

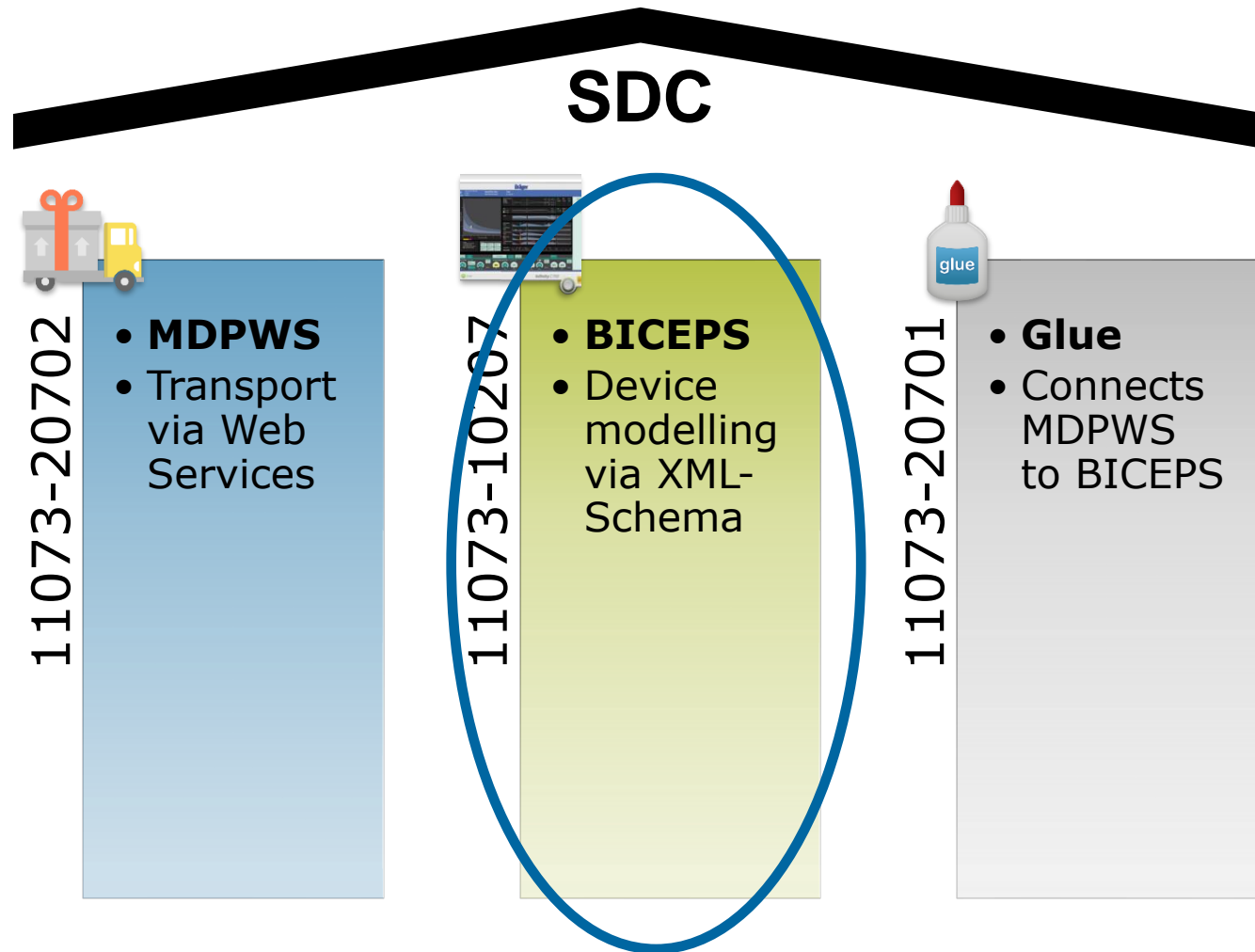
# BICEPS Versioning



Revision 1,  
2018-10-02



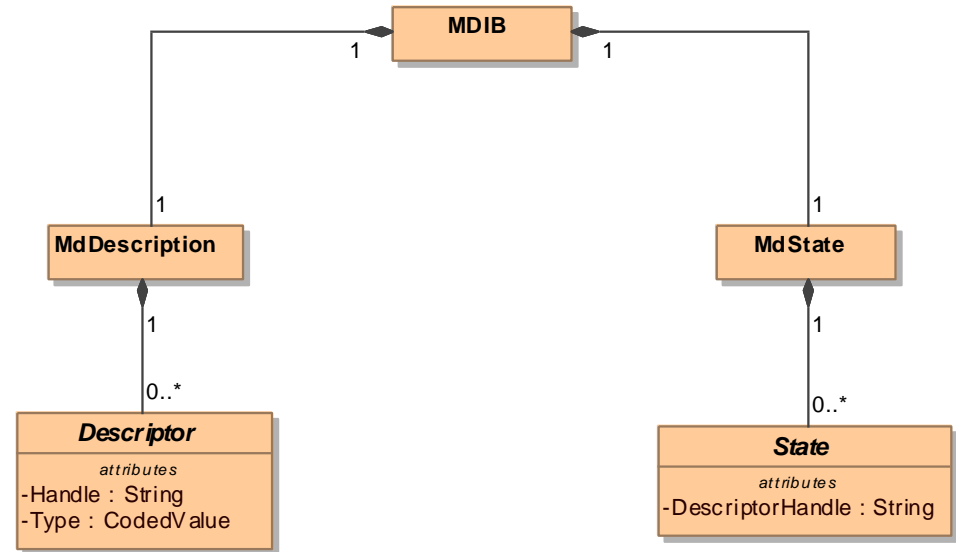
# Orientation



# Versioning

## Versioned objects

- MDIB Version
- MdDescription Version
- MdState Version
- Descriptor Version
- State Version



In common:

- VersionCounter: a non-negative number that is incremented by 1 with every *object change*, and never be decremented
- Initial value is 0
- What is an object change? → Next slide

# Versioning

## Scope of an object change

Consider an XML element

- A change is defined as the modification of
  - an attribute value of the XML element,
  - the XML element value, or
  - a child element of the XML element
- The rules for a change do not apply if
  - a version-related attribute is modified, or
  - the object is one of the following
    - pm:Mdib
    - pm:MdDescription, pm:MdState
    - child XML elements that are derived from pm:AbstractDescriptor; those are considered isolated from changes of the parent object

# Versioning

## MDIB version

- MDIB Version is assigned to any object in the MDIB. It is a triple that consists of
  - Version: of type VersionCounter ([0,n])
  - SequenceId: of type URI
    - A globally unique identifier to designate a sequence of related changes in the MDIB
