1. MEETING MINUTES

The minutes are organized by topic per the agenda.

1.1 INTRODUCTIONS & MEETING GOALS AND OBJECTIVES

Brad Schmidt (CoE) opened the meeting by thanking everyone for attending and participating. Brad then discussed the topics and objectives of the meeting which are captured in the agenda.

1.2 METHODS AND APPROACHES FOR TESTING AND VERIFYING CO-FPS PRODUCTS (NCAR)

Bill Mahoney (NCAR) introduced Barbara Brown (NCAR) who then gave an introductory presentation on methods and approaches for testing and verifying CO-FPS products. Her slides will be posted on the CoE project website.

Discussion notes and stakeholder feedback from the first part of her talk are captured below.

- The stakeholders mentioned that it is important to not narrow the list of products that the CO-FPS will generate nor limit the evaluation effort until more information is gathered on user needs and system design.

1.3 DISCUSSION OF USER PRIORITIES FOR EVALUATING CO-FPS PRODUCTS (NCAR)

Barbara Brown (NCAR) gave part 2 of her presentation and this part was focused on priorities for testing and verification of CO-FPS products. Barb mentioned that the Australian Bureau of Meteorology (BOM) just began a project with the New South Wales (NSW) Rural Fire Service and Australian Fire and Emergency Service Authorities Council (AFAC) that is focused on assessing the performance of a variety of fire spread models that are used operationally in Australia. The BOM collaborates on a regular basis with NCAR on a variety of topics and NCAR intends to collaborate with them on this topic as well.

Discussion notes and stakeholder feedback from the second part of Barb's talk are captured below.

- NCAR asked how it could obtain local field data that could be used to support the system evaluation process.
- The stakeholders mentioned that a lot of the observations are recorded and handed off to "authorities" but it was not clear if or how the data were used. NCAR indicated that we

will need to work with the CoE and identify useful datasets and a process for gathering the data for selected wildfire cases.

- Intterra mentioned that there are ways to capture field data within CO-WIMS that should be utilized to support this project.
- As for priorities, the stakeholder group present at the meeting indicated that the predicted fire boundary and fire spread rate products are the most important products to focus on with respect to evaluation and refinement. It was understood that other user categories (e.g., aviation operations, air quality, etc.) would likely have different priorities.
- It was also mentioned that capturing (predicting) and reporting on the potential for extreme fire behavior (e.g., gustiness, wind shifts, quick changes in fire spread rate, etc.) is very important and we need to think about ways to evaluate those aspects of the CO-FPS.
- NCAR will investigate methods to extract intra-hour information contained in the CAWFE® model that are important to characterize extreme fire behaviors and generate alarms when user defined thresholds are exceeded.
- There was a discussion of how camera and video data may be able to help verify the extreme fire behaviors.
- It was mentioned that fire suppression activities may change the behavior of the fire and this needs to be considered in the verification process.

1.4 BACKGROUND PRESENTATION ON CO-WIMS

- Brian Collins (Intterra) provided a briefing on the CO-WIMS capabilities including capabilities that are not being utilized very much at the present time.
- Mobile applications and resource tracking are now available.
- CO-WIMS can collate information and create summary products that can be emailed as .pdf files.
- CO-WIMS is very flexible and user feedback is needed to determine how to extend CO-WIMS to include CO-FPS products. This is the beginning of the process to discuss the integration of the CO-FPS products.

1.5 DISCUSSION ON THE INTEGRATION BETWEEN CO-FPS AND CO-WIMS

Brad Schmidt facilitated a discussion on how the CO-FPS products should be integrated and presented on CO-WIMS.

- The "Ops" view state is used for real-time operations. There is also a "Planning" view state.
- Should a new view state be provided for CO-FPS products since only a few stakeholders will have permissions to view CO-FPS products (at the early stages of the project)?
- "Power" users will have ability to trigger the fire prediction model. Most users of the CO-FPS products in year 1 will be members of the CO-FPS Stakeholder group.

- How will non DFPC users be able to utilize CO-WIMS? The procedures for how this will be done are still TBD.
- At least for the first year, the CO-FPS products are experimental and shouldn't be used for operations. The Stakeholder group will understand the development effort and have the best sense of how mature the products are.
- WFDSS has multiple layers of permissions and the CO-WIMS may need the same type of procedures.
- There was a strong suggestion that the viewing of CO-FPS products be limited to a select few that understand the state of the development effort and performance caveats. There could be some sharing of output where it makes sense, but this must be done very carefully until the system is refined and evaluated.
- There was a robust discussion of whether the experimental products should be shown to any team working an actual fire.
- There has to be a firewall between the state usage of the products and federal officials because this development effort is not "sanctioned" by the feds.
- How are fire models in current use triggered?
  - Use captured IR boundaries (from most appropriate source – MMA, etc.)
  - For initial attack phase, you will likely only get a LAT/LON
  - Can the fire boundary include areas that are active fire areas vs dead areas?
    - NCAR Response: Yes, the CAWFE® model can handle input data that identifies the burn line boundary and active fire sections.
  - Typically, FBANS must manually input a variety of data into the current tools
    - Weather observations (air temperature, RH, wind, etc.)
    - Fuel type
    - Fuel moisture
    - Suppression actions
    - Fire boundary
  - Users want to minimize the amount of user input needed to trigger the model. They want CO-FPS to automatically select and utilize the most appropriate input data.
- What type of feedback do users want when the CAWFE® model is busy running?
  - Ability to abort the run (kills model process mid-stream)
  - Indicator of completion (clock) time
  - Time to completion countdown
  - Need to know how many runs are in the queue
  - Show users (name) that triggered the runs in the queue
  - Can the user define the forecast period (e.g., 3, 6, 9, 12…18 hours)?
  - Ability to send emails when run is done
  - Can users prioritize model runs?

- Knowing the predicted behavior of an unstaffed fire is very important, so those runs may need a high priority.
- Heat rather than fire extent is more important in some situations - can there be a multi-point ignition?
- Users want CO-FPS to calculate a variety of typical fire risk indices and may have ideas for other derived products.
- Are video animations useful? Yes
- Time series and/or meteo-grams are useful ways to present the fire behavior and fire weather data.
- 3-D interactive products (animations) are also desired. May be able to view in external systems such as Google Earth.

2. ACTION ITEMS

The following actions items resulted from the meeting.

- The user feedback will be captured and included in the CO-FPS Functional Requirements Document.
- The presentation materials will be posted to the CoE project website.

Appendix A – Meeting Agenda

COLORADO
Division of Fire
Prevention & Control
Department of Public Safety

Center of Excellence for Advanced
Technology Aerial Firefighting

Colorado Fire Prediction System March Meeting Agenda
March 29, 2016: 1 p.m. - 4 p.m.

1:00 p.m. - 1:15 p.m.	Introductions & meeting goals and objectives
1:15 p.m. - 1:45 p.m.	Methods and approaches for testing and verifying CO-FPS products
1:45 p.m. - 2:15 p.m.	Discussion of user priorities for testing and verification of CO-FPS products: What performance characteristics should a reliable fire prediction system have? What will determine success?
2:15 p.m. - 2:30 p.m.	Break
2:30 p.m. - 3:00 p.m.	Background presentation on CO-WIMS
3:00 p.m. - 3:45 p.m.	Discussion on the integration between CO-FPS and CO-WIMS
3:45 p.m. - 4:00 p.m.	Closing remarks