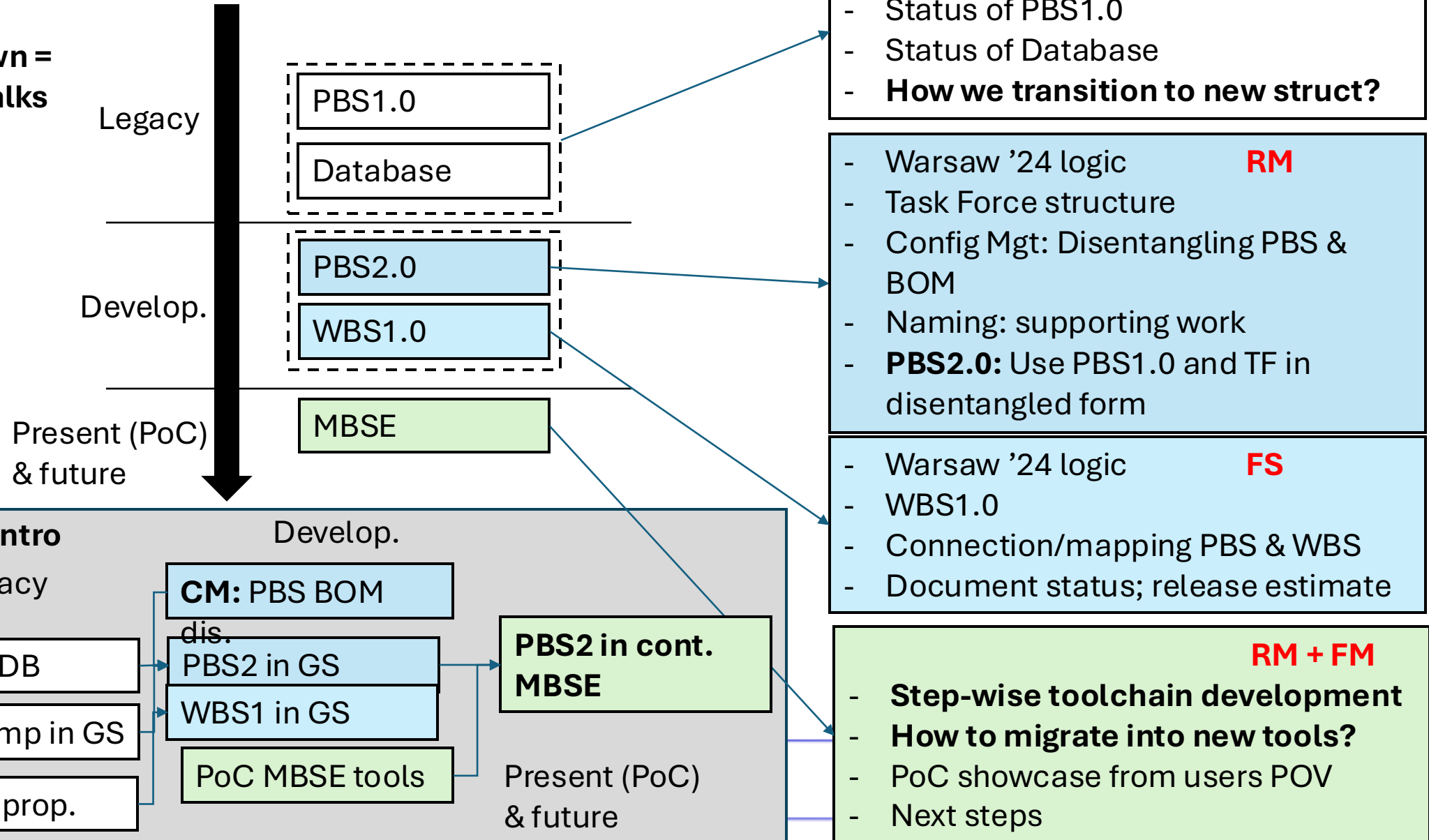


PBS status and plans

Fiodor Sorrentino
Technical coordinator
ETO Project Office

Outline of ETO parallel session

Top -> down =
order of talks



PBS.1

- April/May 2025
 - Instrument PBS tree was updated following the review occurred in 2024
 - Some delay due to ongoing Task Force activities
 - SUSP branch was not updated, feedback after review in Jan 2025 still pending
 - New (more user-friendly) repository was set up at the same time for storing configuration files (MS excel tables)
 - Database was erased (after backup)
 - Most ISB divisions uploaded the updated/new configuration files to the repository
 - ETO PO loaded configuration items to database

