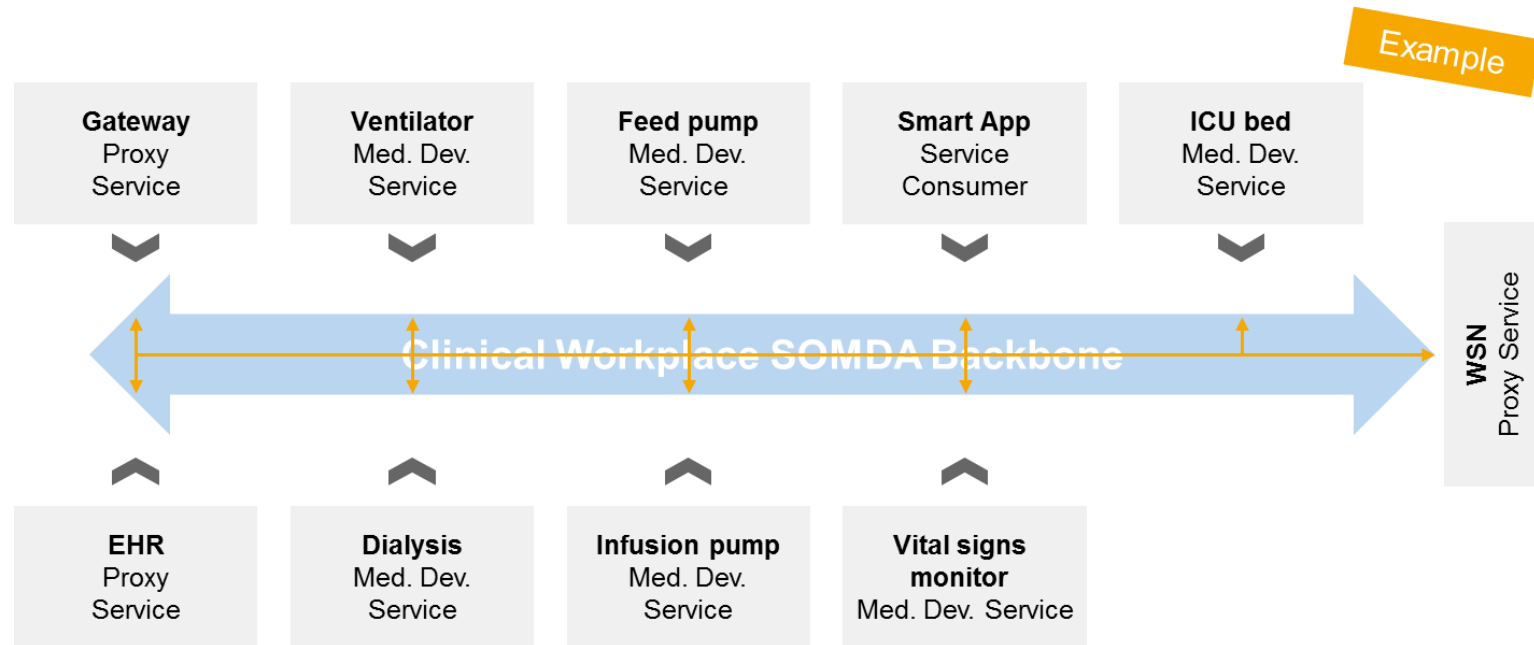
### SOMDA – Service-oriented Medical Device Architecture

- Based on enterprise SOA paradigm
- Difference
  - Safety
  - Dynamic device grouping
  - Influenced by regulatory affairs



# SDC

## SOMDA instance



Conceptual view of a SOMDA for a clinical workplace.