    - A sequence reset is indicated by creating a new SequenceId URI
    - A sequence reset is applied, e.g., on system reboots or network connection losses
    - On a sequence reset it is allowed to reset any VersionCounter
  - InstanceId: optional, non-negative number
    - A number that is increased by 1 with every system reset, e.g., reboot
    - Persistence required, therefore optional
    - Facilitates temporal relation between sequences
    - After an instance has been incremented it is allowed to reset any VersionCounter

# Versioning

## MdDescription, MdState, Descriptors, States

- Any of MdDescription, MdState, Descriptors, and States use a single pm:VersionCounter attribute to designate their version
- The MDIB Version is assigned implicitly to any of these objects

# Versioning

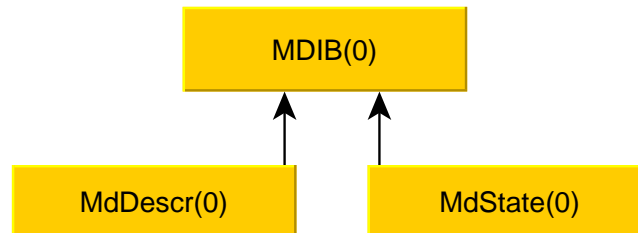
## Conditions for version incrementation

- Descriptor: on *change* or if a child descriptor is inserted or deleted
- State: on *change*
- MdDescription: on any descriptor *change*
- MdState on any state *change*
- MDIB: on any MdDescription or MdState *change*

# Versioning example

## Initial MDIB

- Simple MDIB containment tree in initial configuration
- Versions are attached in brackets

