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PBS Report

Alessio Rocchi, INFN sezione Roma2
ET XIII Symposium
Cagliari, T Hotel, 10/05/2023
ET-0179A-23

PBS Working Group

- Ad hoc WG appointed by the EB and Project Directorate;
 - Mandate available on the ET TDS: [ET-0026A-23](#);
 - Composition:
 - Alessandro Variola, PO Head
 - Alessio Rocchi, PO Technical Coordinator
 - Patrick Werneke, ED Head
 - Christian Olivetto, PO Configuration Manager
 - Luca Latronico, PO Quality Manager
 - Gianluca Gemme (then Jan Harms took over), ISB co-chair
 - Stefan Hild, ISB co-chair
 - Patrice Verdier, EIB co-chair
 - Domenico D'Urso, SPB co-chair

PBS Working Group

- WG met (mostly) in presence four times in different locations with monthly cadence:
 - Rome, January 12th, 2023
 - Amsterdam, February 14th, 2023
 - Paris, March 17th, 2023
 - Rome, April 27th, 2023
- Meetings interleaved by a lot of off-line activity;
- All presentations and meetings executive summaries available in the ET Wiki:
 - <https://wiki.et-gw.eu/Main/PBSWorkingGroup/WebHome>

Goals of the WG

- 1) Provide a strategy for the PBS decomposition and for its hierarchical structure.
- 2) Following this strategy, carry out the breakdown of the baseline configuration in systems and subsystem.
- 3) Provide a first proposal for the coding of the PBS elements, to be harmonized in future with the Quality plan.
- 4) Provide the PBS documentation.
- 5) Periodically present the PBS build up progress to the EB board and the Project Directorate.

PBS GOALS

- 1) PBS (Product Breakdown Structure) will define the structure of the Requirements Breakdown Hierarchy (not considering crosscutting systems or others)
- 2) PBS shall represent the WBS (Work Breakdown Structure) backbone.
- 3) PBS is triggering the OBS (Organization Breakdown Structure) via the definition of the WBS
- 4) PBS shall produce the Hardware Project Object costing

