NMOS Device Capabilities Control overview and demonstration

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NMOS Device Capabilities Control

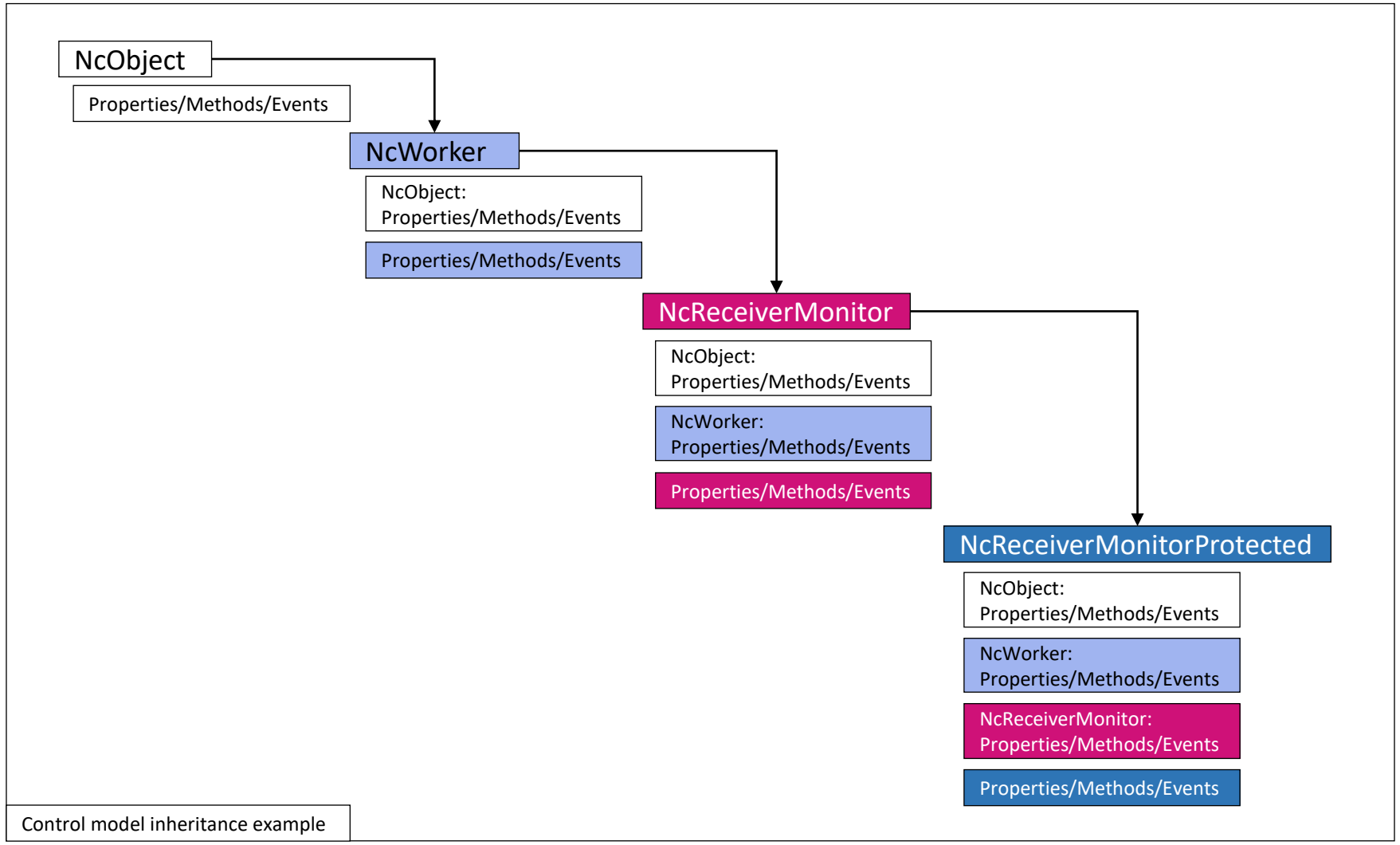
Establishes a **standard, interoperable** vision, philosophy and **platform** for device control within the **NMOS ecosystem** and community.

