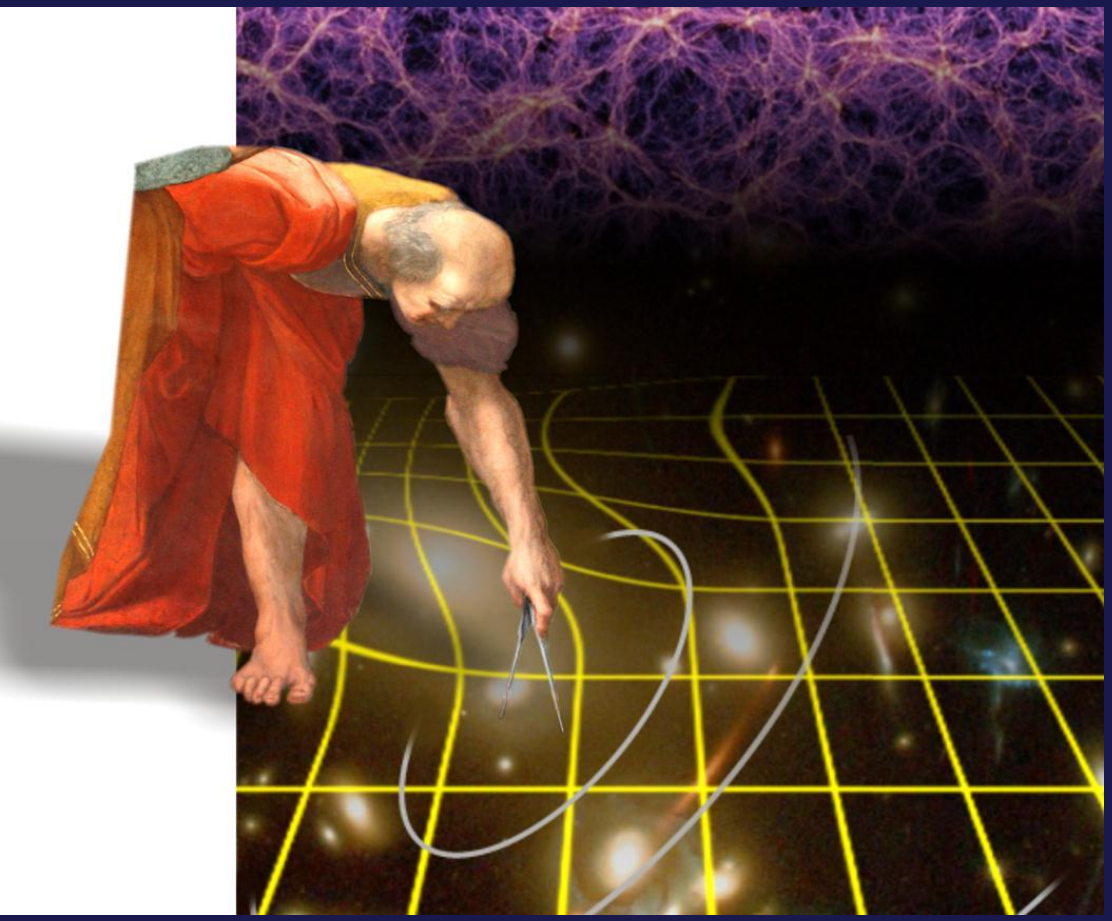


Euclid

Status on:

Mission System Requirement Engineering

Jérôme Amiaux
CEA / Irfu / SAp

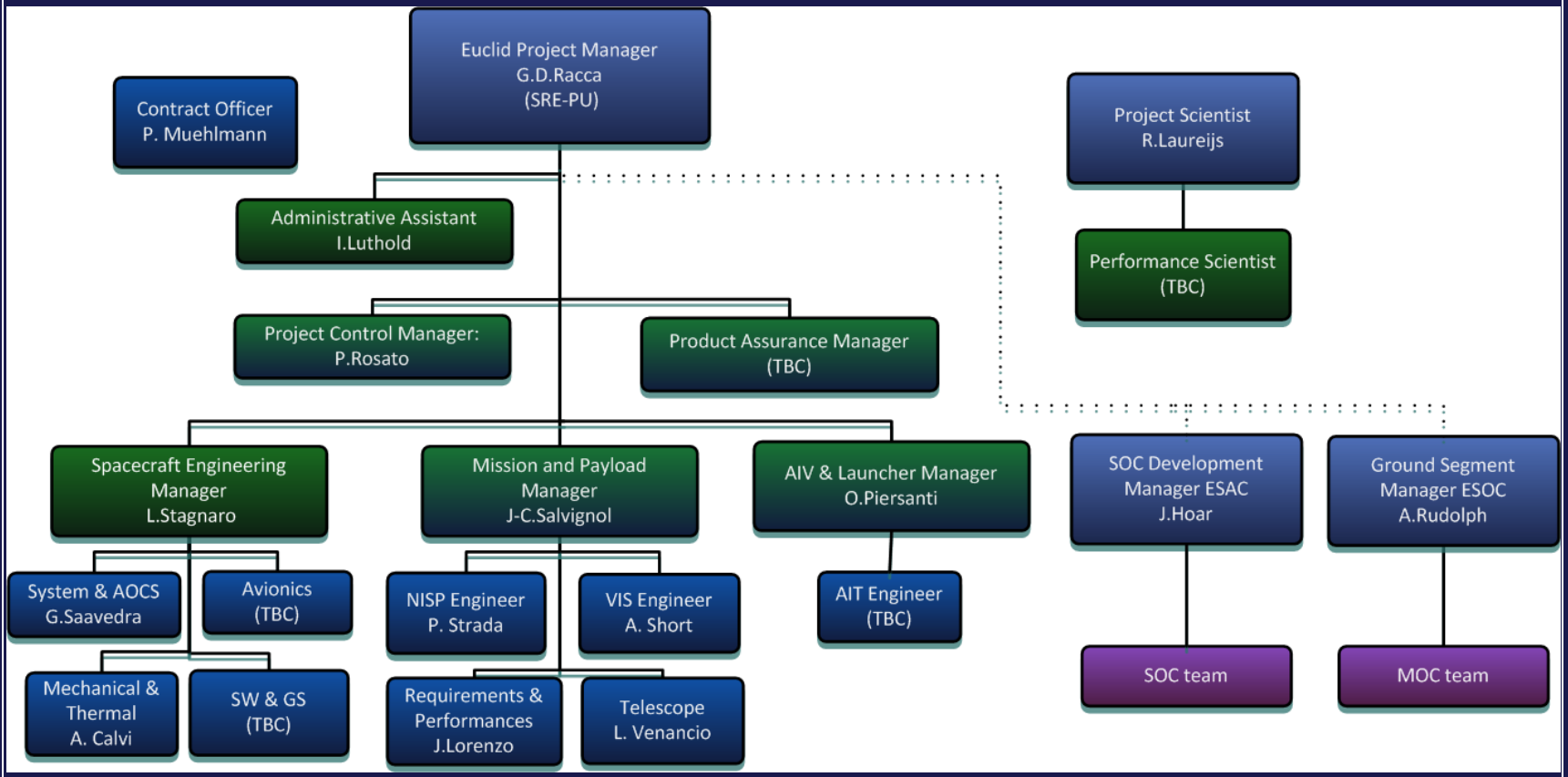
Euclid 2012.

Since last Euclid France meeting:

- Adoption of the Euclid Mission in June 2012

This means:

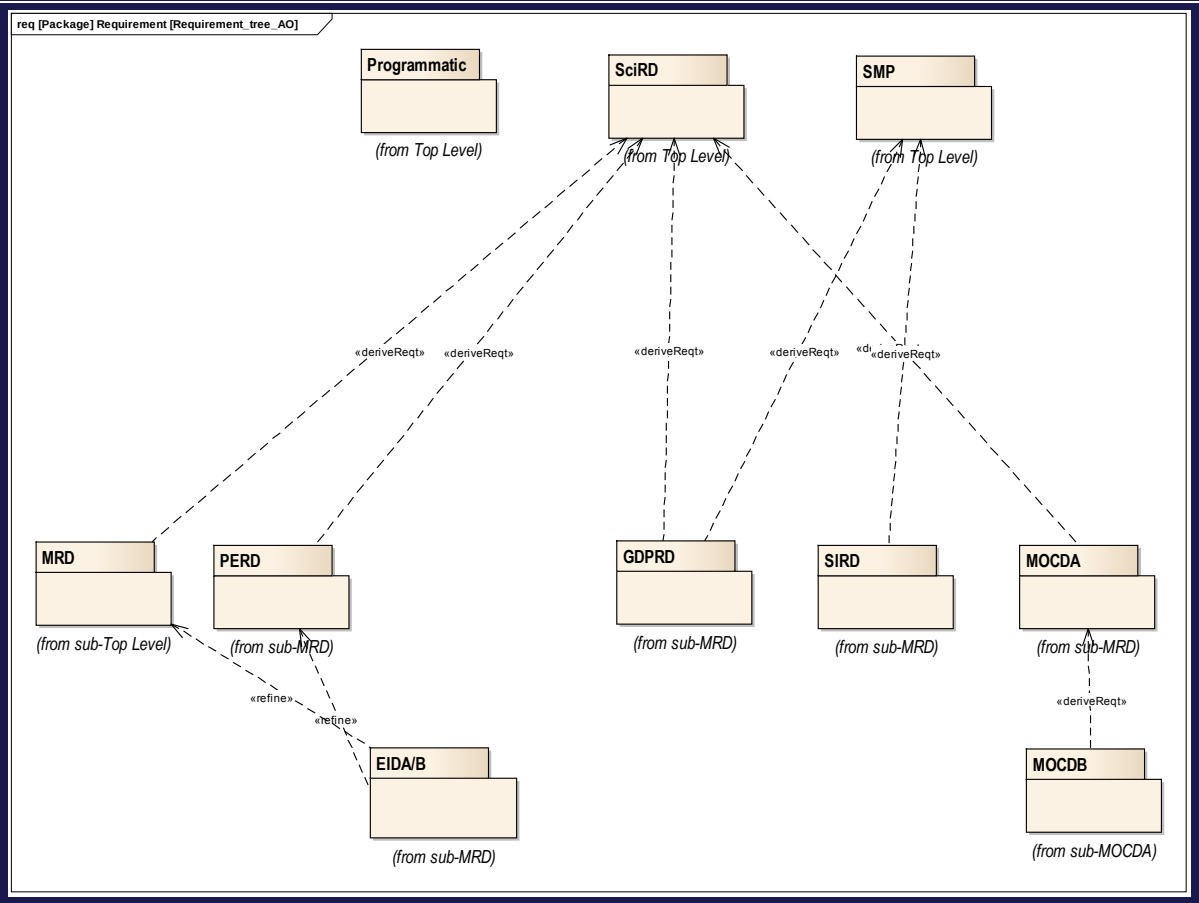
- Euclid on its way for launch in 2020
- A Project Team Created at ESA to follow ESA mission



Requirement flow down

Proposal for Budgeting from SciRD L1 – L2 to Mission L3.

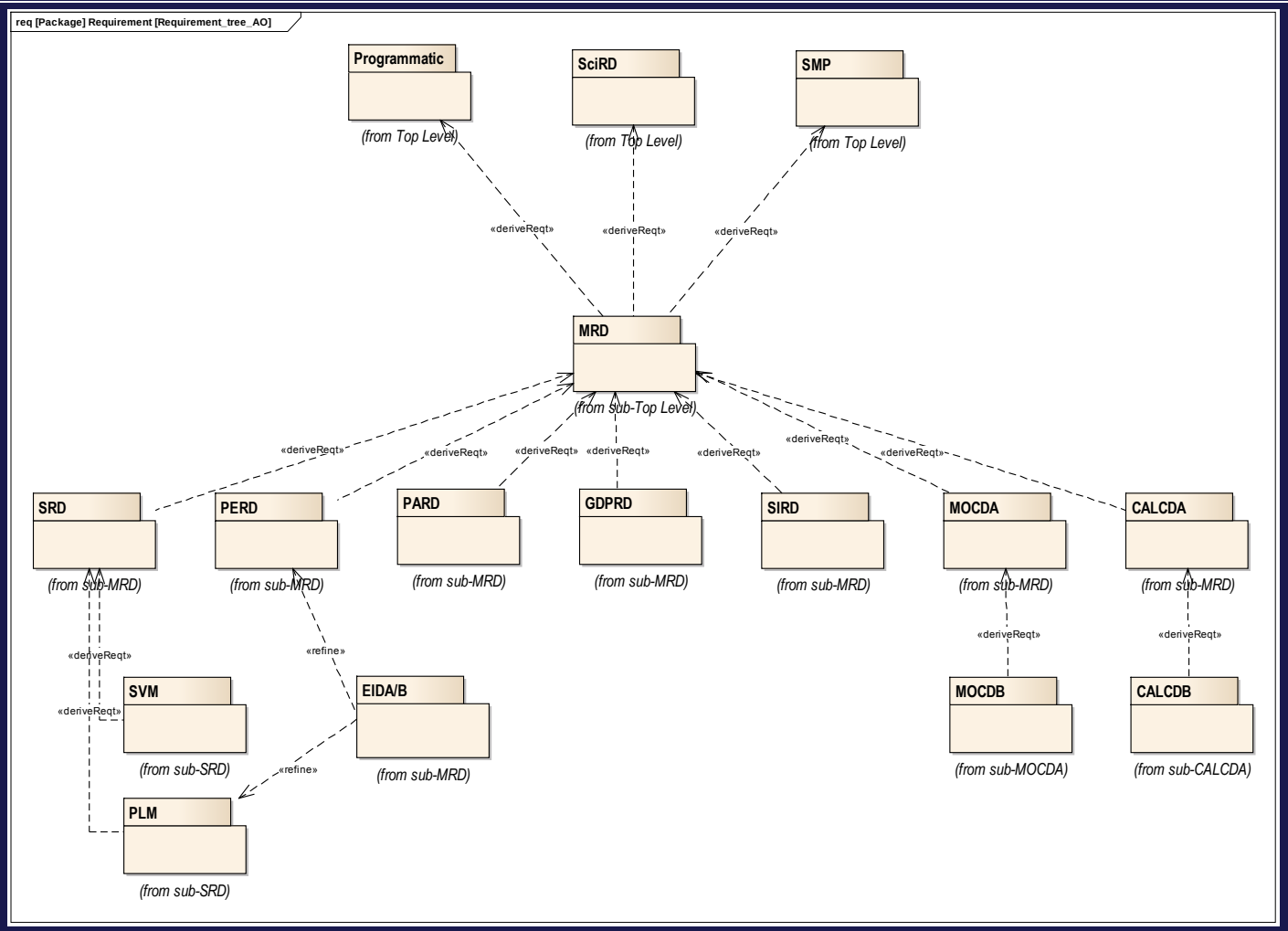
At IPRR



Requirement flow down

Proposal for Budgeting from SciRD L1 – L2 to Mission L3.

