Climate Monitoring Architecture

Robert Husband

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What do we mean by "Architecture"?

- No commonly accepted definition of "Architecture"
  - Interpreted according to anticipated usage
- Some commonly-shared features
  - Describes the structure of a system as characterised by its components, their relationships to each other, and to the environment
  - Generally "multi-view" – as it is unusual for a "single view" to cover all the anticipated uses of an Architecture by the Users/ Stakeholders

⇨ Driver for the design of a Climate Architecture is its intended usage/needs

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Why do we need a Climate Monitoring Architecture?

- Based on discussions three main "needs/usage scenarios" have emerged for a climate monitoring architecture:

  A Assist in promotion of a common understanding of the implementation implications of meeting the various space-related climate monitoring requirements (e.g. from GCOS)

  B To support an assessment of the degree to which the currently implemented, and planned, systems meet the requirements (and the generation of an action plan to address identified shortfalls/gaps/duplication)

  C To improve our understanding of the end-to-end information flows and dependencies (i.e. from sensing through to decision-making)

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What could a Climate Architecture look like?

- Based on these 3 usage scenarios, an architecture with 2 main "views" is proposed as a starting point:
  - a **Logical View**
  - a **Physical View**
- **Logical View** describes the functional and data-flow implications of meeting the requirements baseline
- **Physical View** describes how the requirements baseline are actually implemented (including the functional aspects described in the Logical View)

What could a Climate Architecture look like?

- Relationship between the 2 views and the 3 usage scenarios

Usage Scenario	A. Common Understanding of Requirement Implications	B. Measuring Implementation Status against Requirements	C. Understanding the End-to-End Information Flows
Logical View	X		X
Physical View	x	X	

