

Summary of the ESMF Change Review Board Meeting on October 17, 2006 in Greenbelt, MD.

Attendance:

Robert Ferraro/JPL, Cecelia Deluce/NCAR, Atanas Trayanov/NASA GSFC, Alan Walcraft/NRL SSC, Chris Hill/MIT, Mark Iredell/NOAA, Mariana Vertenstein/NCAR, Tom Clune/NASA GSFC

Agenda

The CRB covered the following topics during its meeting:

- Development status review
- Review of JST telecon
- Review and amend current schedule
- Linking esmf_support major feature requests to task schedule
- CRB process document

A synopsis of the discussion and decisions from the meeting is presented below. It is organized by agenda item. These notes attempt to capture the high points of the discussions, and any decisions that resulted.

Development Status Review (Cecelia Deluca)

ESMF v2.2.2 release is delayed. Progress towards completing the functionality needed for the CCSM Evaluation of ESMF is being made, but at a slower pace than planned..

Limited progress on tasks due for release 3.0.1 was reported, due to the core team concentrating on getting version 2.2.2 ready for released. Cecelia noted that the CCSM has been working with the alpha version 2.2.2 and is quite happy with the progress made to date. Optimization of the initialization of the arbitrary to arbitrary redistribution is done, and the remained modifications and testing for the CCSM evaluation is mostly done. An additional month of a key developer's time is still required on v2.2.2.

The design cycle for component and state C++ interfaces has been completed. Some work has been done on testing ESMF scaling to 1000+ processors.

Review of JST Telecon input

Notes from the joint CRB/JST telecon held on October 12 were reviewed. Only one request was made at the telecon – support for a new platform.

A representative of the GOES-CHEM community requested that ESMF be ported to a Sun Solaris AMD64 system at Harvard. Harvard is working to port GEOS-CHEM to ESMF, but it will be some time before the port is ready. An ESMF core team member did a quick look at the Harvard platform environment, and noted that it is missing an MPI implementation and some GNU tools that are used in building the ESMF distribution.

It was noted that for ESMF to be supported on any specific platform, the core team requires regular routine access to an instance of the platform for debugging and nightly

build testing. Besides the missing tools, this routine access will need to be arranged for the Harvard platform, or a similar one at some other location. At this point, the core team has no estimate of what it may take to do the port.

It was noted that there is no clear documentation among the ESMF docs that speaks to the requirements or the procedure for porting ESMF to a new platform. ESMF core team resources are limited, so it would be useful to have such a porting document available to the community to allow ESMF migration by others to their favorite platform. Porting to the Sun Solaris system may be trivial – but at the moment, it takes someone who is familiar with building ESMF to make that determination. The CRB agreed that a specific porting document is needed, and added such a task to the development schedule. A decision on the timeframe for potentially supporting the Sun Solaris platform was deferred to the next CRB meeting, pending further investigation of the difficulty in doing the port.

Functionality discussions among CRB members

Tom Clune/NASA GSFC noted that he sees the need within a year or so to be able to pass function pointers among components. He volunteered to write up a use case to illustrate the requirement.

Robert Ferraro/NASA JPL noted that there are many places within the ESMF code base where functionality is not implemented, but the code returns normally (as if something actually had been done). This has resulted in some frustration among users (who spent quite a bit of time on what they thought were application conversion bugs). Cecelia Deluca noted that this was an issue related to the original design of the error handling routines. A near term task was added to review the entire code base and make unimplemented code branches return an error indicator. This is a stopgap measure pending a redesign of ESMF error handling.

Linking esmf_support major feature requests to task schedule

Cecelia noted that requests for new functionality are coming in via esmf_support, which also is the pipeline for reporting bugs. The CRB has been dealing with functionality requests that come in via the JST telecons, or from CRB members themselves. What is the mechanism for having the CRB review esmf_support requests?

This is also in line with the notion that the CRB will prioritize and schedule all core team tasks for a duration of 2 or more weeks. Some of the schedule slips seen recently are due to developers spending time doing bug fixes at the expense of design and implementation tasks. The CRB decided early on that it would not deal with bugs fixes that are expected to take less than 2 weeks to resolve. These were to be handled within the core team, and developer time was to be de-rated to account for bug fix work. Experience is showing that the developer time de-rating is not being factored into the schedule.

The CRB consensus is that developer time be de-rated by 25% to account for bug fixing. This needs to be monitored to see if this is an adequate estimate. Also, bugs need to be triaged after they are entered into the tracking system to sort them into two categories: short turnaround (less than 2 weeks) and longer term. Short turnaround bugs would be prioritized and scheduled by the Core Team manager. Longer term bugs would be reported back to the CRB.

The CRB requested the following information on longer term bugs referred for scheduling:

- Developer time estimate (3 weeks or 3 months?)
- Core Team priority
- Should it be fixed, or classified as a “feature”?
- Can it be associated with a development task (e.g., will it be superseded by development on a future release) ?
- Does a workaround exist?

Cecelia would like to find a way to associate bugs tracked with development tasks if appropriate. The SourceForge tool does not lend itself to such tracking. No immediate solution to this problem was apparent.

Since esmf_support requests are entered into a tracking tool, Cecelia would like to see all new development requests come through support requests. The CRB didn't have any objections. In future JST/CRB telecons, Cecelia will present new development requests received through esmf_support so that the community is aware that these requests exist and are being tracked. She will also report any significant bugs being tracked so that the community has the opportunity to express opinions with regard to the priority of getting them fixed.

CRB Process document

CRB processes have been captured and reported in the CRB meeting summaries. Cecelia noted that it would be useful to have a separate document that details these procedures. The CRB Chair agreed to produce such a document from previous meeting summaries. It will be circulated to CRB members for concurrence before it is published.

Review and amend current schedule

A two month slip in v3.0.1 and v3.0.2 is likely. There is substantial uncertainty in tasks which have not yet completed their design reviews. Developer review of the current task list is required before the CRB can make a determination on a new schedule.

There was significant discussion among CRB members regarding the support for generalized curvilinear coordinates task that keeps slipping. It is on the schedule because the development team feels that it is counterproductive to implement specific grid types individually. Yet CRB members noted that support for several key grid types is lacking and is preventing widespread adoption of ESMF among interested parties. Stopgap tasks were added to the schedule to provide workarounds while the generalized case support could be designed. These tasks are also tied into the change in the ESMF infrastructure support for arrays (that is changing from v2 to v3). Although the multiply interpolation weights was added so that users could implement their own grid types (by inputting weights from some other source), it is not clear that the capability is being used. An impediment to interoperability remains, even with the stopgap functions, because there is no ESMF convention for how to represent a multipatch curvilinear grid. One can implement your own within the ESMF state bundles, but without a convention, everyone is doing their own thing (and thus, are incompatible). The multipatch curvilinear grid support was deemed to be the highest priority development area by the CRB.

Cecelia noted that there remains major design issues for generalized curvilinear support (if it were easy, it would have been done by now). Still, the specter of continued

delays in getting curvilinear grid support left several CRB members concerned. It was agreed that the core team would make an initial design effort its top priority for the next 3 months. At the next CRB meeting, the core team would report the results of the design activity so that the CRB might make an intelligent decision on how to prioritize implementation of curvilinear grid support. Certain high priority grid types need to be supported within the next 12 months (tri-polar, cube-sphere,...)

Next Meeting

Core team review of the revised task schedule is needed before a schedule update is posted. The CRB may need to convene a follow-up telecon if the core team review results in substantial changes to the estimated completion dates discussed at this meeting. The CRB adjourned without deciding on the next meeting date, pending the completion of the core team review.