A Federated System of Systems Approach for EO-based Products

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What Do Conservation Users Need?

- Essential Biodiversity Variables
- Indicators

- Answers to resource management questions
  - Species distribution for species X
  - Condition of ecosystem Y
  - Threats to National Park Z

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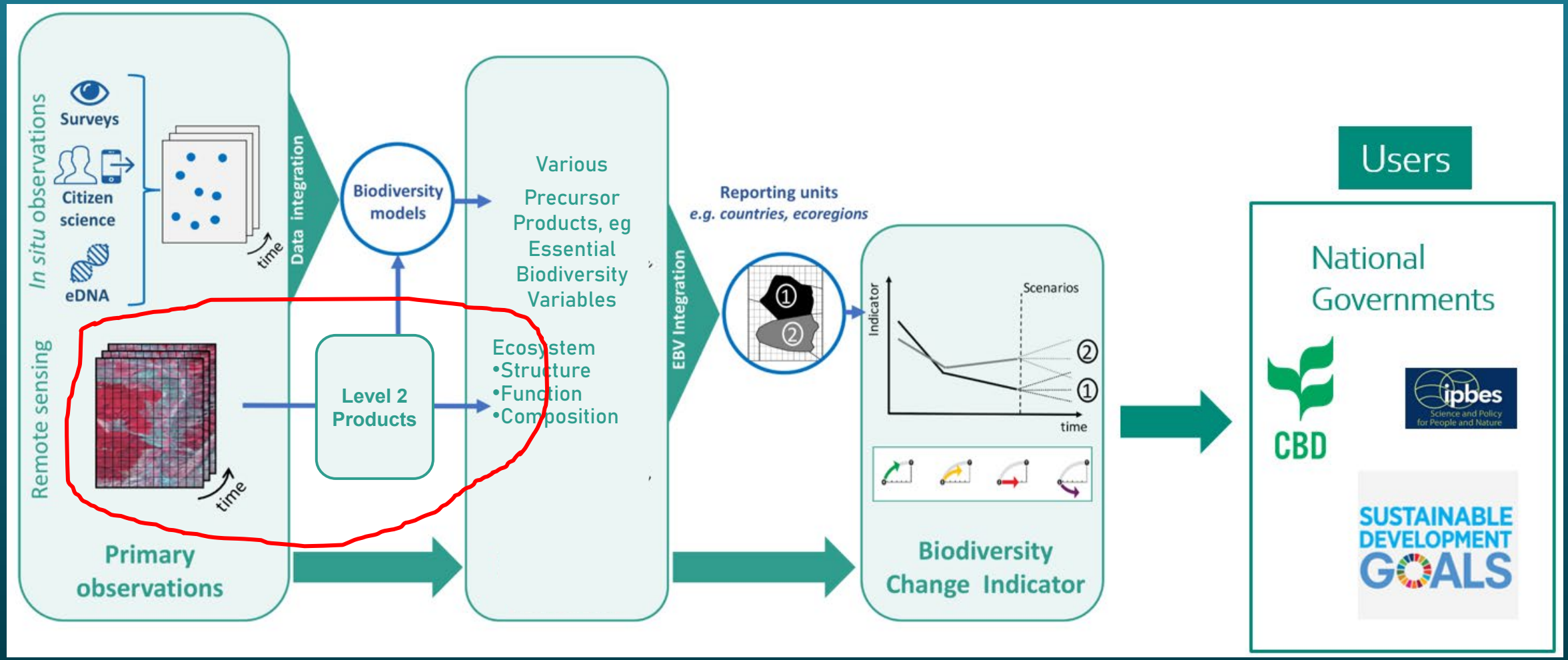
Conceptual, End-End Workflow

