Systems Engineering Approach in LOFAR2.0

Boudewijn Hut

ILT-TO meeting, 7 nov 2019, Schiphol, The Netherlands

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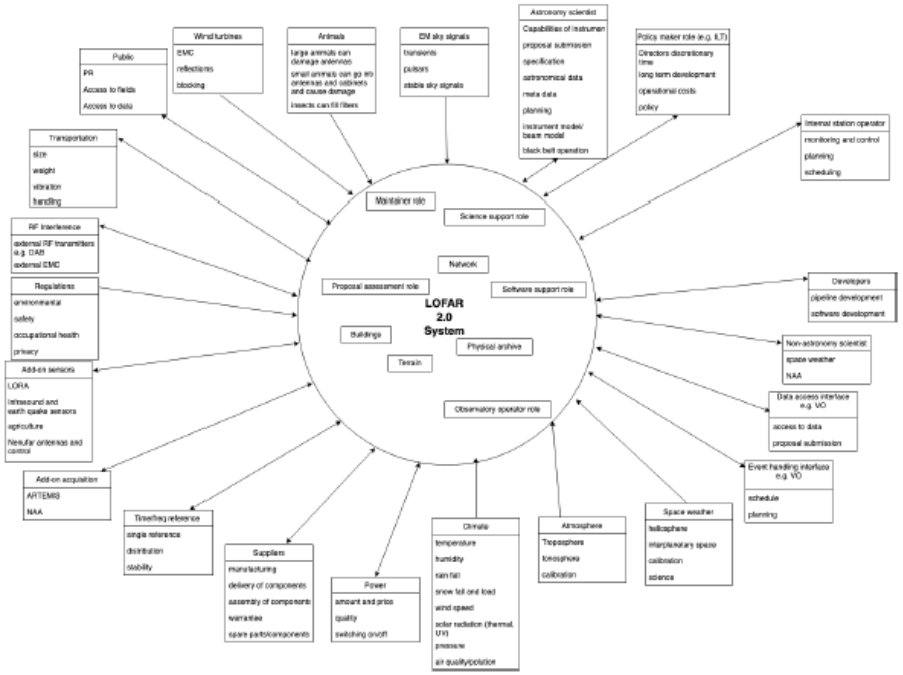
Take home messages

1. “LOFAR2.0 Program uses a **structured Systems Engineering development approach**”

2. “We would like to be in touch with *station stand-alone user* – **You**!”

Why this Systems Engineering (SE) approach?

- LOFAR is a complex system
- LOFAR has many stakeholders (see fig)
- Need to upgrade/change LOFAR
  - in Stages



→Systems Engineering approach

- Understand why certain requirements are there
- Be prepared for changes
  - Be able to quickly analyse impact of proposed change

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References: (1) "*LOFAR2.0 System Requirements Specificaion*", TC: 010866/02

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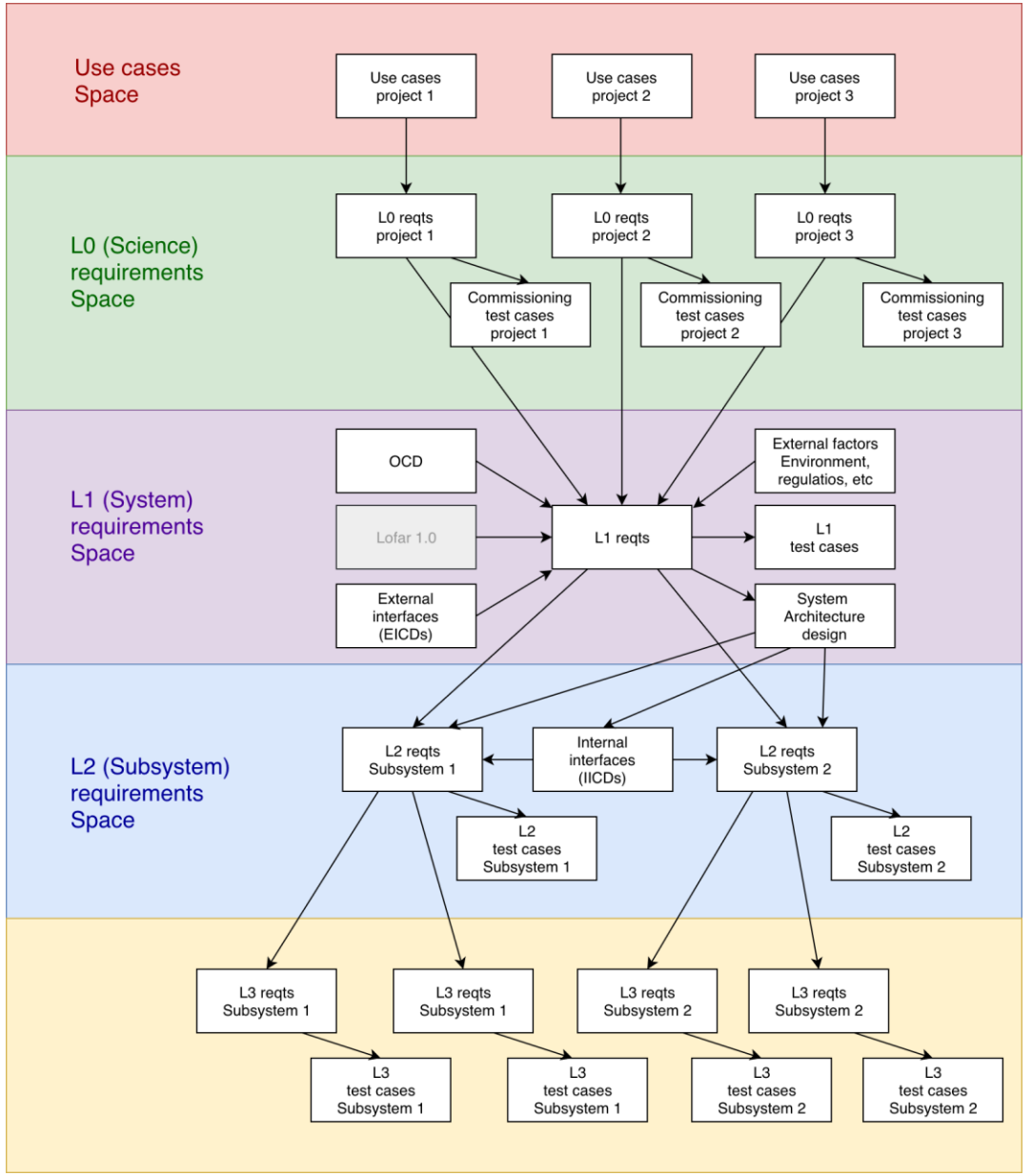
What is this SE Approach?

