EUROPEAN SPALLATION SOURCE

ESS Naming Convention

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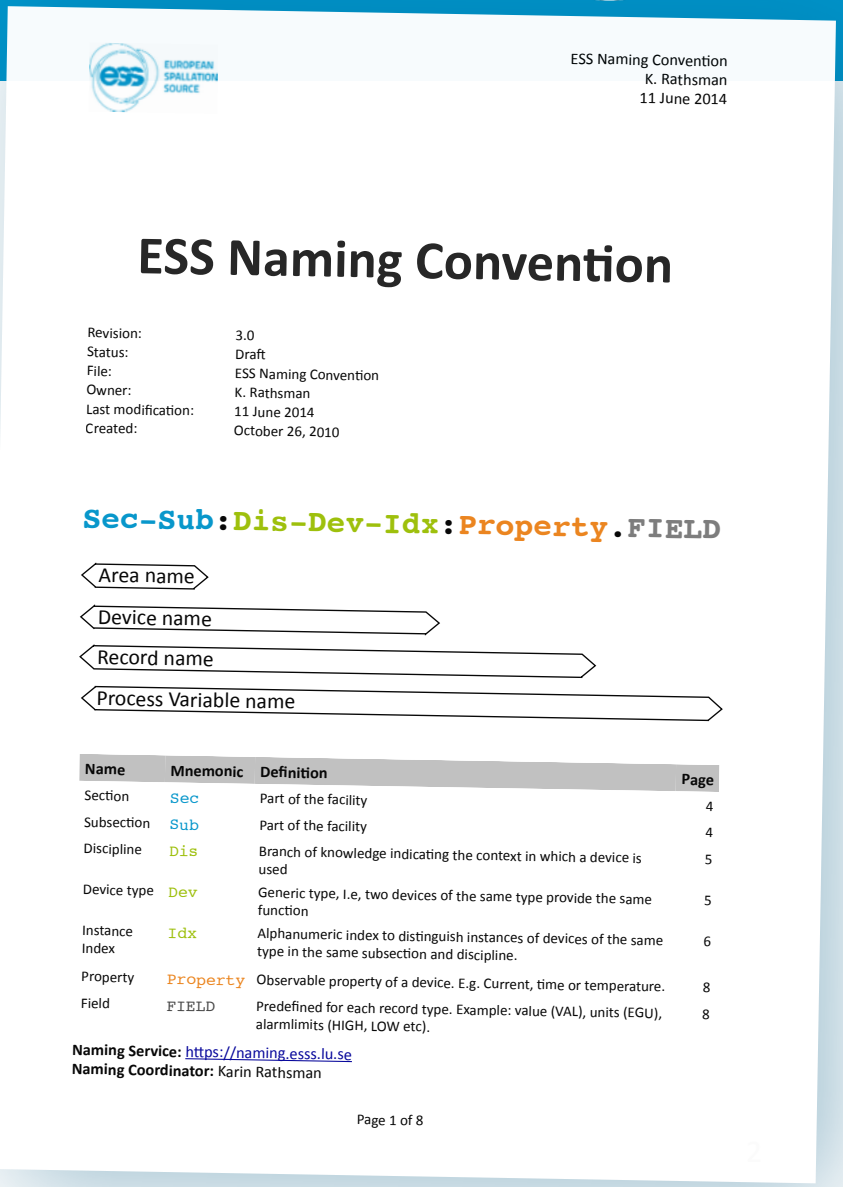
November 25, 2014

ESS Naming Convention

ESS Naming Convention is based on a standard developed for the Super Superconducting Collider (SSC) and later adopted to other large research facilities:

- Spallation Neutron Source (SNS)
- Facility for Rare Isotope Beams (FRIB)
- International Thermonuclear Experimental Reactor (ITER)
- Continuous Electron Beam Accelerator Facility (CEBAF)
- Paul Scherrer Institute (PSI)



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11 June 2014

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Sec-Sub:Dis-Dev-Idx:Property.FIELD