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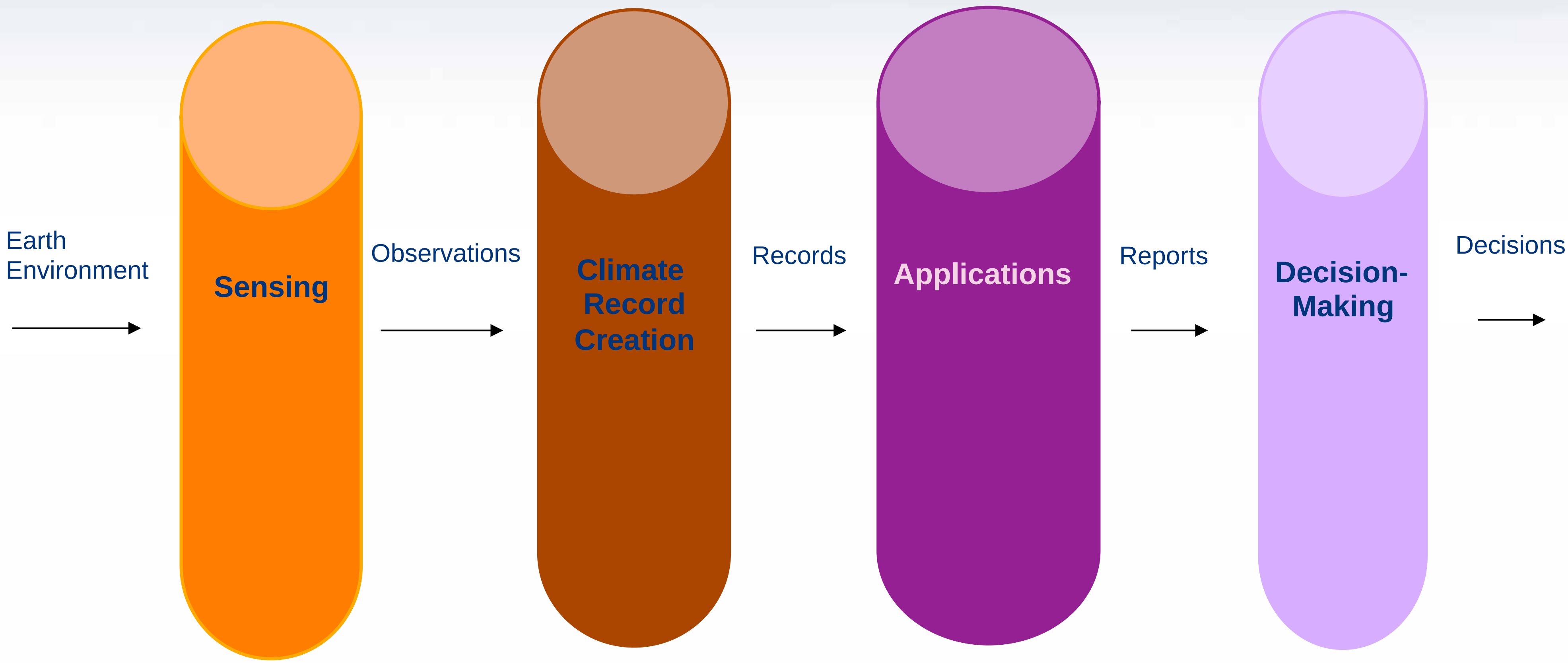
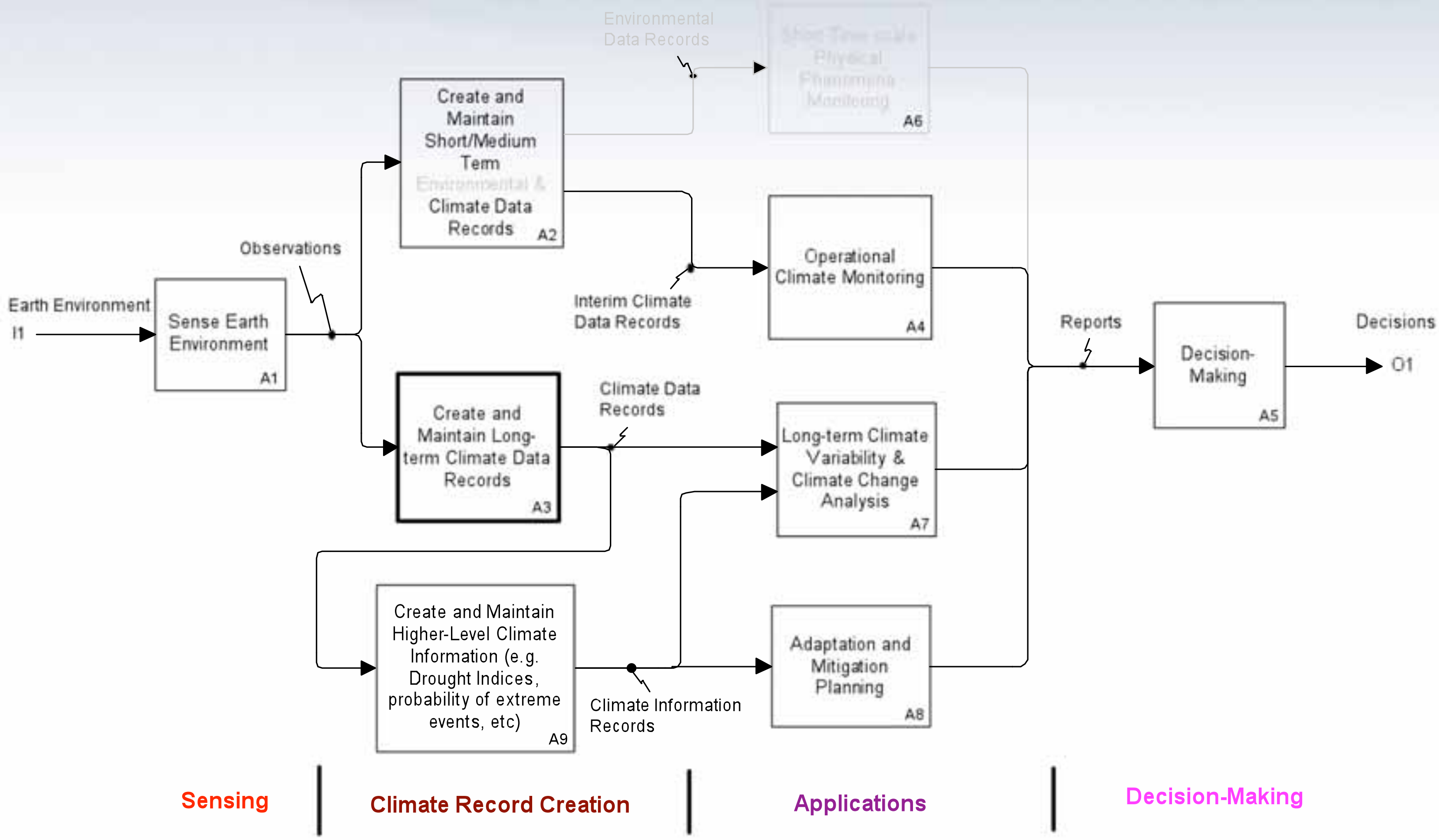
What could a Climate Architecture look like?