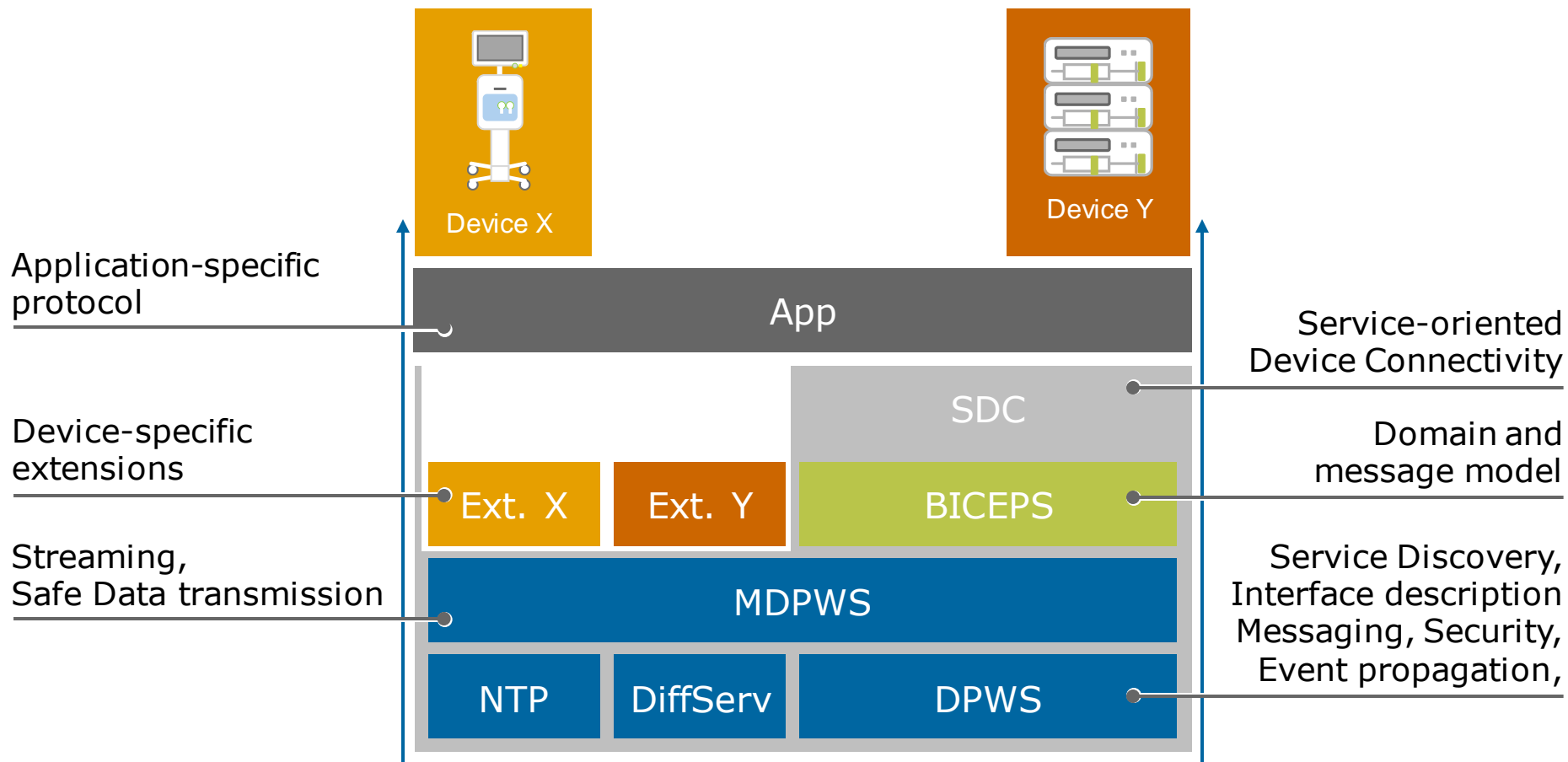


Concept of a clinical workplace SOMDA does **not** make any assumptions of the underlying network topology.