Area name
Device name
Record name
Process Variable name

Name	Mnemonic	Definition	Page
Section	Sec	Part of the facility	4
Subsection	Sub	Part of the facility	4
Discipline	Dis	Branch of knowledge indicating the context in which a device is used	5
Device type	Dev	Generic type, I.e, two devices of the same type provide the same function	5
Instance Index	Idx	Alphanumeric index to distinguish instances of devices of the same type in the same subsection and discipline.	6
Property	Property	Observable property of a device. E.g. Current, time or temperature.	8
Field	FIELD	Predefined for each record type. Example: value (VAL), units (EGU), alarmlimits (HIGH, LOW etc).	8

Naming Service: https://naming.esss.lu.se
Naming Coordinator: Karin Rathsman

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Scope

- The ESS Naming convention applies to devices and signals controlled and monitored by the ICS.
- ICS reserves the right to enforce the naming convention by limiting the functionality of hardware in case
  1. …the signal names, referred to as PV names in EPICS based Control System, do not follow the naming convention format and rules.
  2. …the associated device name is not registered in the web-based Naming Service.
- Equipment outside of the ICS scope will be named if requested.

What is a Device?

- Any equipment that serves a particular function and is connected to the Integrated Control System is modelled as a device.
- A Device name can represent
    1. Single piece of equipment, e.g a temperature transmitter with only one signal.
    2. Complex module of components, other named devices and a local control system. (Klystron modulators, neutron beam choppers.)
    3. Indirectly controlled equipment, e.g., a quadrupole magnet with the gradient field calculated from the settings and readouts from the connected power supply.
    4. Equipment outside the scope of ICS. Equipment will be given a device name if requested.

