ALMA Offline Requirements Review Meeting
2002-Apr-10, 14:00 UT

Present:

W. Brouw
B. Glendenning   (Chair)
M. Gurwell
A. Kemball
R. Lucas   (Author)
S. Myers   (Principal Author)
G. Raffi
A. Wootten

Minutes:

1. Agenda approval

The agenda was adopted as distributed. Brouw noted that he had not been able to print the distributed PDF files. Glendenning believes this to not be a general problem as he has not heard similar complaints.

2. Requirement priorities

Glendenning noted that there had been several people questioning assigned priorities, usually in the direction of asking that items at priority "2" become "1". Myers informed the group that the priority "1" items are expected to be 100% available in an obvious fashion, priority "2" items are expected to be available at the 90% level with more latitude on how they are implemented, and priority 3 are desirable and will result in a higher score at audit time. He also noted that whereas most reviewers asked for priorities to be raised, most of his edits in fact reduced requirement priorities (i.e., 1→2 or 2→3). Kemball asked how the requirements were distributed by priority bin. Myers had not performed this count. Raffi noted that the scheme was different than the one used by the SSR in ALMASW-11. Myers replied that this was a deliberate choice of the SSR. For (largely) ALMA developed software we want a time-ordered priority scheme (as in memo #11), whereas for a (largely) non-ALMA developed software ordering by ultimate feature desirability seemed more appropriate.

ACTION: Myers to ensure that the description of priorities is sufficiently clear in the
        document.

3. Feature enumeration/TBD items

Kemball introduced the topic by noting that producing requirements is hard enough work already without requiring that it be at the level of a legal contract. What we require is that it be sufficiently specific that it clearly indicates to a scientific user what is intended to be

provided by a particular requirement, and that it is sufficient to guide the software development. He noted that the v4.0 draft (incorporating the replies to written comments for this review) largely fulfills this goal.

Myers noted that there is a difference between items which are defined as TBD (e.g., supported computer platforms and data formats), and areas in which the list enumeration was felt to be incomplete. The TBD items are generally outside the scope of purely scientific concerns, and the enumerations have been improved in the v4.0 draft.

Brouw believes that it is a mistake to be too explicit in the lists, since they are certain to be incomplete and out of date. These lists should be left for a specification document. Brouw also thought that some of the lists were not broadly enough based (e.g., 3D planetary imaging) or were not sufficiently carefully defined (e.g., heliocentric instead of barycentric). Myers noted that it is not too late to accept additions to the lists.

Raffi agreed with Brouw's contention that we should not aim to be too complete in the enumerated lists, but would not argue that the current items should be removed. Brouw added that the explanatory text should be expanded to make it clear that lists are not exhaustive. Lucas noted that priority "3" lists will be indicative, whereas lists for priority "1" items should be more complete. Brouw thought that the combination of priorities and lists was even worse than having incomplete lists.

Gurwell agreed that the lists will always be incomplete, but believes that the lists should be filled in to the extent that it is practical to convey the science requirements both to the community and the project. He also agreed that a caveat about the completeness of the lists in detail needs to be made. Kemball added that for current purposes, the important lists are related to scientific functionality, not, e.g., supported computer platforms.

ACTION: All to send Myers missing scientific enumerated list items by close of business 2002-04-12 (Friday).

ACTION: Myers to add received enumeration items and ensure that a general caveat about their completeness is added to the document. No change is required to the TBD items that do not directly address scientific functionality.

4. "Squishy" (imprecise) requirements

Glendenning noted that some review comments (e.g., by Butler) had commented that it would be difficult to evaluate requirements that were principally adjectives: "fast", "easy to use". Myers responded that he has already replaced the "fast" items. Brouw thinks that "easy to use" items are so subjective to be of no use – for example the standard "Windows" vs. "Linux" arguments. Myers noted that B.Clark has noted that the only important requirement is that the package "not suck." Glendenning opined that ALMA needs more resolution than this.

