

Summary of the ESMF Change Review Board Meeting on February 28, 2008.

Attendance:

Robert Ferraro/JPL, Cecelia Deluce/NCAR, Tom Clune/NASA GSFC, Atanas Trayanov/NASA GSFC, Mariana Verstenstein/NCAR, Chris Hill/MIT

Agenda

The CRB covered the following topics during its meeting:

- Development status review (v 3.1.1 & v 3.1.0r Public Release scheduled for Feb)
- Review of JST/CRB Telecon notes
- Review of bug list and feature requests being tracked by the Core Team
- Review and amend current schedule

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)

The internal release ESMF v3.1.1 is behind schedule and will not likely be ready for release until mid-April. All required functionality planned for this release will be delivered. Two optional items (error reporting and NEC platform port) are not ready and will be deferred to a future release. Added to the release will be functionality for arbitrary distributions for structured grids, which is completing earlier than expected, and hierarchical attributes which are the result of a part time student effort.

The Public Release v 3.1.0r is slipped to the end of March so that additional testing can be completed before release. The CRB's priority is to get the Public Release out as expeditiously as possible.

Review of JST/CRB Telecon notes

Fedora distribution of ESMF – there is a gFORTRAN issue with the ESMF build that must be resolved before Fedora will take up an ESMF distribution. Although the CRB sees value in having Fedora distribute ESMF, the general feeling was that the core team should deal with the gFORTRAN issue as a lower priority “as developer time is available” basis. Also, ESMF should only distribute Public Releases through Fedora. For the time being, tasks related to Fedora releases remain off the development schedule.

Multiple executables implementation via Intercom – two Board members were opposed to incorporating the contributed Intercom enabled ESMF implementation into the supported ESMF distributions. The primary reason for this opposition was that the mechanism subverts the ESMF architecture by allowing coupling between components that bypasses the ESMF component coupling architecture. Although this mechanism may enable some applications built with different frameworks to couple with ESMF components, it provides coupling back doors that are contrary to the ESMF philosophy of

well defined components that present state without hidden side effects to well defined couplers. Components with such back doors would not be generally usable with other ESMF components, which is the whole reason for the ESMF architecture. Also, incorporating the capability into ESMF would require that the core team begin supporting the Intercomm package, which is a maintenance and support burden that the CRB does not want the project to undertake.

The CRB agreed that the Intercomm implementation can continue to be available via the ESMF Contrib facility, but that ESMF would not support it.

Location Streams – This is on the schedule for v. 3.3.1

Exchange Grids – These are also on the schedule for v 3.1.2

Icosahedral Grids – A telecon to discuss requirements will be set up with the JST in mid-April. These grids are part of the general case of multi-patch/multi-tile grid support, which is a CRB priority. See schedule below for an estimate of when these grids will appear in an ESMF release.

Exposing component function pointers in ESMF States – There is a particular interest in this functionality from some CRB members as a method for addressing certain problems encountered in making some applications into ESMF compliant components. The specific example discussed was a problem related to building a Kalman Filter data assimilation component that used only ESMF states. It has also been requested in the context of making clean interfaces to chemistry and aerosol packages as components in a GCM. Current practice of wrapping model components so that they present only ESMF data structures requires that a data assimilation component reproduce certain diagnostic functions already available within the model. These functions modify not only the exposed state, but also need to update internal state not exposed through the ESMF interface. If the model was already architected as a set of components using the ESMF structures, this would be trivial. But this approach would require a complete rewrite of some existing models that have been converted to ESMF components by wrapping.

One approach to solving this problem (and potentially addressing the same issues that prompted the development of back door communications via Intercomm, above) is to expose a function pointer in the component state that provides a service to other components. This approach maintains the ESMF coupling architecture and the philosophy of well documented, standard interface, side effect free components. The CRB agreed that the function pointer in states approach may be the right way to address this issue, but urged the project not to adopt this approach without stepping back and examining the whole problem from an architecture perspective. The CRB recommended that stakeholders in the resolution of this issue be invited to the architecture discussions so that ESMF evolves in a direction that maintains the core values of a well structured coupling architecture with standardized, side effect free component interfaces.

ESMF support/feature/bug requests update

[The ESMF SourceForge site now tracks all support requests, bugs, new feature requests, and all development tasks. Links to the various tracking lists can be reached by clicking on Developers on the navigation bar at the top of the ESMF home page.]

The CRB briefly reviewed the bugs tracking list and the feature request list in order to develop the content for a v3.1.3 release for December 2008. Board members were polled

for their highest priorities. The CRB agreed that it was time to turn development attention more directly towards support for a variety of multi-patch grids.

Cecelia recommended proceeding with an inline (as opposed to offline) coordinate generation capability that can be user specified (to ameliorate the I/O problems associated with reading in large amounts of coordinate data), continued focus on unstructured grid interfaces, and try again to provide a rudimentary I/O capability. The board agreed with these recommendations.

Review and amend current schedule

The Public Release v 3.1.0r is slipped to the end of March

The Internal Release v 3.1.1 is slipped to mid- April

The Internal Release v 3.1.2 is slipped to August, in recognition of the impacts of the prior release slips and the typical summer slowdown due to vacations. Array Halo continues to be pushed out because it is not believed that there are any users waiting for the functionality.

The CRB added Internal Release v 3.1.3 to the schedule, with a tentative deliver date of December. This release will cover:

- Multi-tile grids
- Array Halo
- Coord generation from user?
- Continued unstructured grid interfaces
- C interface tasks
- rudimentary I/O

Other Topics

None

Next Meeting

The next meeting will take place in May. The specific date is TBD, with interest expressed in having the meeting prior to the ESMF Community Meeting at the end of May.