Syntax

Sec-Sub:Dis-Dev-Idx:Property.FIELD

Area name

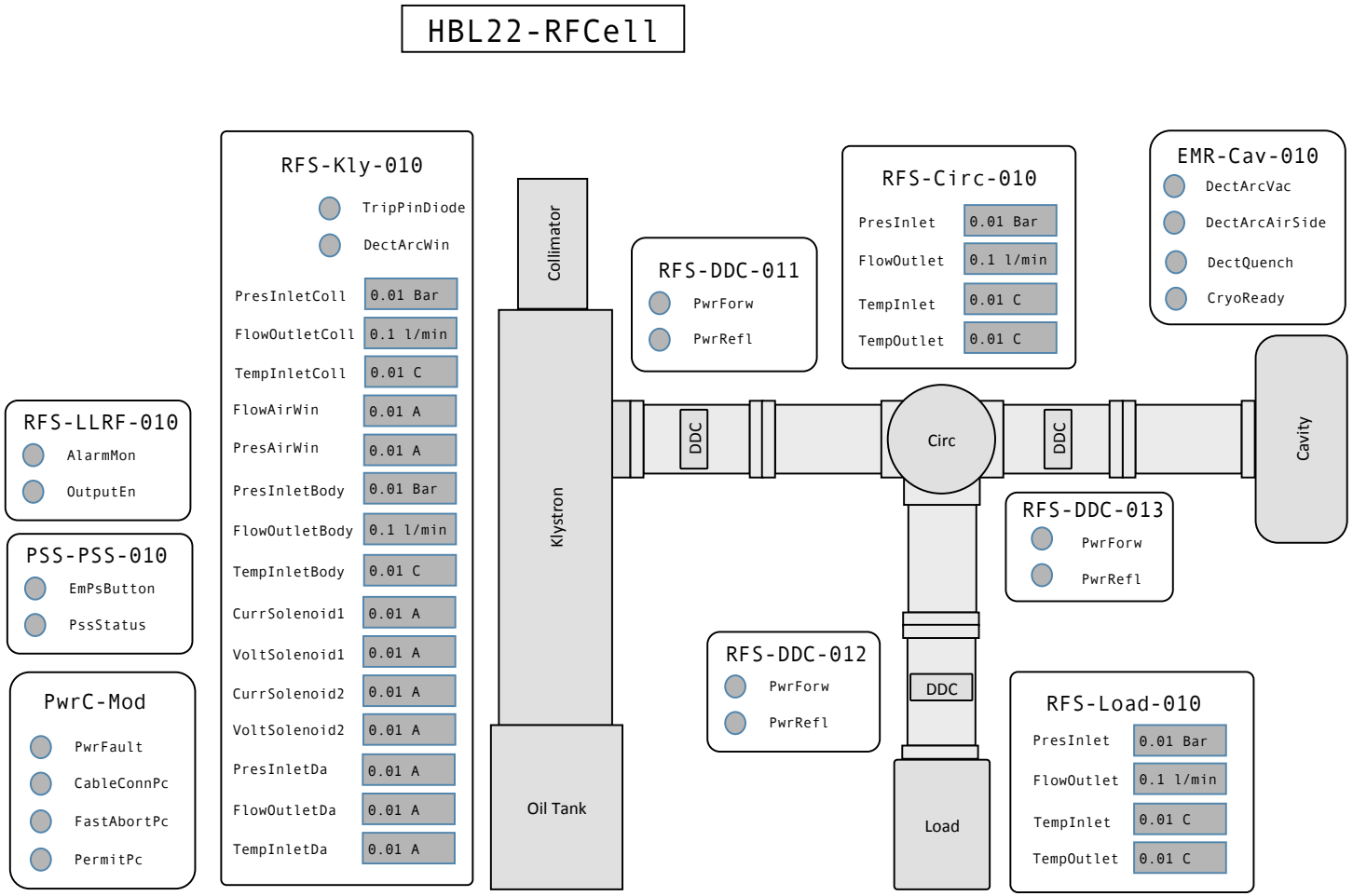
Device name

Record name

Process Variable name

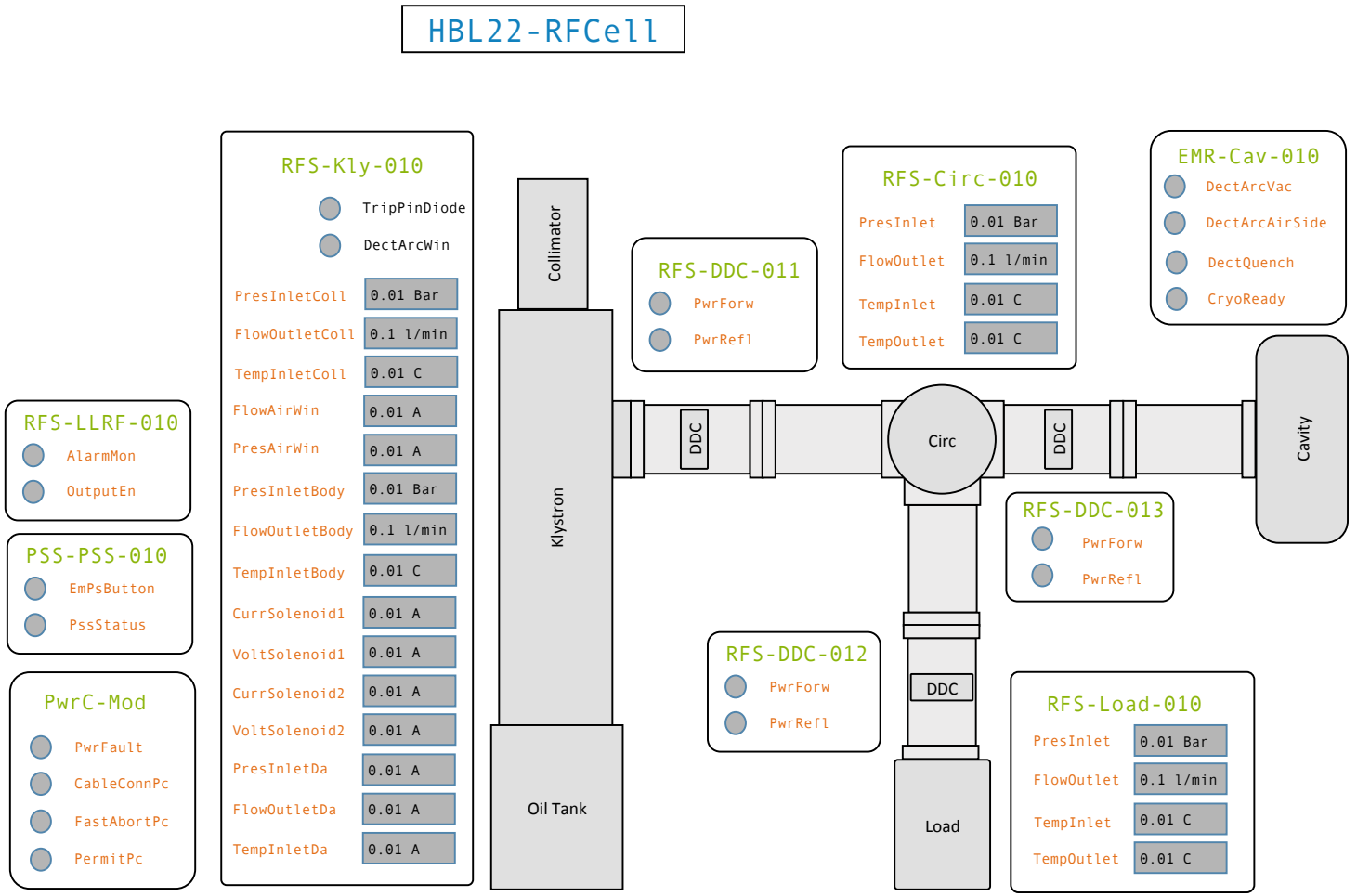
Name	Description
Sec	Section
Sub	Subsection
Dis	Discipline
Dev	Device Type
Idx	The instance index
Property	Observable Property of a device. E.g. Current, time or temperature.
FIELD	The field is predefined for the EPICS record type. Example: value (VAL), units (EGU), alarm limits (HIGH, HIHI, LOW, LOLO)

