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INTERNATIONAL

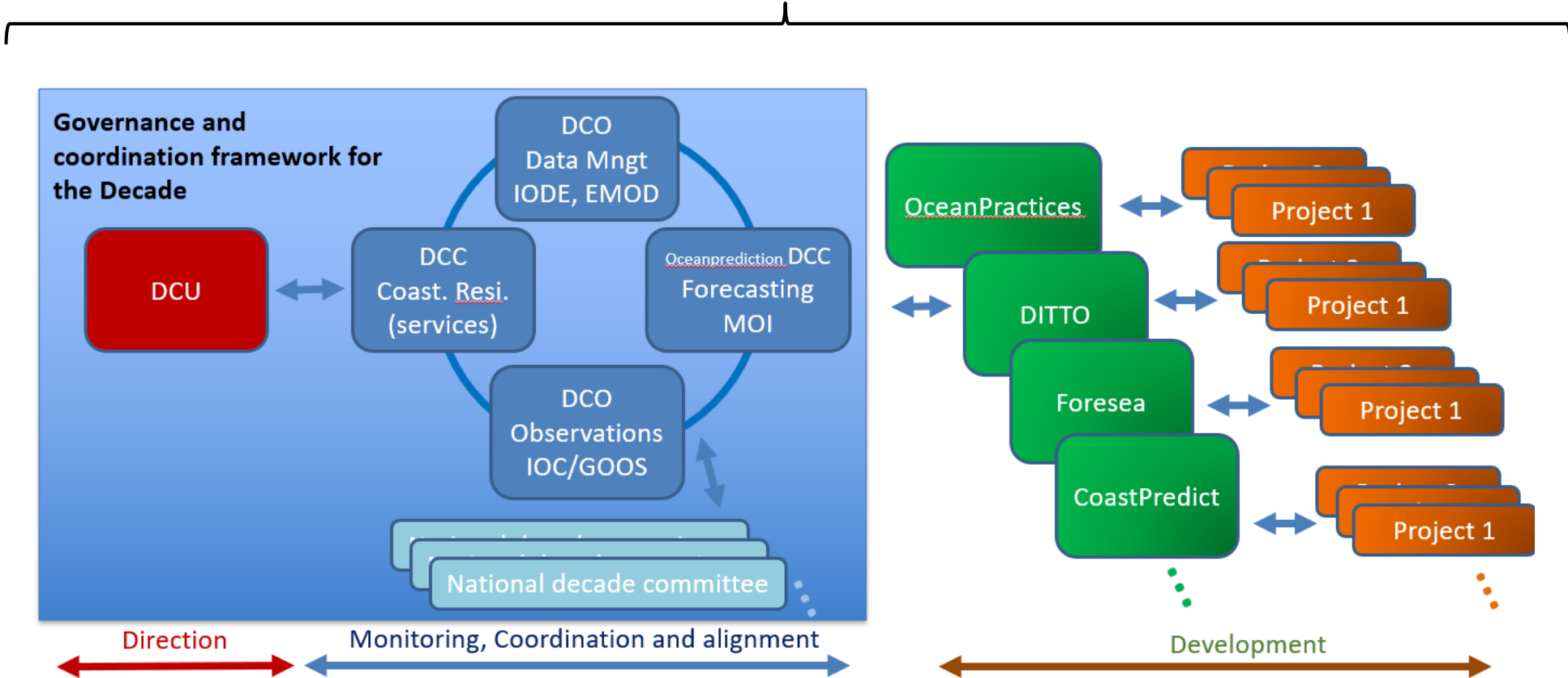
“OceanPrediction DCC”

A Decade Collaborative Centre
to build the ocean prediction we need

Enrique Alvarez Fanjul and the MOI team

- A predicted ocean based on a shared and coordinated global effort in the framework of the UN Ocean Decade
- To galvanize and coordinate efforts towards the co-development and integration of worldwide ocean prediction activities, serving Decade objectives and in close collaboration with the Decade endorsed actions and other stakeholders





