



Laboratoire d'Annecy-le-Vieux
de Physique des Particules



Control and Monitoring System for SuperNEMO Status report

Aussois, Jan 2014

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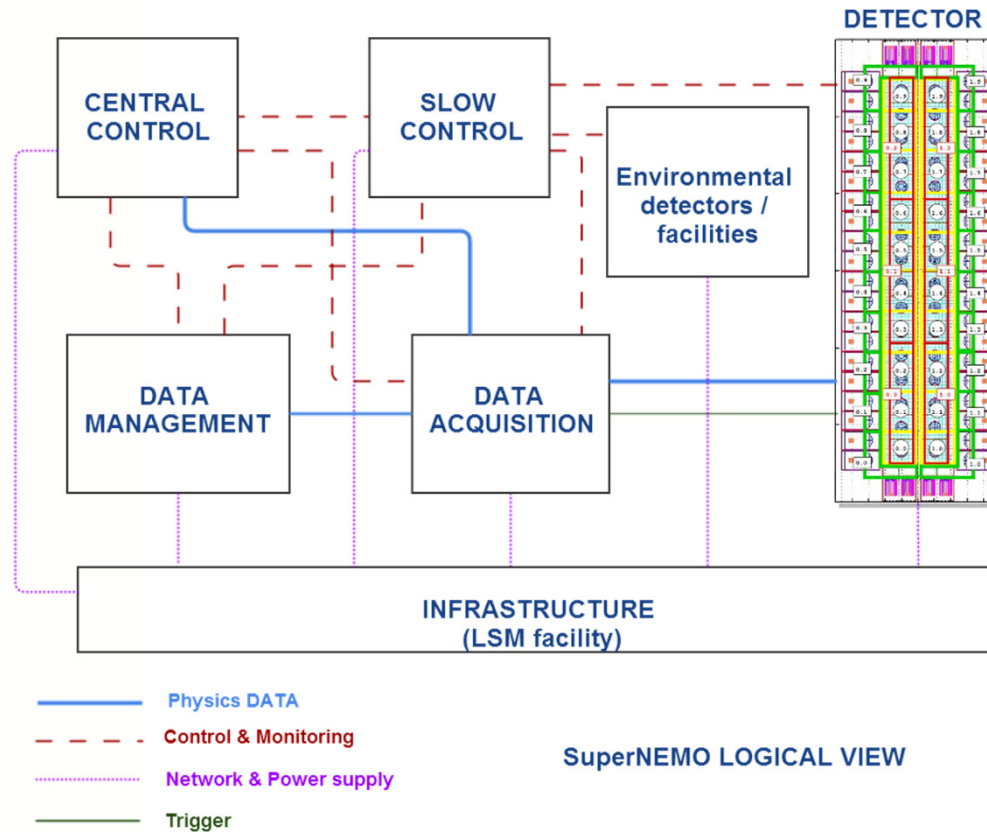


In2p3

outline

- New diagrams for Ctrl. & Mon. and top level entities
- ICD status
- First device integration : Coil Power supply
- Control & Monitoring System : what for who?
- Beyond control integration : general demonstrator behavior/operation discussions

