Session VI: Strategy, Summary and Recommendations

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What is EPIC?

- Consensus
  - Vision: Creating the world's best community modeling system of which a subset of components will create the world's best operational forecast model
  - Mission: Advance Earth system modeling skill, reclaim and maintain international leadership in Earth system prediction and its science, and improve the transition of research into operations.

What is EPIC?

- Open Issues
  - Defining the structure of EPIC, including its management and development, evaluation, and technological efforts.

Community Support – User Services

- Consensus: A community modeling system requires robust user support, including the following:
  - Easy access to the latest version of code, input and output data
  - Code repository maintained under version control software
  - Thorough, understandable documentation
  - User-friendly workflow; software infrastructure
  - Tutorials, workshops, help services
  - Developers involved in user support

Community Support – User Services

- Robust user support also includes the following:
  - Hierarchical testing capability
  - Clear pathway for incorporating new science (R2O)
  - Easy access to computing resources
  - Special attention to students as next-generation users
  - Code portability

Community Support – User Services

- Open Issues
  - How community support will evolve from the short-term (next 18 months) to a sustainable long-term paradigm.
  - Will NOAA provide computing resources and if so, how will resources be allocated? How will users begin to access NOAA-owned computing?
  - Is there sufficient expertise available on all of the core UFS components to provide support? CCPP-compliant physics packages?
  - How should developers be involved in user support?

Business Model & Governance

- Consensus
  - EPIC is an organization of, by and for the entire modeling community - and NOAA is a key member of that community
  - EPIC should become world's best community organization for forecasting research and development
  - EPIC will exist outside of NOAA
  - EPIC will have a physical presence at least for the purpose of governance and focus of community support
  - EPIC will have a strong leader with a lot of autonomy.

Business Model & Governance

- Consensus (continued)
  - Immediate steps are required to stand up the management structure of EPIC. This includes identifying the managing institution, hiring its leader, creating management and scientific advisory boards, and providing financial and other support.
  - This management group will design the remainder of the administrative, scientific and technical structures.
  - EPIC will possess a lean and flat administrative/management structure.
  - The initiation of EPIC requires creating a positive collaborative culture across the entire enterprise.
  - EPIC will be accountable to meeting clear, objective metrics, targets and timelines agreed to by the community
  - Code should be validated and reviewed.

Business Model & Governance

- Open Issues
  - How will NOAA spend the $15M?
  - What will be the size, make-up and scope of EPIC staff?
  - What are the qualifications of the Director of EPIC?

How should EPIC be initiated?

- Consensus
  - Early successes are important to prove the EPIC approach and to encourage continued and increased support.
  - Examples of such success might include standing up a community support system with tutorials and help desk, the successful use of the system by members of the community, or the successful application of new DA approaches or physics advances in the operational system.
  - Initial steps must include identifying the managing institution, hiring an EPIC leader and establishing management and scientific advisory boards.
  - Need to incentivize broad participation in EPIC

How should EPIC be initiated?

- Open Issues
  - Modality of selection and funding of EPIC organization

Computing Resources

- Consensus
  - World class environmental prediction requires far more computer resources than currently available for development, operations, and reanalysis/reforecast
  - Cloud computing offers substantial potential for addressing requirements of both NOAA and the community for both research and development, as well as distribution/archival of model output, but perhaps not for operational forecasting.
  - EPIC must be agile to a rapidly evolving computing landscape.

Computing Resources

- Open issues
  - What will be the sources of the computing necessary for the success of EPIC?
  - To what degree should EPIC support a diverse set of computing architectures.

Recommendations

- **Business Model and Governance**
  - Identify the managing institution and stand up the management structure as soon as possible
  - Create a strategic plan that addresses the consensus points above
  - Create a culture of community cooperation across the entire enterprise
- **Community Support**
  - Allocate resources to immediately instantiate robust user support
  - Accelerate propagation of expertise on all core UFS components
- **Computing**
  - NOAA must establish bold and ambitious plans for sustained funding for computing to ensure the success of EPIC.