PBS.1

- June/October 2025
 - Analysis on updated database: several errors from manual editing of configuration files
 - ETO PO prepared a new procedure for configuration files generation, getting rid of manual editing .xls files
 - PBS table updated again to fix inconsistencies and to comply with requests by ISB divisions
 - missing files uploaded to repository by IOO and ANM, then transferred to database by PO
 - ongoing analysis by ISB on current status after last steps

Next steps

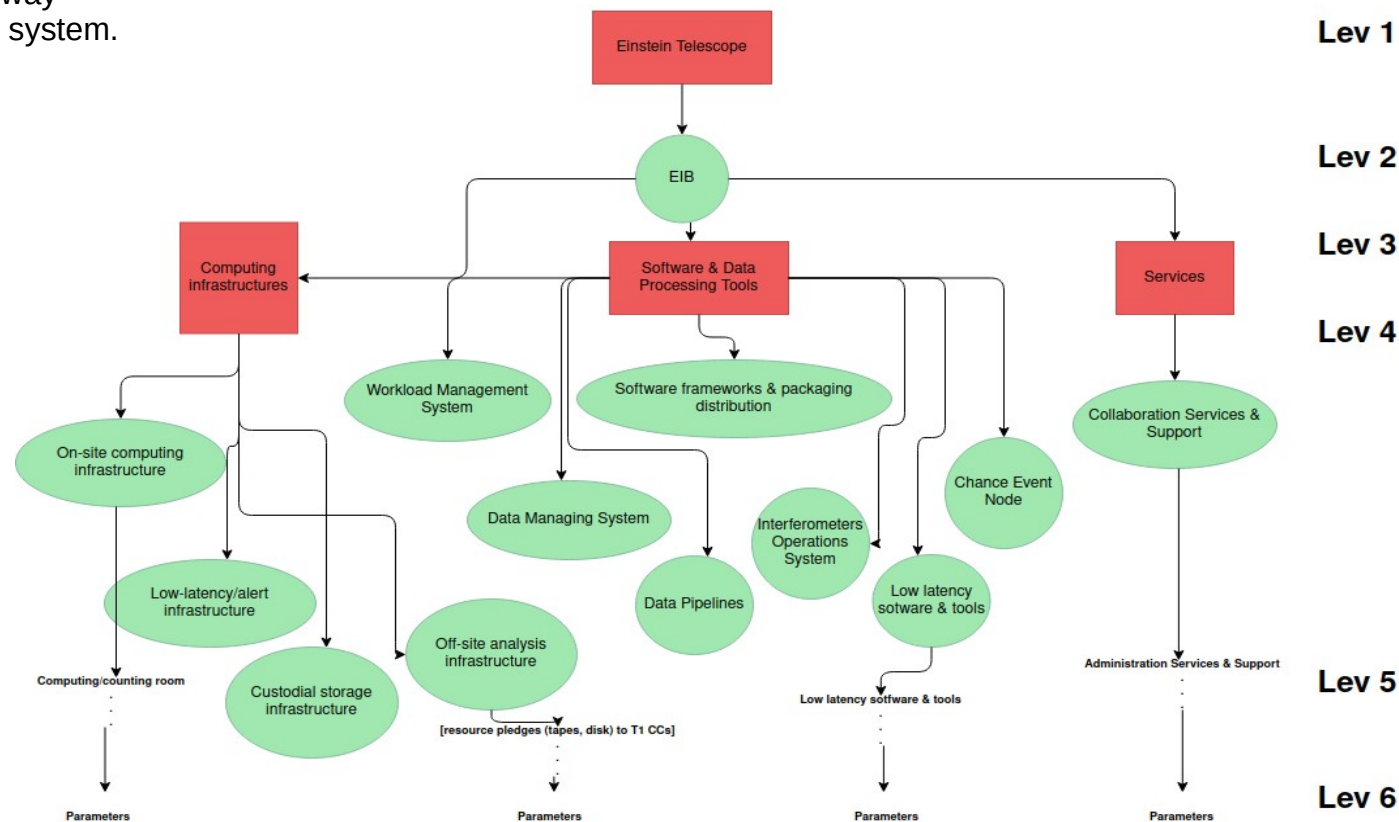
- Short term
 - conclude exercise & fix faulty parameter files (might require a couple of more iterations)
 - update PBS structure for SUSP division to implement recommendations following the review of January 2025, then upload corresponding parameters to database
- Mid term
 - Database software evolution
 - see Oussama's talk
 - Include more functionalities
 - unique ID
 - additional parameters (multiplicity, TRL, relations, etc.)
 - see talk by FS&RM on PBS.2 & WBS.1