- Architecture and roadmap are governed not by a single company but by the NMOS community
- Will benefit from interoperability testing within the NMOS ecosystem
- Will benefit from a forum where end users and integrators can provide feedback about any concerns/improvements/integration issues they may have
- Will make resolving specific use cases open/visible instead of hidden behind NDAs

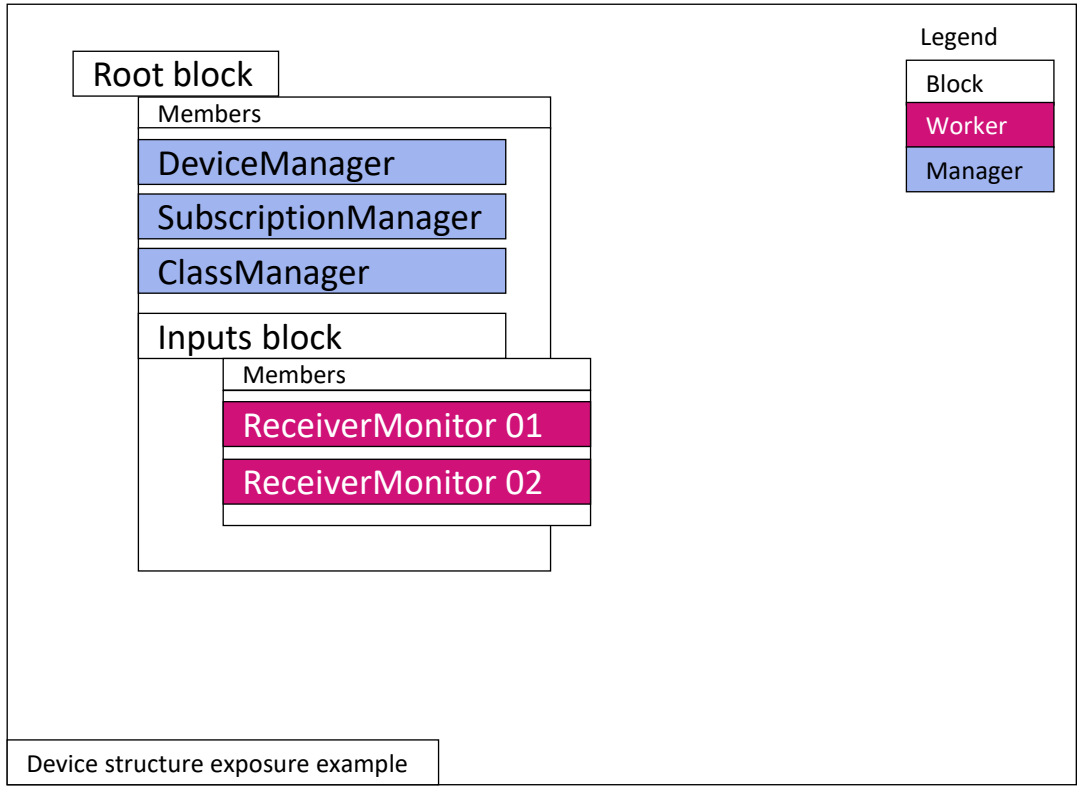
NMOS Control Specifications

		Implementation effort estimations
MS-05-01	**Architecture** • Vision • Philosophy • Overview	10%
MS-05-02	**Framework** • Modelling language & rules (webIDL) • Control classes portfolio • Device structure discovery	40%
MS-05-03	**Blockspecs** • Templates for feature components • Constraints for blocks • Components libraries	30%
IS-12	**Protocol** • Framework mapping to classes and datatypes • Commands and notifications • Transport and message encoding	20%

Framework (MS-05-02)



Framework (MS-05-02)



Framework (MS-05-02)

Other important facts and traits:

