Transition to MOM6
(An Update Since the Breckenridge Workshop)

and

CICE Consortium

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Brief Background

An Advisory Panel was formed by the CESM SSC and charged with recommending a new base model code (dynamical core) for future generations of the ocean component of CESM, beginning with CESM3.

Community input on requirements for the future ocean component was solicited through a CESM-wide e-mail survey and discussions at various venues.

A Request for Information (RFI) was sent to the groups developing the following ocean models:
- Hybrid Coordinate Ocean Model (HYCOM),
- MIT General Circulation Model (MITgcm),
- Modular Ocean Model version 6 (MOM6),
- Ocean Model for Prediction Across Scales (MPAS-O),
- Nucleus for European Modelling of the Ocean (NEMO),
- Regional Ocean Modeling System (ROMS)

Representatives from each of the groups attended the 2016 Breckenridge CESM workshop and presented overviews of the models and development practices at a well-attended cross-working group session. The presentations were followed by a question and answer session and open discussion of concerns of all impacted CESM users.

Panel Recommendations

1. CESM should adopt MOM6 as the provisional ocean component of CESM3 and begin working with GFDL and the CESM developer and user communities as soon as possible to design and develop a configuration(s) that meets the requirements of the full scientific scope of CESM.

2. CESM should work with LANL and DOE management to find a mutually acceptable organizational structure to facilitate continued collaboration on ocean model development and permit the use of MPAS-O within the CESM framework for focused research projects.

3. CESM should invest in developing, documenting, and supporting an "open architecture" for interfacing other ocean dynamical cores (e.g. HYCOM, MITgcm, MPAS-O, NEMO, ROMS) with the CESM framework and provide technical assistance and coordination to university based research groups interested in using alternative ocean components in CESM.

4. CESM should engage the regional ocean modeling community to identify requirements for downscaling CESM global simulations, and develop protocols and requisite infrastructure to support the growth of this research area within the CESM community.

Panel Recommendations

1. CESM should adopt MOM6 as the provisional ocean component of CESM3 and begin working with GFDL and the CESM developer and user communities as soon as possible to design and develop a configuration(s) that meets the requirements of the full scientific scope of CESM.

CESM SSC followed the panel recommendation and chose MOM6 as the provisional ocean component of CESM3 (13 October 2016)

Status

NSF supplementary funding for 4 ocean positions to support transition to MOM6 as well as for enhanced engagement with the university community.

Three positions were advertised for a Ladder Track Scientist, a Project Scientist, and a Software Engineer with the latter two aimed at serving as OMWG science and software liaisons, respectively.

All three positions are at the interview stages.

Engagement with GFDL and preliminary discussions on how to proceed.

Joint session of several WGs Thursday AM, regarding transition to MOM6 and impacts.

Hallberg will be visiting NCAR during summer.

Adcroft will spend his summer at NCAR.

Why build a CICE Consortium?

to enhance sea ice model development for and by the community

- Acceleration of scientific development
- Acceleration of R&D transfer to operational use
- Vehicle for collaboration and sharing
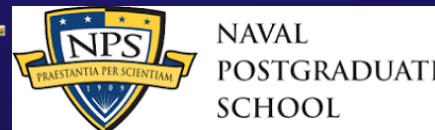
CICE Consortium Organization

Executive Oversight Board
DOE/ACME, DoD/NRL, DoD/NPS, NOAA/NWS/GFDL, NSF/NCAR, UKMO, ECCC

Lead Coordinator
LANL

Co-Lead
[TBD]