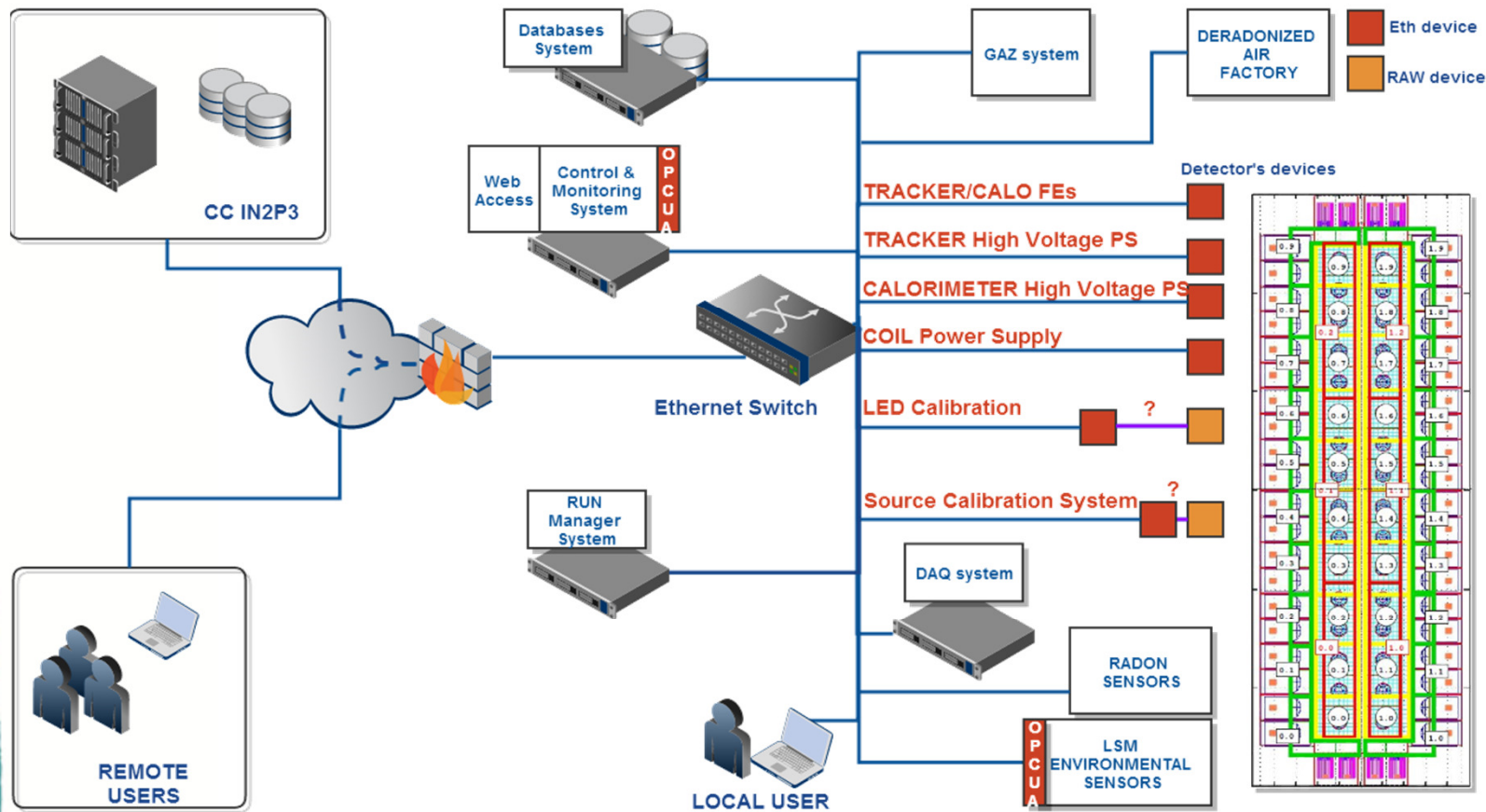
Top level entities are useful to define features !



It's a first draft,
It can be updated
Feel free to add any comment

- Could be part of the system engineering plan
- This will give top level interfaces and future data flow

