

Minutes
WRF Executive Oversight Board
1 December 2003

1. **Attendees:** Mike Sestak, William Curry, Gloria Kulesa, Louis Uccellini, Nelson Seaman, Jack Hayes, Eric Hartwig, Simon Chang, Steven Koch, Alexander MacDonald, Tim Killeen.
Remote attendees: Charles Benson, Mark Surmeier, Christopher Gunderson, Rebecca Stone, Richard Hodur, Michael Clancy, Robert Gall, Joseph Klemp

2. **The WRF Partnership, Vision, Goals and Desired Outcomes:**

- A three-phase **concept** for the WRF program was presented with goals and measurable desired outcomes for success in terms of thresholds and objectives.
- At NCAR's request, the ExOB agreed to add a **new goal to emphasize research applications** of WRF.

Action Item 1 for PC: **Change slide 2.6** to show a separate research-focused goal: "Create and release WRF as the next-generation mesoscale NWP modeling system supported to the research community."

Action Item 2 for PC: **Change to slide 2.8:** As a consequence of the new goal on slide 2.6, the sub-bullets on slide 2.8 that discuss Reference code will be moved to a new "Desired Outcomes" slide corresponding to the new goal defined on slide 2.6. In addition **the objective for the Reference code** will be to **support three cores** to the atmospheric science community instead of two cores.

- The ExOB agreed to a suggestion that the wording in the introductory sentence of slide 2.11 be altered slightly to read, "...NWP modeling system that improves operations and opens new research opportunities."
- The ExOB adopted a suggestion that the WRF program be managed using a performance metrics approach.

Action Item 3 for PC: **Establish Performance Metrics** to assist members in tracking WRF improvements, using metrics that can be augmented as needed.

- The ExOB agreed with FAA's request that its interests be **represented** in the WRF PO, Research Applications Board and Operational Requirements Board **by**

either FAA or non-FAA individuals, at FAA's discretion. This option is available to all WRF AIP signatories.

Action Item 4 for Hayes and PC: Establish **periodic informational briefings** for ExOB members (at intervals, as requested by members) on WRF program developments occurring between meetings of the ExOB.

- The ExOB endorsed a suggestion that an **annual operating plan (AOP)** be developed annually and used to implement forward elements of the WRF five-year plan.

Action Item 5 for PC: Through the Program Office, **draft and submit a WRF AOP** to the ExOB by 31 January 2004. The AOP would identify deficiencies and opportunities, and identify agency leads, deliverables, milestones, resources needed, and agency commitments. Amend the WRF Partnership/Vision slides to indicate an AOP along with references to the WRF five-year plan (slide 2.9 and following).

3. WRF Program Status and Software Issues

Action Item 6 for PC: Ensure that **standard elements, levels, etc.**, of the common modeling infrastructure are **defined** that will facilitate the Navy's effort to establish **interoperability of WRF and COAMPS** at the level of input and output data files.

- On slide 3.11, add “**annual operating plan**”
- The ExOB **supports** the goals presented for **alleviating deficiencies of the WRF Software Infrastructure**, but recommended and adopted several changes to slide 3.16, as follows

Action Item 7 for PC: Change **Slide 3.16**, as follows

- (first bullet) “Modify the existing WRF Software Infrastructure to enhance the functionality, usability and extensibility in sync with an ESMF end state”
- (third bullet) change “Create” to “Publish”
- (fourth bullet) change “Establish” to “Upgrade” since NCAR already has a form of on-line WRF services.

Action Item 8 for PC: The PC, with assistance from the PO, will provide the ExOB with a **proposal** for establishing a team to alleviate the deficiencies of the WRF Common Software Modeling Infrastructure, including goals, desired outcomes, success metrics in terms of thresholds and objectives, milestones and suspense dates, and resource requirements.

The suspense date for providing infrastructure documentation, the principle deficiency, is set as 1 October 2004.

Action Item 9 for ExOB: **Approve or modify the proposed approach** submitted by PC for alleviating deficiencies of the WRF Common Software Modeling Infrastructure and **provide resources**.