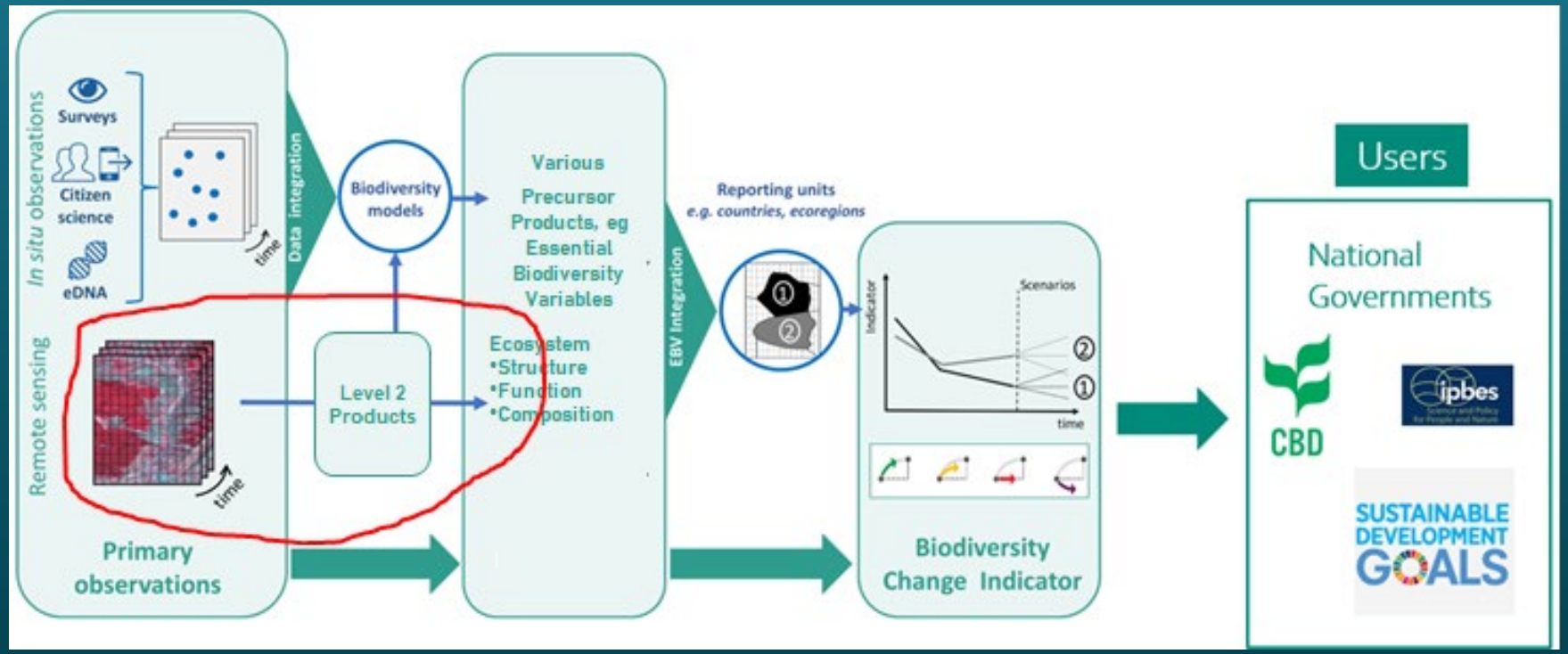
- Space agencies focus on this end of the workflow (operationally)



Based on Navarro et al. 2017

What to Do?

- Coordinated suite of partnerships could help
- Partnerships provide complementarity
- Help fill data product gaps



What is a Federated System?

- An extended partnership
- A system of systems that takes advantage of complementary capabilities of the participants, yet provides enough autonomy that each can focus on its core mission

