



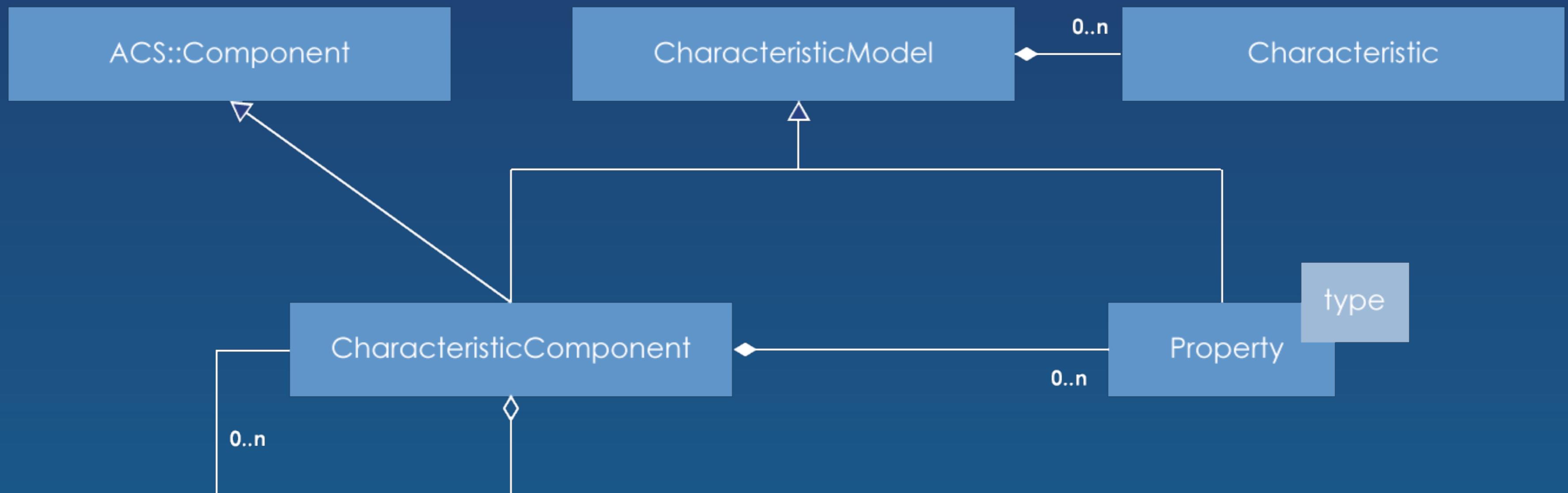
ALMA Common Software

Basic Track

Characteristic components
BACI properties and DevIO classes



Components and characteristics components





Components and characteristics components

- ❖ Object, can be a distributed object
- ❖ Executed within a container running on a given machine
 - ❖ Container spawns threads for component execution
- ❖ A Component is the natural base class for physical and logical “devices”
- ❖ Follows a component lifecycle
- ❖ A characteristic component aggregates BACI properties of different data types
 - ❖ Characteristics: static data store in the CDB
 - ❖ units, default values, monitor*, alarm*, archive*
 - ❖ Abstraction of hardware devices