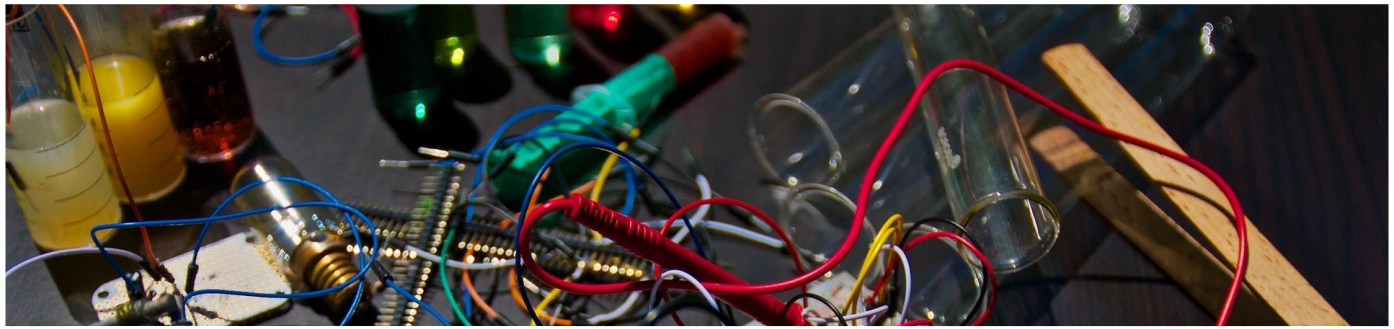
- Values of properties of any object can be retrieved and set (if write allowed) using the generic get/set methods defined for **NcObject**.
- Any object can be subscribed to for the **PropertyChanged** event.
- The full structure of a device is discoverable via querying members of nested **blocks**.
- The full set of control classes and data types being used is discoverable. This is achieved through methods defined in the **ClassManager** which all devices MUST implement.

Protocol (IS-12)

Is a **JSON** over **WebSocket** protocol which maps control classes and data types from the framework.

- Defines fundamental message types (CreateSession, Command, Heartbeat, Notification).
- Offers generic mapping to control classes and data types which, once implemented, can accommodate new classes and data types.
- Easy to inspect and debug with all major browsers offering WebSocket client extensions.
- Authentication and authorization are delegated to BCP-003-XX and IS-10.
- Easier for implementers to find developer talent.

MS-05 / IS-12 demo time



control

[Pebble Control (Preview)]

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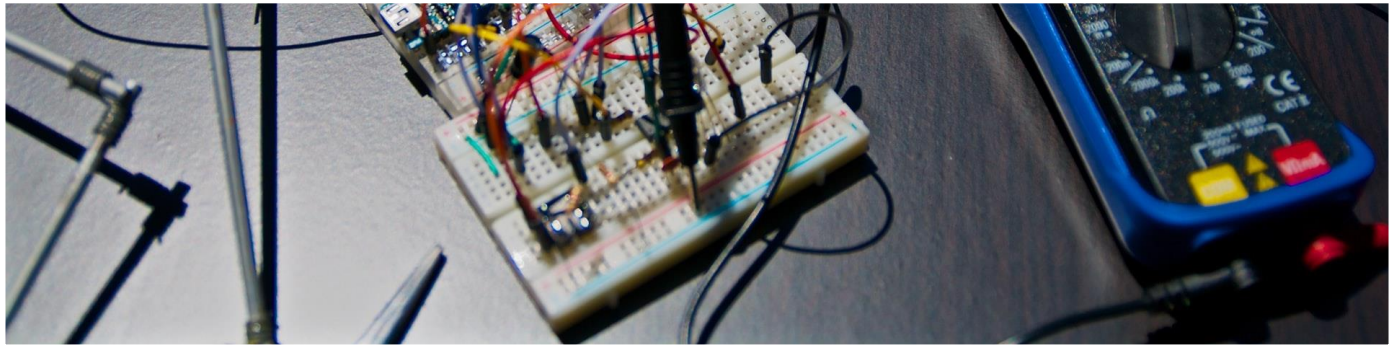
NMOS

[nmos-device-control-mock]



pebble

Blockspecs (MS-05-03)