- Vertebrate and give a voice to the ocean prediction community, supporting the Decade implementation, and centered on:
 - Creating a global forum (coastal to deep sea, nowcast to climate, Bio to physics, public to private, users to scientists) and other tools
 - Capacity development and ocean literacy
 - Promotion of OOFS as a key tool for Blue Economy and ocean policy
- To build a global technical and organizational structure focused on:
 - Creation with Decade actions a new scenario to deliver as one
 - Tools, standards and best-practices for a science-to-service framework
 - Interoperability and integration, towards the creation of Digital Twins





Pierre BAHUREL
HEAD DCC-OP

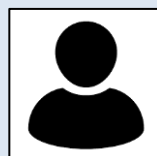
Oceanprediction DCC **BOARD**

France (Hosting country)
European Commission (TBC)
Mercator Ocean G7/GEO



Enrique Alvarez Fanjul
Technical coordinator

Oceanprediction DCC **TEAM**



TBN
Technical support



TBN
Communication



TBN
Administration

Budget 2022 :

300 k€

- France (Ministères): 150 k€
- Mercator Océan: 150 k€

Budget 2023-2026 :

600 k€/an

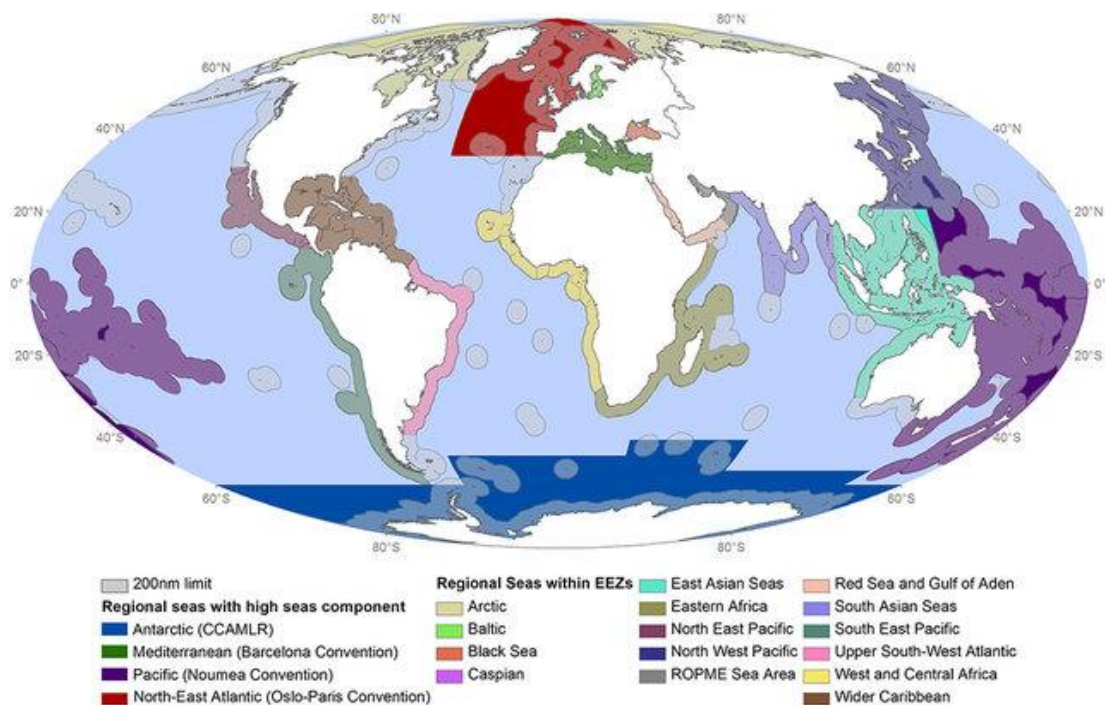
- France (Ministères): 150 k€/an
- Mercator Océan: 150 k€/an
- European Commission (tbc): 300 k€/an