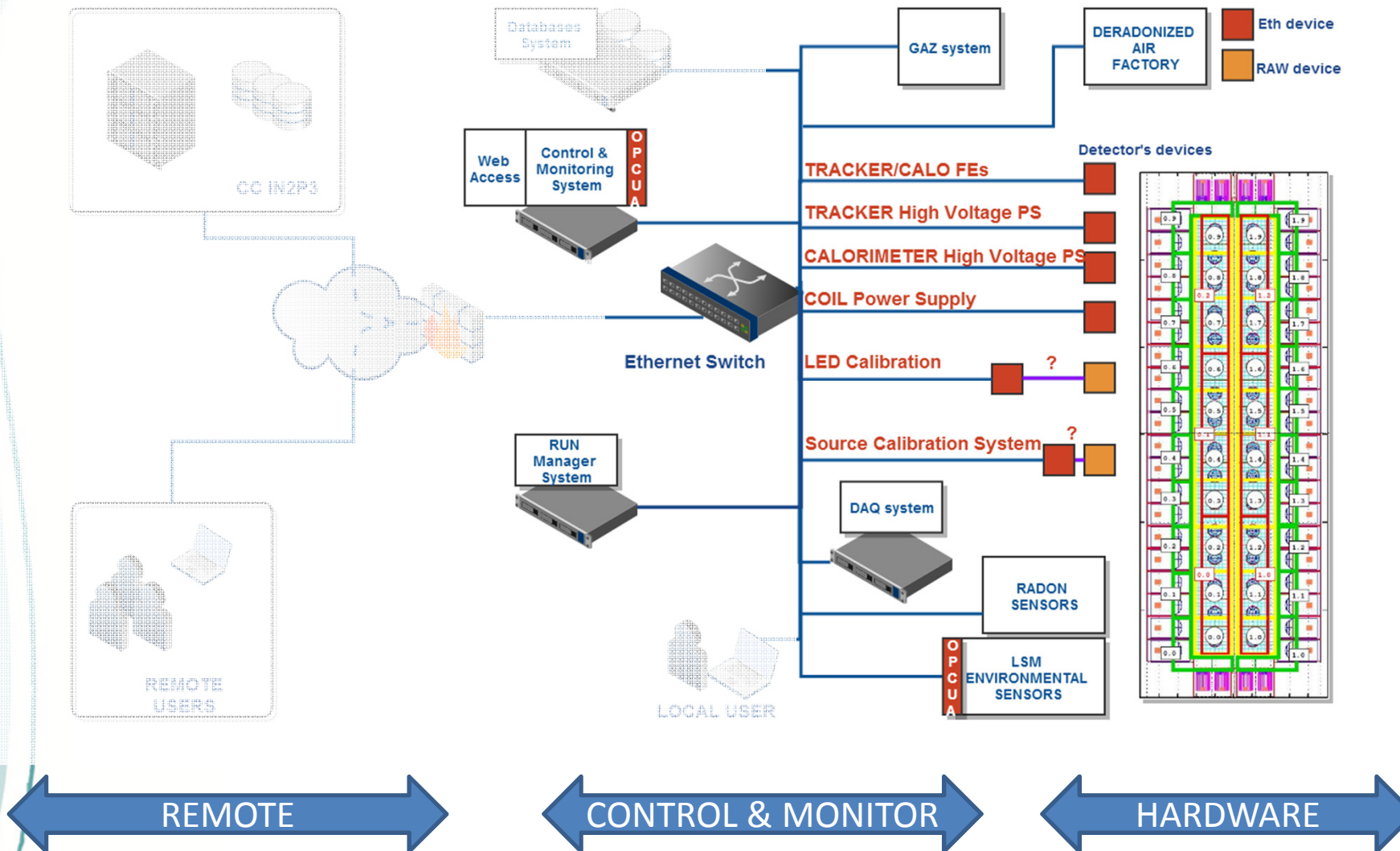
Reworked layout of SuperNEMO's global architecture