Document ID	TBA
Document type	Slides
Document Status	
Author	O. El Mecherfi
Verified by	
Approved by	

PBS Parameters Long-Term-Solution

PBS components

organizing and representing the hierarchical structure and relationships of the product components in a way that can be stored and queried in a database system.



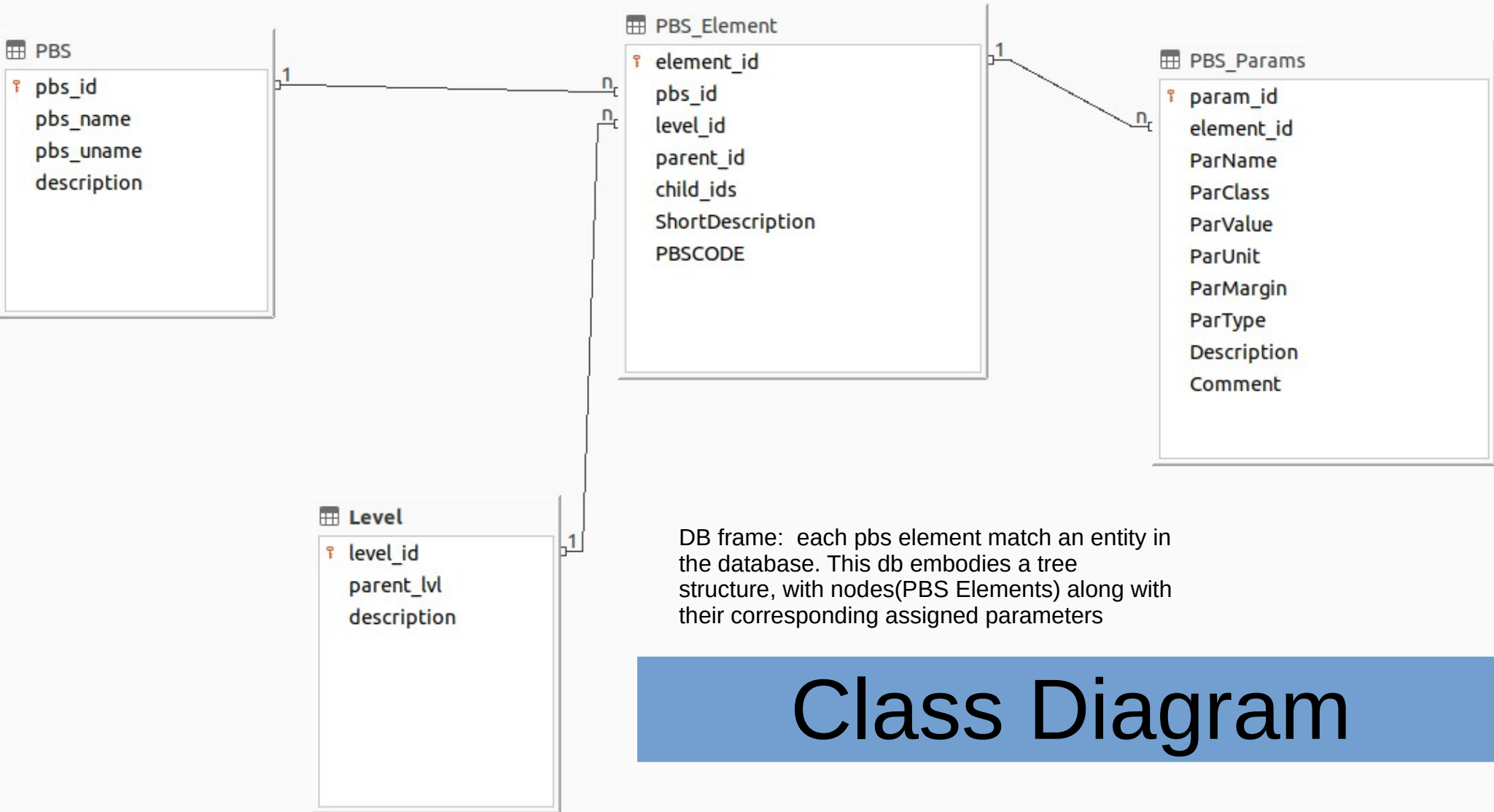
PBS components

Family (letter)	Element (letter)	Element (letter)	Element (letter)	System (letter)	PBS ID (nb)	PBS ID (nb)	PBS ID (nb)	PBS ID (nb)	PBS ID (nb)
System (letter)	Available	System unit (letter)	System unit (letter)	System unit (letter)	PBS ID (nb)	PBS ID (nb)	PBS ID (nb)	PBS ID (nb)	PBS ID (nb)

Element System

provide unique naming convention for parameters file

Nomenclature: [x.x.x][n.n.n.n]



DB frame: each pbs element match an entity in the database. This db embodies a tree structure, with nodes(PBS Elements) along with their corresponding assigned parameters

Class Diagram

PBS components

Python Draft App

All PBS_Levels All PBS_Elements All PBS_Params

PBS_name

Description

PBS Component a class table inheritance (CTI)

To extend PBS Elements

deselect All

Add from csv to PBS

Add to PBS

id

PBS_name

Description

1	Underground Civil Engineering	ET_0
2	Underground Technical Infrastru	ET_0
3	Surface Civil Engineering	ET_0
4	Access	UC_E_
5	Boreholes	UC_E_
6	Underground Civil Engineering	ET_0