- WG are critical to unlock resources needed to advance.
 - Initial suggestion: 2 types of WG, + an implementation advisory WG:
 - First type focused on community and capacity building: organized by regions (GOOS regional alliances regions?) – more details later
 - Second type, technical, focused on alignment for co-design – more details later
 - Implementation support WG, focused on steering and alignment with decade actions.
 - Having different structure for technical and community will allow take the best of both worlds: small specialists team able to deliver technical results on time and larger geographically based structure, able to integrate the community and catalyze the “political” and organizational component
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- Internal activity has started. Work active on:
 - Design of logo and image of Oceanprediction DCC
 - Web page and tools, including:
 - IT tools to develop an Atlas of OOFS, persons and institutions. Collaboration with EuroGOOS and MONGOOS
 - Forum – Collaboration with Oceanpredict
 - News and events – Collaboration with Oceanpredict
 - ...
 - Official activity with external communities to be started on Oceanprediction-DCC KO-meeting (November)
 - Web page ready (most likely tools for Atlas not fully completed)
 - Activities will be put in place to gather information for Atlas during the event
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- Based on UNEP regional seas to foster collaboration, clustering some regions

UNEP regional seas



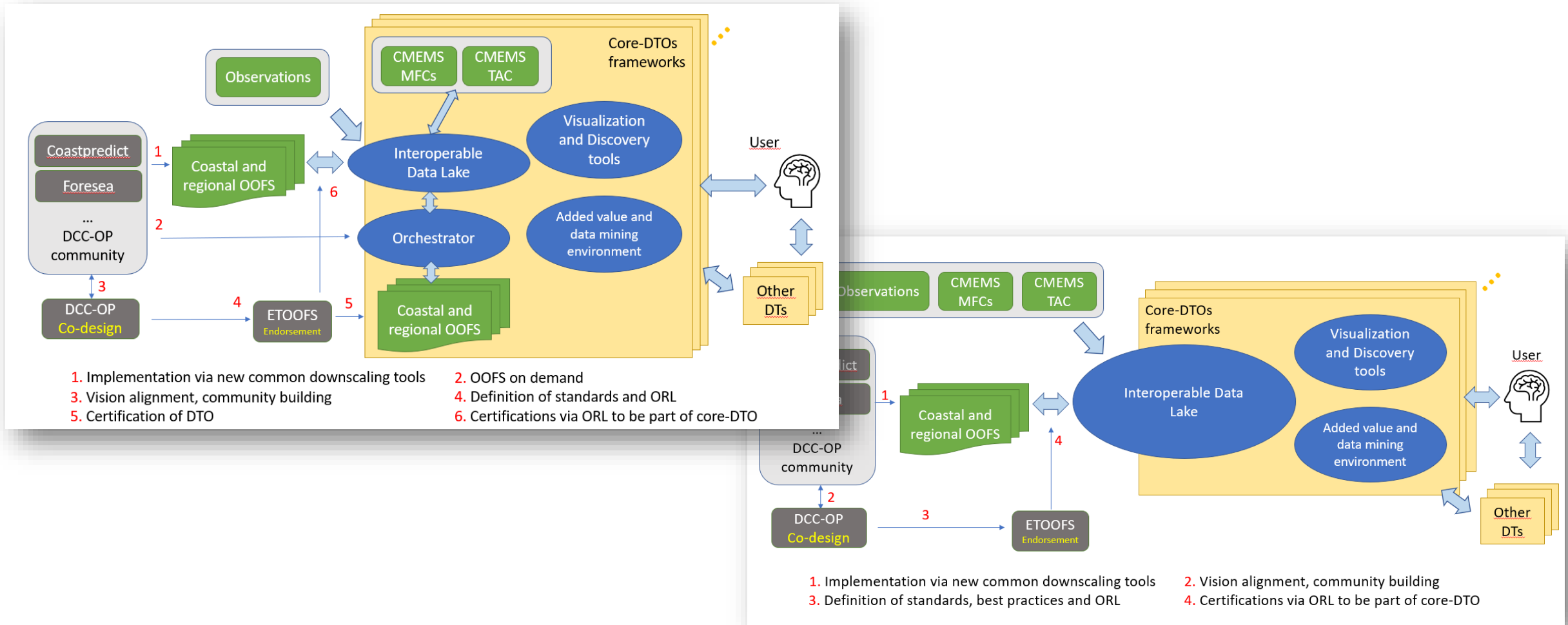
Coastprediction DCC regional WG

- Region 1: West Pacific and East Asian seas
- Region 2: Asian seas