Example: Control Screen



Example: Control Screen

Sec-Sub:Dis-Dev-Idx:Property



Example: Alarm List

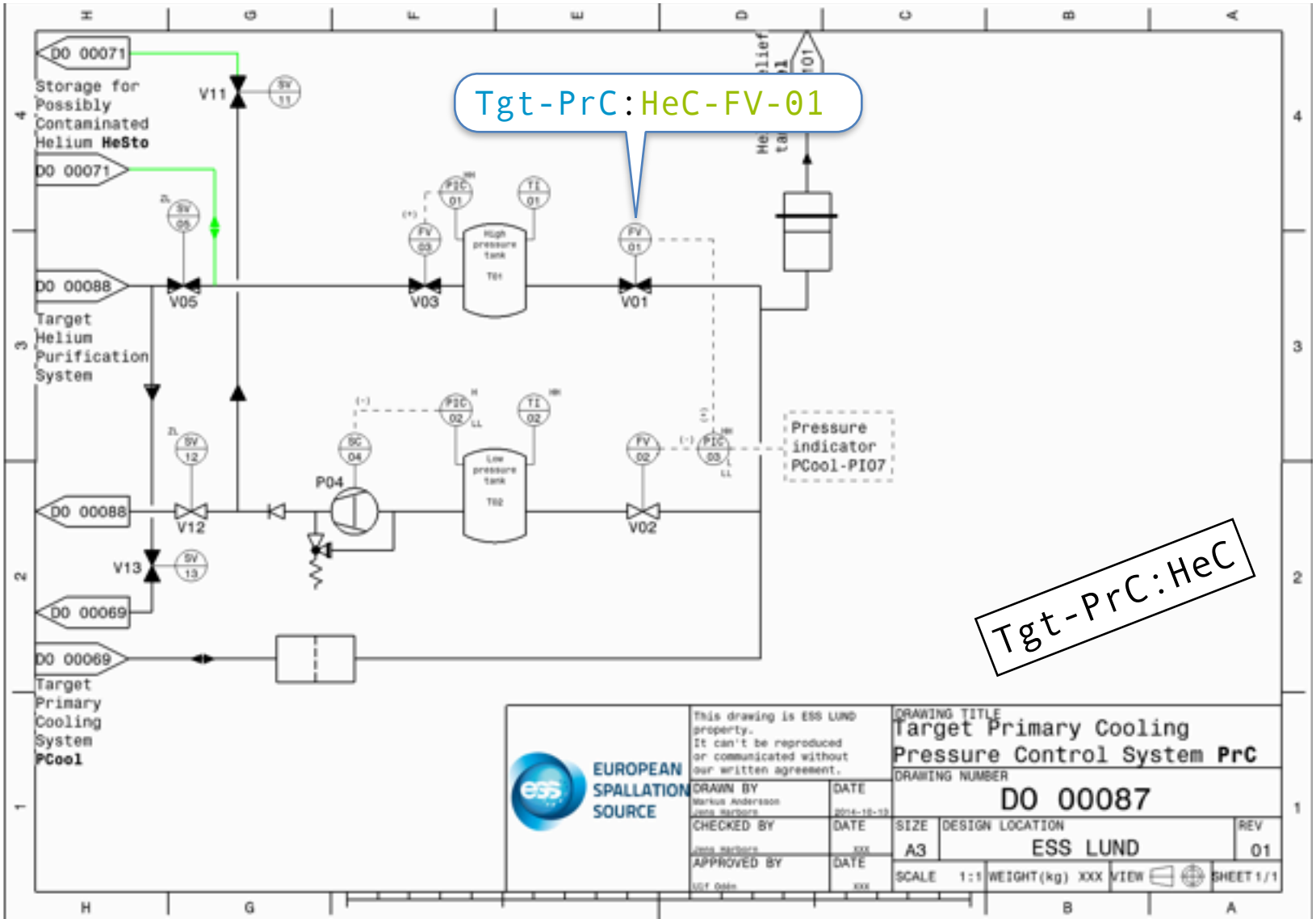
Date and Time	Record Name	Description	Condition	Value	Unit	Priority	Acknowledge	Action
2014-08-26 17:12:20	HBL22-RFCell:RFS-Kly-010:TempInletColl	Collector inlet temperature	HH	125	°C	Low	OK	Show
2014-08-26 17:12:21	HBL22-RFCell:RFS-Kly-010:TempOutletColl	Collector outlet temperature	LL	80	°C	Low	---	Show
2014-08-26 17:12:22	HBL22-RFCell:RFS-Kly-010:PresInletColl	Collector inlet pressure	LO	95	mB	High	---	Show
2014-08-26 17:12:23	HBL22-RFCell:RFS-Kly-010:CurrFill	Filament current	LL	25	mA	High	---	Show