7	Underground Technical Infrastru	ET_0
8	Surface Civil Engineering	ET_0
9	Access	UC_E_
10	Boreholes	UC_E_
11	Underground Civil Engineering	ET_0
12	Underground Technical Infrastru	ET_0
13	Surface Civil Engineering	ET_0
14	Access	UC_E_
15	Boreholes	UC_E_
16	Underground Civil Engineering	ET_0
17	Underground Technical Infrastru	ET_0
18	Surface Civil Engineering	ET_0
19	Access	UC_E_
20	Boreholes	UC_E_
21	Underground Civil Engineering	ET_0

PBS Elements Python Draft App

All PBS_Levels All PBS_Elements All PBS_Params

pbs_id

Select an FK

level_id

Select an FK

Parent_id

Select an FK

ShortDescription

PBSCODE

the test mass suspension system, with ID 1.1.1.2, will be traced with the code 1.1.1.2.0. if the ID code has 5 digits.

This will allow to easily extend the PBS nomenclature to more digit if necessary but keeping the full extension of the ID code.

FK PBS
IDFK to
Level ID

deselect All

Add from csv to PBS_Element

Add to PBS_Element

id	pbs_id	level_id	Parent_id	ShortDescriptic	PBSCODE				PBS_Para
1	1	1	0	ShortDescription	1.1				
2	2	2	1	ShortDescription	1.1.1.1				
3	3	3	2	ShortDescription	1.1.2.1				
4	4	4	3	ShortDescription	1.1.2				
5	1	1	0	ShortDescription	1.1				
6	2	2	1	ShortDescription	1.1.1.1				
7	3	3	2	ShortDescription	1.1.2.1				
8	4	4	3	ShortDescription	1.1.2				
9	1	1	0	ShortDescription	1.1				
10	2	2	1	ShortDescription	1.1.1.1				
11	3	3	2	ShortDescription	1.1.2.1				