- Region 3: African seas
- Region 4: Mediterranean and Black Sea
- Region 5: North-East Atlantic
- Region 6: South and central America
- Region 7: North America region
- Region 8: Polar seas

- Focal point for capacity building and regional workshops
 - Formed by a steering group and open to massive participation.
 - Steering group positions:
 - Ocean observing expert
 - Ocean forecasting expert 1: physics
 - Ocean forecasting expert 2: Biogeochemistry
 - Ocean forecasting expert 3: Climate
 - Connection with users (downstream services)
 - Capacity building/Ocean literacy expert
 - Expert in connecting with policy and legal aspects at the region (most likely to be provided by UNEP)
 - Secretariat
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- Today: useful OOFs but technically disconnected.
 - Core services disconnected (not interoperable for users)
 - To start a new downstream system, require a development from scratch and ends on an isolated service.
 - No possibility to use common tools for OOFs validation and exploitation
 - Confusion about basic things: which is the needed architecture, and which are the basic bricks to be developed (tools, standards, best Practices, ORL)?
- Digital Twins and Decade framework can change this situation
- We suggest start working on defining the roadmap, beginning with identification of architectures and building blocks

Examples of possible technical architectures



Four independent digits to describe a system:

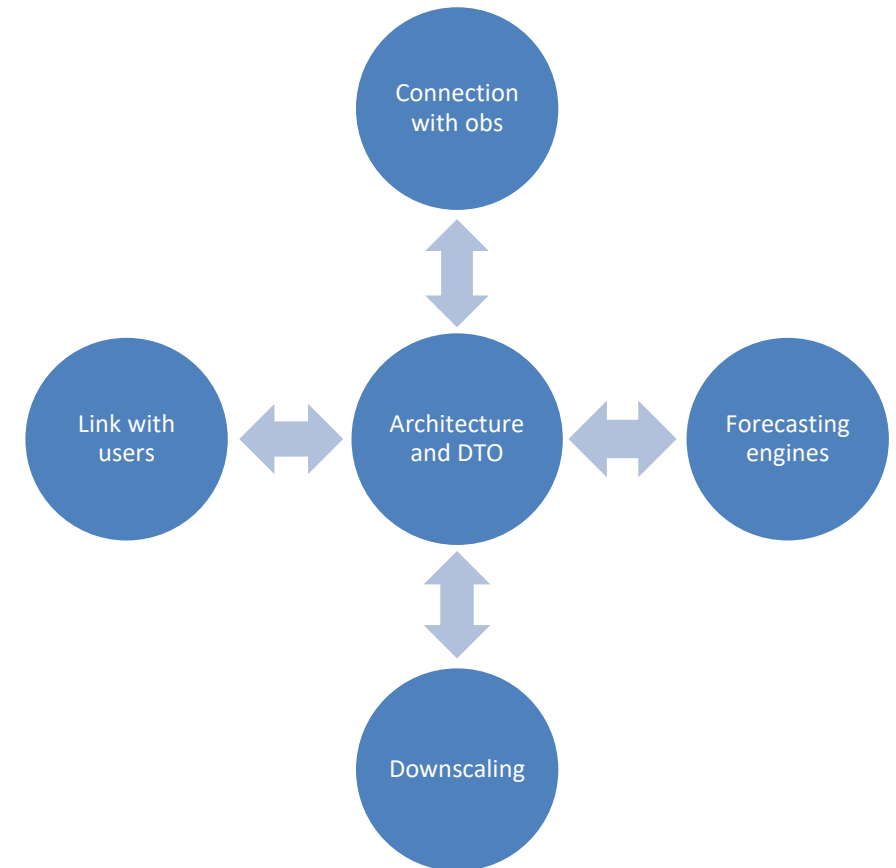
- First number for degree of operability
- Second, to technical solution
- Third for degree of validation
- Fourth to output dissemination