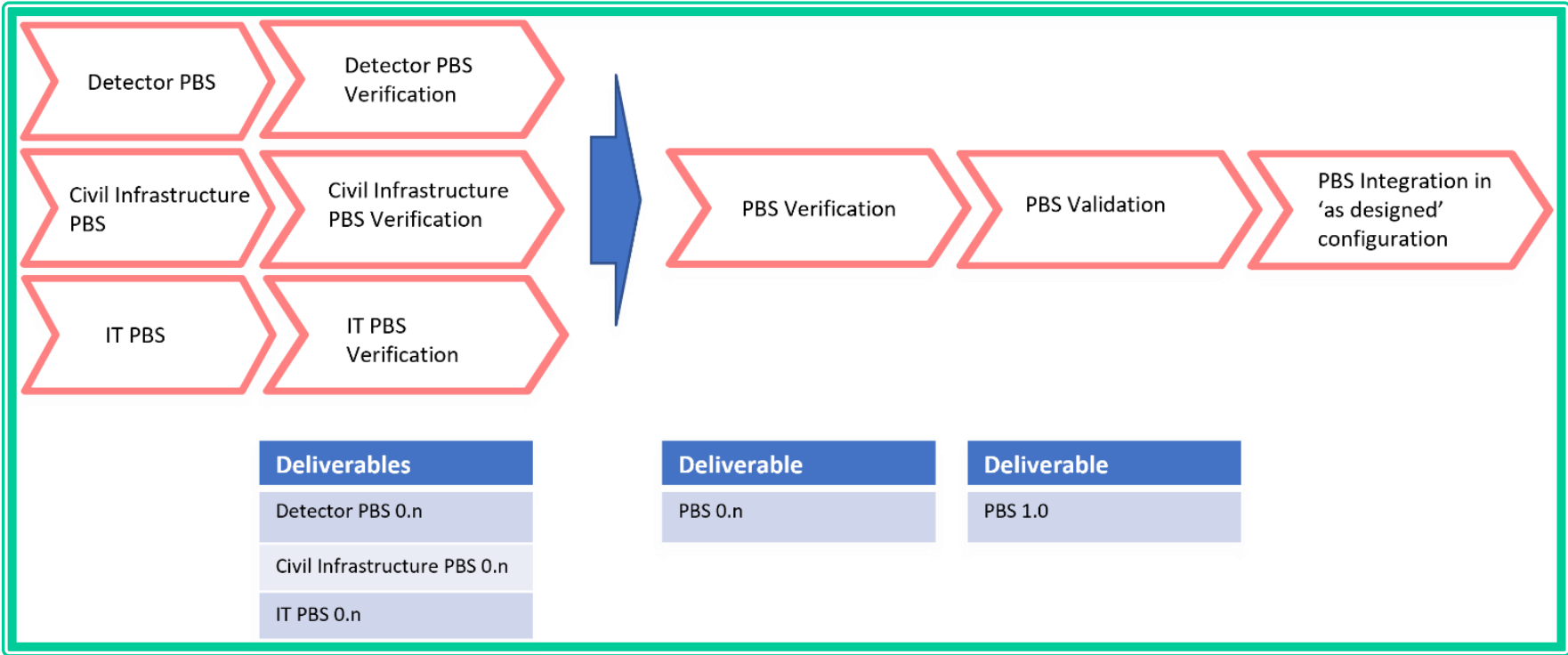
Deliverables: PBS & WG report

- PBS structured in three parts:
 - Detector (HF and LF interferometers);
 - Civil Infrastructure (Surface and Underground) + requests from ISB WPs;
 - E-Infrastructure;
- The WG has released a final report ([ET-0170A-23](#)) describing:
 - Goals
 - Strategy
 - Rules
 - PBS Management Plan
 - Roles
 - Traceability
 - Nomenclature

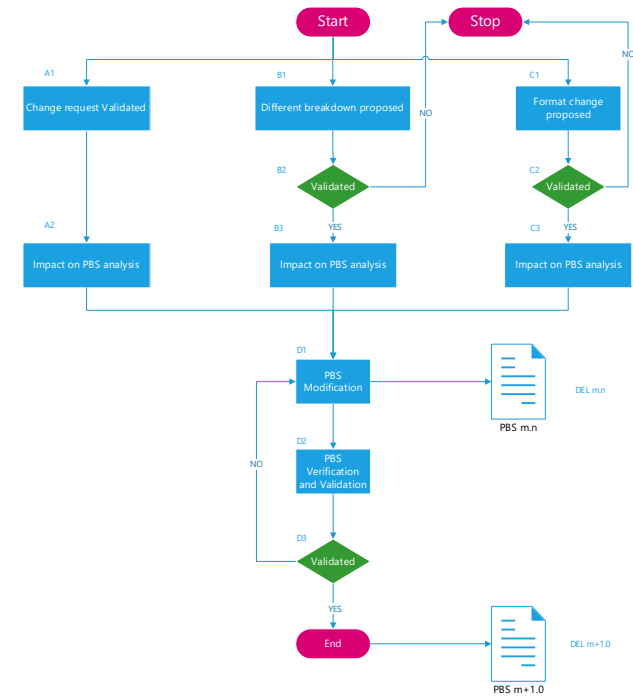
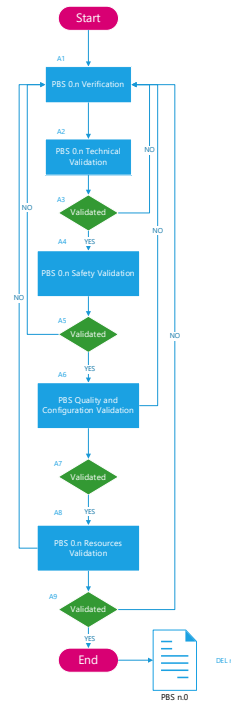
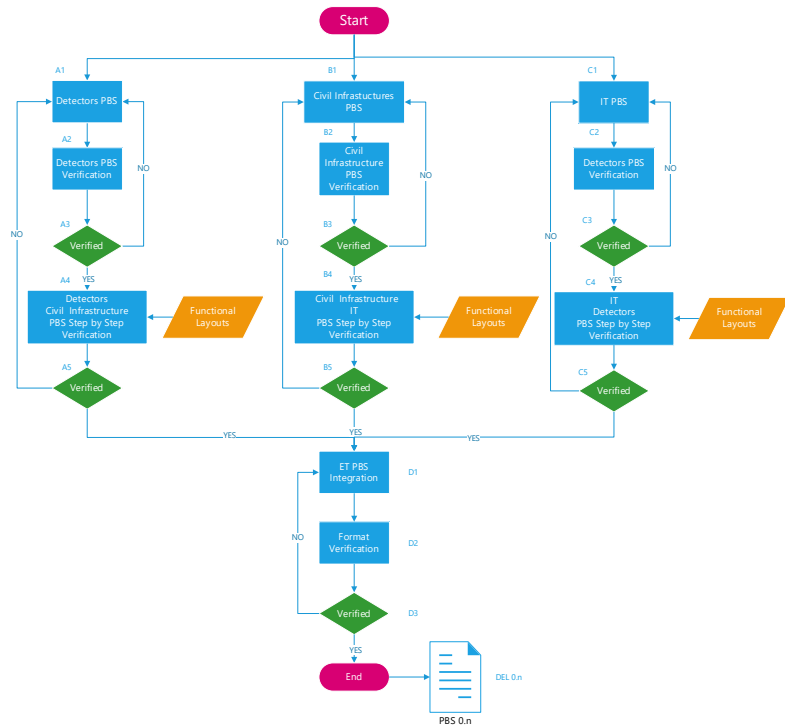
Strategy