Parent
Element
PBS ID

PBS Levels Python Draft App



Parent Level ID

deselect All

Add from csv to Level

Add to Level

parent_lvl

PBS_uname

tree_struct

description

PBS Levels for each pbs element with tree_struct, a script can loop through all parent Hierarchy and generate the tree structure

id	parent_lvl	PBS_uname	tree_struct	description				PBS_Eleme
1		UCE	UCE.AC.SH.ASH	description for M 1				
2	1	UTI	UCE.AC.SH.ASH	description for M 2				
3	2	SCI	UCE.AC.SH.ASH	description for M 3				
4	3	ACC	UCE.AC.SH.ASH	description for M 4				
5	4	BRH	UCE.AC.SH.ASH	description for M 5				
6	5	BRH	UCE.AC.SH.ASH	description for M 6				
7		UCE	UCE.AC.SH.ASH	description for M 1				
8	1	UTI	UCE.AC.SH.ASH	description for M 2				
9	2	SCI	UCE.AC.SH.ASH	description for M 3				
10	3	ACC	UCE.AC.SH.ASH	description for M 4				
11	4	BRH	UCE.AC.SH.ASH	description for M 5				
12	5	BRH	UCE.AC.SH.ASH	description for M 6				
13		UCE	UCE.AC.SH.ASH	description for M 1				
14	1	UTI	UCE.AC.SH.ASH	description for M 2				
15	2	SCI	UCE.AC.SH.ASH	description for M 3				
16	3	ACC	UCE.AC.SH.ASH	description for M 4				
17	4	BRH	UCE.AC.SH.ASH	description for M 5				

A script can generate this, or given from physicians (straight forward)



PBS Params Python Draft App

FK Element ID



All PBS_Levels All PBS_Elements All PBS_Params

element_id

Select an FK

parName

parClass

parValue

parUnit

parMargin

parType

Description

Comment

PBS params containing values, for each pbs element

Can be fed from a .csv file respecting

A form that I will share with you.

 Configuration parameters_RH

deselect All

Add from csv to PBS_Params

Add to PBS_Params

	id	element_id	parName	parClass	parValue	parUnit	parMargin	parType	Description	Comment		
1		1	Dimension L	Integration	3	mt				Lateral clear		
2		2	Dimension L	Integration	3	mt				Lateral clear		
3		1	Dimension L	Integration	3	mt				Lateral clear		
4		2	Dimension L	Integration	3	mt				Lateral clear		
5		1	Dimension L	Integration	3	mt				Lateral clear		
6		2	Dimension L	Integration	3	mt				Lateral clear		

Users Roles

The PBS management processes are described not only by their functional flowcharts, but also from the roles and responsibilities description with respect to the full PBS lifecycle. These are summarized in Table.

PBS roles description. Rights may be of the type R= read, W=write, P=Propose (the modification). RACI acronyms are the classic Responsible, Accountable, Consulted, Informed