Benefits of ORL:

- Promote the adoption of tools, standards and Best Practices
- A mechanism to endorse services to join common frameworks
- A way to guide and stimulate services development



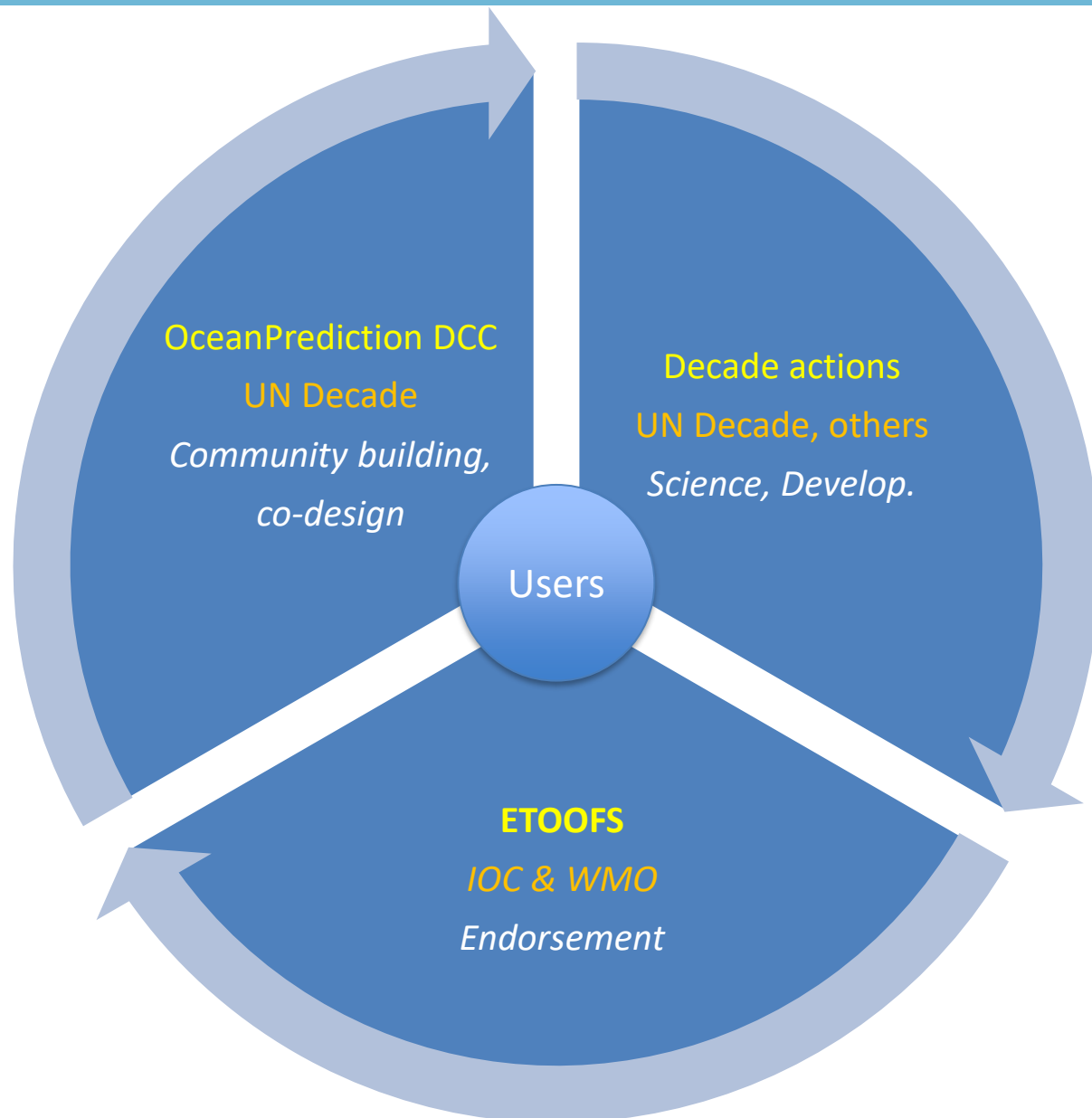
- We need to Start by defining the architecture and the elements (standards, tools, best practices...) of the value chain to be co-designed and developed in the future
- An international team is needed. We will:
 - First, create a central WG on architecture and DTO
 - This WG will later implement other WGs depending on needs and will ensure transversal communication between them
 - Small WGs (around 5 persons?) formed by highly qualified personnel