Example: Alarm List

Sec-Sub:Dis-Dev-Idx:Property

Date and Time	Record Name	Description	Condition	Value	Unit
2014-08-26 17:12:20	HBL22-RFCell:RFS-Kly-010:TempInletColl	Collector inlet temperature	HH	125	°C
2014-08-26 17:12:21	HBL22-RFCell:RFS-Kly-010:TempOutletColl	Collector outlet temperature	LL	80	°C
2014-08-26 17:12:22	HBL22-RFCell:RFS-Kly-010:PresInletColl	Collector inlet pressure	LO	95	mB
2014-08-26 17:12:23	HBL22-RFCell:RFS-Kly-010:CurrFill	Filament current	LL	25	mA

Example: P&ID


Tgt-PrC:HeC-FV-01
Tgt-PrC:HeC
DO 00071
Storage for Possibly Contaminated Helium HeSto
V11
DO 00071
DO 00088
V05
V03
V01
Target Helium Purification System
Pressure indicator PCool-PI07
P04
DO 00088
V12
V02
V13
DO 00069
DO 00069
Target Primary Cooling System PCool
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This drawing is ESS LUND property. It can't be reproduced or communicated without our written agreement.
DRAWN BY
CHECKED BY
APPROVED BY
DATE
DRAWING TITLE
Target Primary Cooling Pressure Control System PrC
DRAWING NUMBER
DO 00087
SIZE
A3
DESIGN LOCATION
ESS LUND
REV
01
SCALE 1:1
WEIGHT(kg) XXX
VIEW
SHEET 1/1

Naming Structures

- Area Structure: Which part of the facility does the device provide service to?
- Device Structure: What kind of device is it?