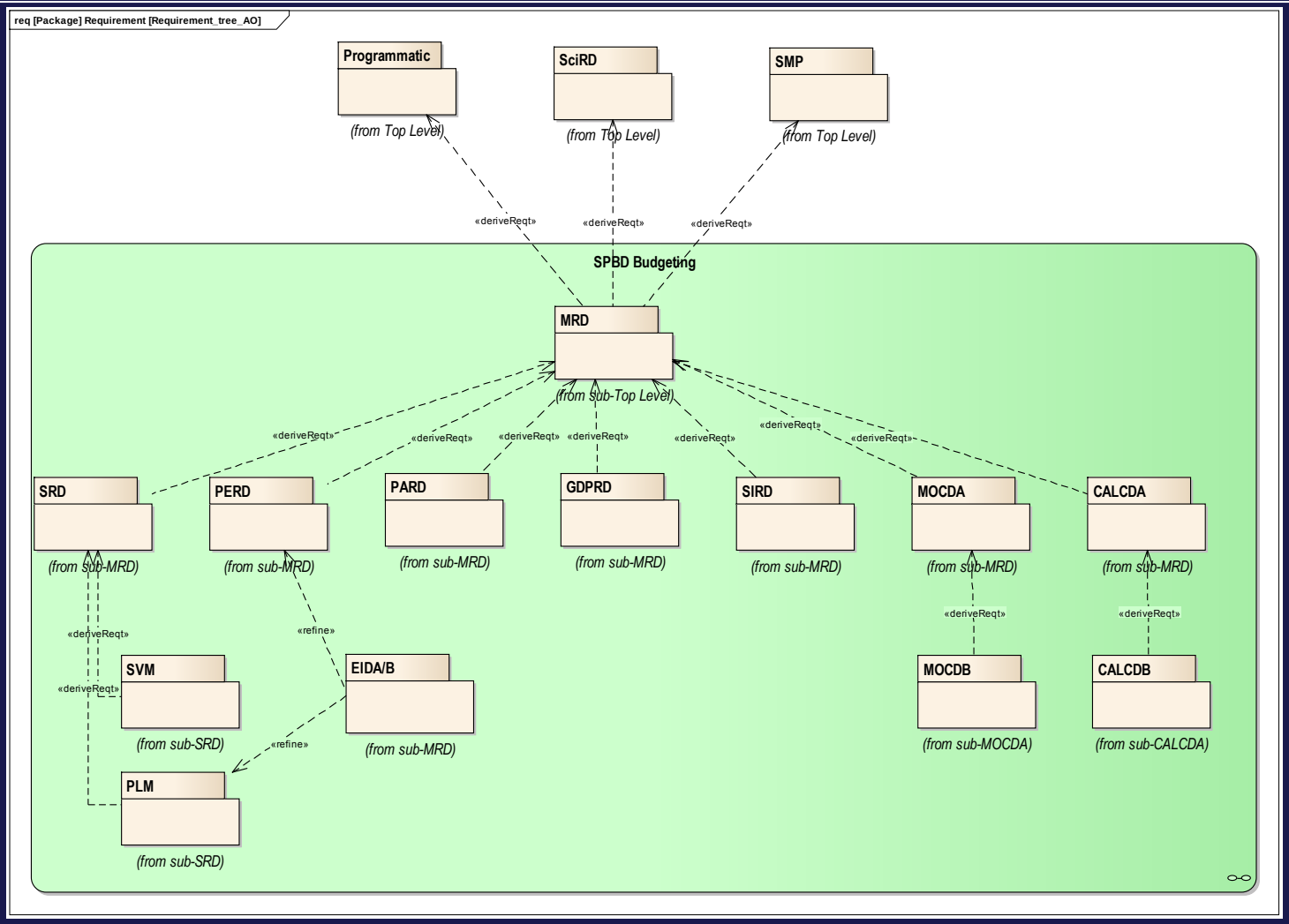
Currently



Requirement flow down: SPBD

System Performance Budget Document

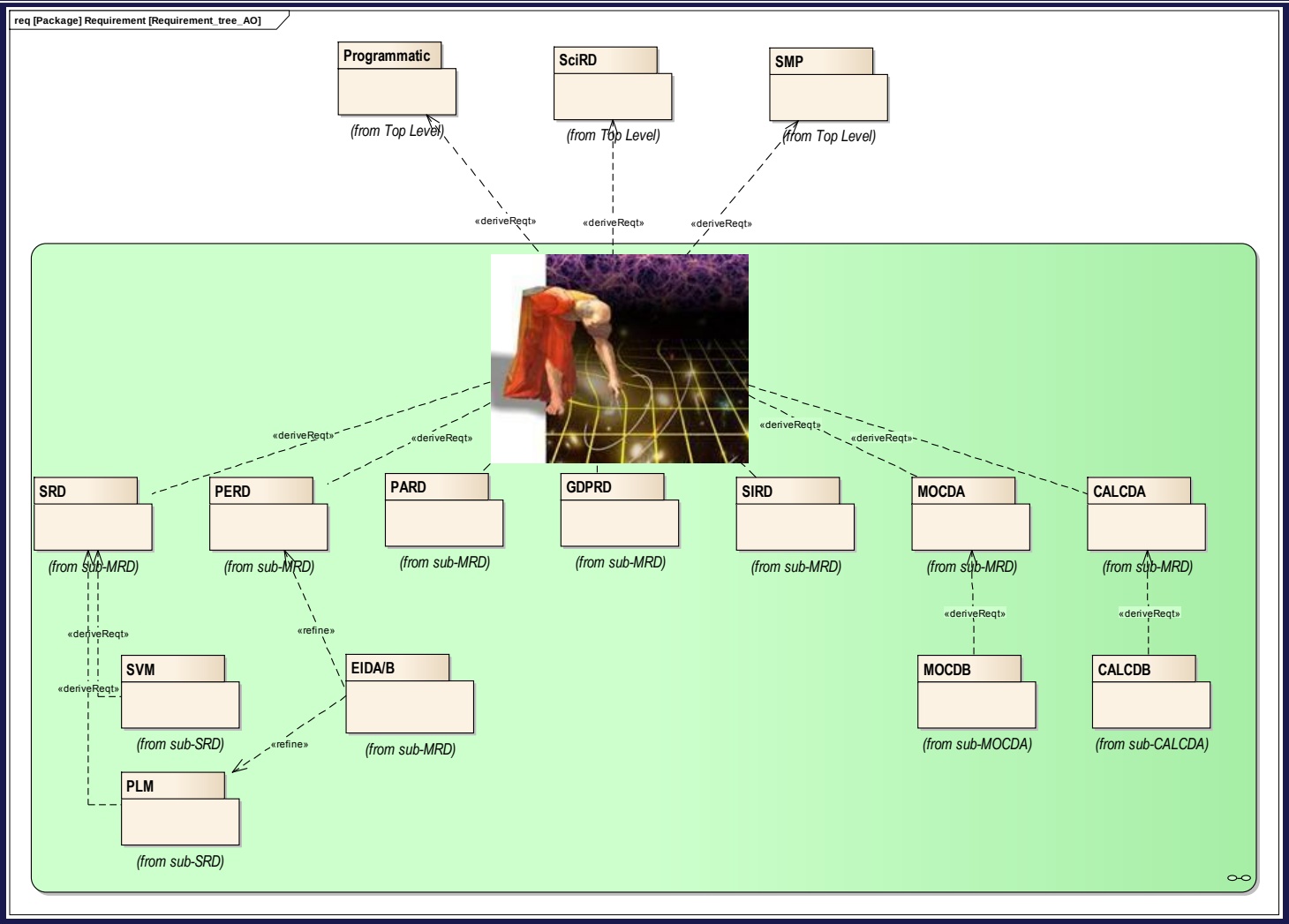
This activity ensure traceability between the different contributors to performance.



Requirement flow down: MRD

MRD: Mission Requirement Document (under review at ESA level)

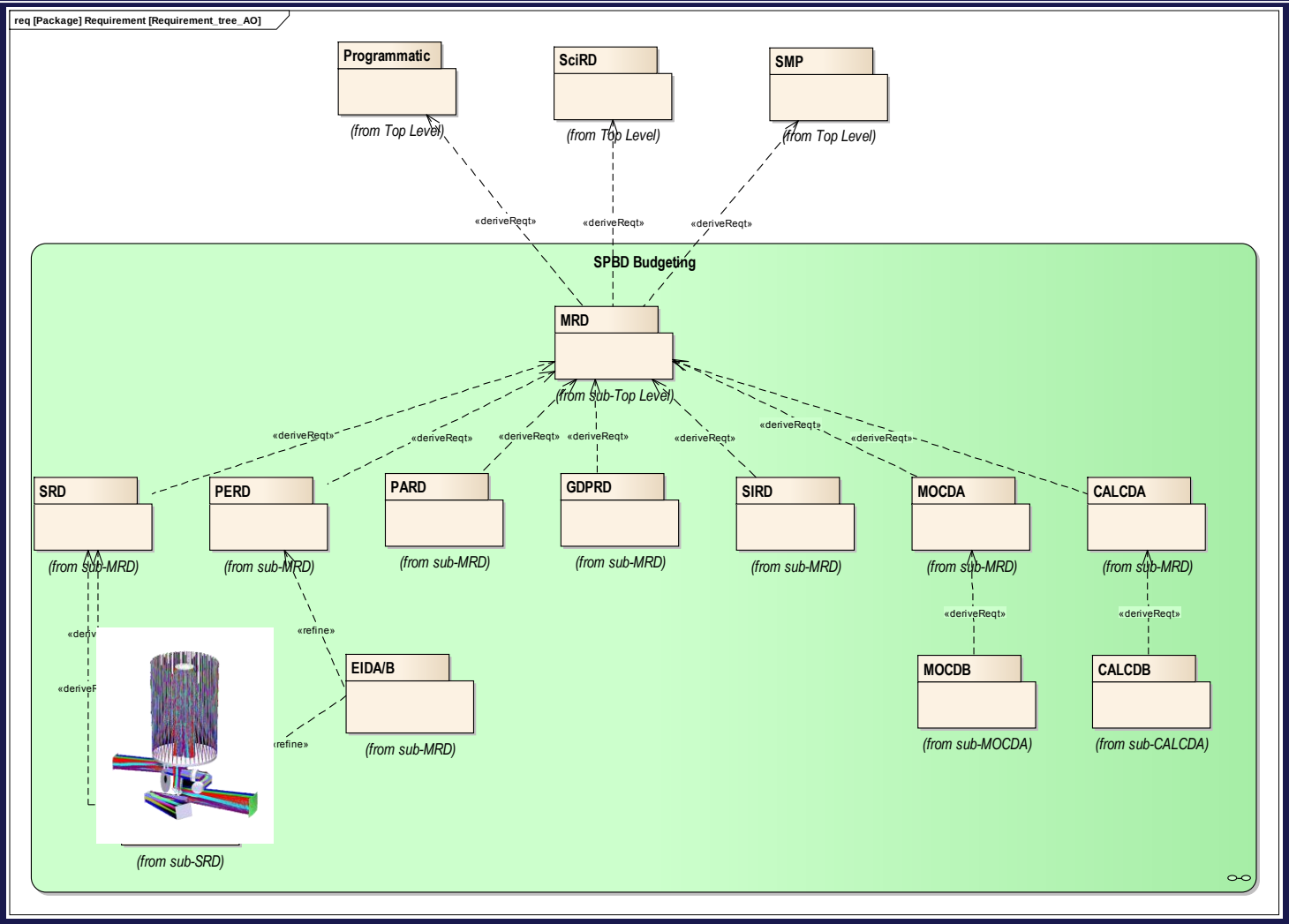
Level of commitment of ESA project.



Requirement flow down: PLM RD

PLM RD: Payload Module Requirement Document (release in 06/12 revised in 11/12).

Document Driving the Telescope (in an extended meaning) Implementation through PLM contract.

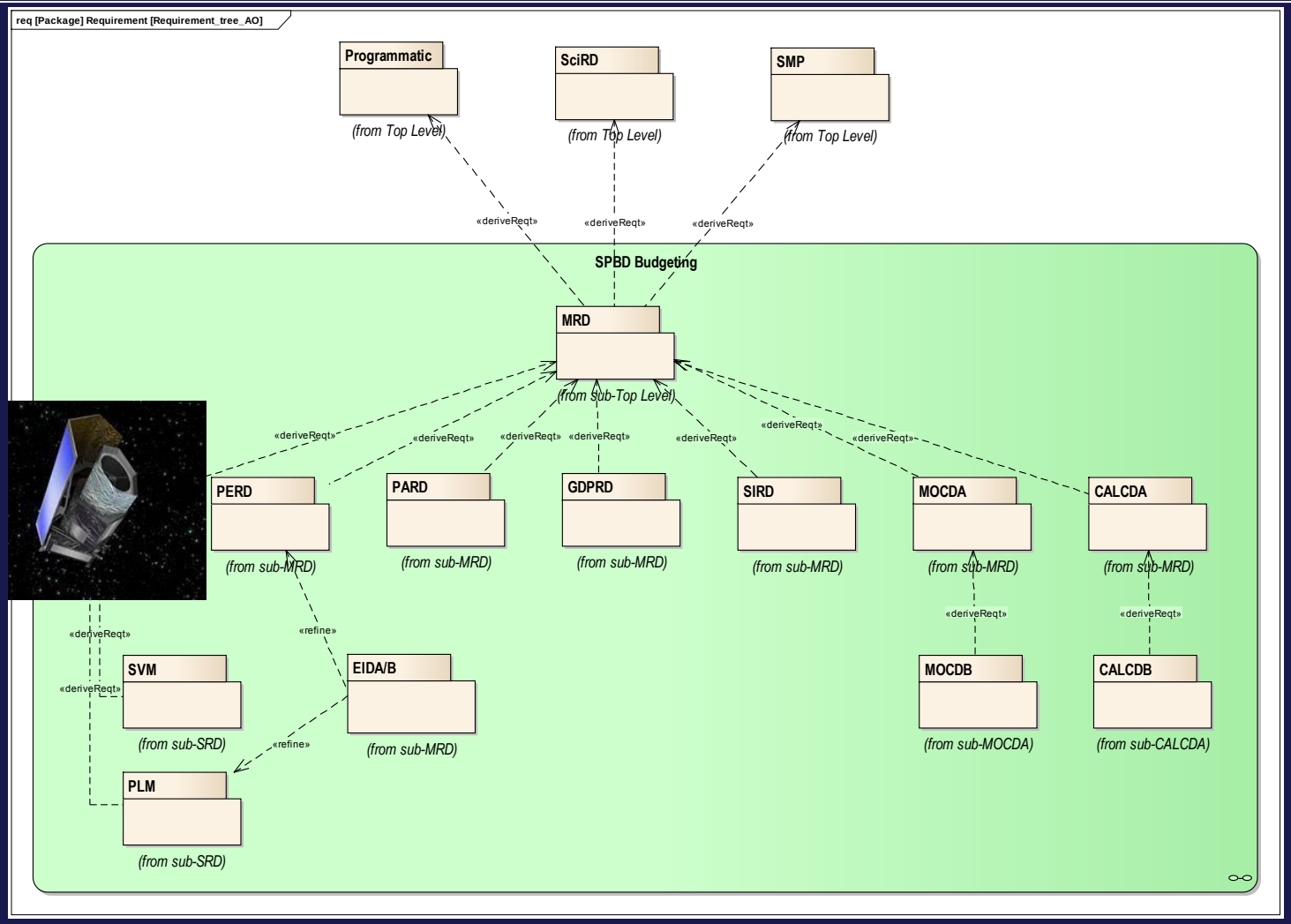


Requirement flow down: SRD

Euclid Consortium

SRD: System Requirement Document (release expected for prime ITT 12/12)

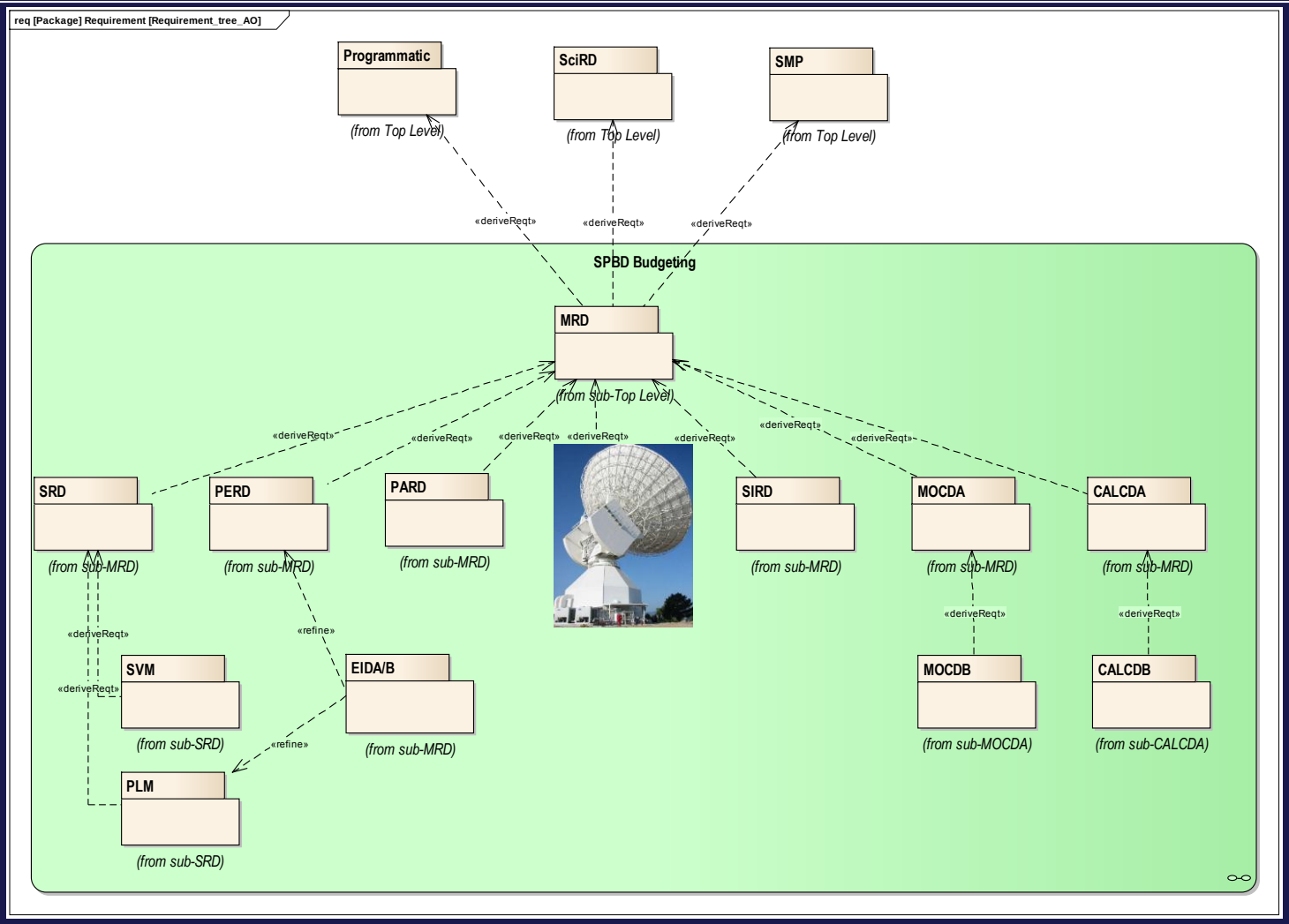
Document Driving the Space Segment Implementation through Prime contract (SVM + PLM).