Examples of posible WG. All are transversal and talking to core WG on Architecture and DTO

- Phase 1, to be executed by architecture and DTO WG
 - Mapping present day situation. Identification of gaps
 - Definition of architectures to deliver as one and to advance towards DTO
 - Define and create the additional required WG for specialized assessment
 - With the outcome we will submit a high-level perspective paper (maybe to a sub-journal of nature) setting the scenario for the overall vision
- Phase 2, to be implemented by all WG:
 - Detailed identification of required standards, best Practices, Tools and ORL's to implement architecture defined in phase 1
 - Write, by the end of 2023, a paper on the corresponding topic (one per WG)
- Results to inspire Decade programmes development targets
- After publication, WG to establish links with decade programmes and outside. Propose ways forward
- “Forecasting Engines” WG will also form the DITTO WG on models.
- Initial work focused on OOFS (physics, waves and bio). Paving the way for longer time scales to be explored in subsequent developments

- Small team to advise during the DCC launch process (2 years)
 - Activity: One 4-hour meeting every 4 months
 - Formed by leaders of the other WG + selected decade actions + external experts + ocean policy expert
 - We need to avoid EU biased composition
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Example of one typical iteration:

- 1) Oceanprediction DCC, in collaboration with decade actions, **identifies** the need of a new standard or tool and coordinates the **co-design** of specifications
- 2) The Decade actions (e.g., Coastpredict, Foresea) **develop** the new component, aligned with OceanPrediction DCC
- 3) ETOOFS **endorse** the new development
- 4) Oceanprediction DCC and others (e.g., BestPractices) make sure the new development is **distributed to the community**

- June 2022: launch
- November: Kick-off meeting, official start of community and populating the maps
- January 2023: Kick off of technical work (start of architecture and DTO WG)
- March 2023: Atlas ready (models and stakeholders)
- March 2023: Other technical WG formed.
- July 2023: first list of architectures and building bricks, ORL defined. Perspective paper submitted
- July-December 2023: Community forum activity: workshops or other (to be defined)
- December 2023: 5 papers of technical WG submitted

- OceanPrediction DCC: a key element for the ocean prediction we need
- Kick-off: June 2022 (UN Lisbon conference)
- Building an active community of users, scientists and policy makers (additional focus on developing countries)
- Taking advantage of the decade framework and arrival of DTO concept to promote delivering as one worldwide
- Substantial benefits expected:
 - A connected community
 - New and better OOFs
 - A technically linked worldwide ocean forecasting framework
- Significant challenge... only possible via collaboration with Decade programmes and other relevant actors.