# SDC

## Layered model



# Standardization activities

## IEEE 11073

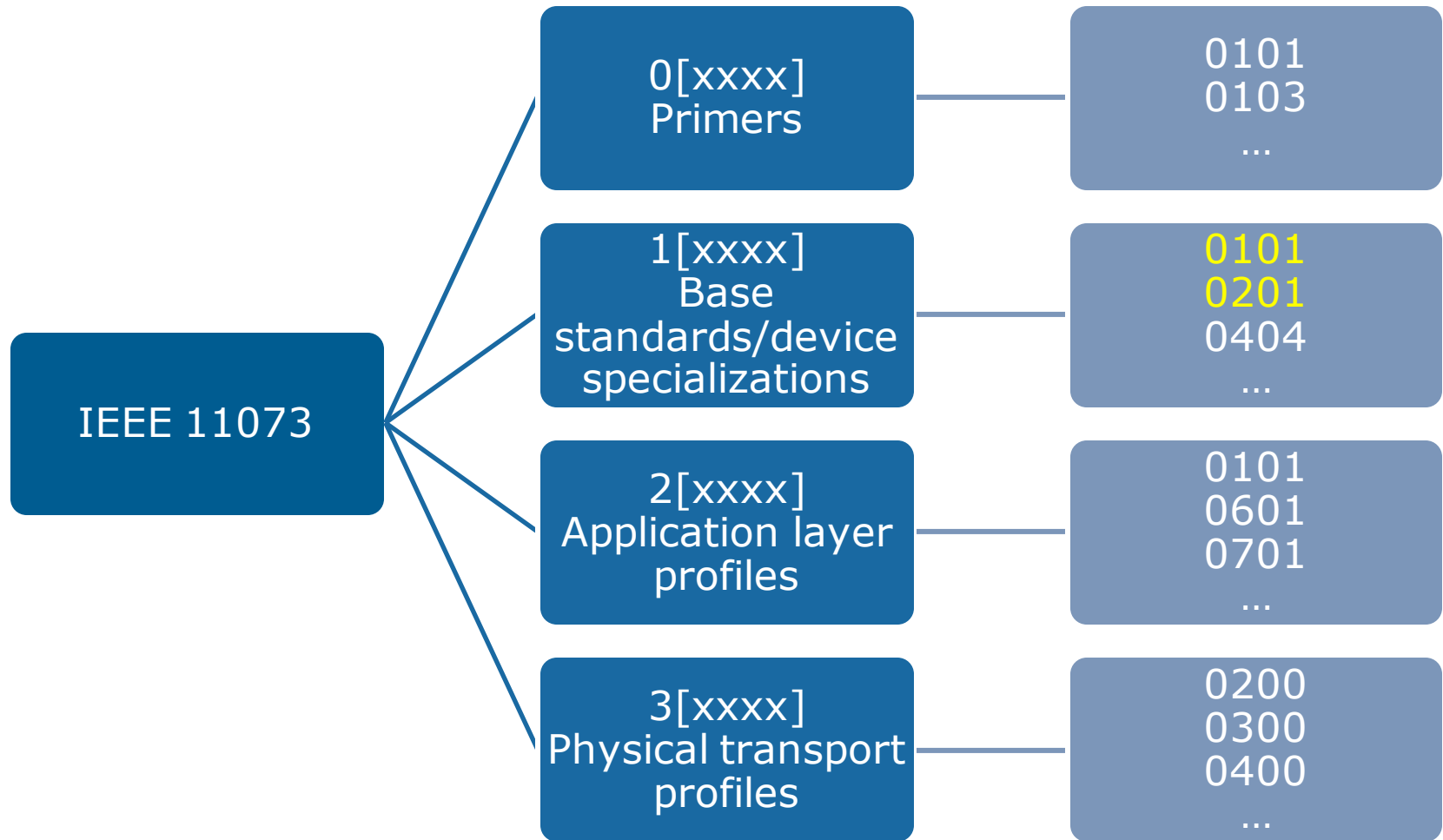
- IEEE = Institute of Electrical and Electronics Engineers
- Association of technical professionals with the objectives of “educational and technical advancement of electrical and electronic engineering, telecommunications, computer engineering and allied disciplines”.
- Example: IEEE 802.11, WLAN
- The IEEE also hosts a sequence of standards prefixed with 11073
- Those standards deal with medical device interoperability and efficient exchange of care device data



