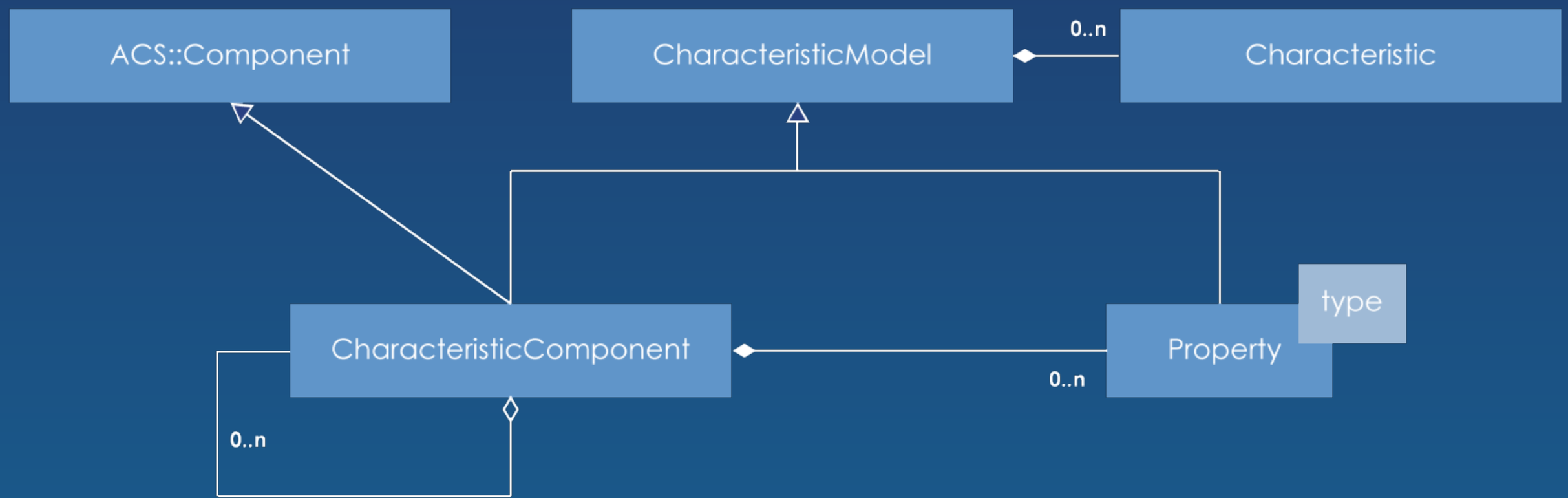
ALMA Common Software

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

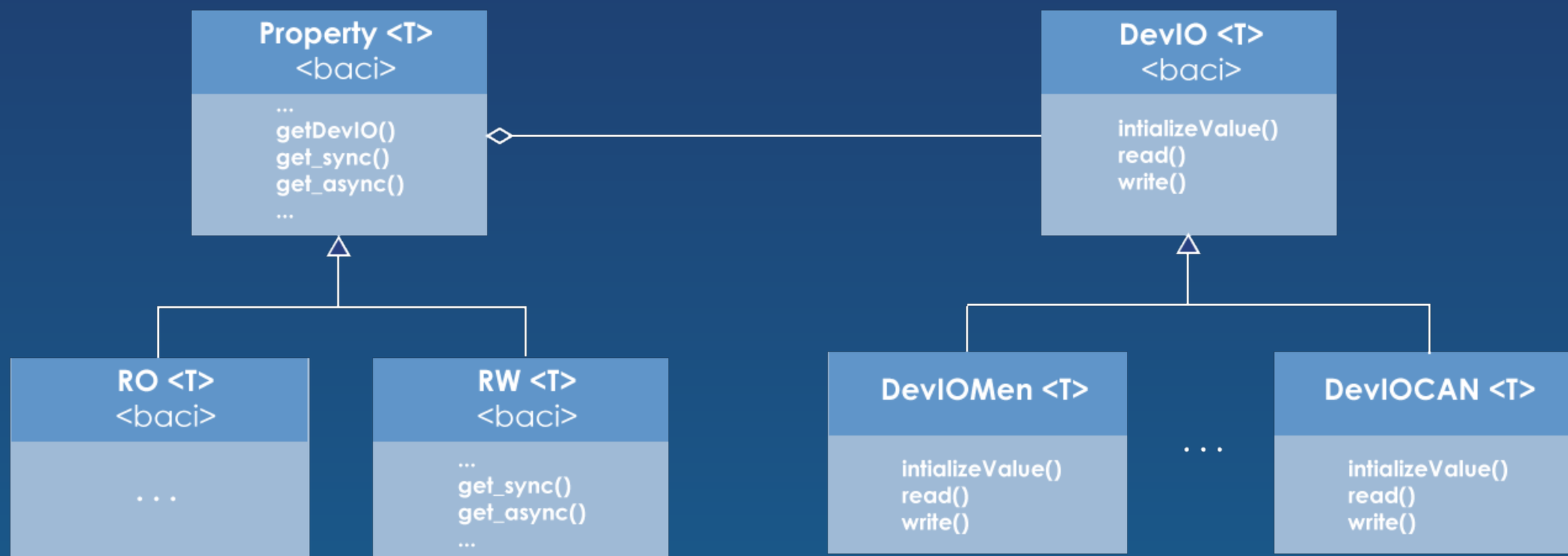
BACI property

- 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



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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