



Quarterly Status Report

Fire Program Analysis (FPA) – Preparedness Modules Project

For Reporting Period: July 1, 2003 – September 30, 2003
October 15, 2003

Scope Status

The scope of the project is to design and develop an automated system for wildland fire preparedness resource planning and budgeting to replace the systems currently in use by the five federal wildland fire management agencies.

- The new application system will evaluate the cost effectiveness of alternative initial attack organizations in meeting fire management objectives.
- The FPA system will use an optimization approach to determine the level of effectiveness associated with a range of budgets.

The FPA Preparedness Module Project has not deviated from its original scope.

Current Scope Issues. The FPA Core Team continues to investigate the most appropriate way to incorporate “fire use” and “appropriate management response (AMR)” into FPA-PM. Both utilize preparedness funding for the initial response.

- The economists on the team have determined methods to include fire use and AMR in the FPA-PM optimization model.
- A program change request (PCR) is being initiated to investigate the schedule, cost and scope impacts of integrating fire use into the FPA optimization model.
- Before the decision is made to implement this PCR, the proposed change will be evaluated for cost and schedule impacts.

Key Tasks, Milestones and Accomplishments

Conceptual Architecture Completed. The Conceptual Architecture Document validates and expands on the initial FPA architecture developed by the FPA Core Team.

- The FPA Project Manager accepted the Conceptual Architecture Document as the deliverable for Task 3 on July 11, 2003.
- This document was delivered by the IBM team ahead of schedule.
- This document may be viewed on the FPA web site at:
http://fpa.nifc.gov/Modules/Task3/conceptual_architecture_final_1.2.pdf

Baseline Requirements Completed. Business Requirements with associated Functional Requirements for Data Transformation “Baseline” iteration 1.1 were complete at the end of September. The Core Team inspected and approved the Functional Requirements document for Data Transformation and Optimization. Development of business requirements will continue through the life of the project.

Technical Architecture Completed. The Technical Architecture Document (TAD) provides the detailed system view of FPA.

- The TAD is in alignment with the Enterprise Architectures (if available) of the participating departments/agencies.
- The TAD was provided to Fire/IT management of all five participating agencies, the NWCG Program Management Office, and NWCG IRM Working Team agency representatives.
- FPA provided a five-week review period with an updated weekly draft. An interactive e-meeting, where all reviewers were invited, was held to familiarize participants with FPA and to answer any questions.
- All oral and written comments were incorporated.

First “Design & Build” Task Started. Task 6, Optimization, kicked off the week of July 20 when the CORE team traveled to Boulder, CO to meet with the IBM development team. Over the next 6 weeks, both teams will be working together to design and build the first iteration of the optimization routine. Iteration 1.1 has been completed and further development is currently taking place for future iterations. Iterations 1.2 and 1.3 will develop the Data Transformer and Results Interpreter.

Development of Iteration 1.1 Completed. On October 3, 2003, the IBM Development Team demonstrated the Task 6 Iteration 1.1 functionality. The completion of Iteration 1.1 came one week past the original schedule. It achieves the goals set for the Iteration, including:

- Established an integrated development platform with Rational XDE, IBM WebSphere Studio Application Developer (WSAD), WebSphere Application Server (WAS), and Rational ClearCase.
- Established effective configuration control for application and requirements components using Rational ClearCase.
- Established the interface format between the optimization engine and optimization controller.
- Developed several low level application components including fpacontroller, datatransformer, resultsmanager, messageservice, dataaccess(fpa_data & db_access), optimizationcontroller, dashboard, xml_support, and fpalogging.
- Established a baseline framework of code upon which subsequent development iterations will be built.
- Installed and configured Oracle in development environment.
- Established programmatic access to the Oracle database.
- Began testing the optimization engine with more realistic data.
- Documented the associated Entity Relationship Diagram in XDE.
- Designed an optimization algorithm that iterates thru the initial response cost levels in such a way that the cost levels that correspond to "infeasible" results are preprocessed out based on an initial run. Remaining subsequent runs are associated with "feasible and possibly optimal" results.
- Tested the baselined optimization model using this algorithm on 5 datasets - SQF (Sequoia), FTA (Ft Apache), BDF (San Bernadino), FIF, UCR, and based on the initial results redesigned CPLEX API calls to improve on I/O efficiency.

One goal that we had hoped to achieve during Iteration 1.1, but did not, was the integration of the CPLEX Optimization engine with the Boulder based controller components. We did define the interface, but the actual Java API was not complete. The IBM Watson Research team is continuing to develop the Java API and will complete by development by 11/01/04. The integration activity will occur during Iteration 1.2.

Iteration 1.1 established a controlled and effective development platform. We have established some of the critical design patterns, and we have implemented some of the key building blocks for future development. We are well positioned for future iterations.

Task 7 “User Interface” Initiated. Task 7 was funded and initiated in July. This task will develop the user interface for the FPA-PM application. Task 7 will execute development iteration 2 in three sub-iterations.

New Process for Fire Behavior Developed. In cooperation with the Fire Behavior Project of the Missoula Fire Sciences Laboratory, a new process has been developed for describing and representing the wildland fire occurrence workload within a Fire Management Unit (FMU). The Fire Behavior calculation process developed for FPA will include a process for calculating the probability distribution of both wind speed and fuel moistures within a FMU. This process will utilize National Fire Danger Rating System (NFDRS) fuel model G’s, Energy Release Component (ERC) for calculating the probability distribution of fuel moistures on a national basis.