- Structured approach in levels
  - Use case ←→ Science requirements ←→ … ←→ Lower level requirements
- Product Breakdown Structure (PBS):
  - Levels along products in PBS
- Traceability is key
  - Different use cases may lead to different requirements
  - Use in impact analysis of a change



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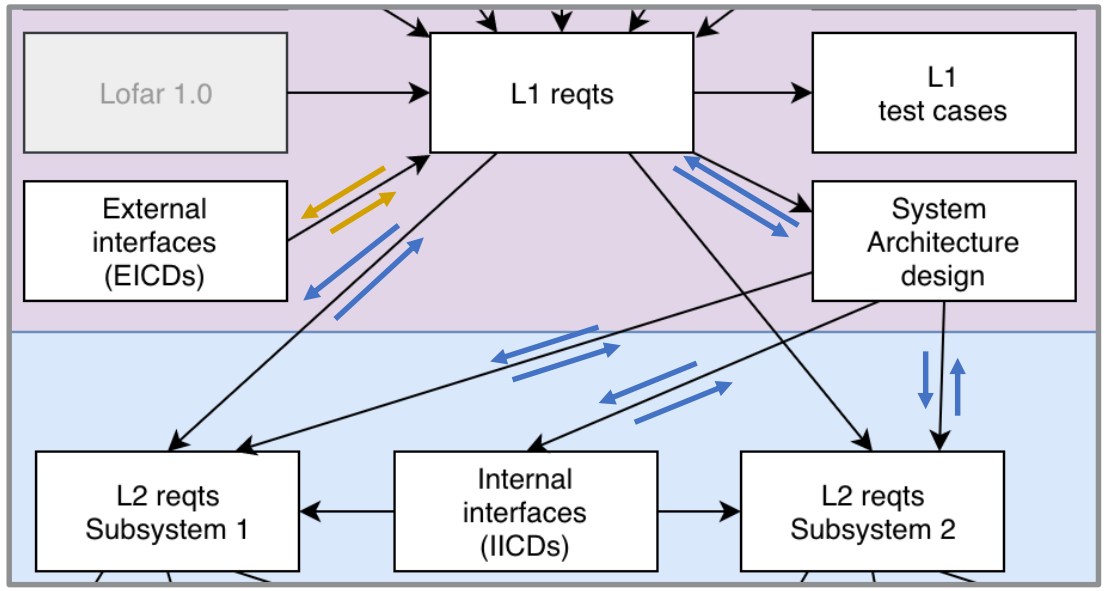
The design process

Collection of requirements for system



Describes tests and pass/fail criteria per reqt

Design of a system that will meet requirements,
- Defines lower products and interfaces
- Budgets over products
- Details functions and maps them on products

- Set up full traceability
- Indicate gaps by
  - using assumptions
  - performing functional analysis