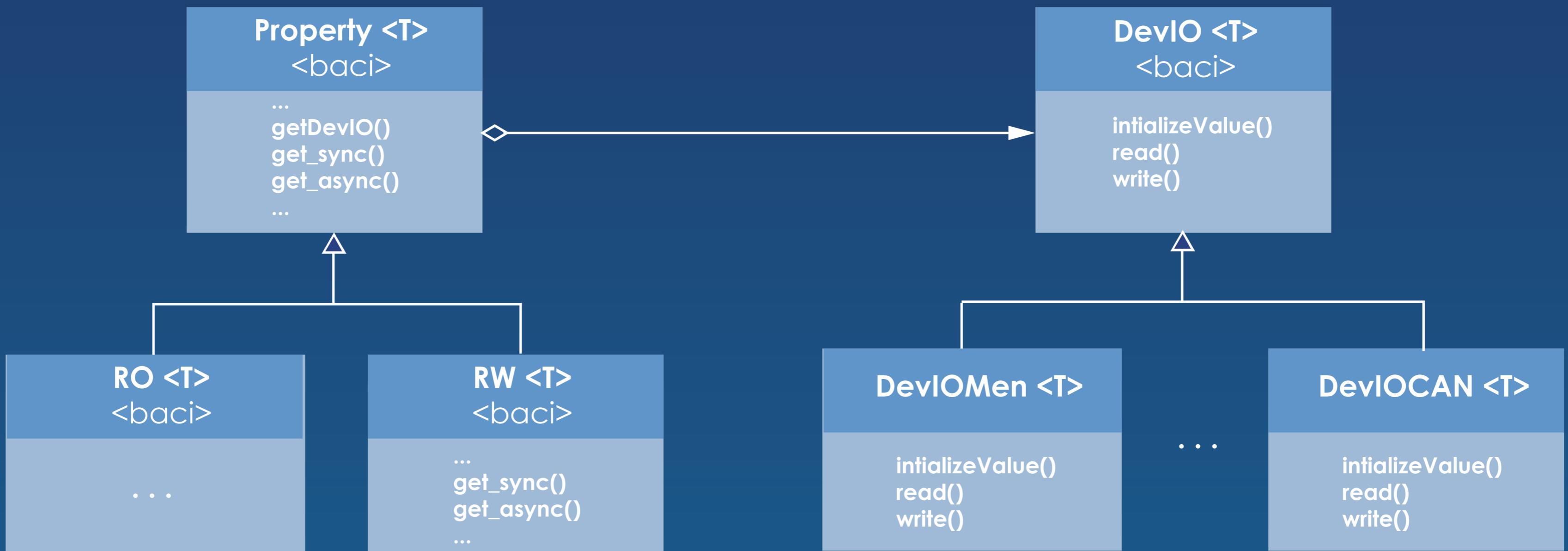
BACI property

- ✧ It is an statically defined item
- ✧ It has a value and attributes
- ✧ The value is strongly typed
- ✧ Only basic types are available
 - ✧ double, long, string, pattern, enum, longSeq
 - ✧ limited unsigned support!
- ✧ Read-only (RO) and read-write (RW) access
- ✧ Defines a C++ interface, which is extended by developer
 - ✧ Developer implements functions read() and write() functions
- ✧ Combines value(s) with “attributes”
 - ✧ Description
 - ✧ Unit
 - ✧ Monitoring parameters
 - ✧ Alarms thresholds



BACI property (continued)

- ✧ All properties have the same attributes!
 - ✧ This cannot be modified
- ✧ Get / set methods
 - ✧ Synchronous and asynchronous
- ✧ Value monitoring
 - ✧ Interval
 - ✧ On change
 - ✧ Keeps history (last 10 values)
- ✧ Value archiving
 - ✧ Same as for monitoring
- ✧ Alarms build-in





DevIO classes

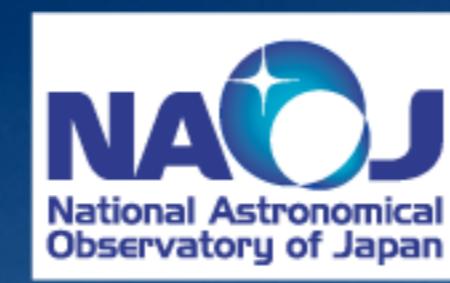
- ✧ Provides the “value” part in BACI properties
- ✧ Can be extended for real hardware
- ✧ Can be extended for simulation purposes (f.i. DevIOMem)
- ✧ Does not prevent race conditions
- ✧ Does not take care of device init, etc.
- ✧ Does not do error handling when hardware fails
- ✧ Decouple software and hardware implementing a bridge pattern
 - ✧ `read()` / `write()` / `initializeValue()` methods can be overloaded



DevIO example class: DevIOMem

- ✧ Inherits from DevIO
- ✧ Useful for simulation and testing
- ✧ Implements read(), write(), initializeValue() methods
- ✧ Very flexible

Questions?



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