Area Structure

From the operational point of view it is beneficial to have names mentally linked to functional area. Devices and signals are therefore sorted under a functional area structure in three levels:

- Level 1 — **Super Section**: High level area of the facility restricted to a particular use. Not part of the device and signal names but it is used for sorting and filtering purposes.
- Level 2 — **Section** (`Sec`): Example the High Beta Linac (`HBL`). Water Cooling Plant (`WCP`), Cryogenic System (`CrS`) etc. Devices related to buildings will be sorted under corresponding building, for example the Gallery (`G02`).
- Level 3 — **Subsection** (`Sub`): Examples: The Target Moderator Cryoplant (`TMCp`) under Cryogenic System (CrS). Air Handling Unit number 2 (`AHU02`) is a subsection under the Gallery (`G02`).

Area Names

To help personnel orient themselves relative to the technical systems the functional area name, defined as

- Sec-Sub

shall be displayed on building structures wherever required.

Device Structure

Thousands of different kind of devices are expected. Devices are therefore categorised on three levels in the device structure:

- Level 1. **Discipline** (`Dis`): Branch of knowledge indicating the context in which a device is used. Examples: Cryogenics (`Cryo`), vacuum (Vac), water cooling (`WtrC`), proton beam instrumentation (PBI).
- Level 2. **Category**: This level has been introduced to allow certain devices to be grouped together in lists and is not part of names. Default category is miscellaneous.
- Level 3. **Generic Device Type** (`Dev`): Two devices of the same generic type provide the same function.

Device Registration

Device Registration

To register new names the naming convention users will be asked to select

- Discipline and device type from device structure.
- Section and Subsection from area structure.

Only the instance index `Idx` needs to be entered to create a unique device name on the format

`Sec-Sub:Dis-Dev-Idx`

Batch Naming

- Experienced device editors can register a batch of devices in three steps:
  1. Download a template file in excel format from the Naming service.
  2. Fill in existing name elements for section, subsection, discipline, device type and instance index as well as a comment (optional) for each device.
  3. Upload the file.

Name Validation

The Naming Service validates device names against the following set of rules:

- Instance index (`Idx`) shall be alphanumeric. I.e., only upper and lower case alphanumeric characters (a-z, A-Z, 0-9) are allowed.
- The device names `Sec-Sub`:`Dis-Dev-Idx` shall be distinguishable, which means that names shall be unique irrespective of
    1. Letter case
    2. Letters I, l and number 1
    3. Letter O and number 0
    4. Letters V and W
    5. Leading zeros, i.e., number 0 immediately following a non-numerical character
- The instance index (`Idx`) shall be 0 to 6 characters long.

Administration of name elements

- Naming editors can propose to add, delete and modify mnemonic name elements.
- The proposed name elements are validated against the a set of rules.
- The naming administrator approves or reject proposals according to general guidelines.

Validation

1. Names elements for any of the items in the area structure (`Sec`, `Sub`) and device structure (`Dis`, `Dev`) shall be alphanumeric. I.e., only upper and lower case alphanumeric characters (a-z, A-Z, 0-9) are allowed.
2. Name elements for section (`Sec`) and discipline (`Dis`) shall be distinguishable.
3. Name elements for subsection `Sub` shall be distinguishable under the same parent section.
4. Name elements for device type (`Dev`) shall be distinguishable under the same discipline.
5. Names elements for any of the items in the area structure (`Sec`, `Sub`) and device structure (`Dis`, `Dev`) shall be at least one character long.
6. The maximum length of name element for items in the area structure (`Sec`, `Sub`) and device structure (`Dis`, `Dev`) is 6 characters.

Guidelines

- Name elements shall be mnemonic, so that operators, technicians, engineers and physicist, who are not necessarily expert in the particular field, do not have to look up names more than occasionally.
- Names should be short and easy to read. Abbreviate words and use CamelCase (skip blanks and begin words with capital letters). Example: TempAvg for average temperature and HBL for High Beta Linac.
- Aspects of long term operation (>20 years) are prioritised over straightforward solutions.
- Use standard nomenclature. Users should for example refer to existing names in the Naming Service before proposing new names, especially for device types used in several disciplines.

Information

https://ess-ics.atlassian.net/wiki/display/NC/ESS+Naming+Convention