R2O: The UFS perspective

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About the UFS

"System" in UFS =
code + governance + community

Purpose — The Unified Forecast System (UFS) is a comprehensive, ***community-developed*** Earth modeling system, designed as both a ***research tool*** and as the ***basis for NOAA's operational forecasts***.

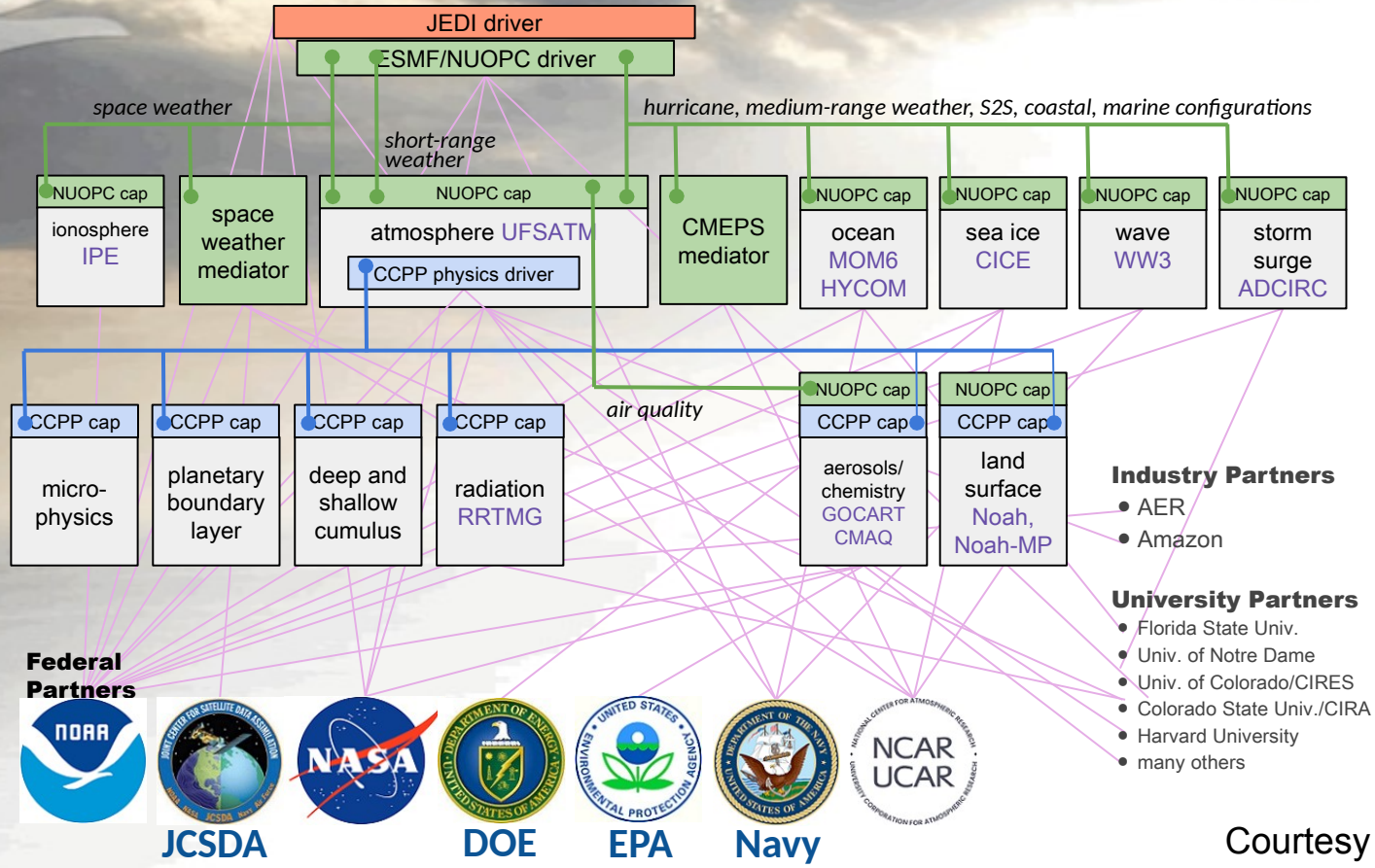
Governance — Planning and ***evidence-based decision-making*** support improving research and operations transitions and community engagement.

Scope — UFS is configurable into multiple ***applications*** that span local to global domains and predictive time scales from less than an hour to more than a year.

Design — UFS is a ***unified*** system because the applications within it share science components and software infrastructure.