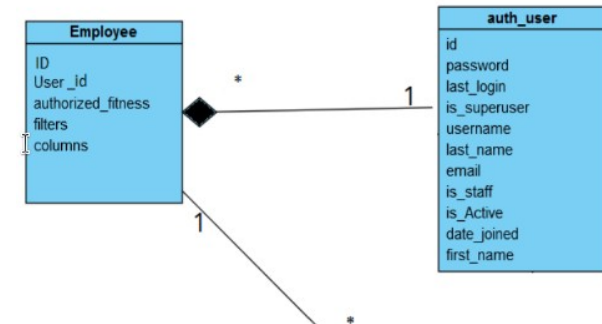
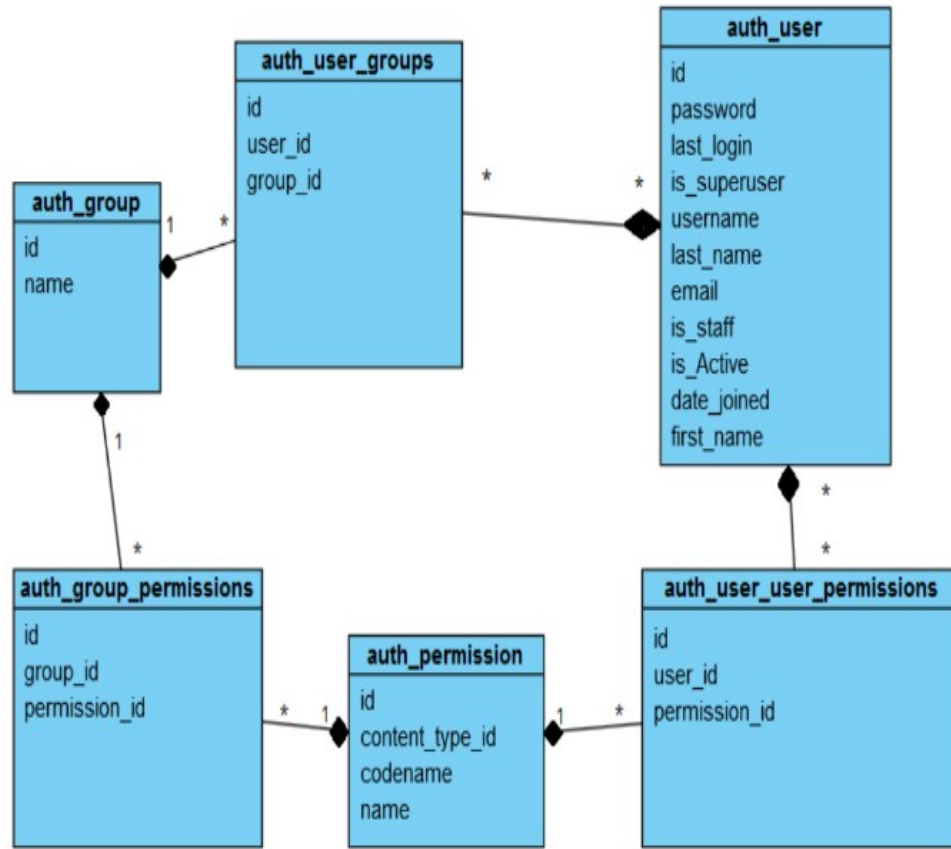
Role	PBS rights	RACI	Description
Technical coordinator	RWP	R	Responsible for the PBS editing and modification. Responsible for all process validation
Unit manager (level n)	RP	A	Responsible for the unit breakdown and for change request proposal
Unit manager (level n+1)	RP	A	Responsible for the unit breakdown and for change request proposal verification
System manager	RP	A	Responsible for the unit breakdown and for change request proposal validation
e-Infrastructure manager	RW	C	Responsible for the PBS e-Infrastructure management tool
Quality manager	RP	A	Responsible for the PBS quality process
Configuration manager	RP	A	Responsible for the PBS integration as configuration item (CI). Responsible for the change process definition
Review manager	R	I	Responsible for the PBS verification and validation reviews.
Safety manager	R	I	Responsible for PBS safety integration
Resources manager	R	I	Responsible for the PBS associated resources and budget

Users Class Diag

Users DB of our web app

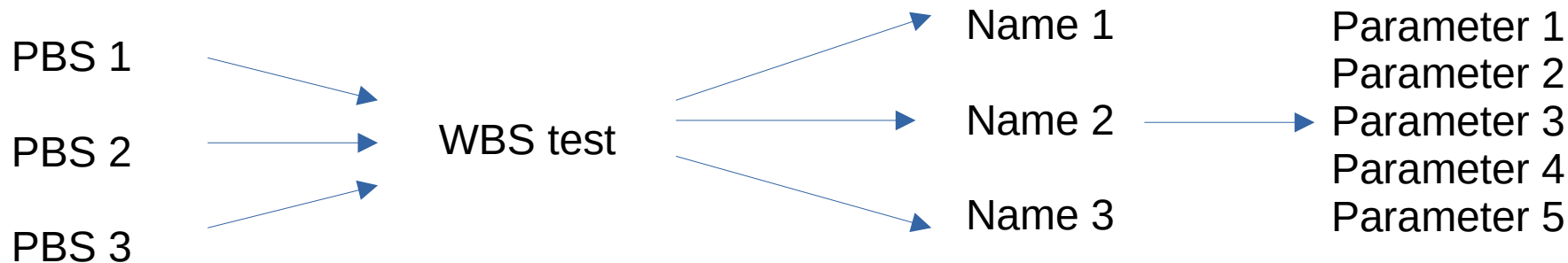
Of course, a quick illustration of how this feature is presented in the database. Thus, a user can belong to multiple groups and have multiple permissions, each group can also have multiple permissions.