Software Engineer
NWS

CICEdyn
NPS/ECCC

Icepack
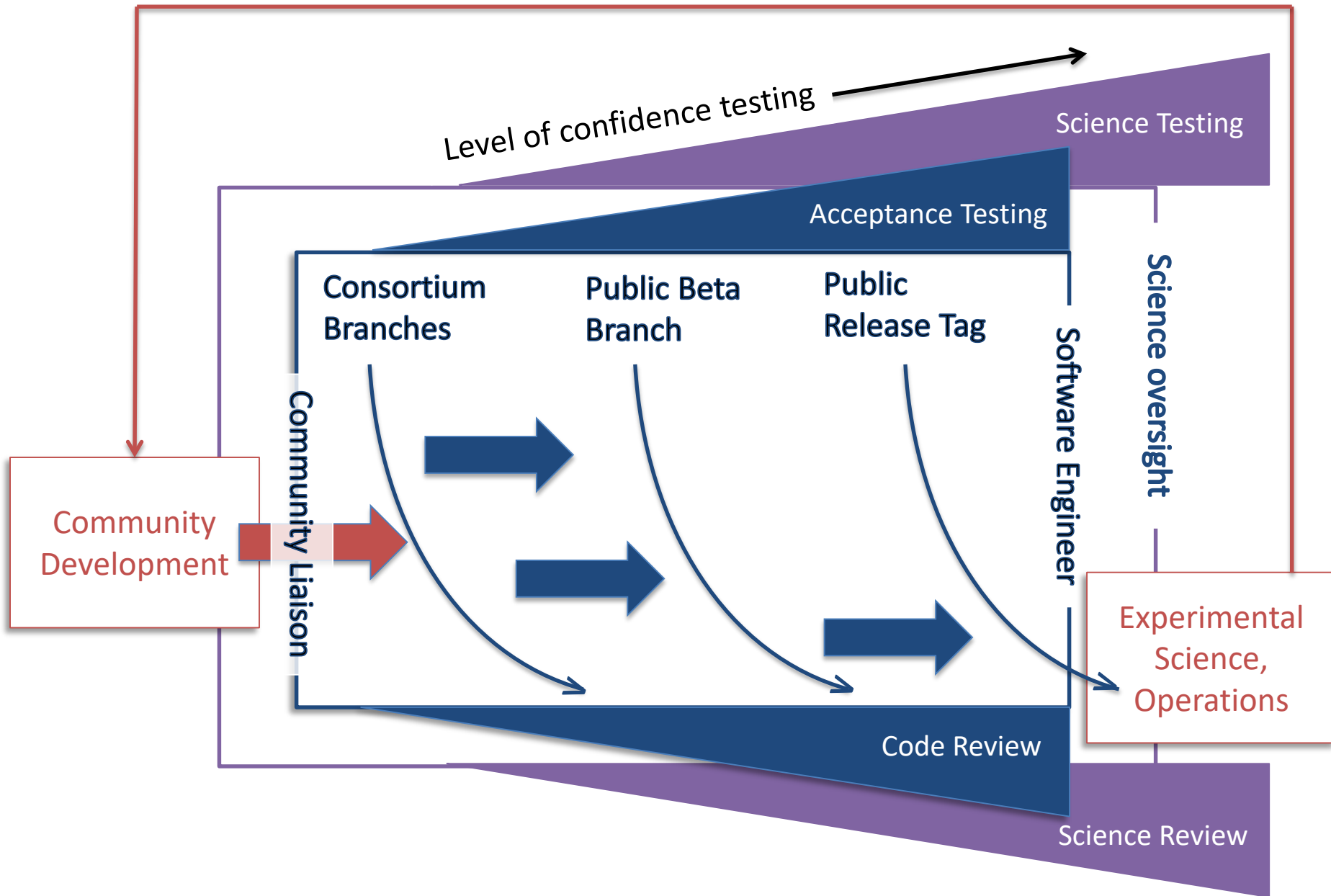LANL/GFDL

Infrastructure
NWS

Testing and Analysis
NRL

Community Support
NCAR/UKMO

Repository
SE

Multiple groups are playing a key role in different task teams

CICE Consortium Functional Design

Level of confidence testing

Science Testing

Acceptance Testing

Consortium Branches

Public Beta Branch

Public Release Tag

Software Engineer

Science oversight

Community Liaison

Community Development

Experimental Science, Operations

Code Review

Science Review

Next steps

- Complete governance documents
- Set up repository
- Design and implement confidence testing
- Design and implement documentation
- Implement contributed code changes
- Prepare Icepack 1.0 release
- Prepare CICE 6.0 release
  - Overoptimistic target date: Sept 30