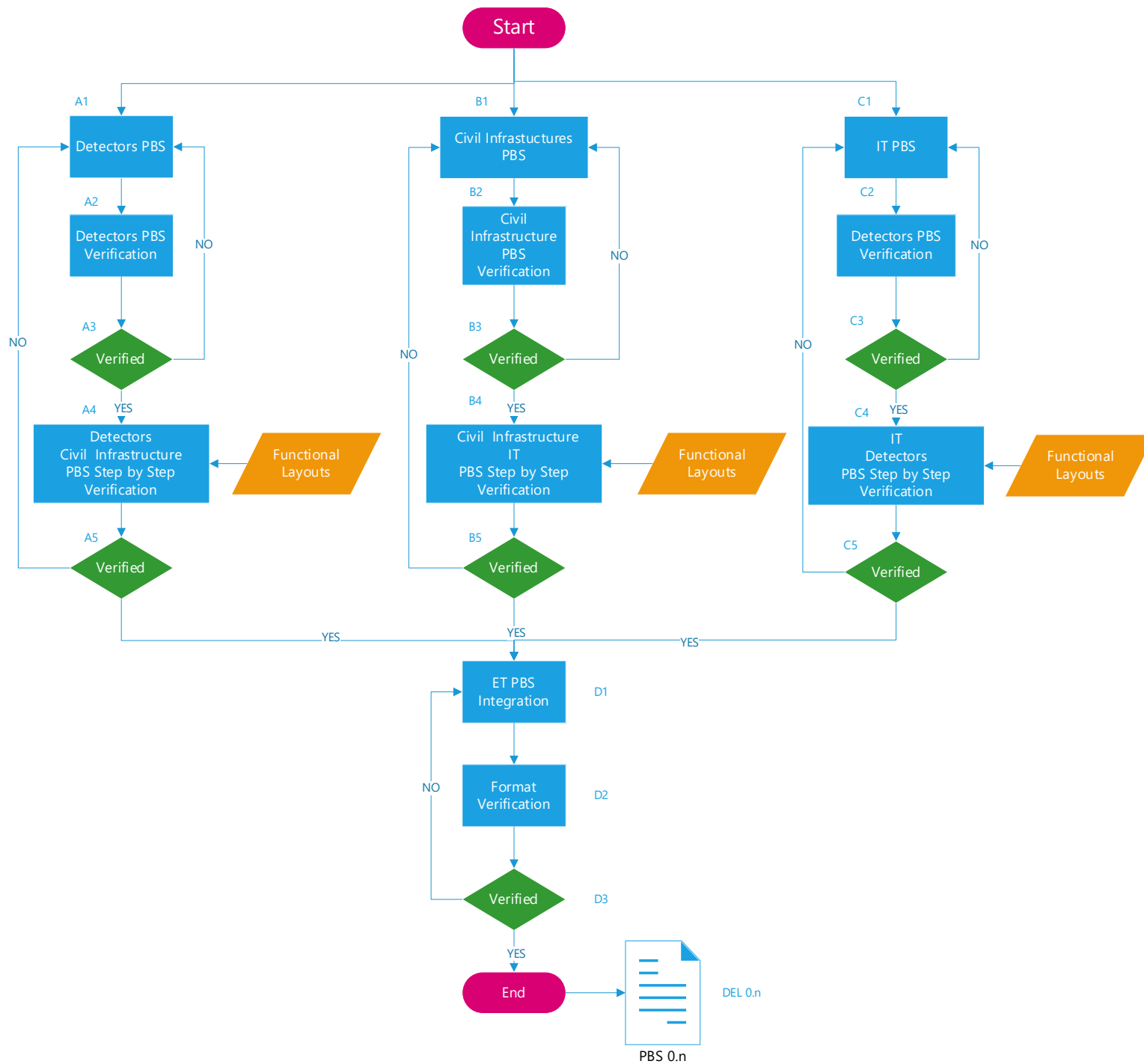
- In general -> defined by the first tiers
- 1) Interferometers: systems (HF and LF interferometers).
- 2) Civil infrastructures: underground civil engineering facilities (buildings, tunnels, caverns, shafts...), underground technical infrastructures (electrical plants, hydraulic systems, cooling and ventilation systems...), ground facilities and technical infrastructures.
- 3) IT: Computing infrastructures, software & data processing tools, services