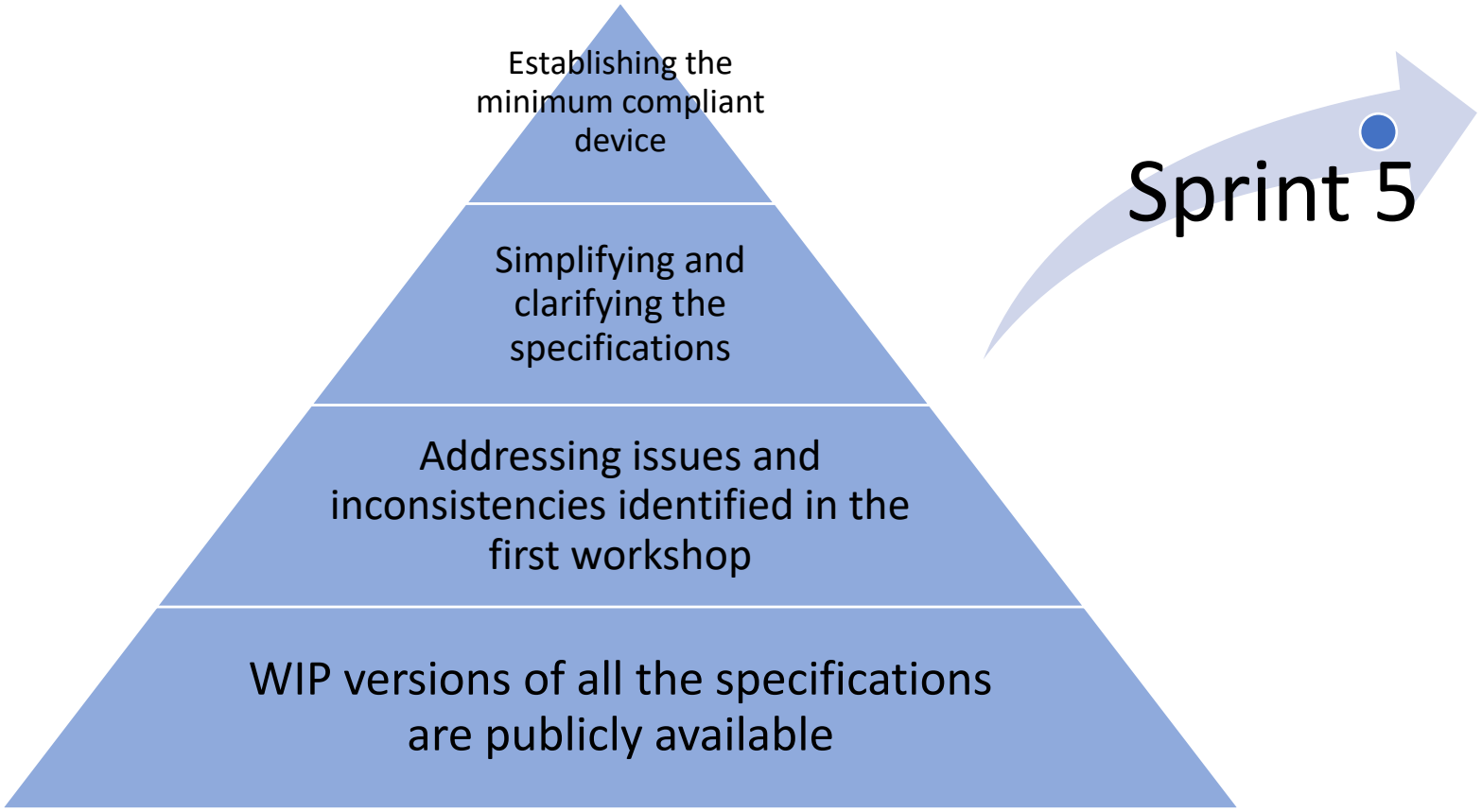
A **blockspec** is the formal specification of the contents of a particular type of block. In device design, blockspecs can be instantiated to form blocks.

- Blockspecs can apply to the root block or to a nested block.
- Blockspecs may define constraints for members and/or properties of members of the block.
- When a block instantiates a known blockspec it must signal the id and version of that blockspec in the **specId** and **specVersion** properties.
- Blockspecs allow for defining standard, reusable blocks which devices can implement in their structures.

Blockspecs (MS-05-03)


```
{
    "isRoot": true,
    "specId": "base-root",
    "specVersion": "1.0.0",
    "specDescription": "Blockspec for root block of minimum compliant device",
    "comment": "This blockspec definition must be implemented by any minimum compliant NCA device",
    "members": [
        {
            "role": "DeviceManager",
            "classId": [
                1,
                3,
                1
            ],
            "comment": "Device manager",
            "classVersion": "1.0.0"
        },
        {
            "role": "ClassManager",
            "classId": [
                1,
                3,
                2
            ],
            "comment": "Class manager",
            "classVersion": "1.0.0"
        },
        {
            "role": "SubscriptionManager",
            "classId": [
                1,
                3,
                4
            ],
            "comment": "Subscription manager",
            "classVersion": "1.0.0"
        }
    ],
    "lockable": true
}
```

Where we are



Stabilising the core framework and platform

What's coming

Sprint 6

- Implementers guide
- Final preparations for interops

Interop

- Convergence on framework and protocol
- Interop events planned (both virtual and face to face options are currently explored)

Standard components

- Encourage convergence on common feature sets
- Standard components library

Any Questions?

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