SuperNEMO NETWORK TOPOLOGY OVERVIEW



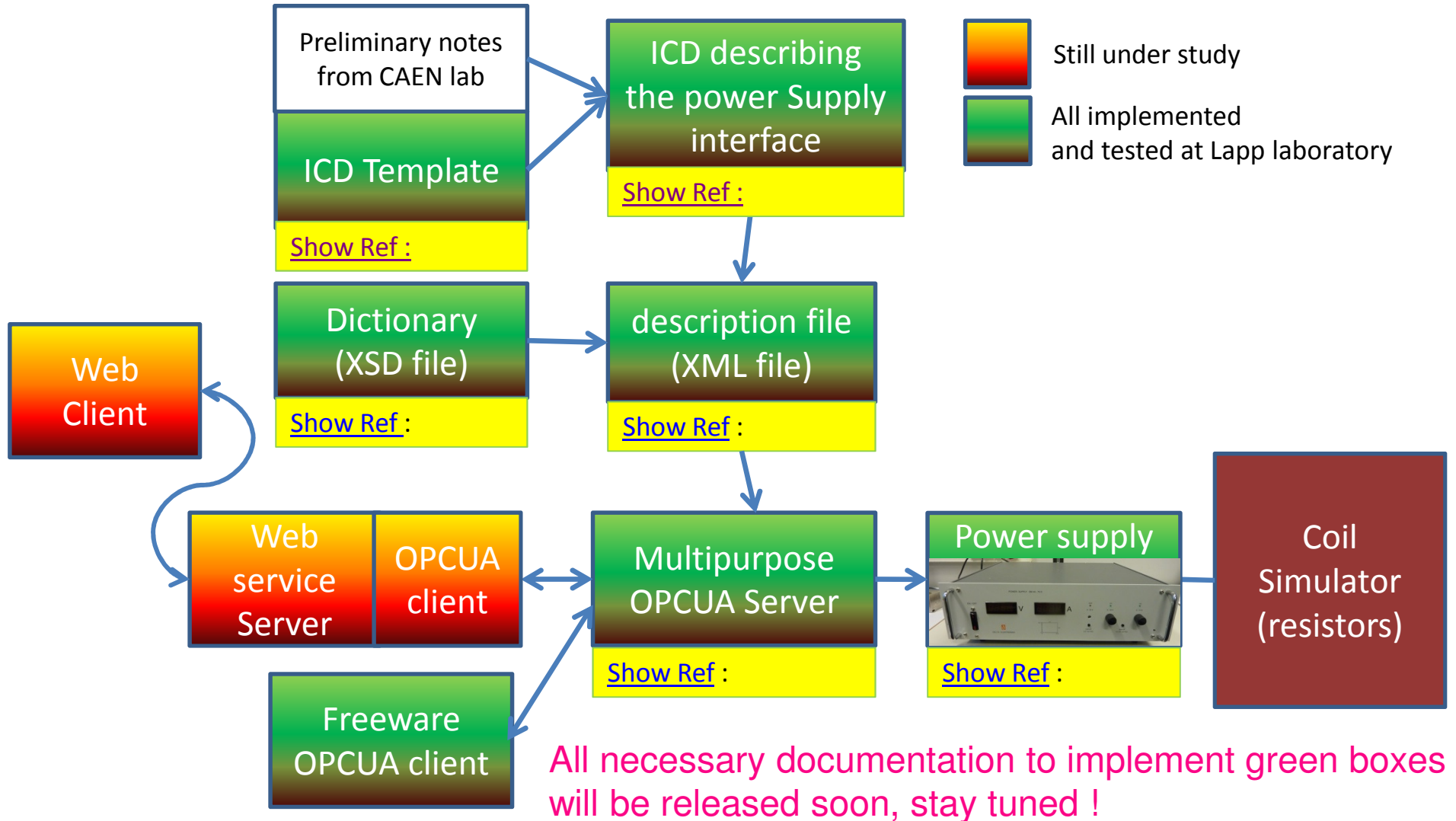
Reworked layout of the Ctrl & Mon. architecture



ICD Status as of Jan 2014

- collection of interface documents:
 - ICD template sent to SNEMO-ELECTRONICS-L@IN2P3.FR dec.2013
 - And DocDB'ed : [NemoDocDB-doc-3064, version 1.](#)
 - Too early to collect new ICDs from subsystems suppliers
 - Tracker HV PS ICD (provisional notes)
 - Tracker Gas Factory (preliminary notes)
 - Coil Power supply (**first draft !** based on preliminary notes and prototype integration)
 - **But we really expect from you guys to receive such doc in the near future ;-)**
 - New inputs from Manchester to work on it (thanks Mike!)
 - New inputs from Bordeaux about the ALEA box (Radon detectors monitoring) to be part of the Control system prototype (thanks Cédric & Arnaud!)

First device integration : Coil Power supply



UA expert : freeware client

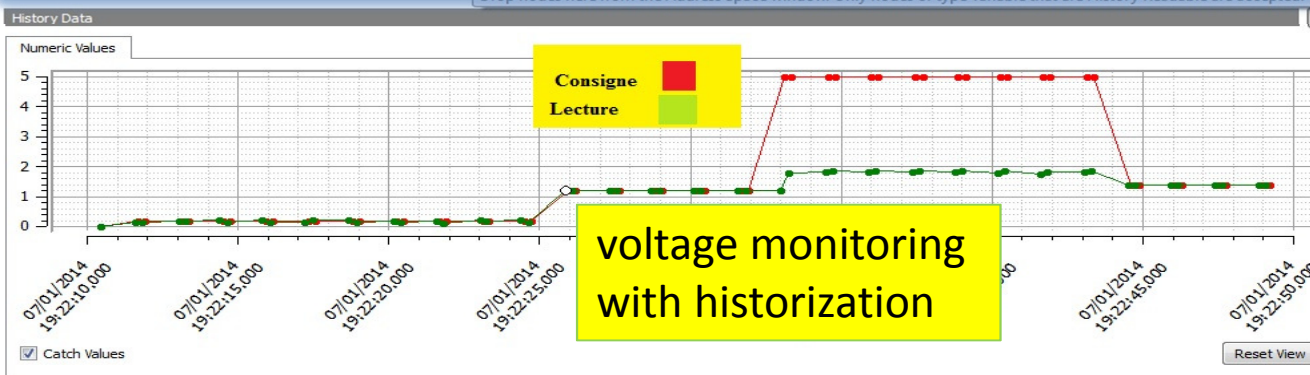
Used to test our power supply server:

- Control
 - Voltage
 - Cmd (Write / Read)
- Current
 - Cmd (Write / Read)
- Monitoring
 - Current
 - voltage, ...



