

# **7. Transforming WRF from a “Project” to a Program:**

## **An Initiative of WRF Phase 2**

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WRF Executive Oversight Board

Meeting 2006-1

NCAR, Boulder, CO

5 January 2006

# Critical Deficiencies Identified for Phase 2

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1. “The **WRF Software Infrastructure** is complex, difficult for new users to understand, lacks in-depth documentation, and is fully known to only one person (single point of failure)”

*ExOB Mtg., 1 Dec 2003*

2. “Options are needed to establish a more firm **management plan** to sustain the WRF Program, including **resourcing for the WRF DTC**”

*ExOB Mtg., 11 Aug 2005*

*New*

# Recall Meeting Objectives

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## Reach consensus on:

- What is necessary to transform WRF into a program?
- **What is appropriate scope of DTC?** (See Brief 8)
- What is role/authority of future WRF program management?
- **\*What are criteria for participation in a WRF Program?**  
(Note - probably cannot be completed in this meeting\*)

*\*Note – At this time consensus is needed to identify what a WRF program should look like. Later discussions must determine how best to achieve those features. Briefs 7 and 8 give proposed solutions and recommended ExOB actions needed at this time.*

# First Step: **Establish Goals** to Alleviate WRF Process Deficiency

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*Transform WRF from a “project” to a program by...*

- 1. Identifying *capabilities*** that describe a WRF **program** and address the ***risks*** associated with current WRF management and resourcing. (Contained in draft MOA)
  - DTC is insufficiently staffed for testing, transition and user-support requirements (See Brief 8)
  - DTC is insufficiently resourced (See Brief 8)
  - WRF management does not provide for efficient decision-making authority or “enforcement” of decisions (Brief 7)
- 2. Deciding appropriate scope of DTC**
  - Identify *services* that must be provided
  - Identify required *staffing*
  - Identify commensurate *resource level*
- 3. Deciding role & authority of program management**
- 4. Establishing resources** (requires action at higher level)
- 5. Implementing WRF program plan**, based on 1-4

# Recommended ExOB Action

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**Adopt the five-goal plan** for transforming WRF from a project to a program, listed on **slide 4**.  
(with modifications, as provided by ExOB)

(responds to 1<sup>st</sup> ExOB meeting objective)

*Note – The rest of brief 7 proposes how to address the five goals listed on slide 4, with specific recommendations for action by ExOB.*

# 1. What capability is needed to establish WRF program?

**Proposal for Goal 1:** *WRF program must have capability to...*

- Define program priorities
- Provide effective testing, transition and user-support center
  - > i.e., appropriately staff DTC (see briefing 8)
- Provide clear path for science/tech contributors to follow
  - > define & implement evaluation of contributed code components  
(e.g. – hurricane WRF modeling components?)
- Define and maintain community WRF reference software
- Operate effective program decision process
  - > especially for paradigm changes having major program implications (e.g. – WRF-ESMF, cores, DA systems/JCSDA)
- Ensure adequate and dependable program resources
- Manage program resources
- Make and implement decisions across the program
  - > WRF equivalent of “federalism” vs. “states’ rights”...
  - > Define how much individual authority to cede to WRF program

*Others?*

# 1. Recommended ExOB Action

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## Response to Goal 1:

- **Adopt** the **eight capabilities** listed on **slide 5** (with modifications, as provided by ExOB) that define what is necessary to transform WRF from a project into a program.

(responds to 1<sup>st</sup> ExOB meeting objective)

- **Adopt** the following to **define WRF program priorities**:
  - > DTC Annual Operating Plan (near term: specific)
  - > WRF Five-Year Plan (longer term: guidance)

...both to be approved by the ExOB.

(satisfies 1<sup>st</sup> capability of Goal 1, see slide 5)

## 2. What is the scope of a fully functional DTC?

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NOTE: Proposal and recommended action for Goal 2 will be covered in Briefing 8.

(Will provide response to 2<sup>nd</sup> ExOB meeting objective and satisfy 2<sup>nd</sup>, 3<sup>rd</sup>, 4<sup>th</sup> and 7<sup>th</sup> capabilities on slide 5)

### **3. What is the role and authority of future WRF program management?**

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**Proposal for Goal 3:** Proposed role and authority for WRF program management follows on slides 10-13

(responds to 3<sup>rd</sup> ExOB meeting objective)

# Role & Authority of Program Management - 3A

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## Proposal for Goal 3: Background

- Current WRF management by **consensus** does not provide adequately for...
  - > efficient decision-making process and authority
  - > assurance that program decisions will be implemented
- **Consensus** approach too often has led to...
  - > inability to prevent independent decisions by individual partners
  - > duplications of effort (cores, infrastructures, DAs, user support)
  - > long delays when faced with difficult decisions
  - > inefficient use of resources
  - > reduced collaborations *... which increase risk*
- Q1: What decisions tend to be problematic?
- Q2: How to address decision making?