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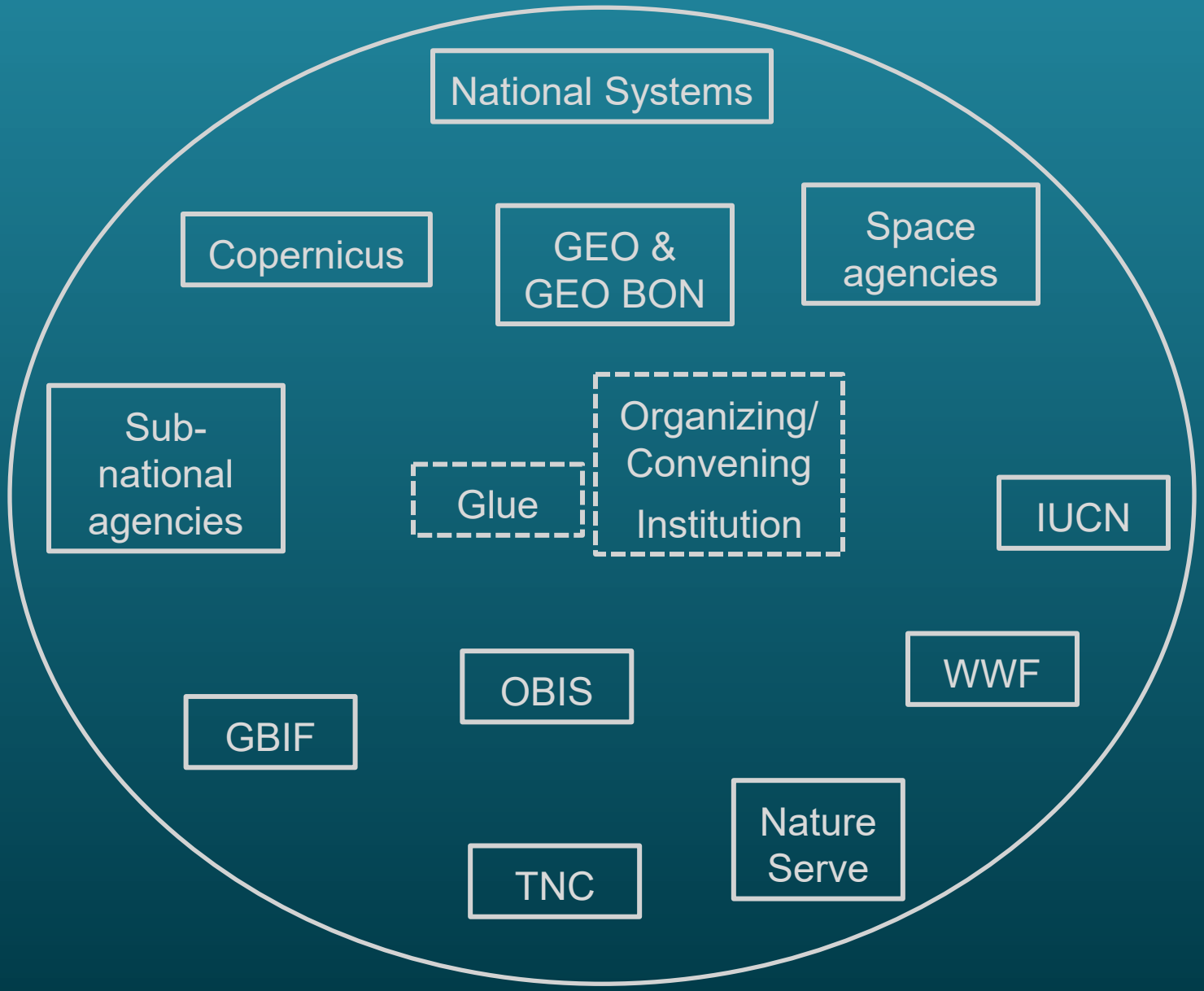
Systems: The Partnership Continuum

Single system ——— ***Continuum*** ———→ **Federated system**

One organization	Many organizations
Guided by sponsor reqts	Guided by shared vision
Design & build	Design & Grow
Manage the system	Manage the interfaces
Integrated components	Autonomous components

Where on this continuum is best?

Examples of Federated Members



Arrows not shown

Federated System

- Many types of federated architectures and hybrids
- Take advantage of complentarities
- Flexible & adaptable (IFF well-managed)
  - Federated system can grow over time

- Challenges include
  - Conflicting institutional needs and styles
  - Potential complexity to make components interoperable
  - Data consistency

Recommendation

- Agencies should actively develop more partnerships
  - Consider a role for federation, esp. hybrid

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Thank You

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