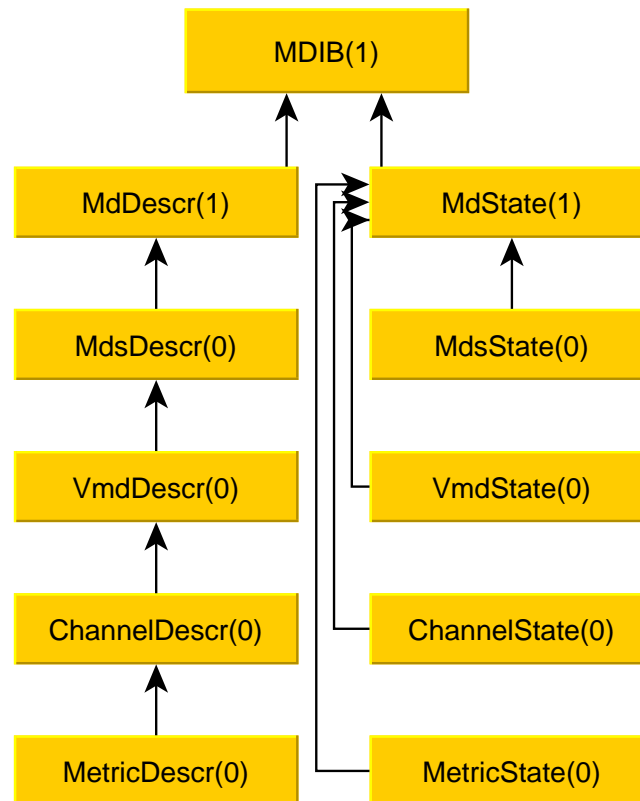




# Versioning example

## Object set insertion

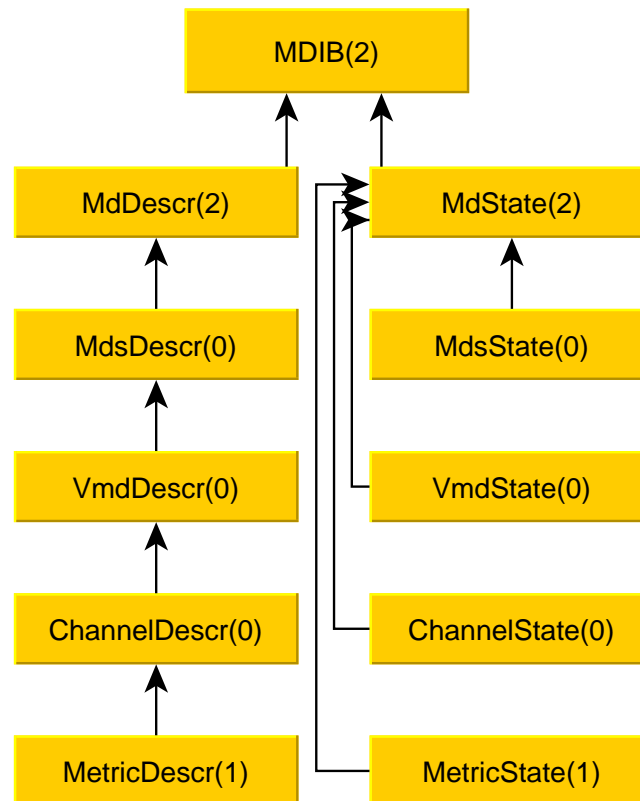
- A set of objects is inserted



# Versioning example

## Descriptor modification 1/3

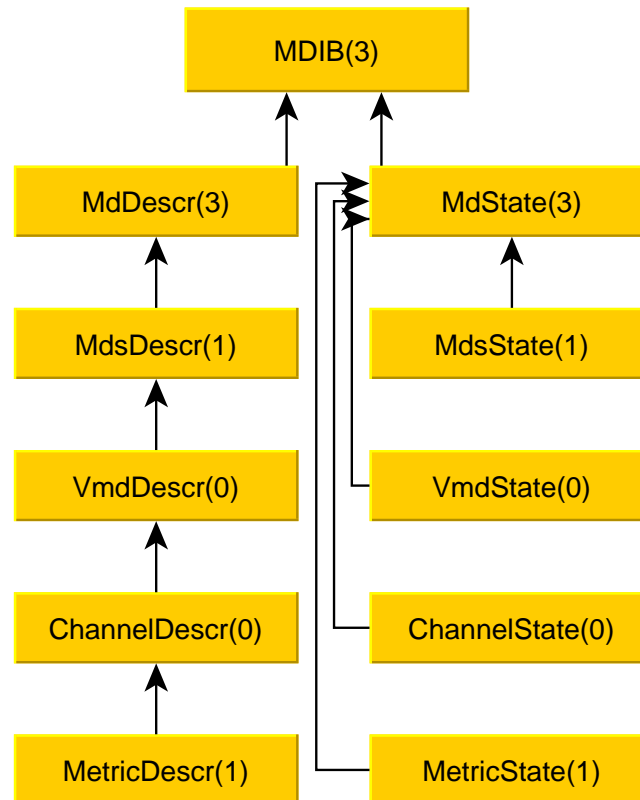
- MdsDescr is changed
- MdsState changes at the same time, because descriptor version is incremented