Thus, a user has a given authorization if he is directly associated with it or if it is associated with a group to which the user belongs.



- A user must have role authority to make change requests to associated elements and their parameters, change requests can only be accessed by the correct group of change request managers based on a WBS name added as an attribute to the entity elements.
- This button will only appear to users belonging to a group associated with a WBS.

WBS Groups



Perspectives & Upcoming Developments (2026)

- With the **New Parameter File Generator**, we can generate an excel file from this form, of course, a **keygen** is generated to make sure each user does not edit the file by hand, **avoiding conflicts** with our **DB**, the user can reedit the file anytime by re-uploading !
- while **8 default parameters** have been added to the dynamic form by default.
- **Dimensions (with free space for description), Weight, Peq. Power, Req. Water, Peq. Cryo, Req. Gas**

"Warning ! Make sure you generated the file from this source to ensure the key is valid. Enjoy!"

make file (.xlsx) General informations

pbs_element_id*

pbs_element_id*

Element Description

HFI or LFI*

author*

verified_by*

+ ADD PARAMETER

Parameter #2 | Dimensions L (z axis)
Integration

Parameter #3 | Dimensions H (y axis)
Integration

Parameter #4 | Dimensions W (x axis)
Integration

Parameter #5 | Weight
Integration

Parameter #6 | Required Power
Integration

Parameter #7 | Required Water
Integration

Parameter #8 | Required Cryo
Integration

Parameter #9 | Required Gas
Integration

DOWNLOAD ALL PARAMETERS

import .xlsx (redit)



Perspectives & Upcoming Developments (2026), Evolution in Configuration Context

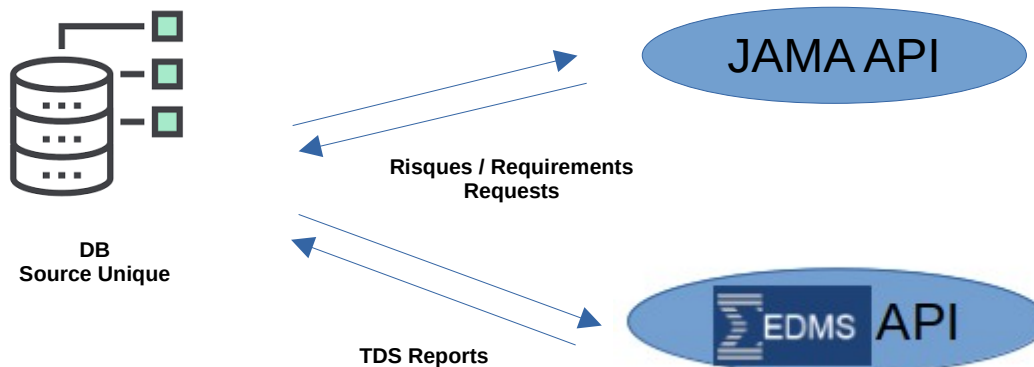
A Bridge Between EDMS, JAMA, and PBS Elements :

Our backend (**middleware**) will serve as the integration layer between:

EDMS API (Electronic Document Management System) – Storing and retrieving **technical documents (TDS, reports, etc.)**

JAMA API (Requirements & Test Management System) – Managing requirements, specifications, and test cases.

PBS Database – Storing **elements, parameters, and hierarchical relationships.**



Perspectives & Upcoming Developments (2026), Evolution in Configuration Context

Middleware Role & Architecture

Our **middleware** will:

Fetch Documents from EDMS : Query **EDMS API** to get URLs of **TDS/reports** related to PBS elements.