Requirement flow down: GDPRD

GDPRD: Ground Data Processing Requirement Document (+SIRD) (expected release 17/12/12)

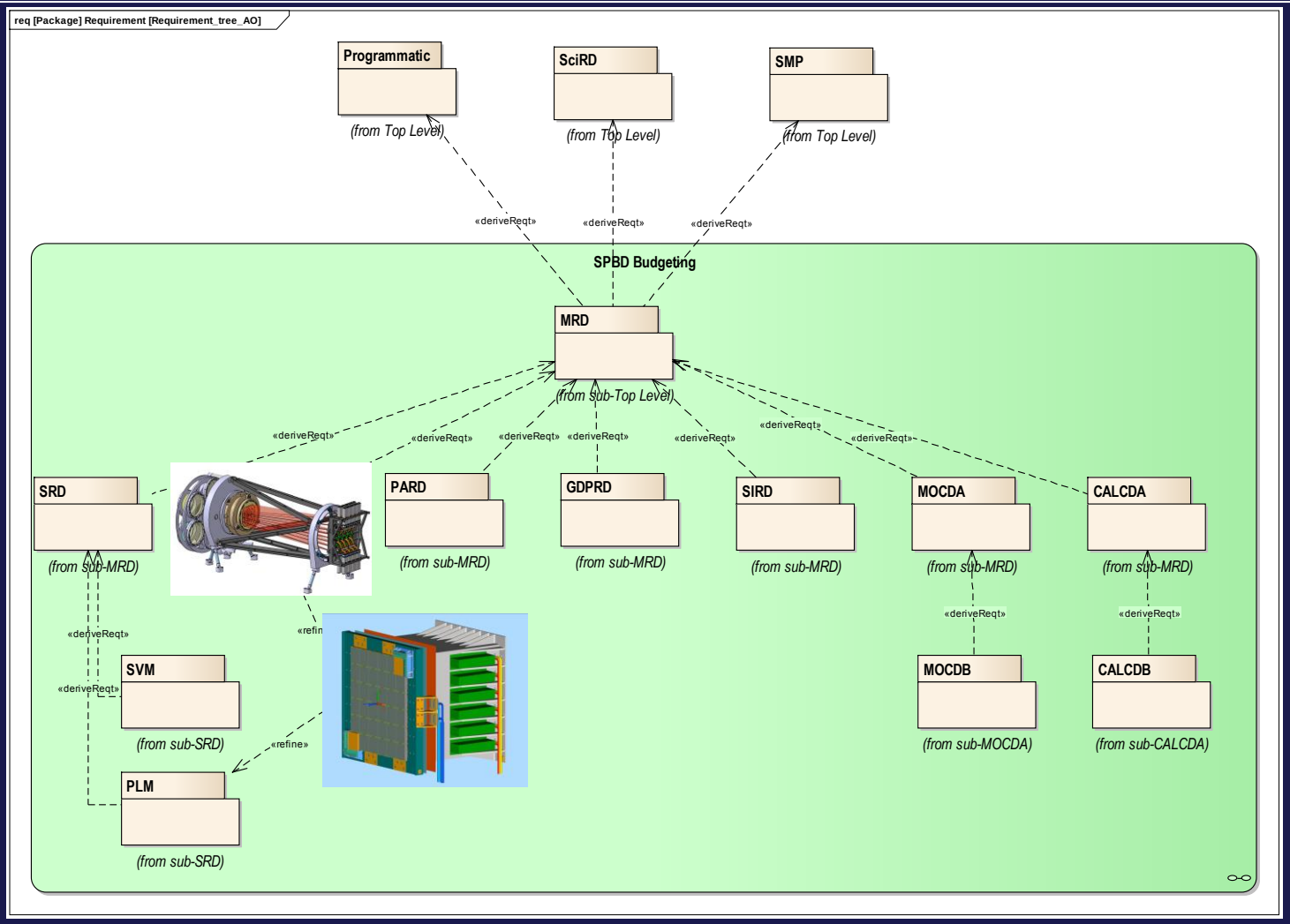
Document Driving the Science Ground Segment being reviewed.



Requirement flow down: PERD

PERD: Payload Elements Requirement Document (+EID-A) (expected release 12/12)

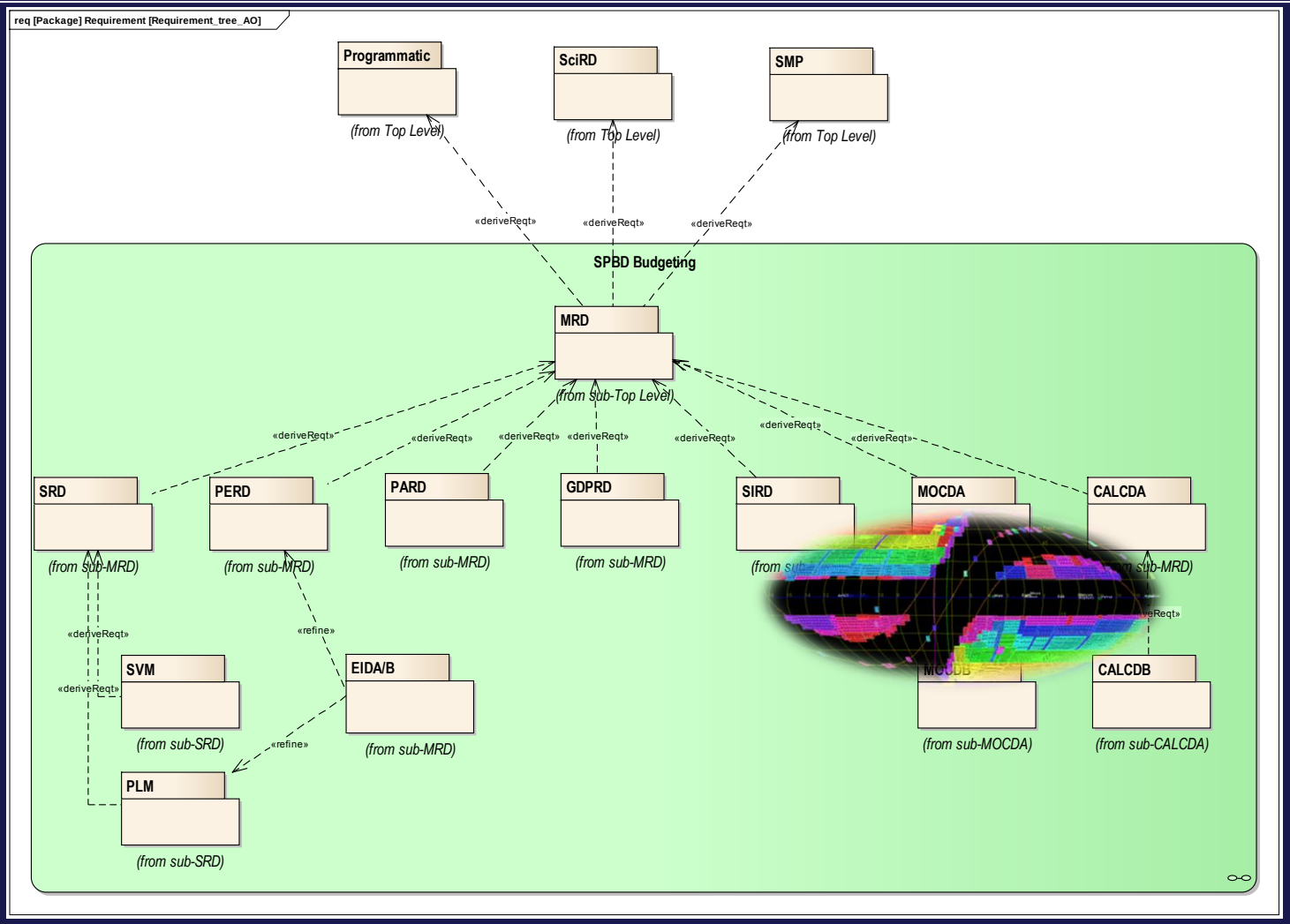
Document Driving the Instrument Implementation, reviewed in the new flow down at ESA.



Requirement flow down: MOCD

MOCD: Mission Operation Concept Document (part A&B) (released 10/12)

Document describing the current reference operation concept (survey sequence of observation).

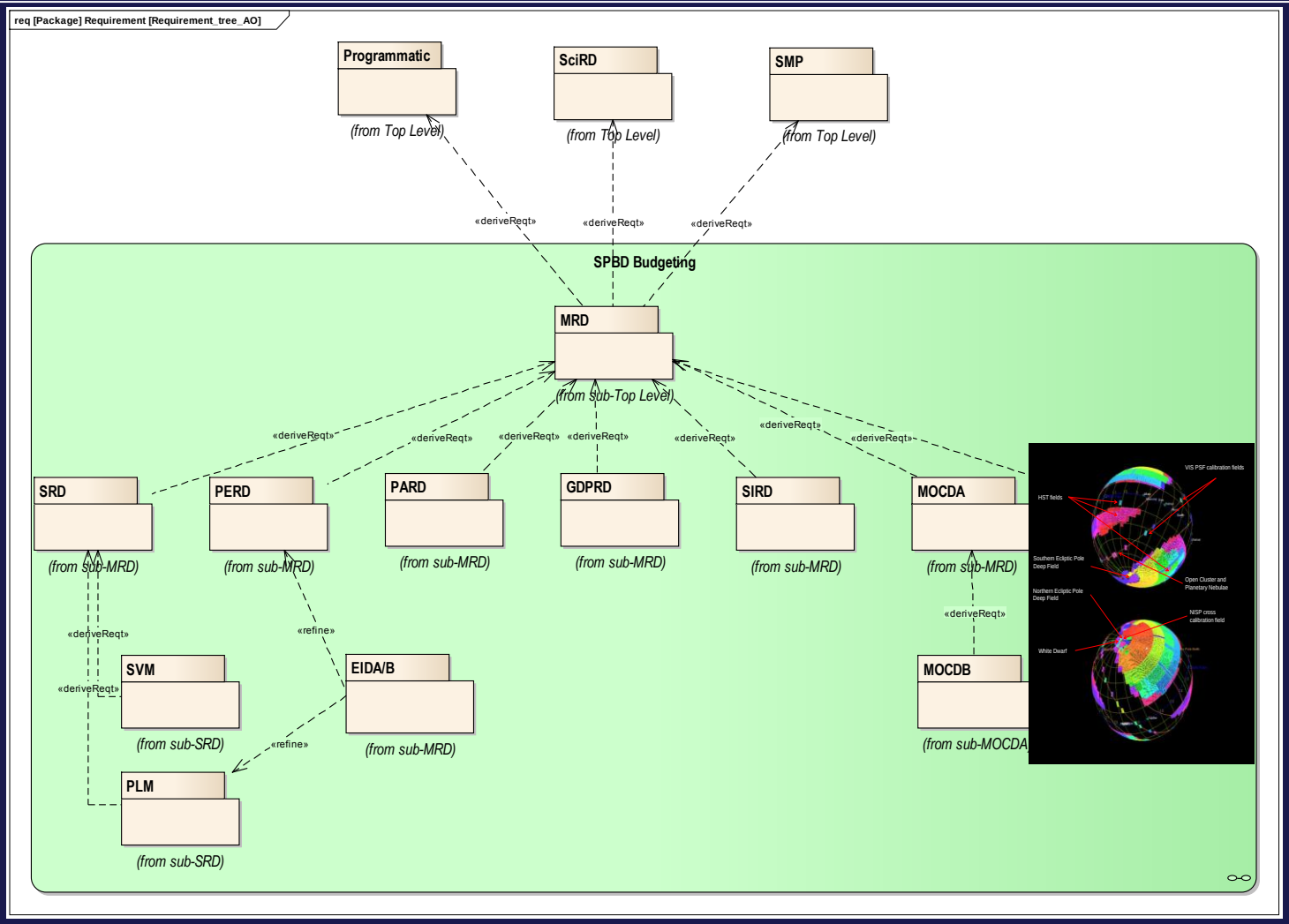


Requirement flow down: CalCD

Euclid Consortium

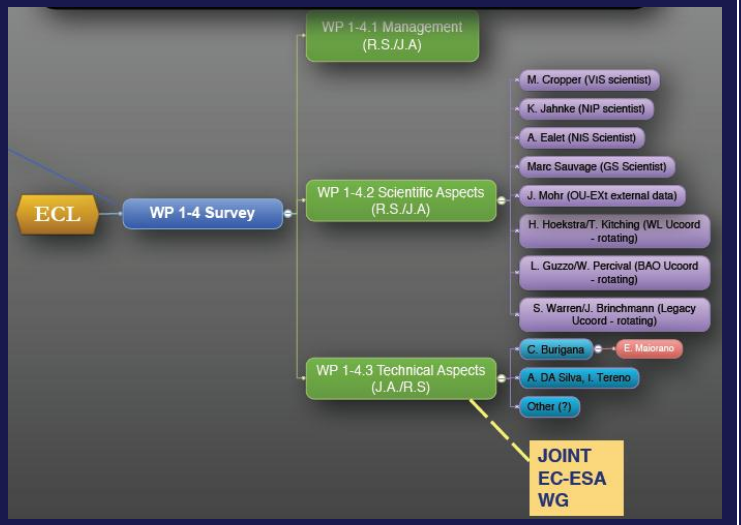
CalCD: Calibration Concept Document (part A&B) (released 10/12)

Document describing the current reference calibration concept (procedure of calibration).



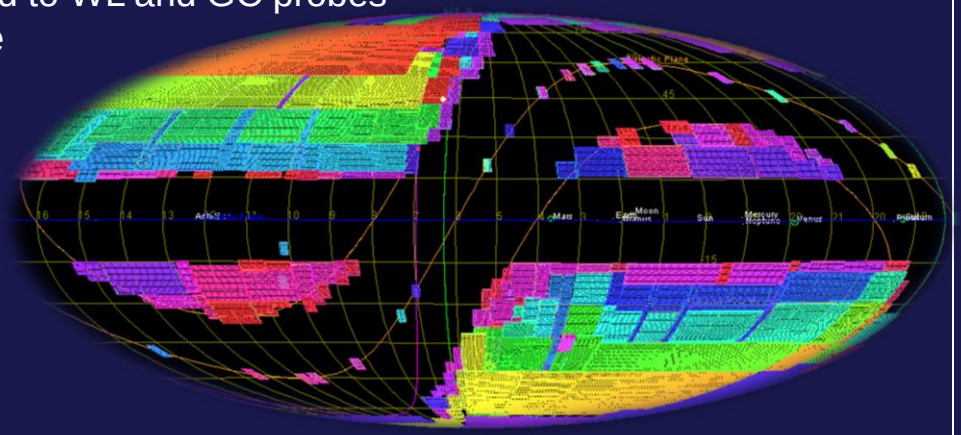
20/2012: Creation of the Euclid Sky Survey Working Group

- Joint ESA / EC
- Responsibility of data package “Implementation”
- Group in Portugal for survey optimisation
- Group in Bologna for Survey map



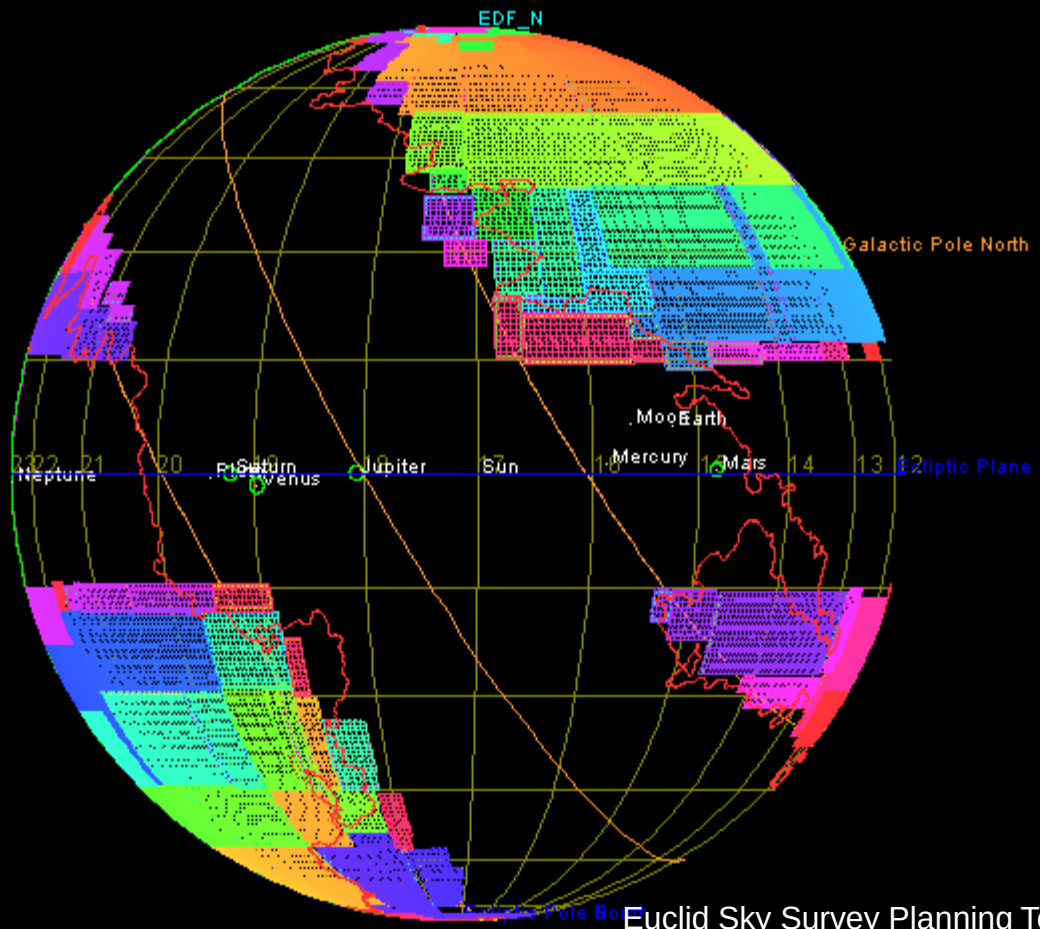
Redaction of MOCD part B issue 3 for SRD ITT support (10/2012):