Fire weather observation data from NFDRS stations will serve as the primary source of weather data used for fire behavior calculations. Many of these stations are missing individual fire weather observations due to previously documented reasons. The Southern Research Station, of the Forest Service is developing a Grid weather observation data process for filling the gaps of missing data.

This fire behavior calculating process will be very robust and will provide a scientific process to represent the probable workload within a FMU.

FPA Approved for CPIC Control Phase. The USDA-OCIO Executive Information Management Investment Review Board (EITIRB) met in September and approved the FPA Project for the CPIC Control Phase. This is official recognition that the FPA project has proceeded from the requirements development phase to design, development, and implementation. Being in the “Control Phase” means that future Departmental and OMB oversight will focus on ensuring that the FPA project is conducted in a disciplined, well-managed, and consistent manner. This includes ensuring that projected benefits are being realized; cost, schedule, and performance goals are being met; risks are minimized and managed; and that the investment continues to meet strategic business needs. The Control Phase requires extensive on-going project monitoring as well as updates to documentation created in the prior phase, the Select Phase (e.g., Security Plan, the OMB 300 submission)."

Prototype Areas Initiated. The FPA team is partnering with four interagency prototype planning areas to 1) validate requirements, 2) develop design specifications, and 3) test the FPA

Preparedness Module. These four prototype areas will be the first interagency planning areas to implement FPA.

Executive Briefings Conducted. FPA project, business, and steering committee representatives conducted briefings on Sept 11, 2003 with the DOI Budget Director, John Trezise; Assistant Secretary, Policy Management and Budget, Lynn Scarlett and Assistant Secretary of Land and Minerals Management, Rebecca Watson; and OMB, Budget Examiners for USDA Forest Service John Pasquantino and USDI Ben Burnett. It was our impression, validated from external sources, that the briefings were well received. Content included current status for Phase I, and the content and budget structure for Phase II. All parties were happy with the current status of the preparedness module including the business functionality and the analytical capability it will provide.

Symposium for Prototype Areas Conducted. The FPA Core Team met with representatives from the four prototype areas in Seattle the week of October 6. The agenda included in-depth reviews of the entire FPA model. The prototype teams worked on an “objectives and weights” exercise and an FPU/FMU development exercise. The group also discussed geospatial data standards for FPA.

Development of Implementation Strategy Underway. Work is underway to develop a strategy that will assist and guide implementation of FPA-PM. Implementation of FPA is expected to require a significant culture change within the participating agencies. The challenges expected in implementing FPA will continue to be identified as we develop an implementation strategy and work with the prototype areas. In July, the FPA Steering Committee decided to establish an Implementation Coordination Group (ICG) to coordinate field level implementation of FPA.

Implementation tasks will begin concurrently with the design and construction of FPA to prepare for implementation in FY 2005. A process for identifying interagency planning units that will implement FPA in the winter of '04-05 has already begun. Other requirements for implementation – such as training, manuals and handbooks, and new policy – will occur as the final design and beta tests are completed.

Schedule & Budget Performance

New Baseline Established. In the latest submission of the FPA Exhibit 300 to OMB (9/12/03), the FPA project establishes a new baseline. The original baseline was established shortly after the official start date of May 15, 2002. The original baseline was decidedly a “rough order of magnitude.” A lot has happened since May 2002.

- This new baseline realigns tasks to incorporate a much better understanding of specific task and milestone dates and costs.
- The new baseline **does not** change the overall implementation date of September 2004.
- Modest increases in budget are proposed to reflect a new understanding of the costs and effort required for CPIC and security planning.

FPA Project Remain On-Schedule and On-Budget. The FPA-PM project remains on-schedule for field level implementation in September 2004. The FPA-PM remains on track to complete the project on-budget.

FPA Cost & Schedule Baseline (September 12, 2003)			
Description of Milestone	Schedule		Planned Cost
	Start Date	End Date	
1. Project Initiation	2002-05-15	2002-06-30	115,000
2. Develop Initial Architecture	2002-05-15	2002-12-30	160,776
3. Technical Approval & Contract Prep	2002-06-15	2003-04-14	150,000
4. Contract Award	2002-06-15	2003-05-02	43,386
5. Requirements Specifications	2002-09-15	2003-06-30	1,004,024
6. Initial Security Planning a. Baseline Security Plan b. Initial Risk Assessment	2003-05-07	2003-12-31	156,024
7. Program Management	2003-01-01	2005-05-06	489,310
8. Iteration 1 – Prototype Optimization Model	2003-07-07	2004-03-16	1,872,667
9. Implementation of WorkLenz, the USDA EVMS Software	2003-08-01	2004-06-01	10,000
10. Updated Security Planning a. Security Test & Evaluation b. Updated Risk Assessment c. Updated Security Plan	2004-06-01	2004-10-07	150,000
11. Certification and Accreditation of FPA-PM	2003-07-01	2004-09-30	200,000
12. Iteration 2 - User Interface	2003-09-15	2004-07-12	1,707,019
13. Iteration 3 - Reports & Outputs	2003-12-16	2004-10-20	1,416,724
14. Iteration 4 – National Database	2004-03-04	2004-11-24	345,873
15. Field Data Development	2003-06-30	2004-09-30	150,000
16. Develop Policy & Procedures	2002-08-01	2005-02-01	80,839
17. Beta Testing	2004-06-03	2005-01-12	1,640,446
18. Release	2004-06-30	2005-04-06	192,791
19. Training	2004-05-25	2005-02-08	201,653
20. Data Migration	2003-06-30	2004-11-01	210,767
21. Implementation	2004-08-01	2005-05-01	382,699
22. Operations & Maintenance	2004-09-30	2007-09-30	1,200,000