# Role & Authority of Program Management - 3B

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**Proposal for Goal 3, Q1:** First, divide issues between two categories

Difficult decision issues typically can be characterized as either...

- **Routine code testing:** Can be solved by providing full DTC capabilities and following its *established procedures*
  - > Evaluating codes, enhancing their reliability and efficiency, and supporting them to research and operations.
  - > E.g. – physics suites, hurricane modeling
- **“Paradigm changes”:** Involves higher-risk issues central to future directions taken by two or more organizations.
  - > Compliance imposes costly changes on some or all partners
  - > May put ability to meet organization’s prime mission at risk
  - > Threatens ability to sustain community approach
  - > Examples:
    - one core or more cores?
    - one or two data assimilation systems?
    - tightly defined or loosely defined software framework?

# Role & Authority of Program Management - 3C

## Proposal for Goal 3, Q2: How to address “paradigm changes”?

- **Establish** that a paradigm decision is needed
  - > Program manager or any ExOB member raises issue
  - > Given 2/3 majority support, **ExOB assigns decision task** to small program management team, led by PM, and assigns resources. Date is established to receive final recommendation (e.g. – 2 yrs).
- **Execute** decision process through management team
  - > Convene a WRF-community **technical team** to review problem, examine data and propose solution options in written report.
  - > Convene broad-based partnership **management team** to review technical report and make recommendation(s).
  - > WRF program management works to **reconcile** technical and management recommendation options, if needed. (May include request for technical evaluation by DTC or other partnership facilities.)
  - > Program management may convene **independent external panel** to review recommendations (if needed).
  - > Management team makes **final recommendation** to ExOB.
  - > **ExOB approves** final recommendation **or returns** it for further study based on specific issue(s).

# Role & Authority of Program Management - 3D

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## **Proposal for Goal 3: How to ensure implementation of difficult decisions involving “paradigm changes”?**

- Each partner and the DTC is responsible to report its **plan for compliance**, with milestones and completion date, to the ExOB within 6 months of decision approval.
- ExOB will discuss and **approve** each organization’s compliance plan **or return** for further work.
- ExOB members individually **use internal spending authority** to direct their organization’s budget.
  - > No base funds applied to non-compliant “WRF” projects or codes
  - > No cross-organization funding for non-compliant projects or codes
  - > Redirected funds are made available to transition internal and joint modeling activities in order to support the community program decision
  - > No WRF program resources applied to maintain non-compliant codes or provide user support

### 3. Recommended ExOB Action

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#### Response to Goal 3:

- **Adopt the decision and implementation process** shown on slides 10-13 (with modifications, as provided by ExOB) that define the role and authority of future WRF program management.

(responds to 3rd ExOB meeting objective and satisfies 3<sup>rd</sup>, 5<sup>th</sup>, 7<sup>th</sup> and 8th capabilities of Goal 1 on slide 5)

## 4.-5. How Can the WRF Program be Resourced and Implemented?

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**Proposal for Goals 4 & 5:** *Final Steps needed to complete transformation to WRF Program:*

- **Provide briefing** to appropriate higher-level authorities on consensus view for WRF Program (suggest January 2006)
- **Establish resource baselines** (Tri-agency atmospheric modeling workshop scheduled for February 2006)
- **Secure commitment of resources** (requires action at higher level)
- **Update and sign MOA for WRF program** (requires action at higher level)
- **Implement signed WRF Program MOA** (follows immediately from the above)

## 4.-5. Recommended ExOB Action

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### Response to Goals 4 and 5:

*At this ExOB meeting...*

- **Provide memo** to higher level authority outlining consensus view to support transition of WRF from a project to a program.
- **Direct** WRF program manager and DTC director to **revise WRF MOA** draft to reflect ExOB actions resulting from this meeting.

(responds to 4th ExOB meeting objective and satisfies 6<sup>th</sup> capability of Goal 1 on slide 5)

End