- use of ESSPT Tool
- Sequence of 45 000 observation fields
- Analysis of end-to-end performance linked to WL and GC probes
- inclusion of updated calibration sequence
- Statistical analysis of Survey

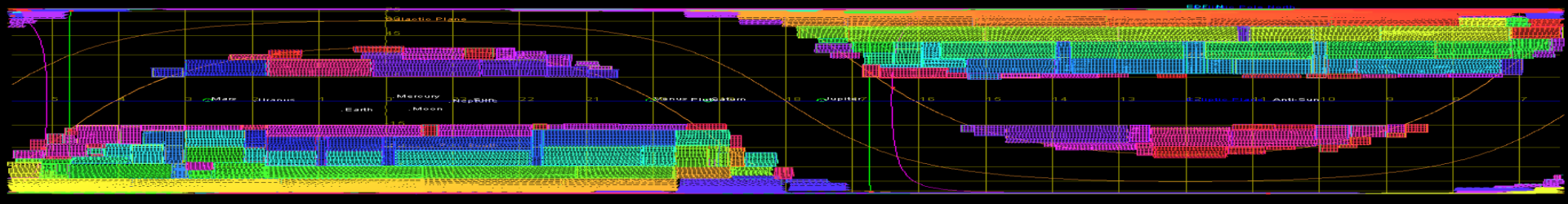


Euclid – Survey

Euclid Consortium

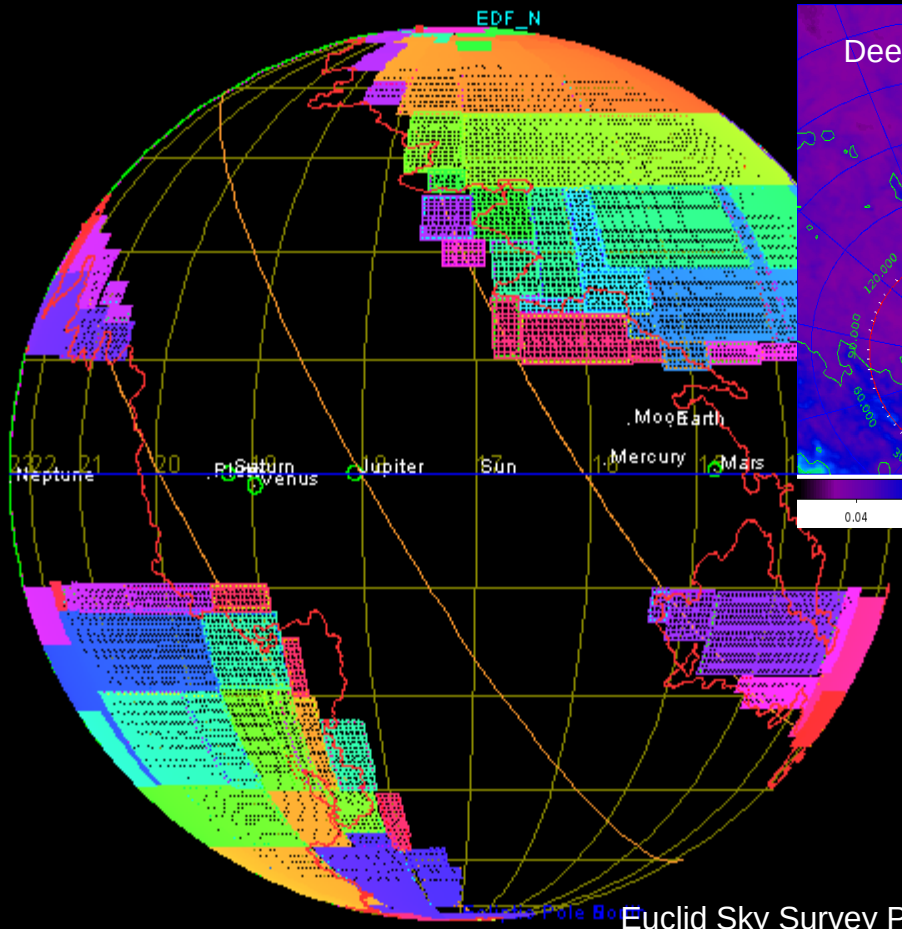


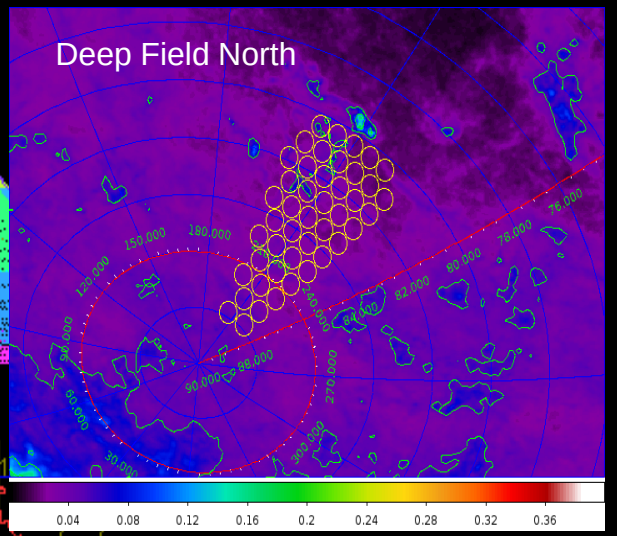
Euclid Sky Survey Planning Tool developped by ESAC



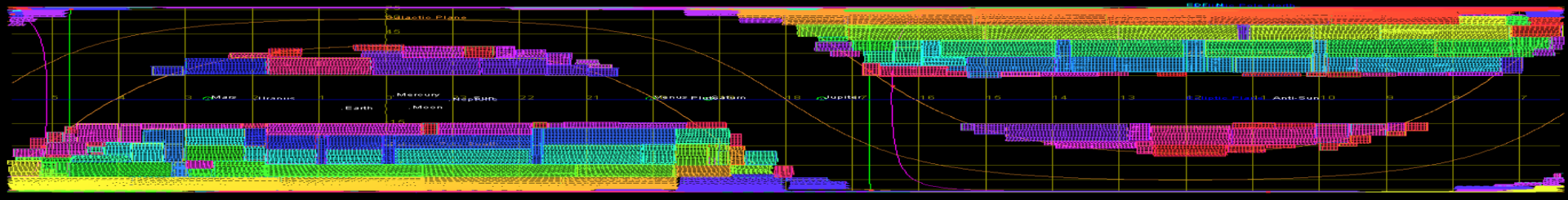
Euclid – Survey

Euclid Consortium



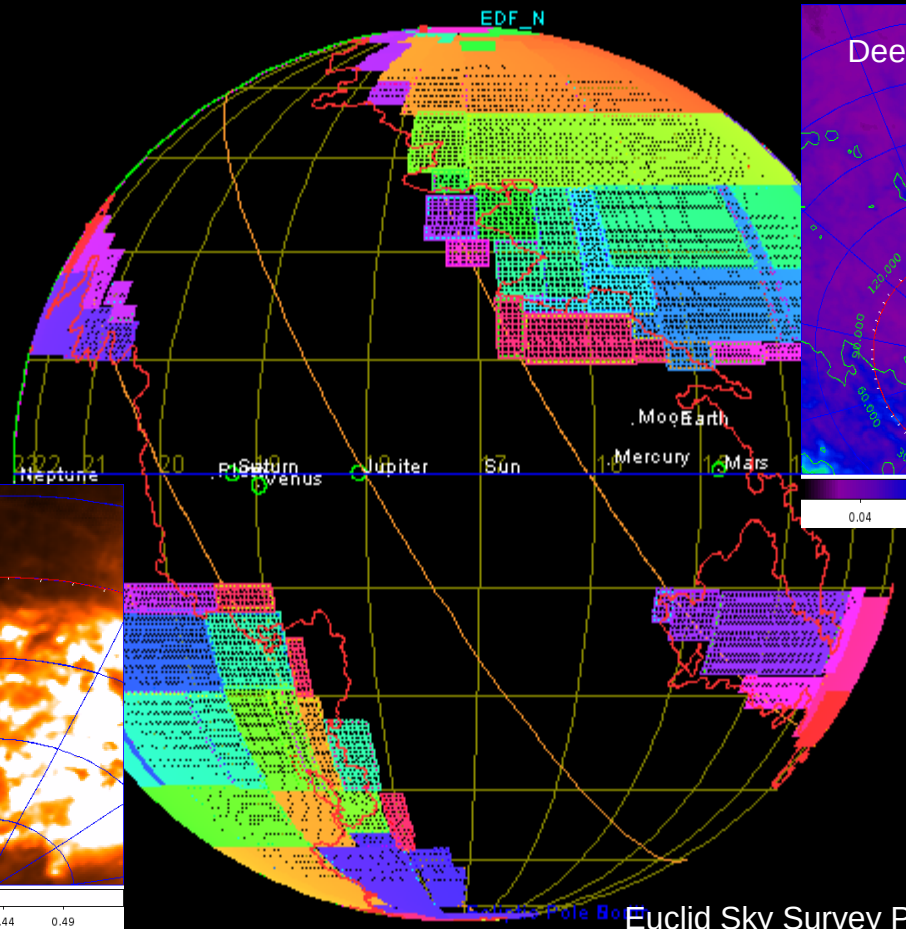


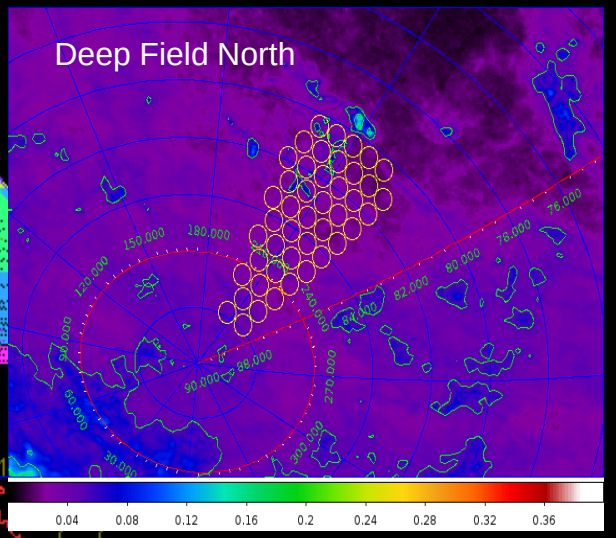
Euclid Sky Survey Planning Tool developped by ESAC