Management - Lifecycle



Verification, Validation, Change Request





Roles (to be finalized)

Role	Verification Flowchart	Validation Flowchart	Change Request Flowchart
Technical coordinator	A5, B5, C5, D1, D2, D3, DEL 0.n	A2, A3, DEL n.0	A2, B1, C1, B2, B3, C2, C3, D1
Unit manager (level n)	A1, B1, C1, A2, B2, C2,		
Unit manager (level n+1)	A1, B1, C1, A2, B2, C2, A3, B3, C3		
System manager	A1, B1, C1, A2, B2, C2, A3, B3, C3, A4, B4, C4	A2	B1, C1
IT manager	D1		
Quality manager	D1, D2	A6, A7	A2, B1, C1
Configuration manager	D1, D2	A6, A7	A1, B1, C1
Review manager	A5, B5, C5		
Safety manager		A4, A5	
Financial manager		A8, A9	

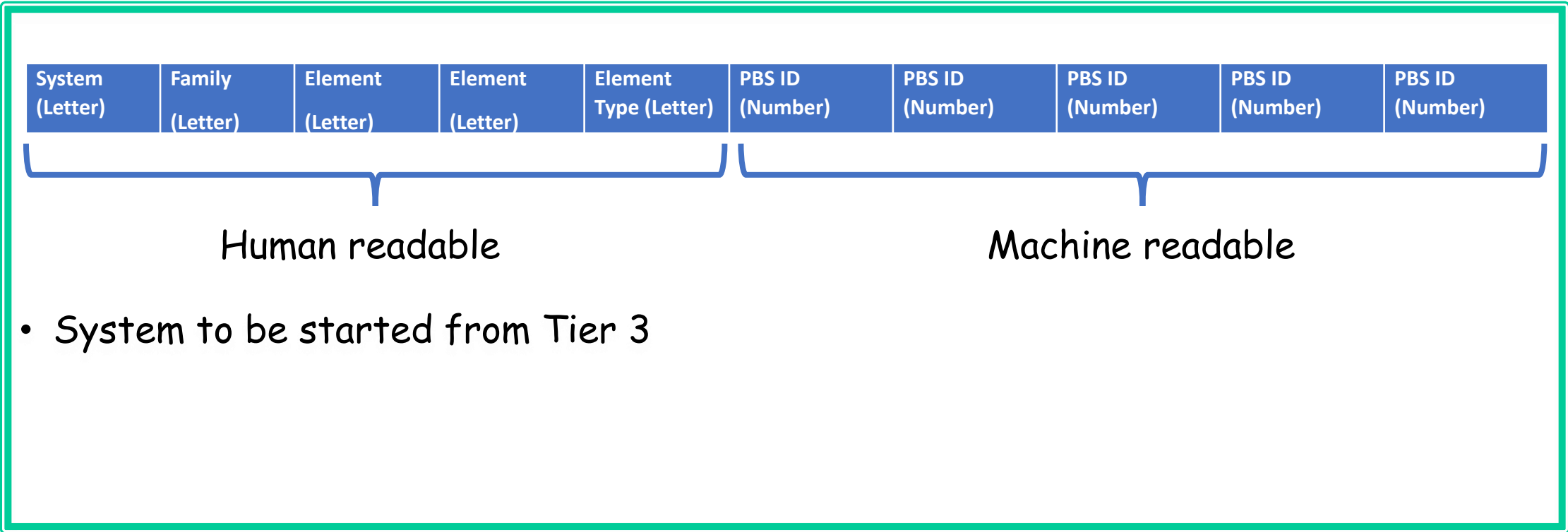
Roles & Responsibilities

Role	PBS rights	RACI	
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
IT manager	RW	C	Responsible for the PBS IT 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

Terminology

- Project (Parent) = Einstein Telescope Observatory
- System (Parents - Sons) = Interferometers, Civil Infrastructure, Information Technology Assets-Products
- Sub-system (Parents - Sons) = unit @ n level
- Element (Sons) = arborescence leave, last tier

Traceability - goal -> identify an element in the PBS



Conclusions

- PBS files available for comments (links added to the Wiki);
- Interaction with some WP coordinators needed to close the loop;
- ITF PBS to be moved into Database to build Reference Configuration (see Alessandro's talk).