IEEE Headquarter in New York

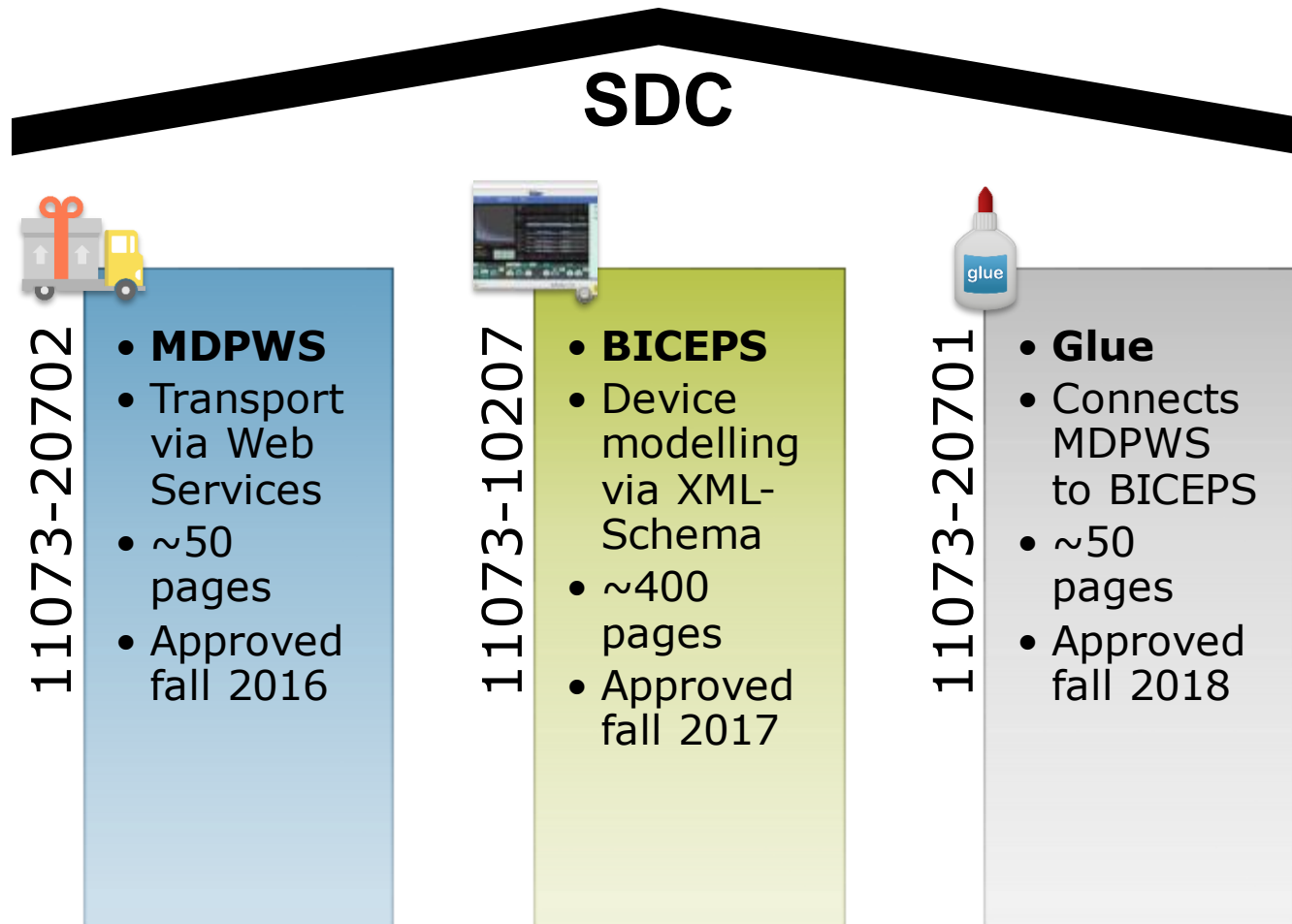
# Standardization activities

## IEEE 11073



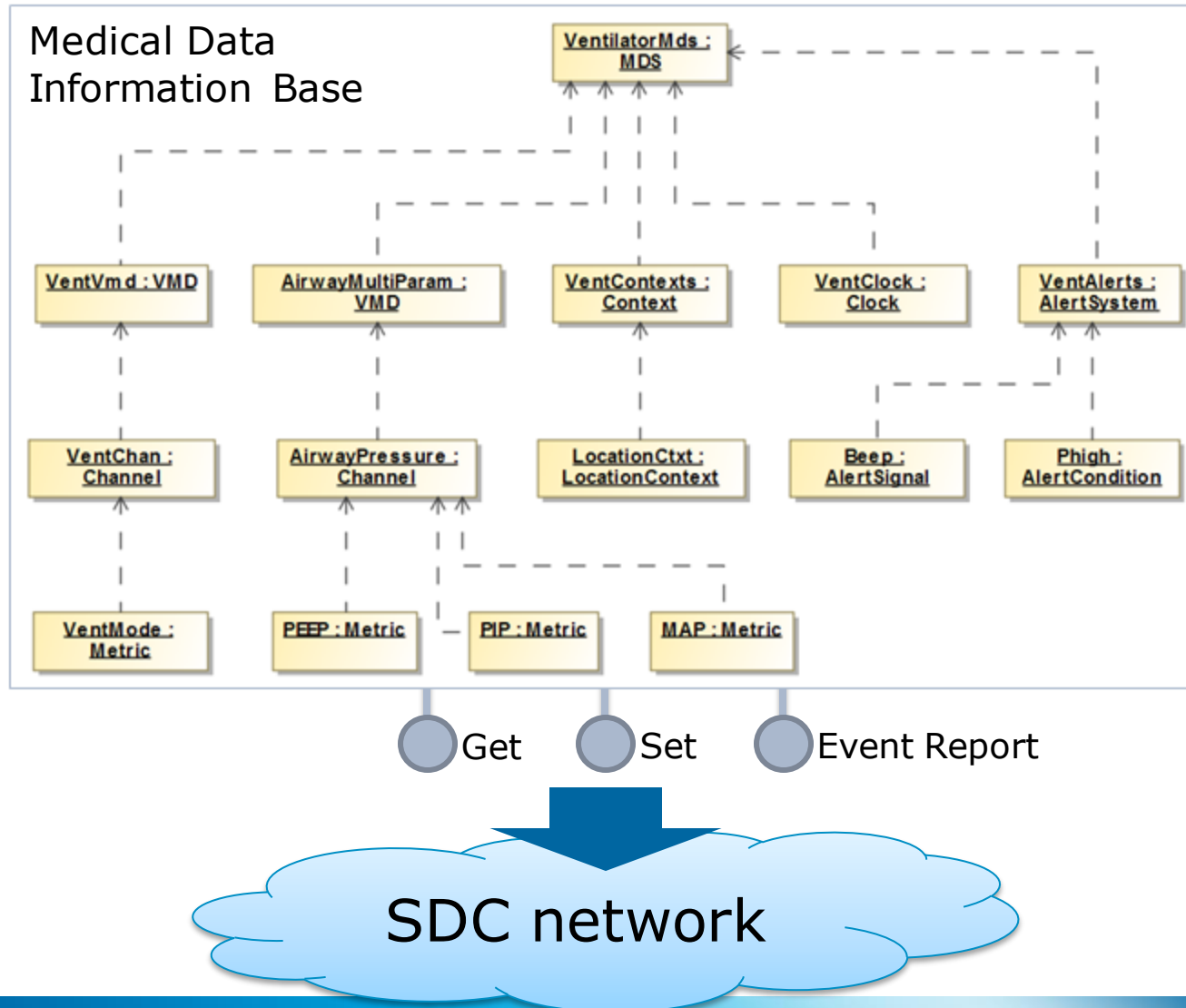
# Standardization activities

## Standardized SDC protocols



# General approach

## Medical data on the wire



# General approach

## Advanced topics

- DPWS
- Streaming
- Safety

MDPWS



- General approach
- Domain layer
- Message layer

BICEPS



- Numerics,
- Waveforms,
- Enumerations
- Strings

Metrics



- Condition and signals
- Alert signal delegation

Alert Systems



- Patient demographics
- Location information
- Device grouping

Contexts



- MDIB version
- Descriptor version
- State version

Versioning



- Operation types
- Transaction pattern

Remote Control



- Time synchronization
- Battery status

Clock & Battery



- Model binding
- Security & trust
- QoS

SDC Glue



# Thank you for your attention!

Contact information

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