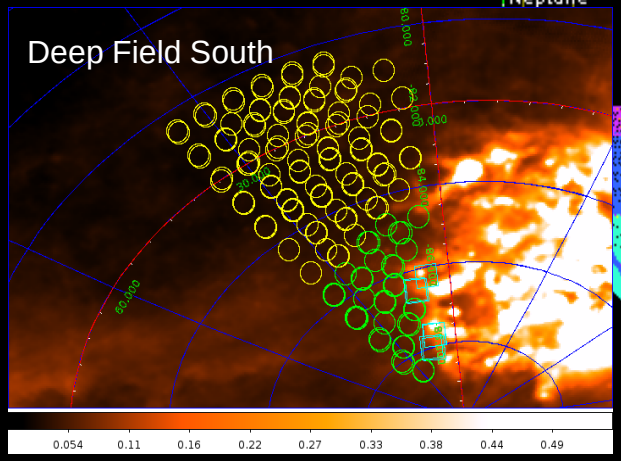


Euclid – Survey

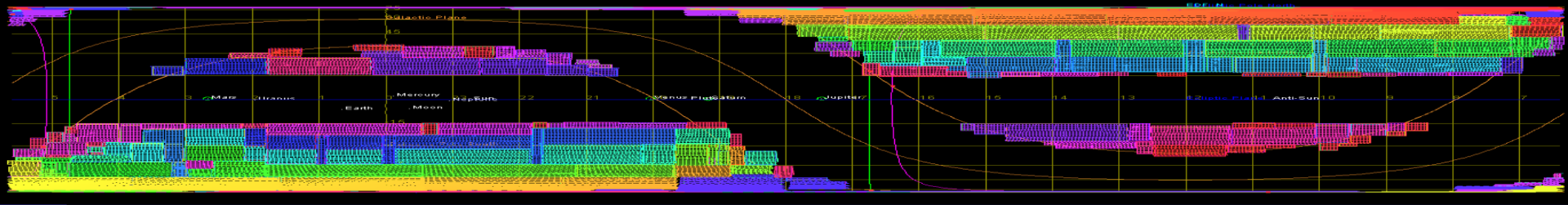
Euclid Consortium





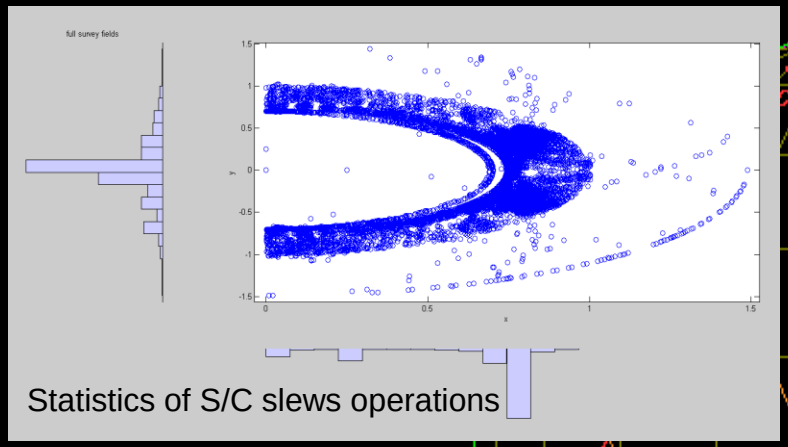


Euclid Sky Survey Planning Tool developped by ESAC

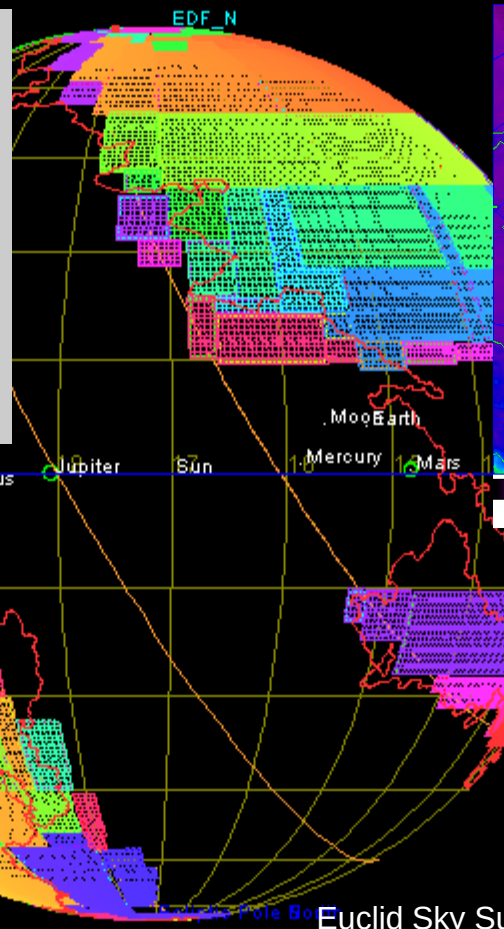


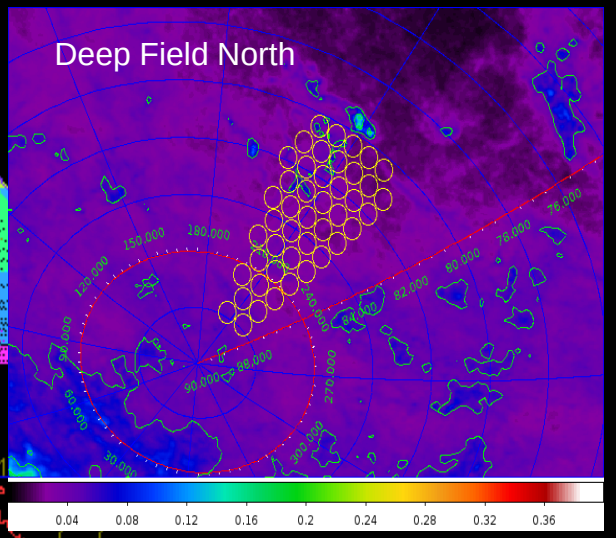
Euclid – Survey

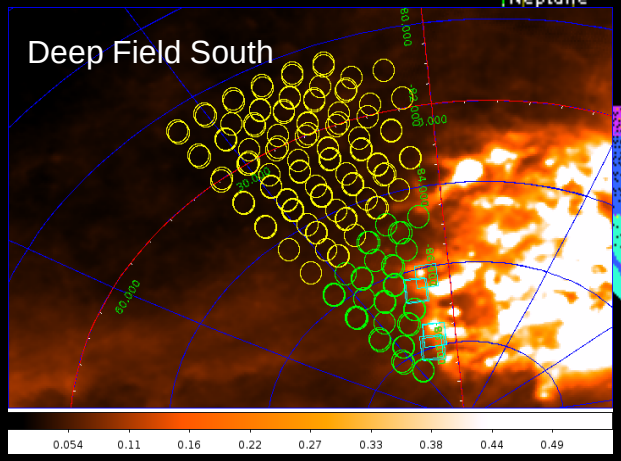
Euclid Consortium



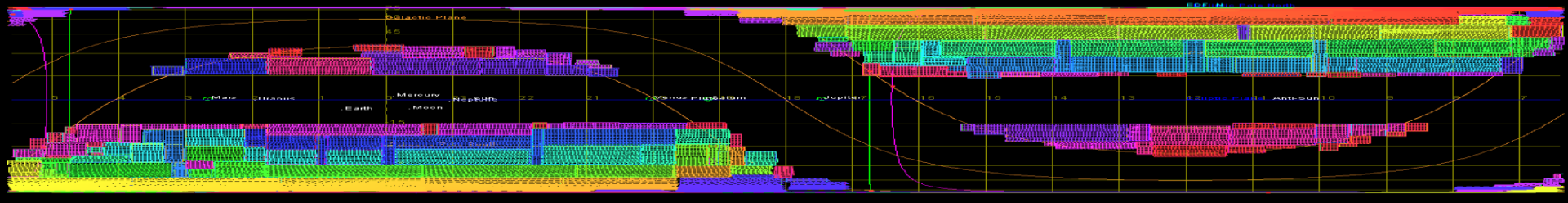
Statistics of S/C slews operations





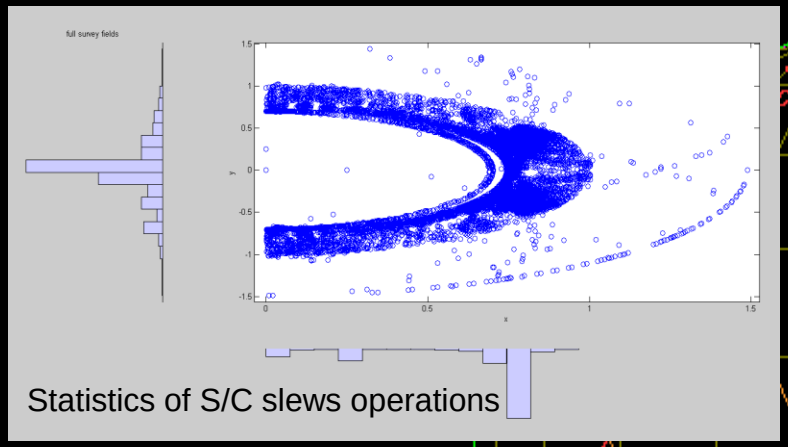


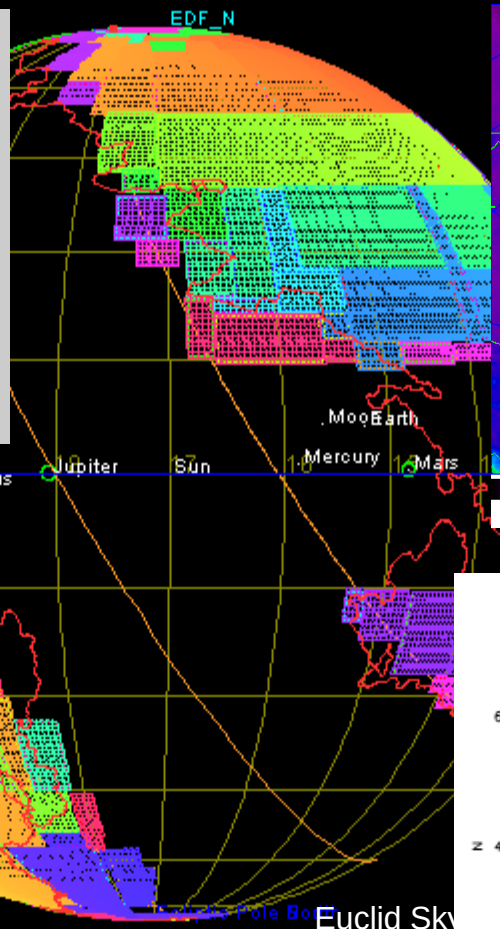
Euclid Sky Survey Planning Tool developped by ESAC

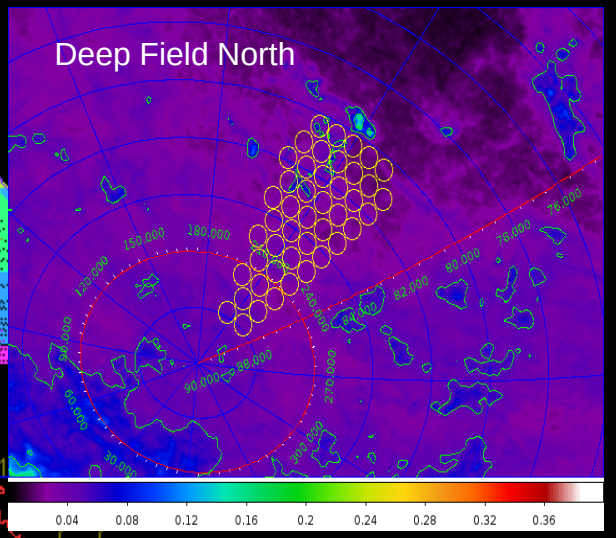


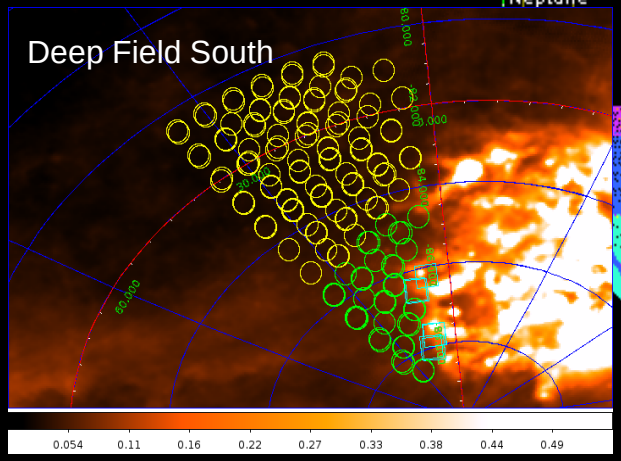
Euclid – Survey

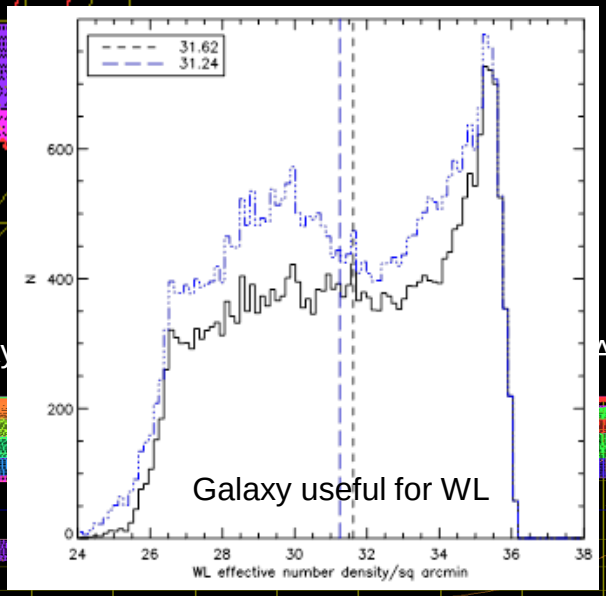
Euclid Consortium

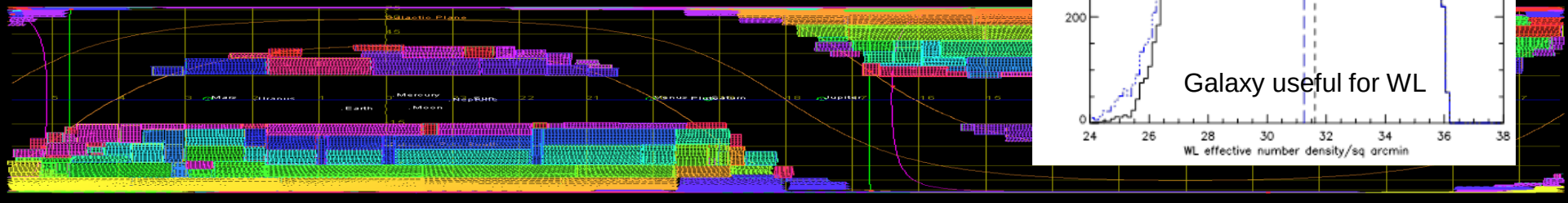










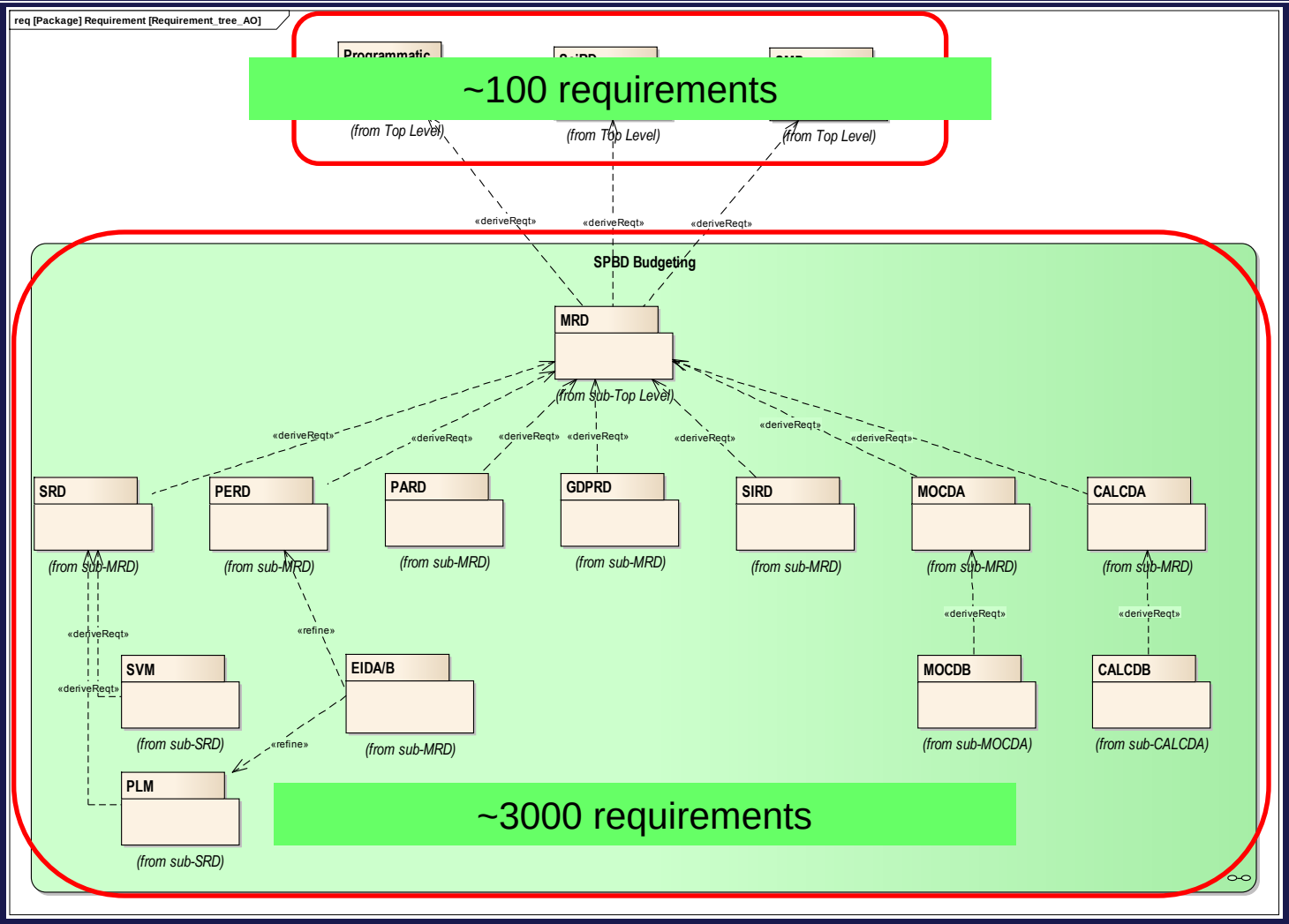


Requirement flow down: complexity

Euclid Consortium

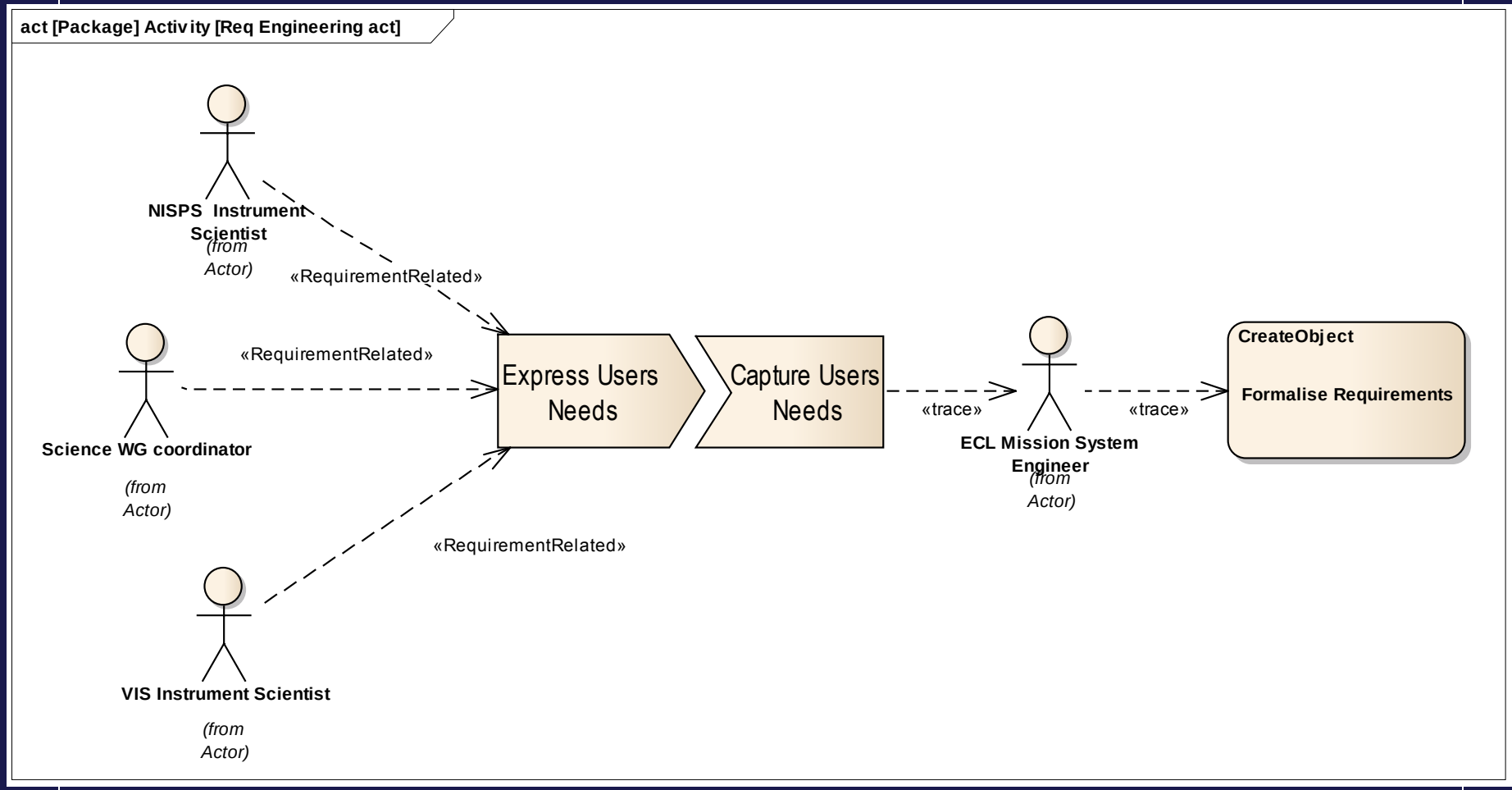
Euclid requirement allocation / justification / tracking is a complex activity.

Need of specific approach and tools to ensure coherence is maintain.