Action Item 10 for PC: Develop a proposal for a **sustainable process** by which **deficiencies** in and **opportunities** for WRF code and system can be identified and prioritized on a continuing basis, responses planned and resources assigned as part of the WRF Annual Operating Plan.

4. WRF Program Management Structure:

- The ExOB **endorsed the creation of a central DTC in Boulder**, resourced by NCAR and NOAA (see slide 4.4). The ExOB further agreed that the DTC should be a distributed capability that encompasses WRF development efforts among the WRF partners at other sites. NRL currently acts as a DTC for the ocean modeling community and expressed strong interest in partnering with the Boulder DTC.
- OTCs will be owned by their respective operational centers, but developed as enterprises (i.e., focused innovative production units) sharing a common vision and striving for interoperability going forward.

Action Item 11 for PC: **Change slide 4.6 accordingly** to reflect this decision of the ExOB (by asterisk).

- **Threshold outcome (Phase 1):** Establish a **physical DTC in Boulder**, resourced by NCAR and NOAA
 - **Objective outcome (Phase 2):** Extend DTC with Boulder as the **hub of a distributed facility** by establishing common goals and standards by which existing centers can identify and establish overlap.
- The ExOB agreed that the **DTC director** will coordinate WRF developmental **testing activities** across distributed test centers. Assets of Boulder DTC are in direct control of the director, while assets of distributed (non-Boulder) test-center affiliates do not require direct control.
 - Slide 4.5 will be changed to **include an AOP** to be developed and executed by the PC, with assistance from the PO, DTC, OTC and WGs, as needed (also see Action Item 5).

- ExOB agreed that slide 4.11 be changed to define the ExOB only in terms of the signatory organizations in the form of “**billets**”, without reference to current incumbents.

Action Item 12 for PC: Change slide 4.11 as directed by ExOB.

- The ExOB **adopted the WRF Management Structure** defined in **Working Draft 1** (slide 4.6), with the following **caveats** that add further elements adopted from **Working Draft 2**.

Action Item 13 for PC: Change Slide 6 and Board Charters as follows:

- The DTC will be “asterisked” in Slide 4.6 to indicate that the central DTC in Boulder and other existing centers desiring to be part of the distributed WRF DTC will develop standard operating procedures to define their relationship in the broader distributed DTC (see Action Item 11).
 - The PO will include individuals with program planning and execution roles. The PO charter will be modified to reflect this dual role.
 - All WRF AIP signatory organizations will be included in the PO, and also represented on the WRF Research Applications Board and Operations Requirements Board, either directly or through their designees.
 - The WORB will have *ex officio* research members and the WRAB will have *ex officio* operations members.
- The ExOB endorsed the nominations of **N. Seaman as WRF PC and R. Gall as DTC Director**.

Action Item 14 for PC: The PC will **nominate heads for the WRF boards and select members** in accordance with their charters. Board heads and members will be approved by the ExOB. The PC will work with the AIP signatory agencies' ExOB members **to identify agency representatives** to the PO.

Action Item 15 for ExOB members: With the incumbent ExOB members as POCs, the Signatory Agencies will identify a **deputy for each ExOB member**, if so desired.

5. WRF Outreach to NSF:

- NSF is open to **joint AOs**. **Precedents exist** between NSF - USWRP and NSF - National Oceans Program. Unsolicited proposals are another route that may be exploited for pursuing WRF goals. However, overtly WRF-specific AOs probably would create a problem for NSF because of objections from the academic community.
- **FAA** can only direct resources to AOs that support **applications that help fulfill its mission**, but most basic research does not fall in that sphere.
- It was suggested that an approach to use to enable NSF resources to be applied in support of WRF goals would be to have **two categories** of proposals could be linked in the **joint AOs: basic research and applied research**.
 - PIs could apply to a **basic-science AO category**, using any model or methodology. This category can be supported by NSF or other agencies. PIs could also submit **WRF-specific applied science proposals** for research and development that would adopt WRF coding and documentation standards and might involve collaboration with the DTC or other AIP organizations having common objectives.

Action Item 16 for PC and DTC Director: Establish a formal POC with NSF, to be approved by the ExOB, and discuss possibilities and terms for joint AOs between NSF and WRF Program.