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1. Introduction

The AWIPS Forecast Preparation System (AFPS) is being developed by the Enhanced Forecaster Tools (EFT) Branch of the Forecast Systems Laboratory (FSL) Modernization Division with support from the NWS Office of Systems Development Techniques Development Laboratory (TDL).

2. Accomplishments

EFT staff concentrated their efforts on the following activities this quarter:

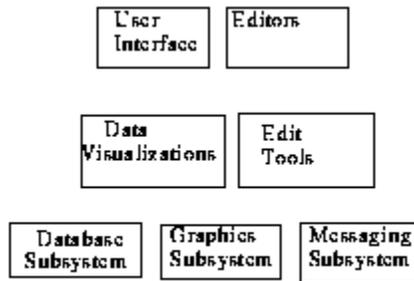
- Designing, implementing and testing portions of the new Graphical Forecast Editor (GFE).
- Developed outline for the User's Guide and began writing it.
- Updating the Graphical Forecast Viewer (GFV) to support scalar, vector, discrete, and weather data.

2.1 Designing, Implementing, and Testing the GFE

The specifications and architecture for the GFE were completed last quarter.

Much of our focus was dedicated to the design, implementation, and testing of portions of the new Graphical Forecast Editor (GFE).

There are three tiers to the new GFE as shown in the figure below. The first tier is the foundation software which consists of the database subsystem (Mathewson, LeFebvre), the graphics subsystem (Romberg), and the message notification subsystem (Romberg). These subsystems are generic and can be used for many different applications (e.g., GFE, consistency checkers, product generation software). These subsystems were completed in early September.



GFE Tiered Development Approach

The second tier builds upon the first tier and consists of the visualizations and edit tools. The visualizations depict meteorological data as a series of images and/or graphics (e.g., contours, bounded areas, wind barbs, images) (Longstaff, Wier). The edit tools interact with the user to produce useful data editing operations (e.g., paint brush, move/copy, modify contour) (LeFebvre). A major portion of the second tier was completed by the end of September.

The third tier consists of the user interface and the three editors (Grid Manager, Spatial Editor, and Temporal Editor) (Mathewson, Romberg, Mayer). This tier is planned to be completed by the end of October.

Our development strategy has been to build each tier and test it completely before advancing to the next tier, thus reducing the complexities of debugging the software.

We have also strengthened our development practices this quarter. Design reviews and code walkthroughs are occurring for each class. Unit tests are now required for many classes. We have also been working on improving our schedule/task tracking. We have found software defects during code walkthroughs that take only five minutes to fix, but would have taken potentially hours to fix if not detected until the GFE was complete.

We realized that we have undertaken an ambitious task by redesigning and implementing the GFE, but felt that was the best choice to incorporate all of the suggestions and enhancements made last year. These suggestions and enhancements are needed to make the GFE an efficient, usable system. We expected to have the GFE completed by the end of this quarter, but it has taken longer than expected due to the magnitude of the task. Approximately 16,000 lines of software and 100 C++ classes were written during this quarter. Detailed designs were completed for the bottom two tier levels.

2.2 User's Guide

Significant effort was applied to the user's guide. The outline and content of the user's guide was determined in August. Writing of the guide commenced in September.

The purpose of this guide is to train individuals on the use of AFPS. Chapters include concept material as well as "knobology". First drafts were finished for chapters 3 through 5 (George, Howard).

The chapters in the user's guide are:

1. IFP Overview
2. AFPS Overview
3. AFPS Data
4. Viewing Data
5. Initializing and Creating Data
6. Editing Grids
7. Managing Grids with the Grid Manager
8. Ensuring a Correct Forecast
9. Generating Forecast Products
10. Forecast Methodology

2.3 Updating the GFV

We have finished updating the GFV. It is now capable of displaying scalar, vector, discrete, and weather data. A separate frames interface on the WWW permits simultaneous viewing of animated color-enhanced grids, time series for any point on the grid, and the custom generation of a textual point-based forecast. The point-based forecast was an extension of our earlier work in exploratory development of rule-based formatters.

The on-line user's manual for the GFV was revised in August (Bacco).

You can view the GFV through <http://www-md.fsl.noaa.gov/eft/internal/GFVUsersMan.html>.

2.4 Other Activities

TDL and FSL developers continued to work toward integrating TDL's MOS ingest into the AFPS development system in Boulder. There were a few hitches in setting up the data feed from WFO Advanced, but the MOS ingest for AFPS is nearing completion. (Peroutka)

The initialization portion of AFPS was redesigned and partially re-implemented. The purpose of this redesign is to support multiple sources (e.g., NGM, ETA) without writing copious amounts of additional software. (Wier)

Corby Bacco left our project at the end of August to take a job in Washington D.C. During his three years here, he made significant contributions in the areas of networking, database servers, and new and innovative forecast products (GFV). We are currently planning to fill his position.

3. Presentations/Visitors/Travel

Travel and presentations:

- None this quarter

Visitors:

1. Rita Moi, Norwegian Meteorological Institute (July 1).
2. Gene Brusky, SOO Green Bay (July 8)
3. Dave Reynolds, SOO Monterey (July 15)
4. Kees Estie, South African Weather Bureau (July 15).
5. Fred Mosher, AWC NCEP (July 25).
6. Mary DesJardins, Geoff DiMego, Dwayne Kidwell, and Glen Taylor (NCEP) (July 26).
7. Mel Nordquist, SOO Eureka and Bill Forwood (Eureka forecaster) (July 30).
8. Lieutenant Commander Mike Neith, Naval Research Laboratory (Aug 22).
9. Karl Jungbluth, SOO Des Moines (Aug 27).
10. Scott Cunningham, SOO Sacramento (Sep 9).
11. Mary DesJardins and Edwin Danaher, NCEP (Sep 19)

4. Plans Next Quarter

Our main effort for the next quarter will be to finish the implementation of the GFE and to deliver the software to the AWIPS Forecaster Working Group (AFWG) for their evaluation.

We will also begin requirements, specifications, and design of the following AFPS components:

- TAF Editor
- Consistency Checker
- Product Generation Software

The first complete draft of the AFPS User's Guide will be finished late in the quarter.

Initialization algorithms will continued to be improved.

Begin coordination with NWSH and Denver WSFO for AFPS risk-reduction planning activities.

Our development environment will be upgraded to HPUX-10.20 from HPUX-9. We will take into consideration that AFWG members evaluating the AFPS software on their SACs are running HPUX-9.

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