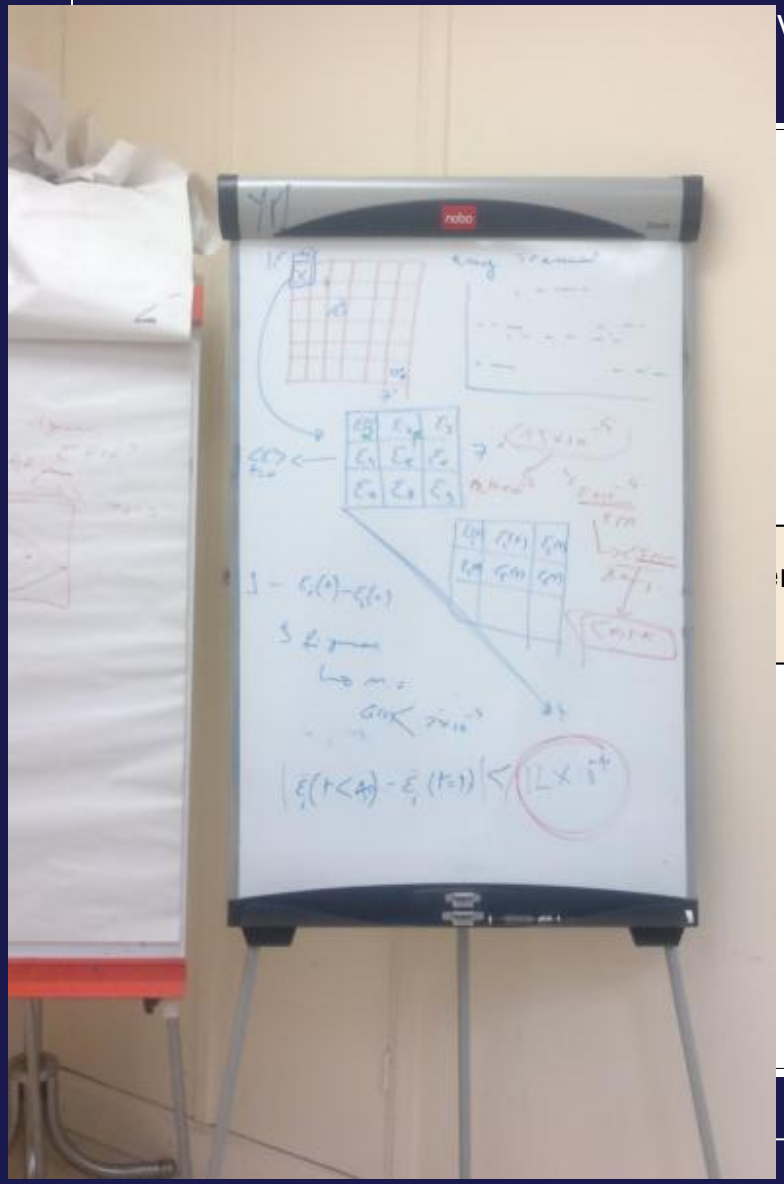


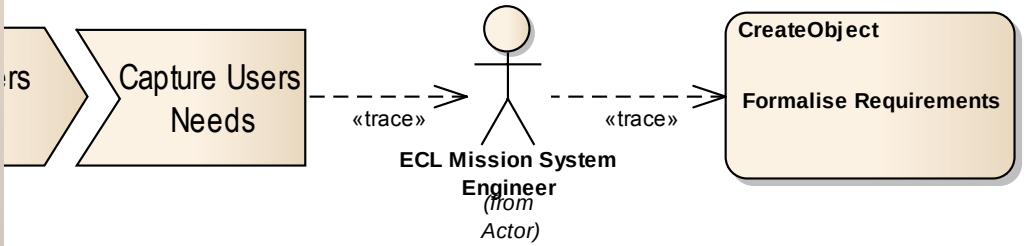
Requirement Engineering

Systematic Requirement Engineering Activites down to Level3.



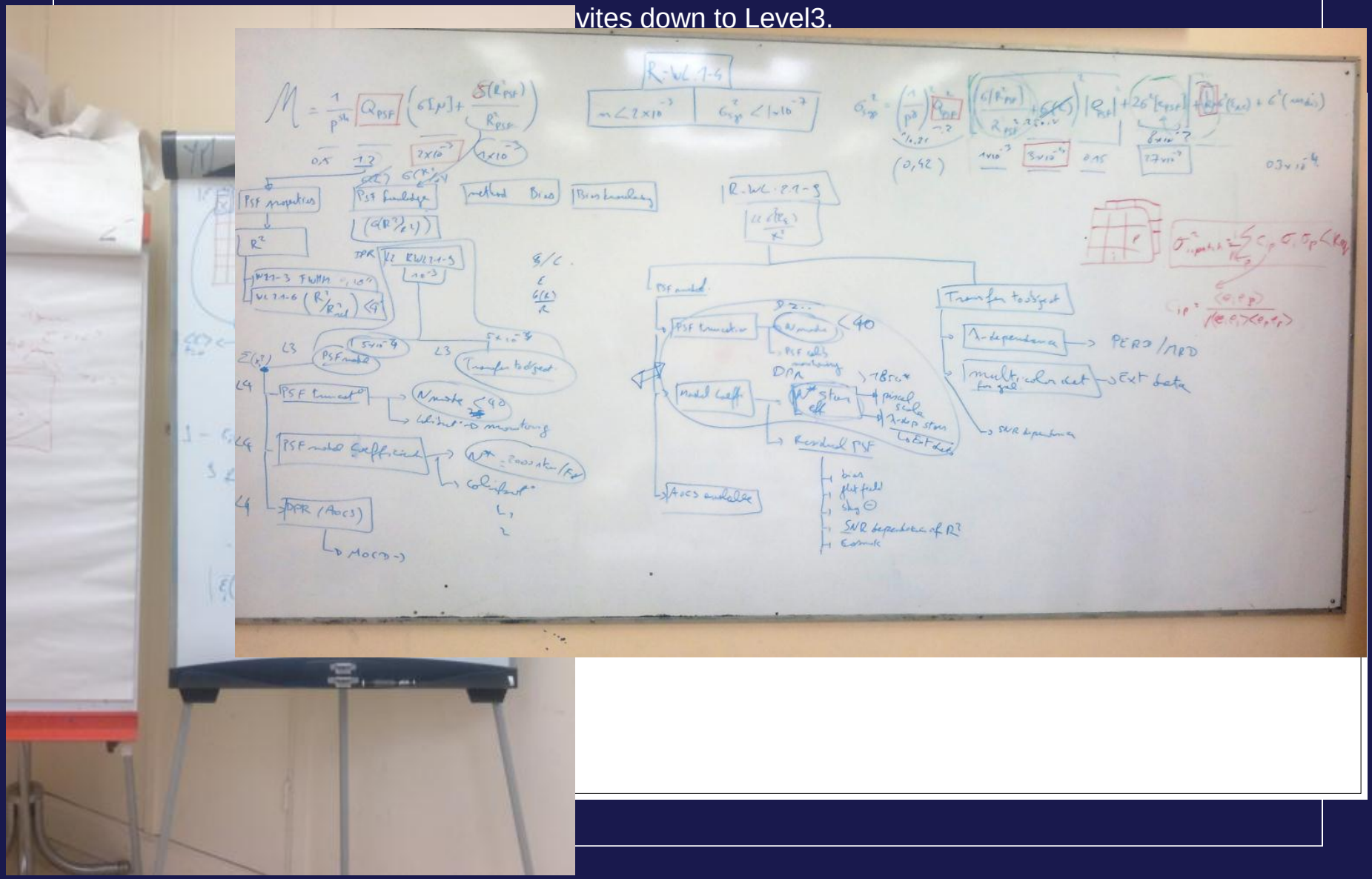
vites down to Level3.



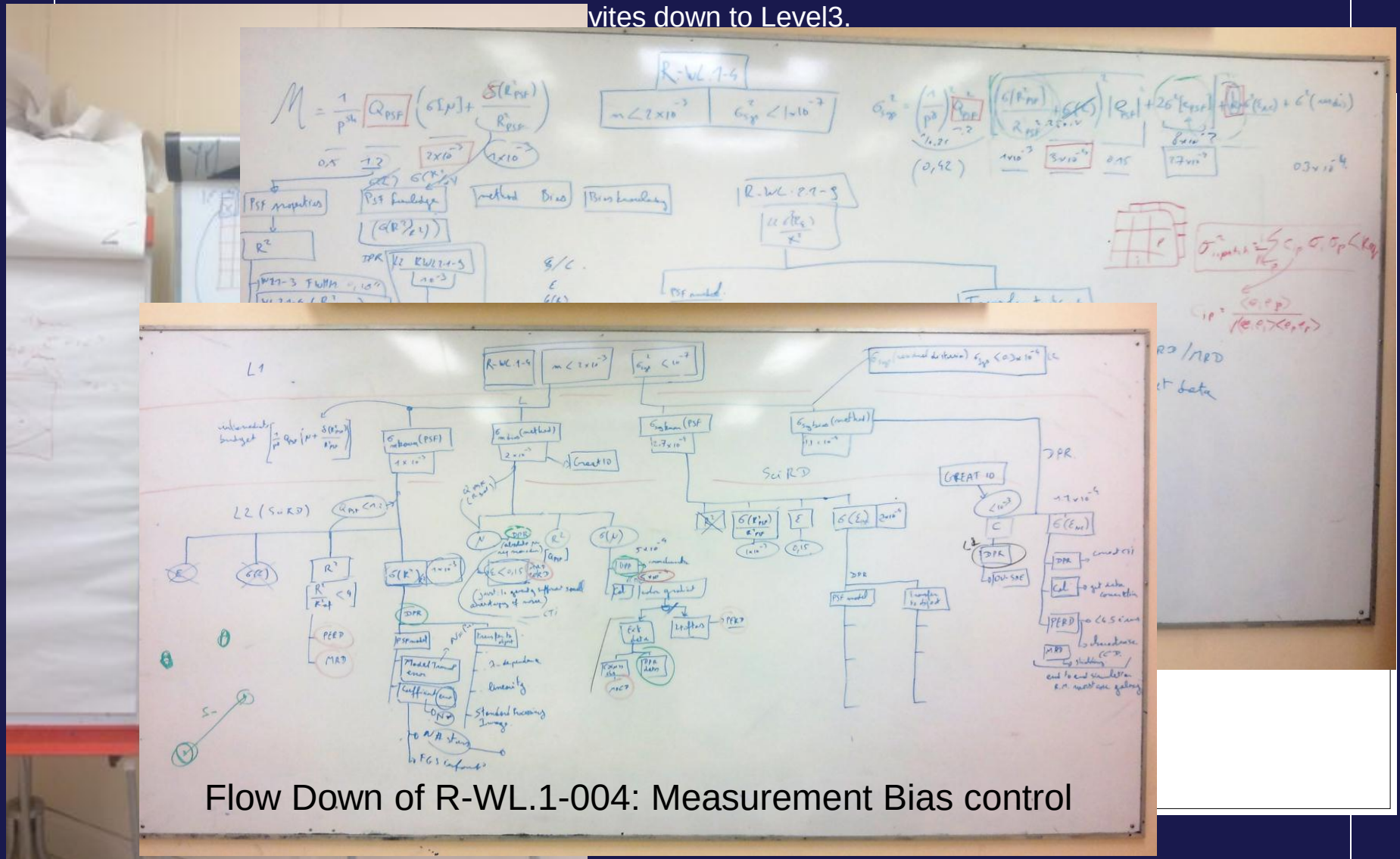


Requirement Engineering

vites down to Level3.

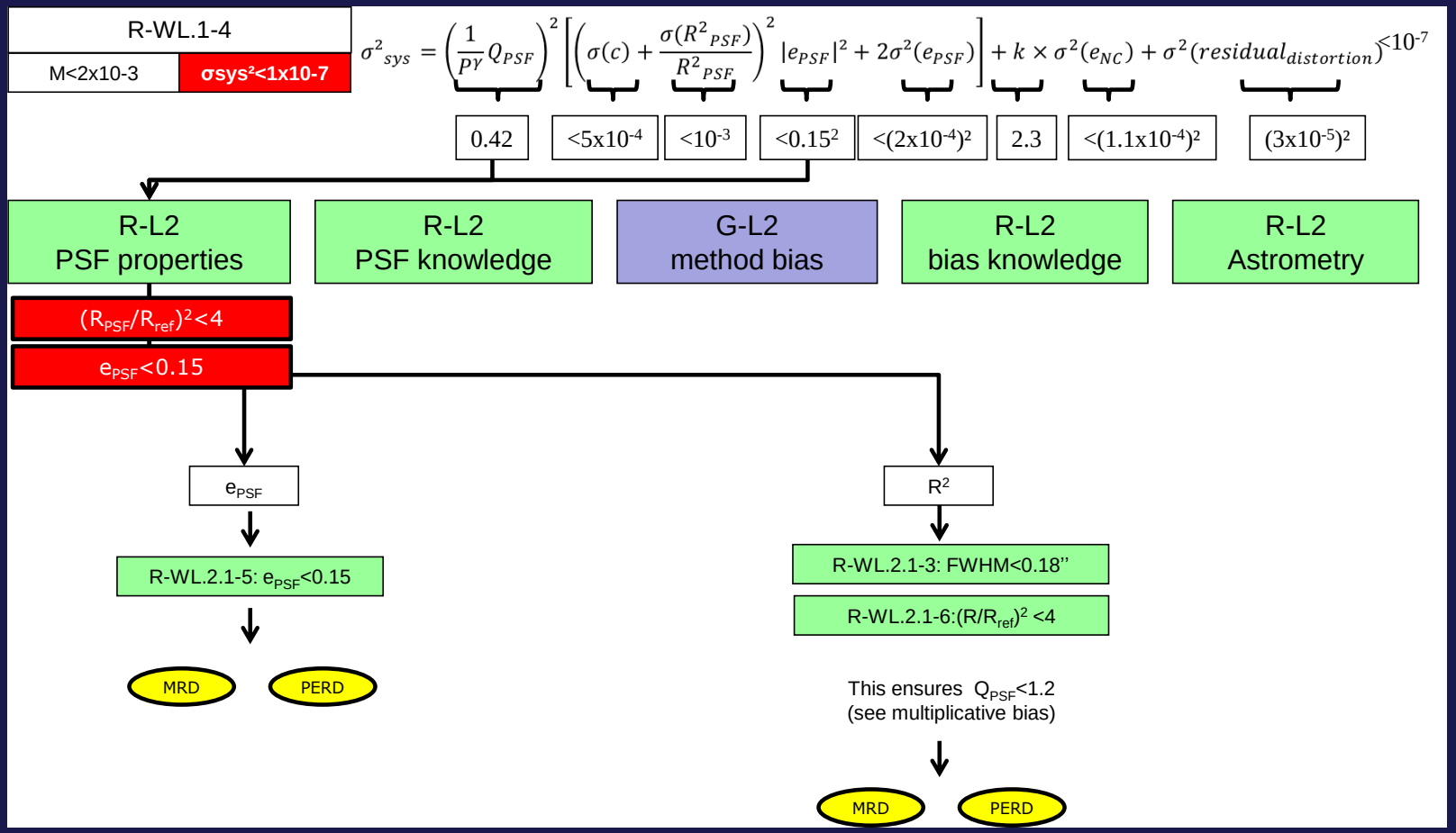


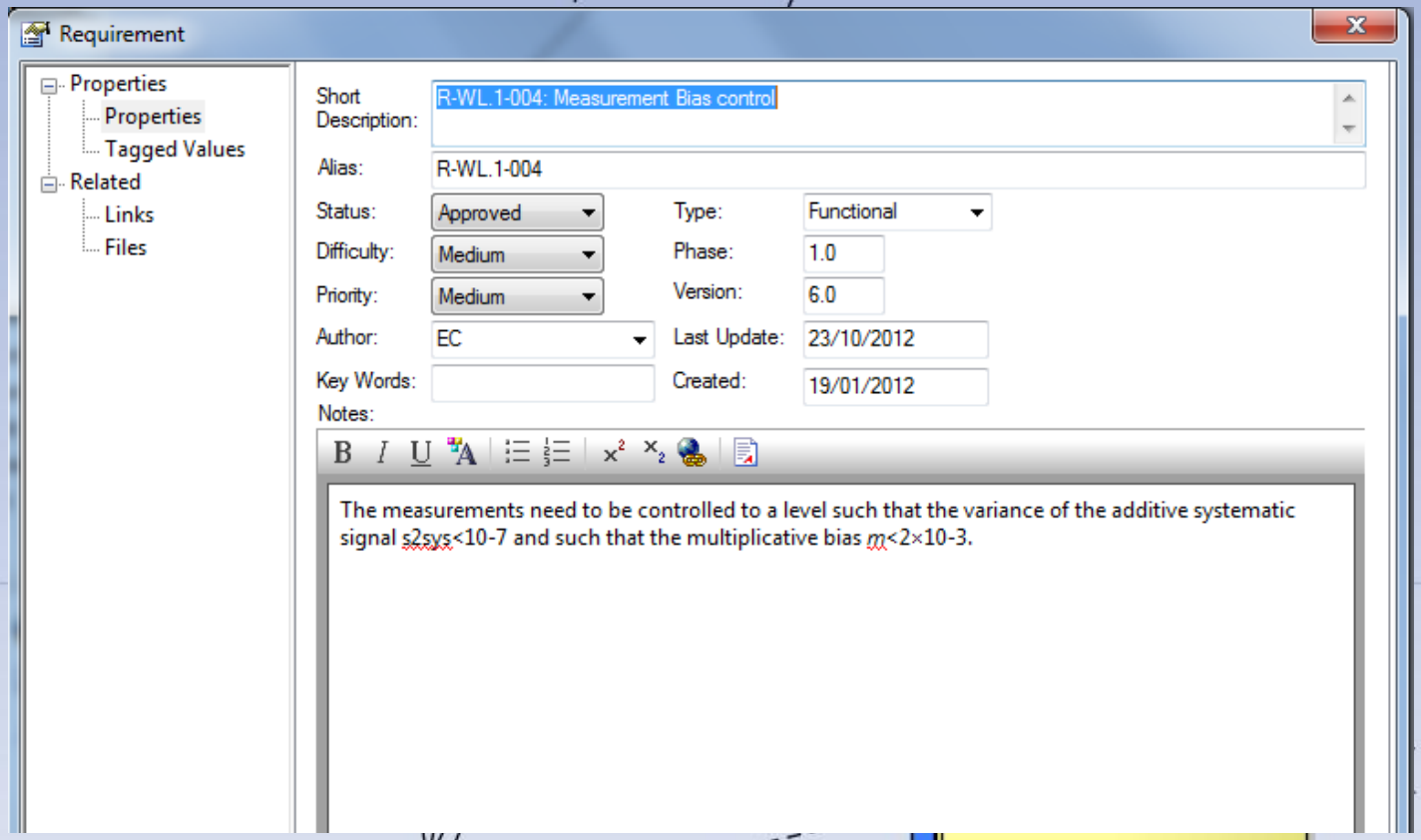
vites down to Level3.