- **Logical View** – generic building blocks



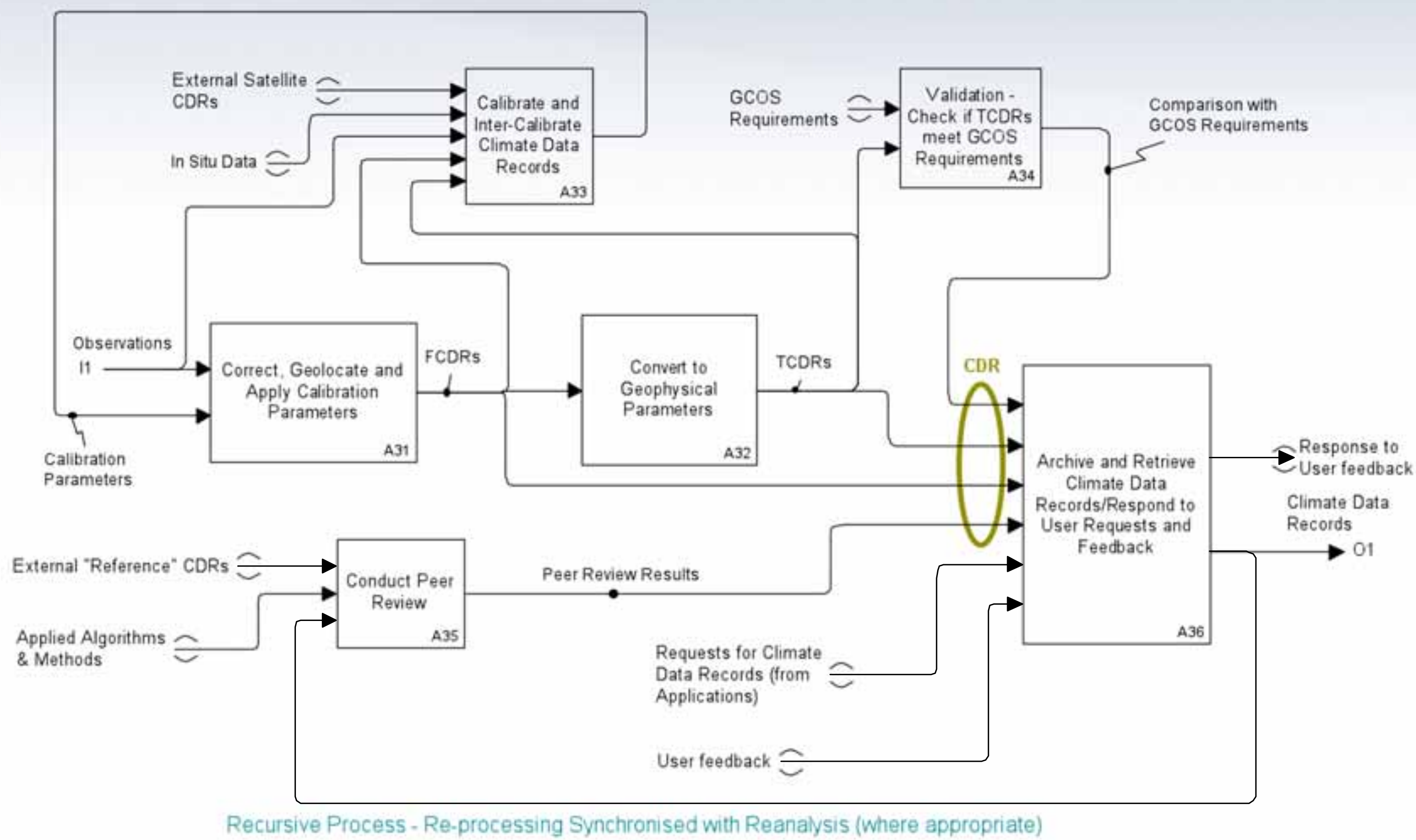
What could a Climate Architecture look like?

➢ **Logical View** - Partial Decomposition of the 4 Pillars



What could a Climate Architecture look like?

- **Logical View** - Decomposition of "Create & Maintain Long-term CDRs"



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What could a Climate Architecture look like?

- **Logical View** is generic (applies to all ECVs)
- In contrast **Physical View** needs to describe the current (and planned) implementation status on an ECV-by-ECV basis
- Possible main components of a **Physical View** (per ECV)
  - **ECV-specific Requirements** (e.g. ECV identifier, accuracy, resolution, stability, coverage, frequency, etc)
  - **Current Implementation Characteristics** for each ECV
    - Sensor/satellite
    - Custodianship arrangements for each of the functions in the Logical Architecture
    - Achieved performance (accuracy, resolution, stability etc)
    - Record length......
  - **Planned Contributions** – with a similar scope/structure as the description of the current implementation characteristics
- A spreadsheet would seem to be the most appropriate format for the **Physical View** (further explored in presentation on "Framework for a CEOS ECV Inventory")

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Thank you for your attention!