# Versioning example

## Descriptor modification 2/3

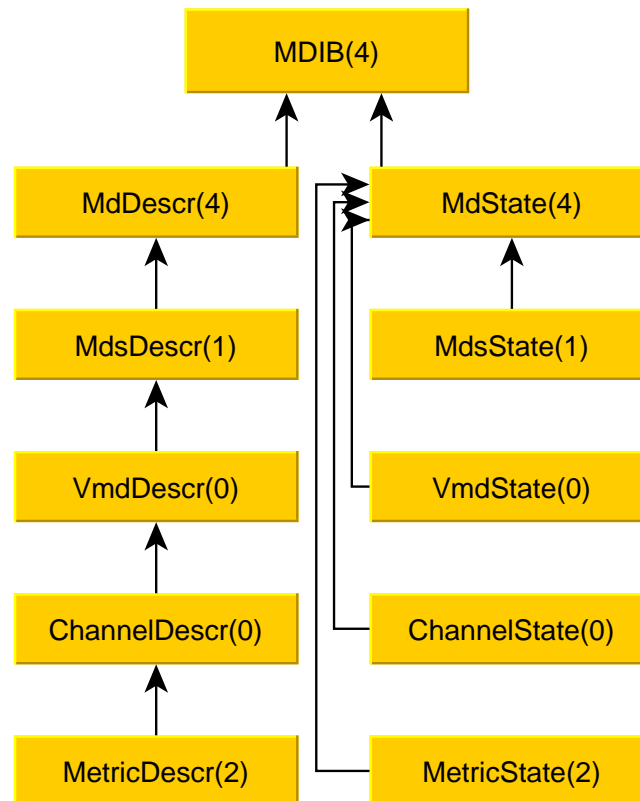
- MetricDescr is changed again



# Versioning example

## Descriptor modification 3/3

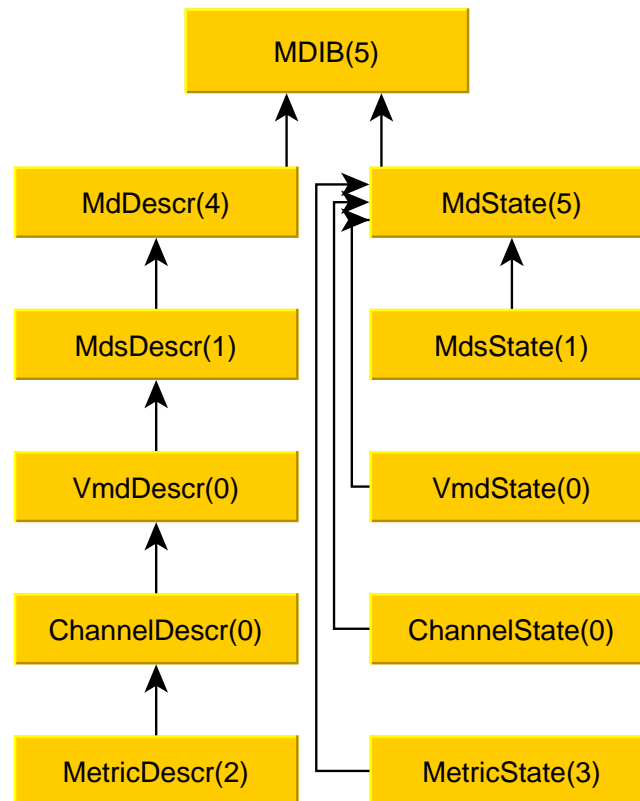
- MetricDescr is changed again



# Versioning example

## State modification

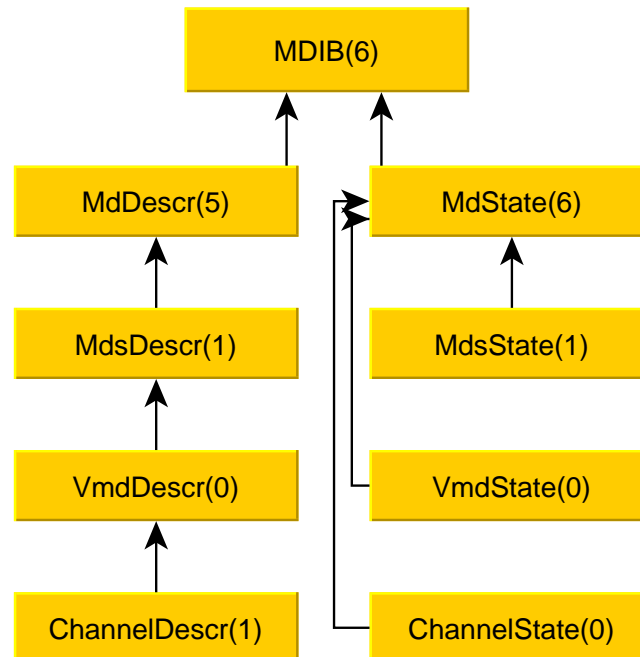
- MetricState is changed
- Version of MetricDescr remains the same