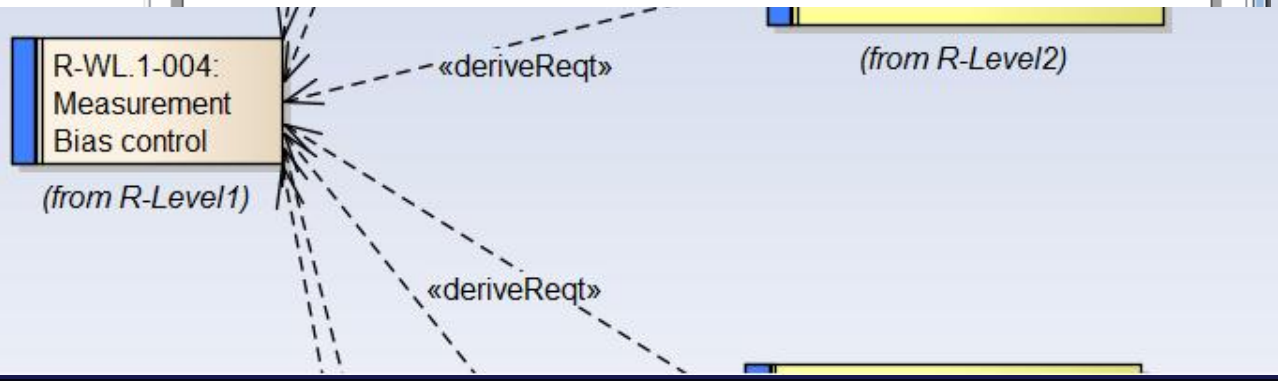


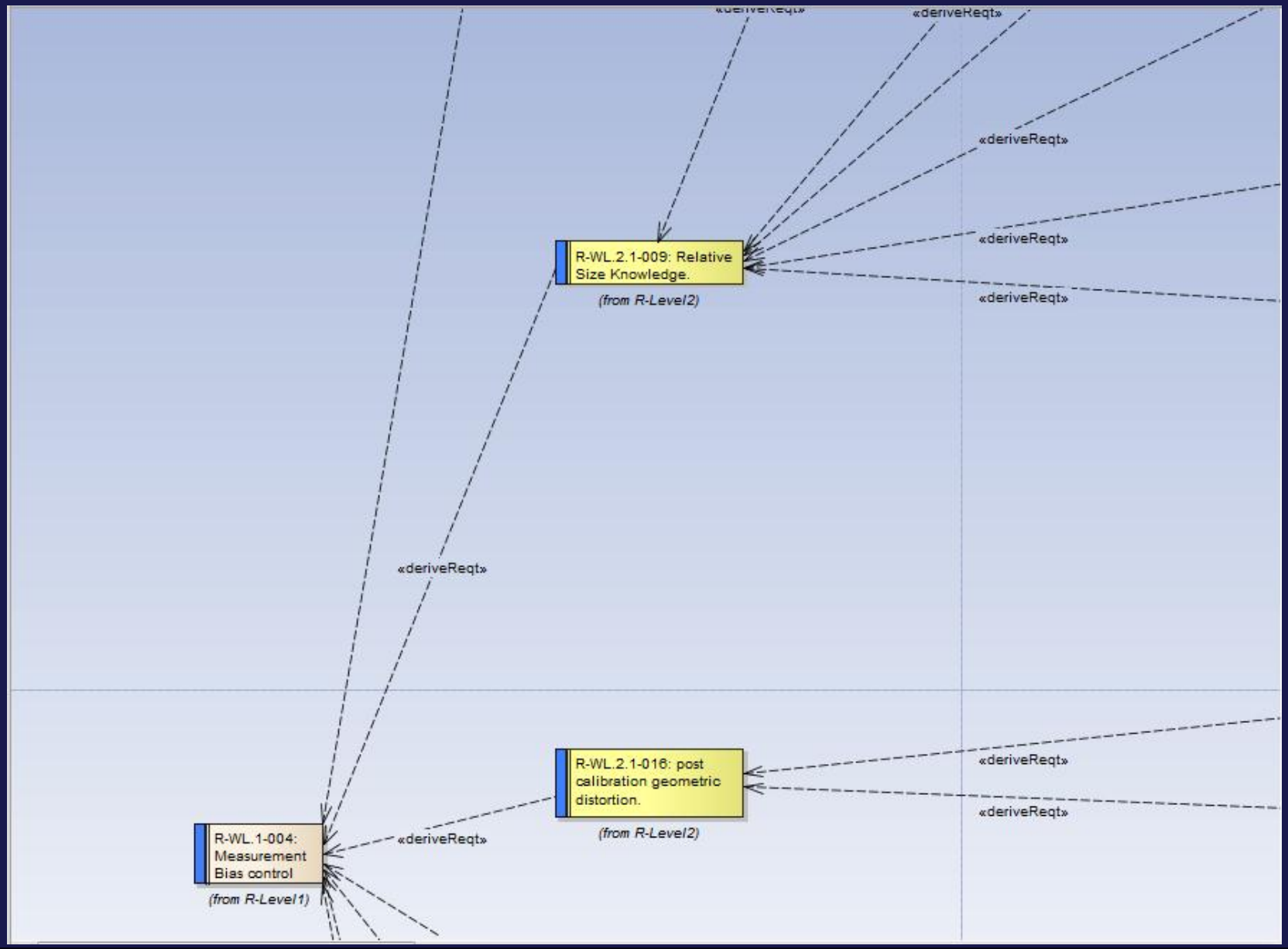
Flow Down of R-WL.1-004: Measurement Bias control

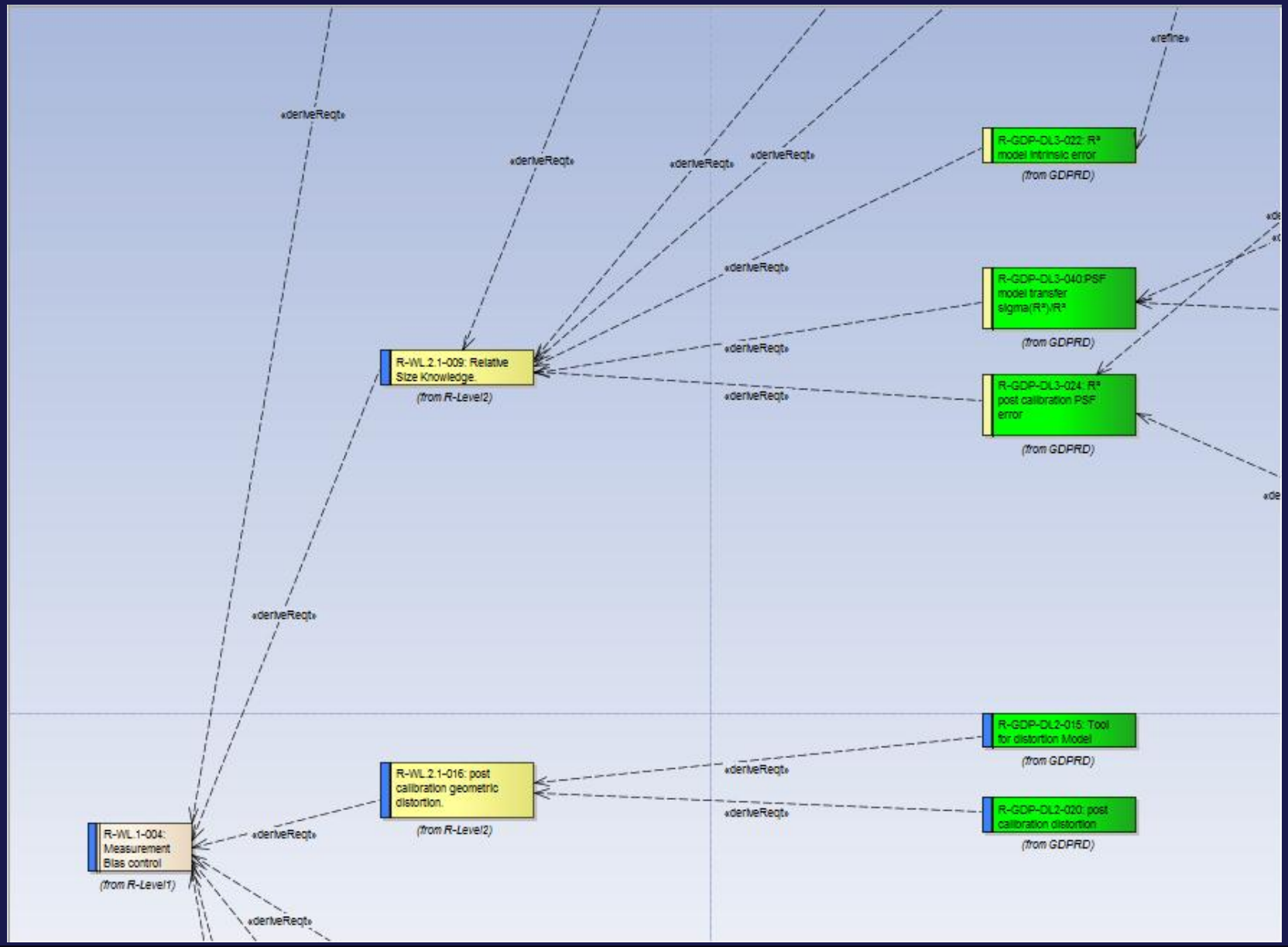
Transfer of all budget from Document type (Word / powerpoint) to Model to ensure configuration control, traceability and long term coherence of requirement flow down.




Requirement
Properties
Properties
Tagged Values
Related
Links
Files
Short Description:
R-WL.1-004: Measurement Bias control
Alias:
R-WL.1-004
Status:
Approved
Type:
Functional
Difficulty:
Medium
Phase:
1.0
Priority:
Medium
Version:
6.0
Author:
EC
Last Update:
23/10/2012
Key Words:
Created:
19/01/2012
Notes:
The measurements need to be controlled to a level such that the variance of the additive systematic signal s2sys<10-7 and such that the multiplicative bias m<2×10-3.


R-WL.1-004: Measurement Bias control
(from R-Level1)
«deriveReqt»
(from R-Level2)
«deriveReqt»


«deriveReqt»
«deriveReqt»
«deriveReqt»
«deriveReqt»
R-WL.2.1-009: Relative Size Knowledge.
(from R-Level2)
«deriveReqt»
«deriveReqt»
R-WL.2.1-016: post calibration geometric distortion.
(from R-Level2)
«deriveReqt»
«deriveReqt»
R-WL.1-004: Measurement Bias control
(from R-Level1)


«deriveReqt»
«deriveReqt»
«deriveReqt»
«deriveReqt»
«refine»
R-GDP-DL3-022: R² model intrinsic error
(from GDPRD)
«deriveReqt»
R-GDP-DL3-040:PSF model transfer sigma(R²)/R²
(from GDPRD)
«deriveReqt»
R-WL.2.1-009: Relative Size Knowledge.
(from R-Level2)
«deriveReqt»
R-GDP-DL3-024: R² post calibration PSF error
(from GDPRD)
«deriveReqt»
R-GDP-DL2-015: Tool for distortion Model
(from GDPRD)
«deriveReqt»
R-WL.2.1-016: post calibration geometric distortion.
(from R-Level2)
«deriveReqt»
R-GDP-DL2-020: post calibration distortion
(from GDPRD)
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R-WL.1-004: Measurement Bias control
(from R-Level1)
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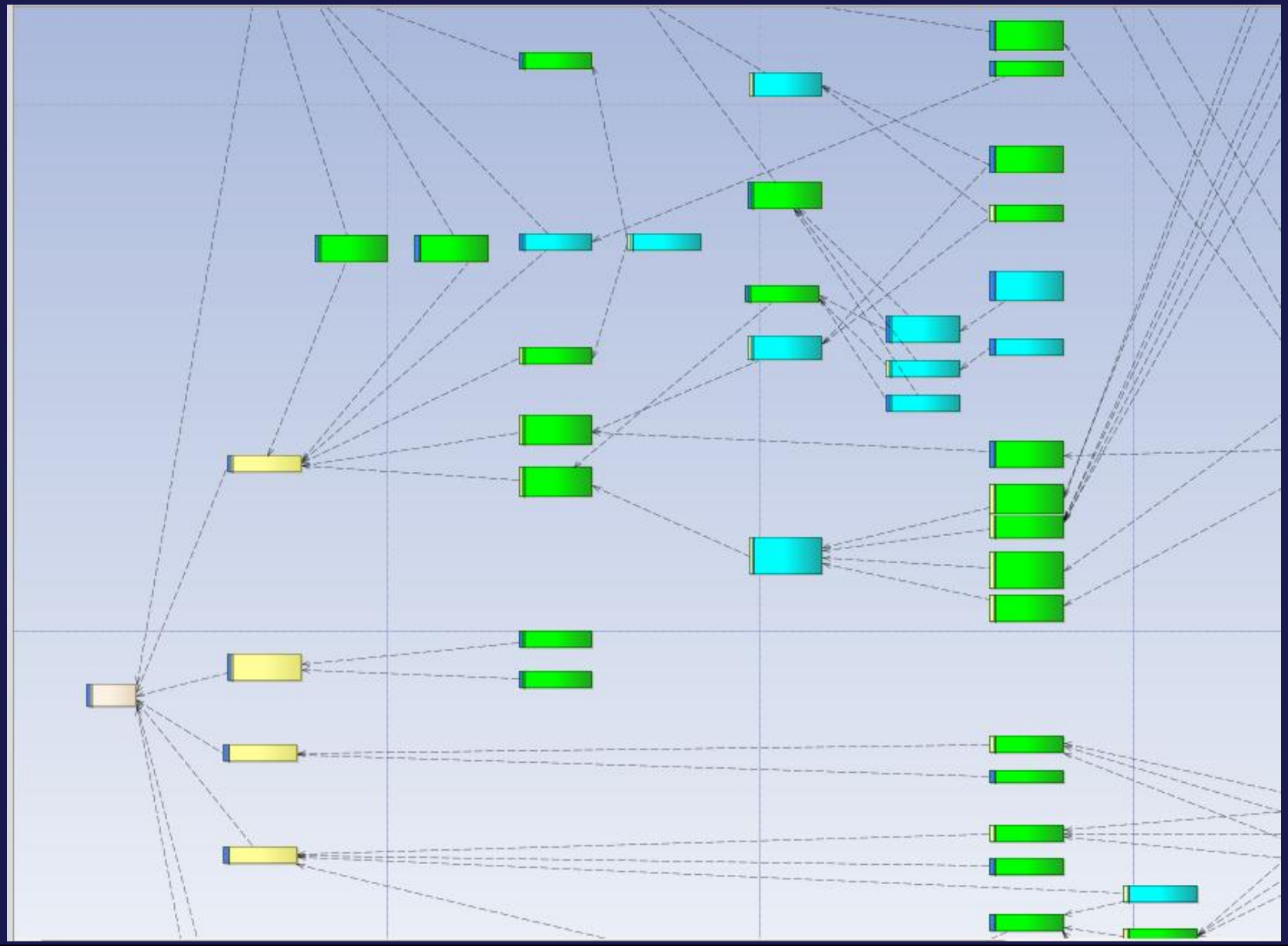
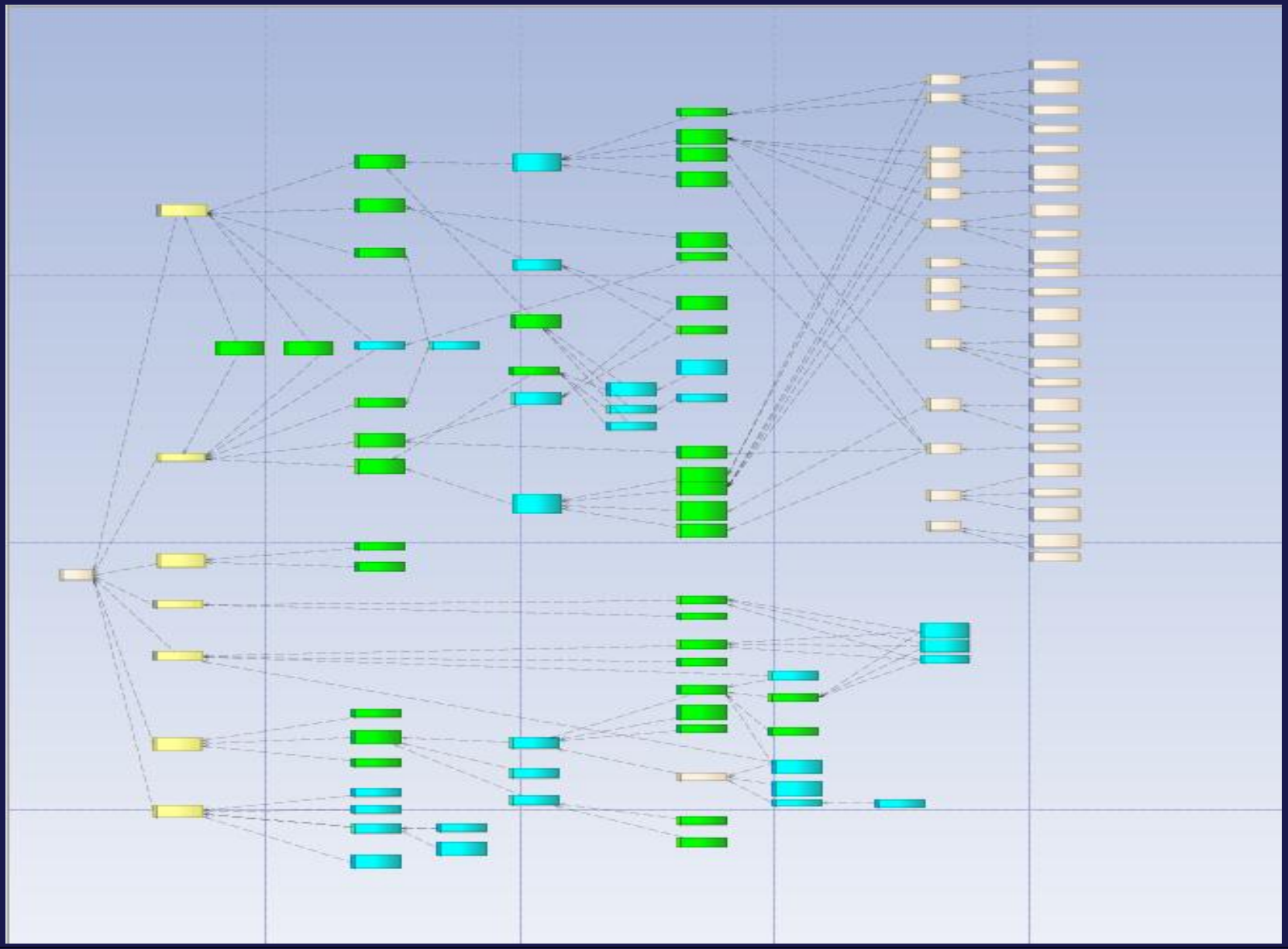
«deriveReqt»