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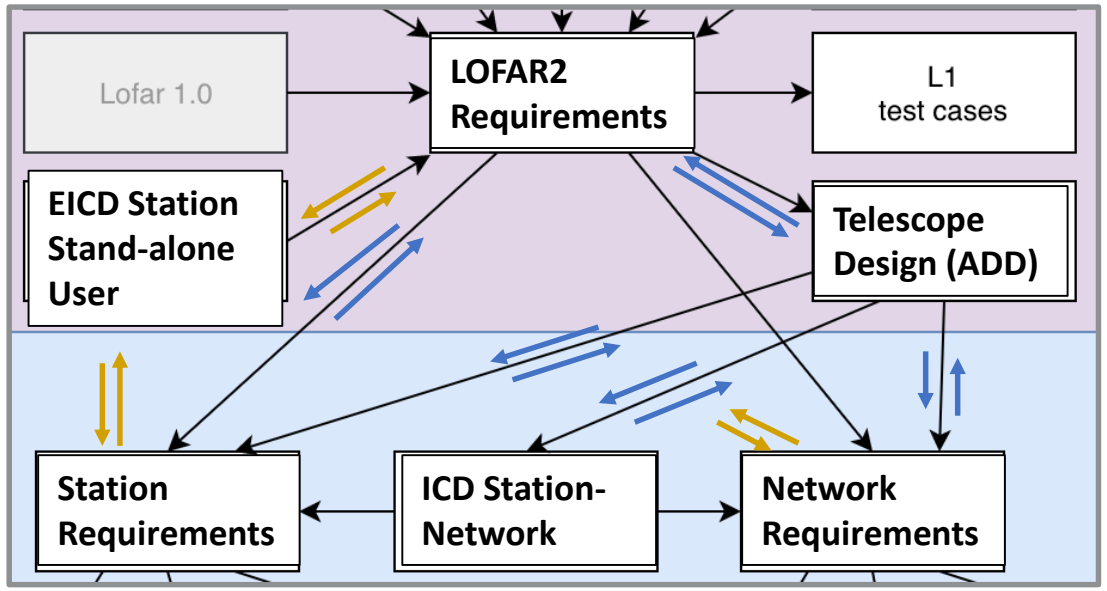

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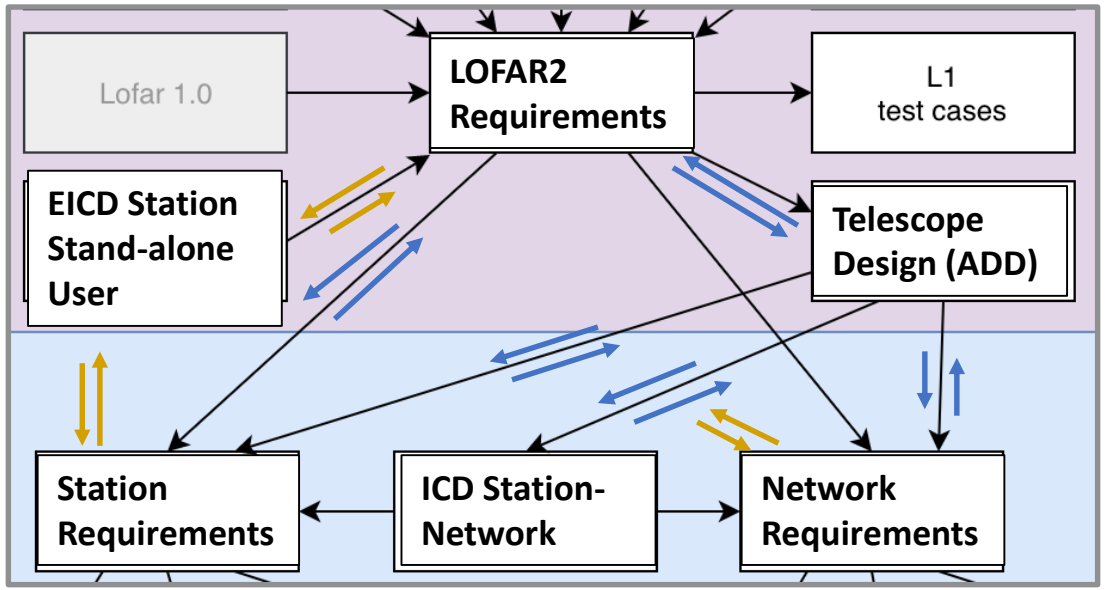
External Interfaces

- External Interface Control Document (EICD)
  - Interface that is external to LOFAR2
  - Holds definition of interface
  - Used to derive interface requirements for LOFAR2
- EICD “station stand-alone user”
  - You will have use cases and science requirements
  - This EICD is the landing point for these requirements on the system
- **Invitation to fill this interface (EICD) with me**
- Focus is on DUPLO Use Case, but we would like to see if there are any conflicts in reqts or design.
  - We should identify them and then see what to do about them.



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Fill EICD with me

FLOW	Jean-Mathias Griessmeier
GLOW	Francesco de Gasperin
I-LOFAR	t.b.d.
IT-LOFAR	t.b.d.
Latvia	t.b.d.
POLFAR	Leszek Blaszkiewicz
Sweden	t.b.d.
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