# Versioning example

## Deletion of object from containment tree

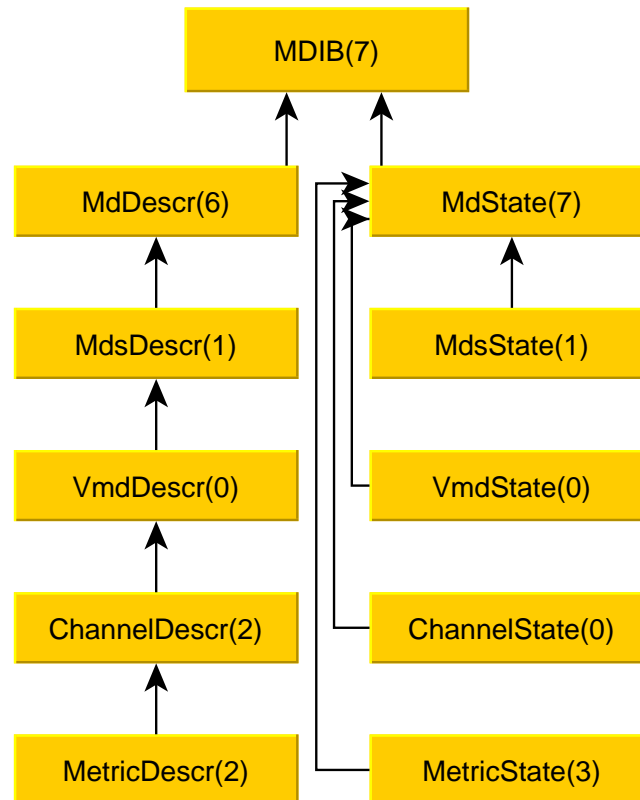
MetricDescr is deleted plus the corresponding MetricState



# Versioning example

## Re-insertion of object into containment tree

MetricDescr and MetricState are inserted again



# Thank you for your attention!

Contact information

David Gregorczyk

[david.gregorczyk@draeger.com](mailto:david.gregorczyk@draeger.com)