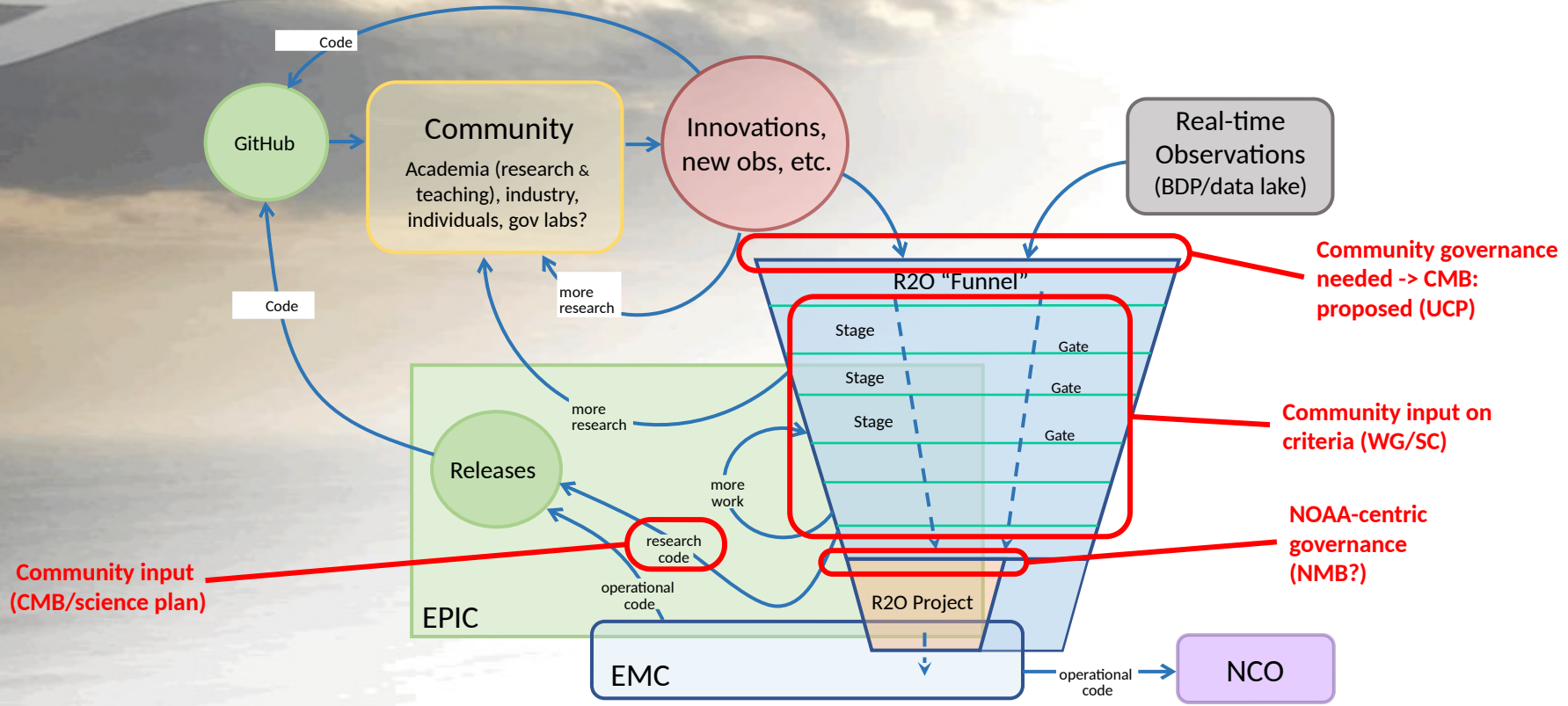
Impact — UFS is a ***paradigm shift*** that will enable NOAA to simplify the NCEP Production Suite, to accelerate use of leading research, and to produce more accurate forecasts for the U.S. and its partners.

Components and Contributors Jan 2020



Courtesy C. DeLuca

Process vision for the future: governance and decision points



Thank You!

Jacobs, N. A., 2021: Open Innovation and the Case for Community Model Development. *Bull. Amer. Meteor. Soc.*, **102**, E2002–E2011, https://doi.org/10.1175/BAMS-D-21-0030.1.

Uccellini, L. W., R. W. Spinrad, D. M. Koch, C. N. McLean, and W. M. Lapenta, 2022: EPIC as a Catalyst for NOAA's Future Earth Prediction System. *Bull. Amer. Meteor. Soc.*, **103**, E2246–E2264, https://doi.org/10.1175/BAMS-D-21-0061.1.

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Code Management

Code management principles from latest UFS Governance Document, Section 5.5:

- *"As a community model with components provided by a large number of groups and teams, code management and governance by origin is organic and distributed, with in particular many of the component models already having established this. To assure that the development of these models is not hampered by the UFS, the UFS does not aim to replace this governance at the "component" level. Nevertheless, rules are needed. A high level document on repositories was one of the first policy documents generated by the UFS community. "*

Code Management

Code management

- *"Furthermore, the UFS expects the following high-level code management and governance principles to be followed by each self-contained component (including infrastructure) individually:"*
  - **Do no harm**
    - Continuous regression testing
    - Maintaining backward compatibility
    - Explicit concurrence from operations where needed
  - **Coding Standards**
  - **Ownership**