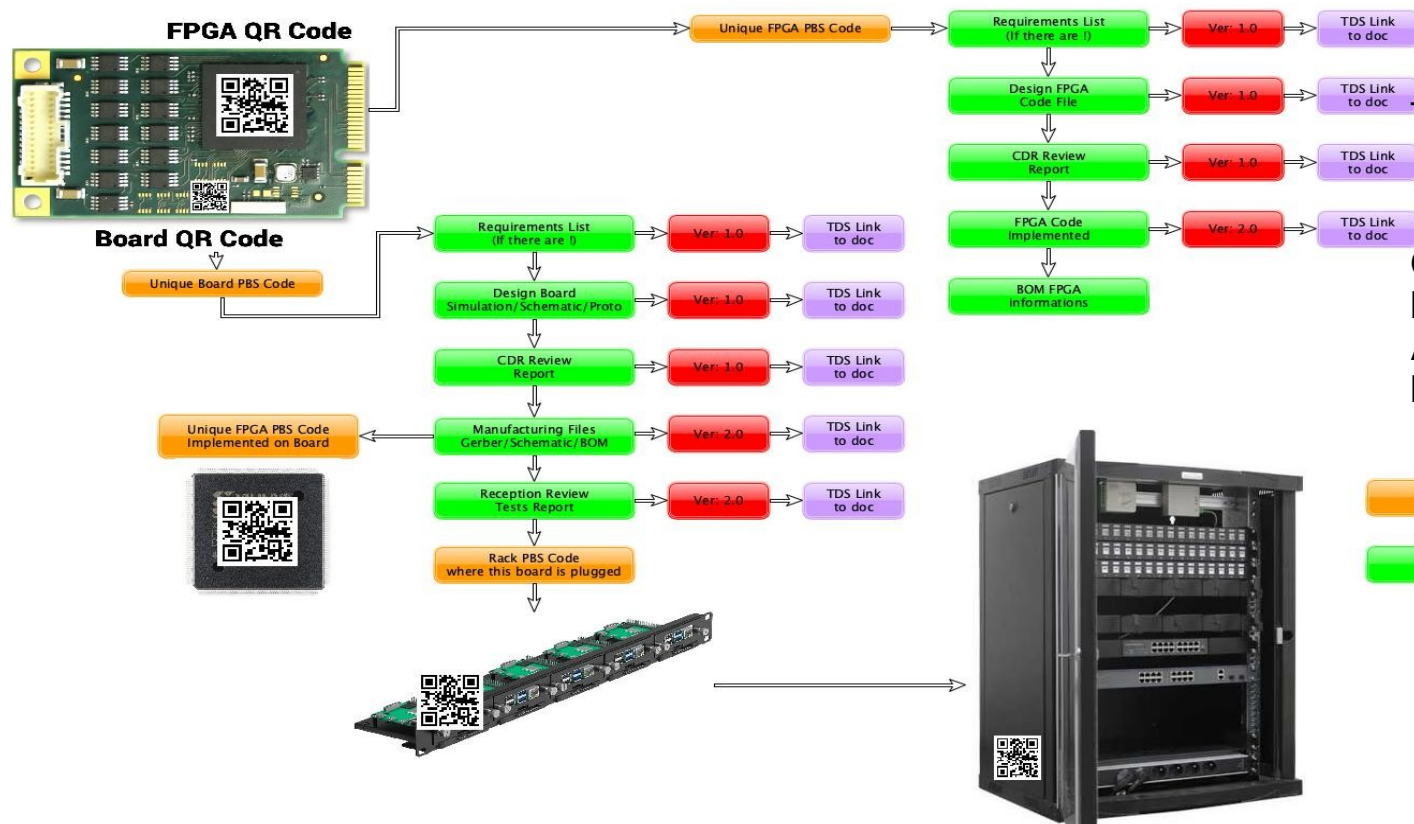
Retrieve Requirements from JAMA : Pull relevant specifications and link them to **PBS elements**.

Map Data to PBS Elements : Ensure each **PBS element** has its associated documents & metadata.

Provide Secure Access : Only authorized users can access specific reports or documents.

Serve Data via API : Our **Frontend** will request documents from Django, which fetches and delivers the appropriate links or content.

Product Configuration Traceability Process



TDS associated with Link

Our middleWare will act as a bridge to **EDMS** and **JAMA API** to get documents to view back to the user

Thanks

DB