Address Space

- Root
 - Objects
 - DeltaPowerSupplies
 - SM45-70D
 - Control
 - Current
 - Current_v
 - _info
 - get
 - setWithParam
 - Voltage
 - Voltage_v
 - _info
 - get
 - setWithParam
 - FSM
 - Hardware_Connection
 - Monitoring
 - Current
 - Current_v
 - _info
 - get
 - Power
 - Power_v
 - _info
 - get
 - Voltage
 - Voltage_v
 - _info
 - get



Events Alarms

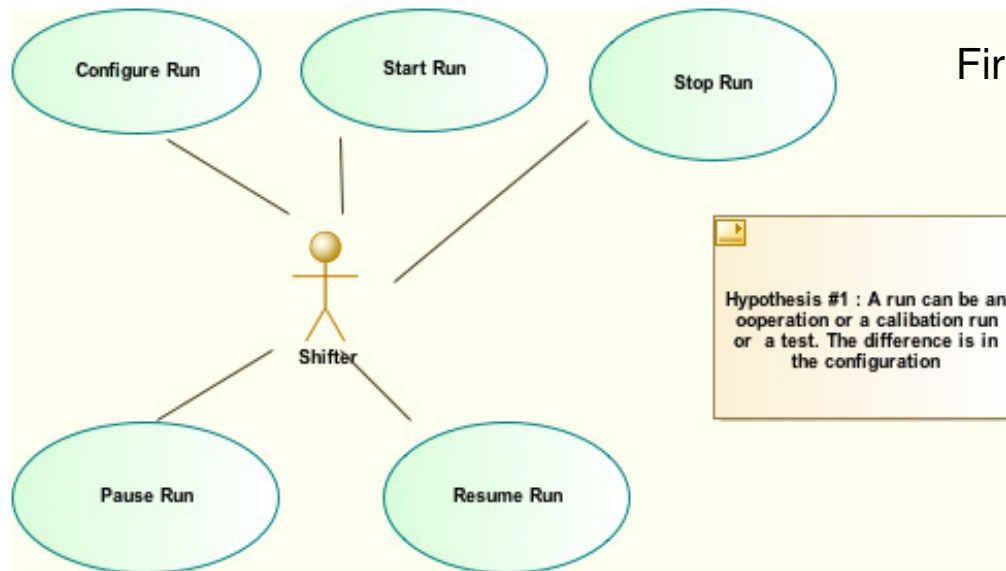
| A | C | Time | Severity | Server/Object | SourceName | Message | EventType | Active |
|---|---|--------------|----------|---------------|------------|-------------------------|--------------------|--------|
| ⚠ | | 19:22:33.251 | 999 | / Voltage | Voltage | Voltage : Value to high | OffNormalAlar... | Active |
| ✓ | | 19:22:44.550 | 500 | / Voltage | Voltage | Voltage : Ok | OffNormalAlar... | |
| | | 19:24:38.567 | 500 | / Voltage | Server | | RefreshStartEve... | |
| | | 19:24:38.567 | 500 | / Voltage | Server | | RefreshEndEve... | |
| ⚠ | | 19:30:34.001 | 999 | / Voltage | Voltage | Voltage : Value to high | OffNormalAlar... | Active |

Here Alarm Events (too high!)

Control & Monitoring System : what for who?

As shown in Bratislava meeting

- We also need to write down an agreed FORMAL DESCRIPTION to specify:
 - **Actors** (physicists, engineers, shifters, maintenance people, etc.)
 - **Use Cases** (Normal Op, Configuration, Commissioning, Maintenance, etc.)
 - **Sequence Diagrams, Finite State Machines**
 - **HMIs/GUIs requirements**
- We had a first iteration to define use cases and features that deal with Run Control, DAQ and the OPCUA server.



First issues has raised !

What does Run Control mean in term of operation mode?

How the DAQ interacts with others subsystems ?

