Strategic Implementation Plan (SIP) for a Community-based Unified Forecast System (UFS)

Infrastructure Working Group

Presented by

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Coordination Meeting for UFS SIP

02 August, 2018; College Park, MD

Infrastructure WG
Membership

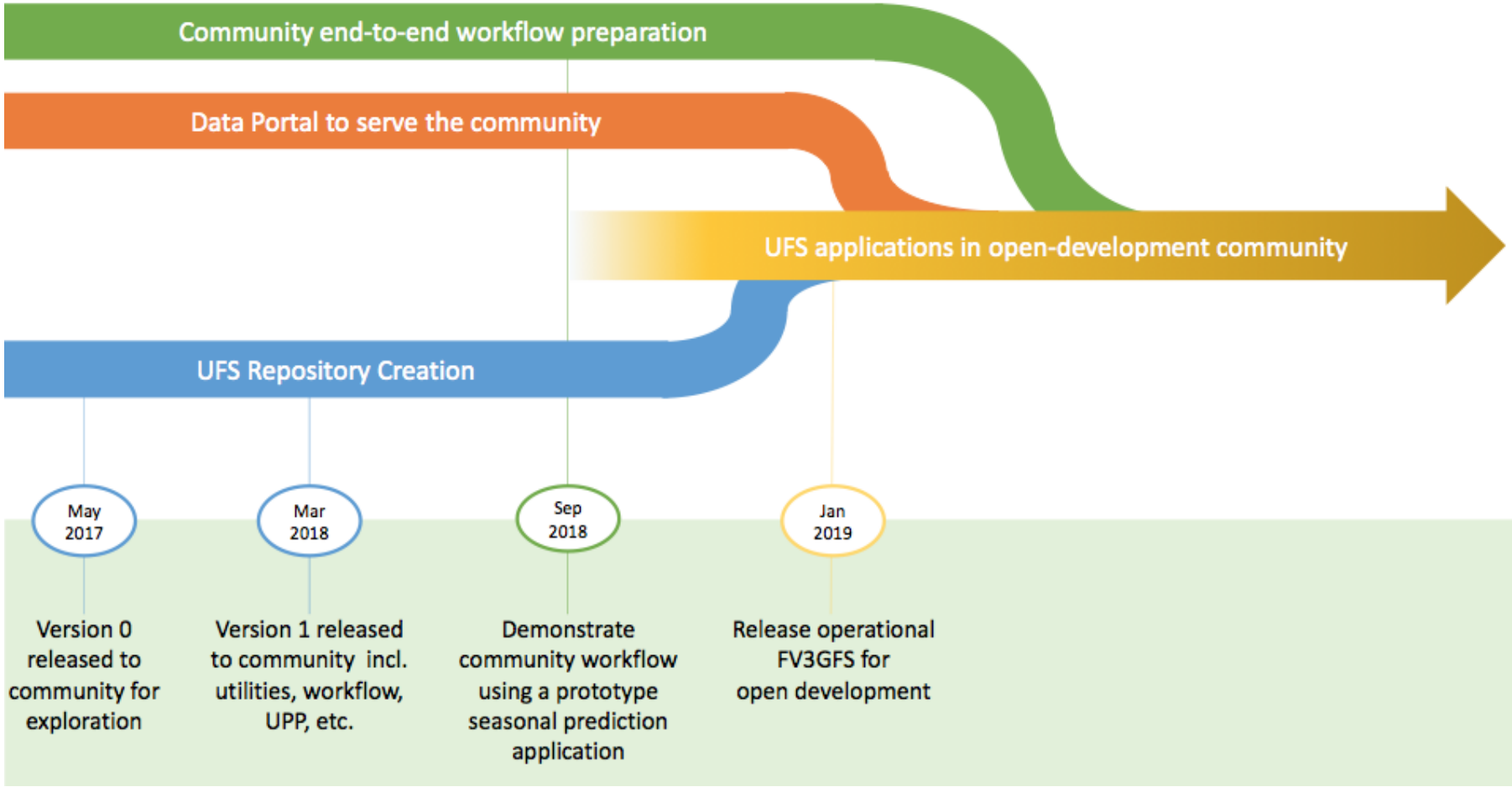
- *Arun Chawla (NOAA/NCEP/EMC) ***
- *Cristiana Stan (George Mason University) ***
- *Rusty Benson (NOAA/GFDL) ***

Repositories Sub-Group

- Cecelia Deluca (NOAA/ESRL/GSD & CIRES/ESMF)
- Gerhard Theurich (NRL/ESMF)
- Jun Wang (NOAA/NCEP/EMC)
- Mariana Vertenstein (NCAR)
- Seth Underwood (NOAA/GFDL)

***Co-Chair*

Infrastructure WG Projects



Infrastructure WG
Project Milestone Accomplishments

SIP project accomplishments to date:

- Defined governance rules and processes for open-development projects with cooperation of ESPC Model Liaison Committee
- Repository strategy briefing to UFS-SC (08 June 2018)
- Preliminary report shared with EMC Director and Office of the Director, NCEP
- Finalized report available with recommendations and milestones for Repositories, Data Portal, and Community Workflow

SIP project issues:

- Uncertainty of NOAA/NCAR MOA activities and timelines
- Fiduciary obligations for Data Portal and Repository management
- Workflow requirements to satisfy GST yet overlap with operations (where appropriate)

Infrastructure WG Team Coordination and Dependencies

Coordination:

Steering Committee – approval on repository strategy

System Architecture WG – repository management strategy

System Architecture WG – workflow

Dependencies:

NOAA/NCAR agreement(s)

UFS Weather Forecast App

Current NEMSfv3gfs repository contains:

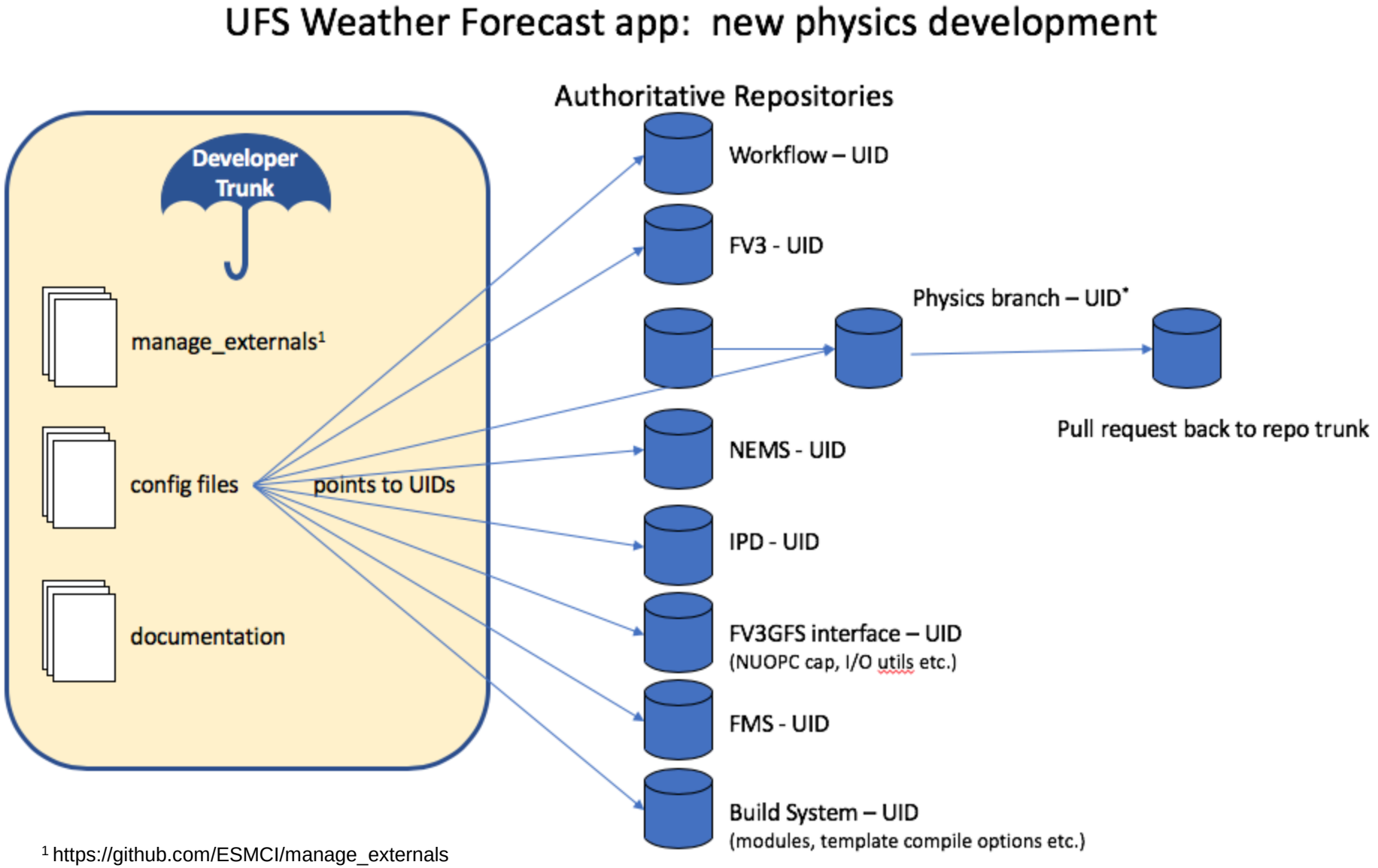
- regression workflow system
- NEMS mediator source code (sub-module)
- FV3GFS source code (sub-module)

List of authoritative repositories for source code:

- NEMS
- FMS infrastructure
- FV3 dynamical core
- Interoperable Physics Driver (IPD)
- GFS physics
- Stochastic physics
- FV3GFS driver system (incl. NUOPC cap, write component, etc.)
- NCEPlibs

existing authoritative repository

Umbrella Repository Strategy



[1] https://github.com/ESMCI/manage_externals

UFS Repository Governance

General repository practices:

- Authoritative central repository with versioning and management system
- Governing body who sets and enforces policies and establishes terms of use
- Periodic reference releases with unique ID
- Documentation of incremental changes and outdated/unsupported logic
- NUOPC cap managed internally

Additional rules for "community" component models:

- Code is either fully open or available through a registration process
- Publicly documented policies, including procedures for changing code, repository use, policy change
- Responsive support contact or mechanism, e.g. a forum - not personal email
- Issue tracking mechanism is provided with timely feedback

Participation in UFS system:

- Well-defined, regression testing strategy

Required Resources

Q. What are the resources needed for maintaining umbrella repositories?

A. *This depends on the applications that make up the UFS and their complexity. As a rule of thumb, the more complex the development repository and the number of active developers, the larger the number of code managers needed. Data from CICE5 and MOM6 indicate a minimum of 2 part-time individuals (1 FTE) are necessary. Back of the envelope calculations for the Weather Forecast app and a Seasonal Prediction app indicates a 6 - 10 FTE effort. This does not include the integration team needed to test the end-to-end modeling systems. This is only sustainable if all the agencies involved make a commitment to share the support functionality*

Infrastructure WG
Full Report

A full report (pdf) with Use Cases, FAQ, and more is available at:

https://drive.google.com/file/d/1hFFUHNRatjB43HxhUVpBvfd_3npoxjiv