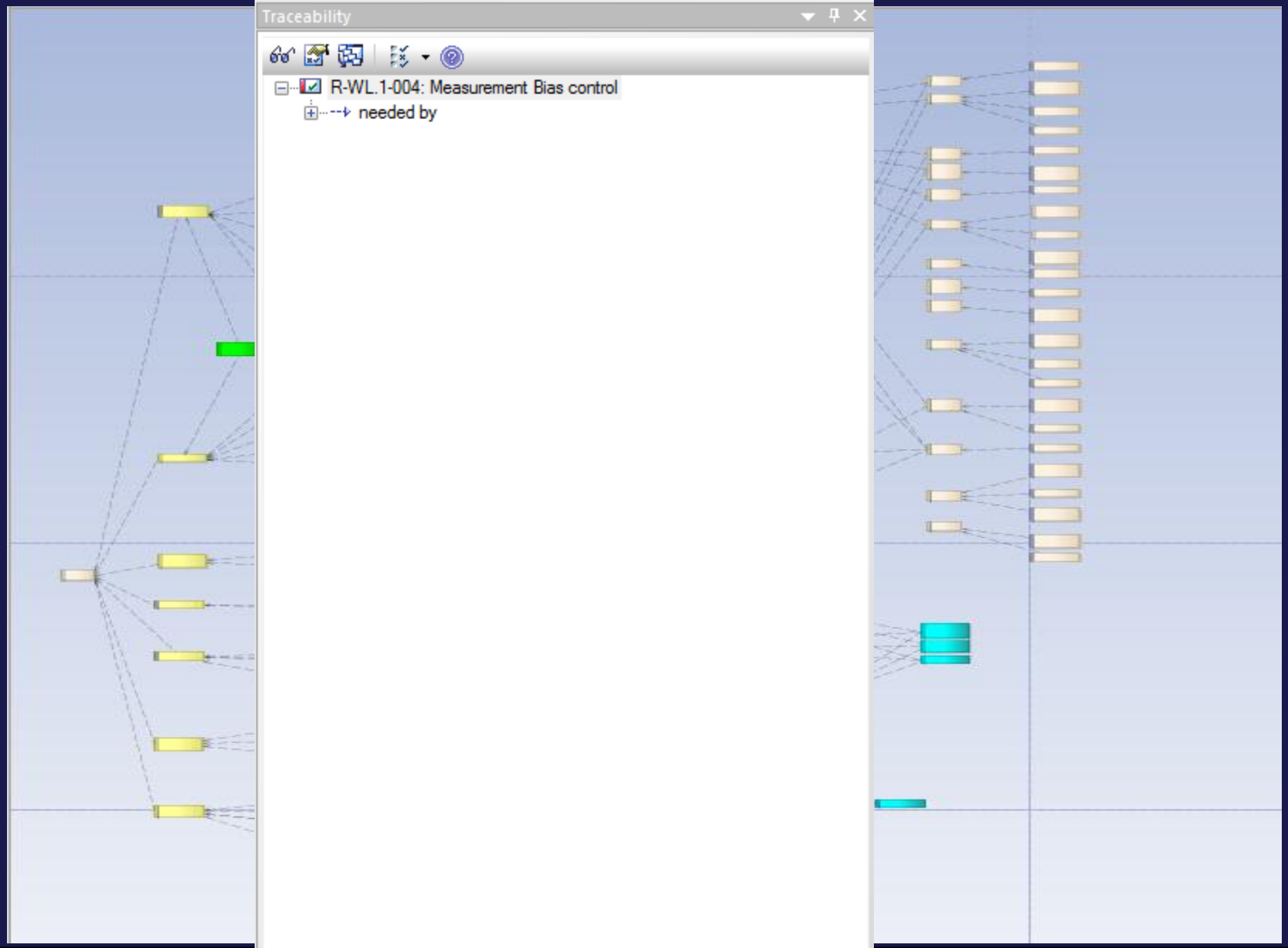
Euclid Model

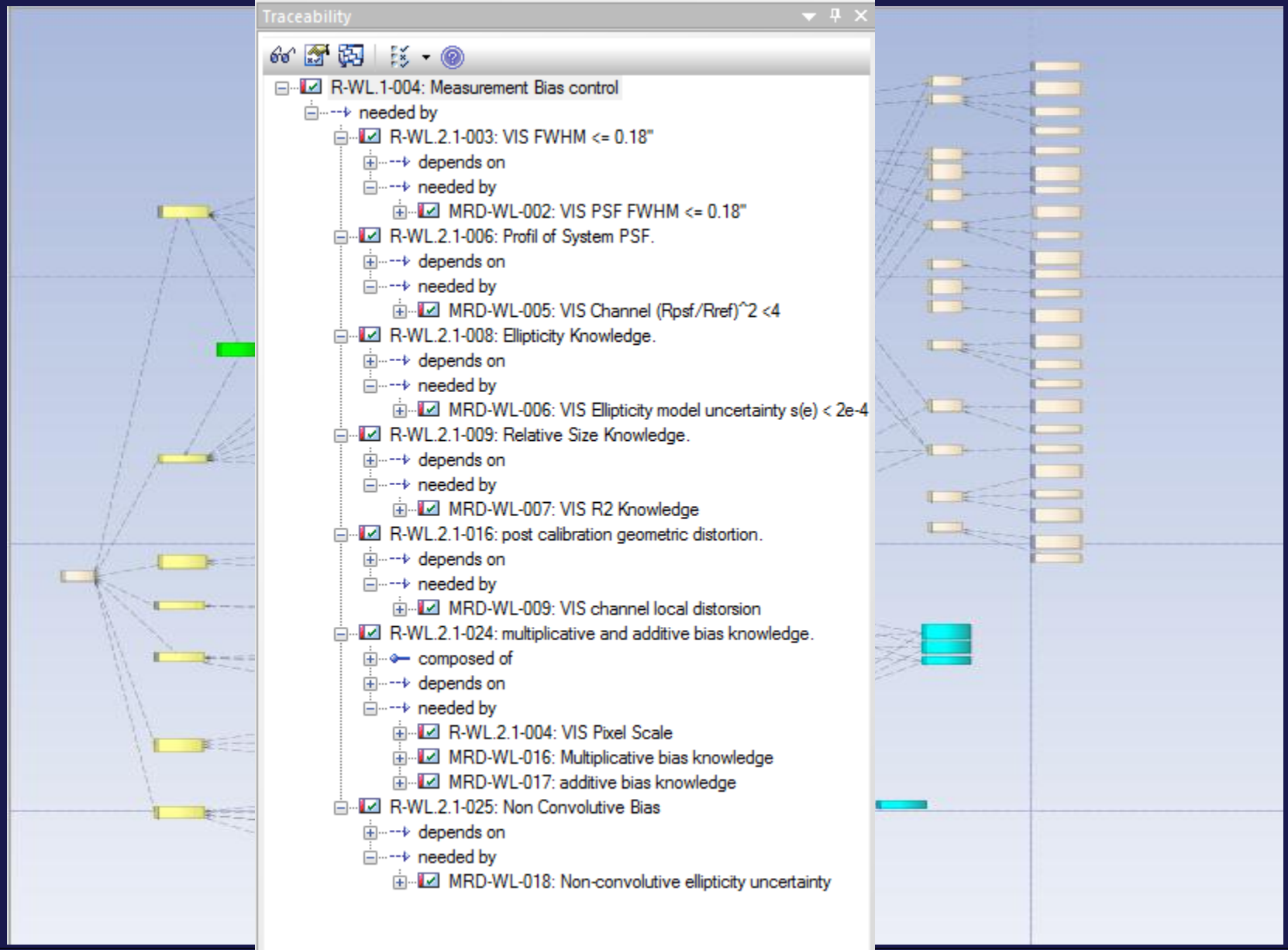


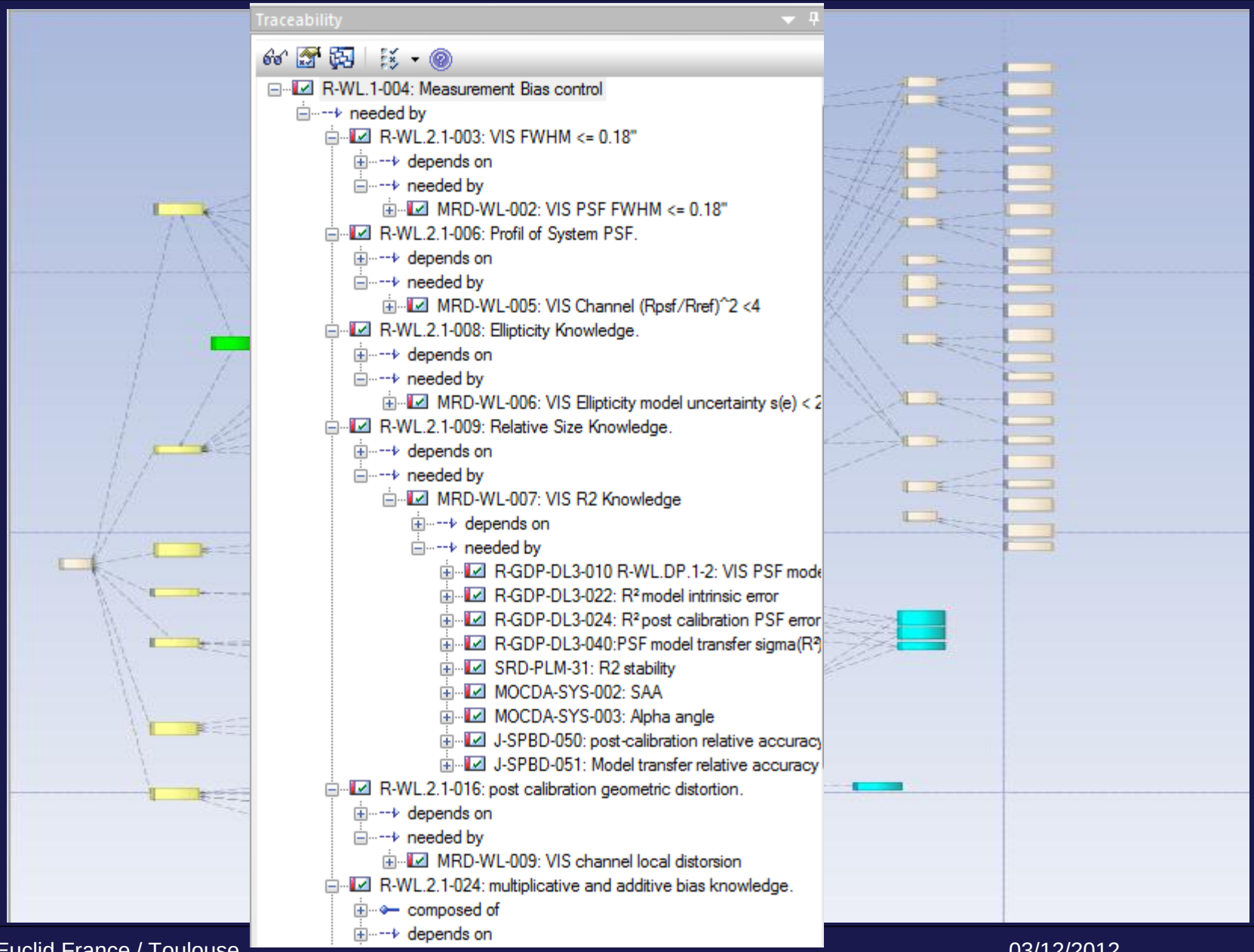
Euclid Model



Euclid Model




Traceability
R-WL.1-004: Measurement Bias control
needed by
R-WL.2.1-003: VIS FWHM <= 0.18"
depends on
needed by
MRD-WL-002: VIS PSF FWHM <= 0.18"
R-WL.2.1-006: Profil of System PSF.
depends on
needed by
MRD-WL-005: VIS Channel (Rpsf/Rref)^2 <4
R-WL.2.1-008: Ellipticity Knowledge.
depends on
needed by
MRD-WL-006: VIS Ellipticity model uncertainty s(e) < 2e-4
R-WL.2.1-009: Relative Size Knowledge.
depends on
needed by
MRD-WL-007: VIS R2 Knowledge
R-WL.2.1-016: post calibration geometric distortion.
depends on
needed by
MRD-WL-009: VIS channel local distorsion
R-WL.2.1-024: multiplicative and additive bias knowledge.
composed of
depends on
needed by
R-WL.2.1-004: VIS Pixel Scale
MRD-WL-016: Multiplicative bias knowledge
MRD-WL-017: additive bias knowledge
R-WL.2.1-025: Non Convolutive Bias
depends on
needed by
MRD-WL-018: Non-convolutive ellipticity uncertainty


Traceability
R-WL.1-004: Measurement Bias control
needed by
R-WL.2.1-003: VIS FWHM <= 0.18"
depends on
needed by
MRD-WL-002: VIS PSF FWHM <= 0.18"
R-WL.2.1-006: Profil of System PSF.
depends on
needed by
MRD-WL-005: VIS Channel (Rpsf/Rref)^2 <4
R-WL.2.1-008: Ellipticity Knowledge.
depends on
needed by
MRD-WL-006: VIS Ellipticity model uncertainty s(e) < 2
R-WL.2.1-009: Relative Size Knowledge.
depends on
needed by
MRD-WL-007: VIS R2 Knowledge
depends on
needed by
R-GDP-DL3-010 R-WL.DP.1-2: VIS PSF mode
R-GDP-DL3-022: R² model intrinsic error
R-GDP-DL3-024: R² post calibration PSF error
R-GDP-DL3-040:PSF model transfer sigma(R²)
SRD-PLM-31: R2 stability
MOCDA-SYS-002: SAA
MOCDA-SYS-003: Alpha angle
J-SPBD-050: post-calibration relative accuracy
J-SPBD-051: Model transfer relative accuracy
R-WL.2.1-016: post calibration geometric distortion.
depends on
needed by
MRD-WL-009: VIS channel local distorsion
R-WL.2.1-024: multiplicative and additive bias knowledge.
composed of
depends on

Euclid 2013?

Year 2012 key achievements:

- Adoption of the Mission
- Major update of the Requirements to support Implementation phase
- PLM is selected (though not announced)
- Prime contractor ITT will be released

Year 2013 expectations:

- Start working with industrial PLM contractor to refine interface
- Proposal from industry for Prime ITT beginning of 2013
- Selection of Prime ITT mid 2013
- SGS Preliminary Requirement Review