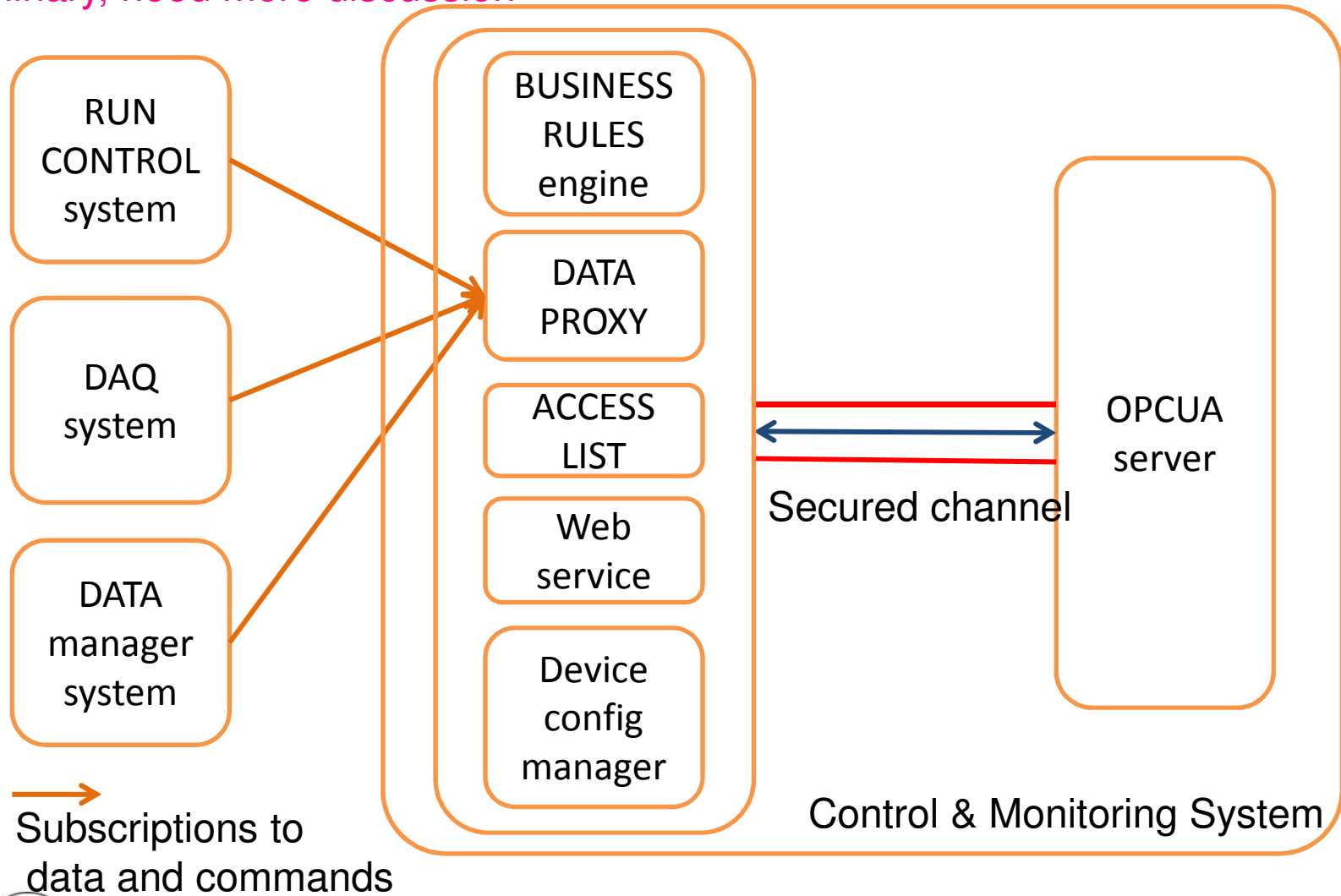
Who has access to what ? (need for a “role and privileges” definition)

How data is accessed (directly or through a proxy between OPCUA server and “clients”?)

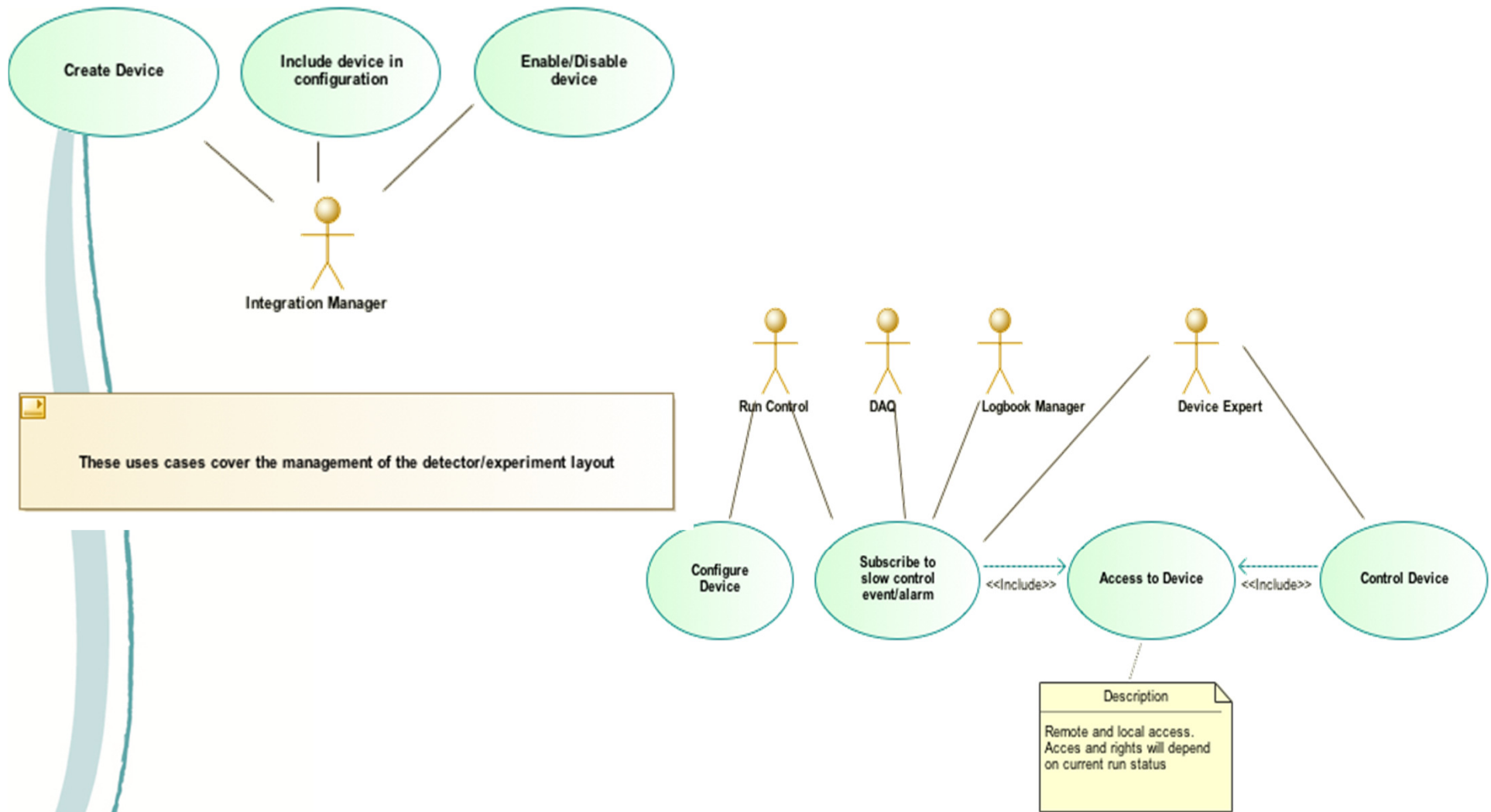
Hypothesis #1 : A run can be an operation or a calibration run or a test. The difference is in the configuration

Possible scenario for accessing control & monitoring data

Very preliminary, need more discussion



We started this exercise for Control & Monitoring System



To sum up the situation

- We fixed ourselves with a deadline on building a first Control & Monitoring System prototype by end of Q2-2014
- Based on few set of hardware that is already available (or soon to be)
- We need the ICDs + your system « behavior » to be able to think about integrating and operating it properly.
- Use cases may sound a little bit tricky to play with. Litteral description is enough to start to describe this behavior.
 - how you imagine use your subsystem in the general detector behavior and operation modes of the experiment.
 - and more particularly its interaction with the Run Control System and with the Control & Monitoring System
- We'll send a questionnaire (and/or a check list) to SuperNEMO Electronics mailing list to help you formalize this point and hope to open discussions
- Dedicated workshops on this topics are highly recommended.
 - The first one can be set by end of spring 2014.
 - All interested people are welcome 😊



Thank you!



Do you have any questions ?

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