ACTION: All to send Myers suggestions for removing or clarifying "squishy" requirements by close of business 2002-04-12 (Friday).

ACTION: Myers to address received corrections to "squishy" requirements in the document.

5. Requirements weighting for package scoring

Glendenning noted that in discussion on the written review comments that Cornwell had suggested a weighting scheme for scoring the package:
    50% Core Functionality
    10% Human Interface
    10% Documentation
    10% Testing procedures
    10% Optimization
    10% Management

Myers believes this to be a useful addition to the document and intended to add it. However everyone else considered it to be inappropriate for the document hence it will not be added. (Clearly this is an important topic to be discussed in the context of auditing off-line packages. This is intended to be discussed at Granada).

6. Performance Benchmarks

Glendenning noted that the general topic of benchmarking is important for ALMA, but believes that it should be treated separately. If nothing else, it would introduce at least several months of delay into the approval of this document. The intent is that the SSR will determine how benchmarking is to be performed with initial discussions at their next face to face meeting in Granada.

Kemball commented that it is important that benchmark standards be tied to scientific requirements. Glendenning commented that he thought that this would be straightforward for the pipeline (the ensemble of pipelines must be able to process data faster than they are observed), but that it's not so clear what to do for interactive use. Kemball suggested that, for example, relating performance to the time required to set parameters might be an appropriate course for interactive use, and in any event the performances shouldn't be arbitrary but should be tied to some measure. In particular Kemball noted that requirement 1.1-R4 could be better defined, a sentiment with which Myers agreed.

Lucas suggested that the overall off-line performance be linked to the performance required for the pipeline. Myers responded that he thought it would be best to not tie this document to that (still TBD) performance benchmark.

ACTION: Lucas to organize a discussion of benchmarking strategy at the April Granada meeting, with recommendations to ALMA computing management.

ACTION: Myers to tie the performance requirement in 1.1-R4 to a more explicit underlying scientific need of users and the project.

7. Other
   a) Brouw stated that he thought that the off-line requirements document was too separated from the pipeline requirements. In practice they should be related very intimately, and there should at least be more of a general discussion that ties them together (for example, stating that their algorithms should be identical). The effort should also be reused. Kemball agreed with Brouw about the practical reasons for wanting to reuse effort between the off-line and pipeline developments. Glendenning noted that this is an economic, not scientific, argument. Myers stated that the SSR wrestled with this and decided in the end that it was not a scientific requirement that the off-line package and pipelines be tied together, although as a practical matter they are likely to be related. He also commented that he thought there was a pipeline requirement that pipeline reprocessing can be initiated by the user (i.e., from a regional support center (RSC)) [however this requirement is not explicitly noted in ALMASW-11].

      ACTION: Myers to introduce some general text (non-requirement) about the desirability of reusing effort between the pipeline and the off-line package.

   b) Gurwell reported that the ASAC has a particular interest in the simulation abilities of the off-line package, and consider it important that it have a broad range of simulation capabilities. In particular, the ASAC would favor stronger language than the current general description of "moderate simulation capability". Glendenning and Raffi stated that this interest in simulation has been noted, and that Lucas will organize with the SSR an effort to produce a prioritized list of simulation capabilities, to fit within an overall envelope of 2 FTE-years of effort. Myers noted that there is already a more extensive discussion of simulator capabilities in ALMASW-11.

      Brouw commented that he thought it would be best if the simulator was developed completely independently of the off-line package to provide an independent test. There appeared to be some difference of opinion on this point, but Myers pointed out that this discussion is about the off-line package requirements only, which does require some simulation capability in any event.

      Similarly, Lucas noted that it's important that any simulator, however it is developed, write the ALMA data format. Myers responded that this is a requirement on that simulator, not the off-line package.

      ACTION: Lucas and the SSR to produce a prioritized list of simulator capabilities.
      ACTION: Gurwell to consult ALMASW-11 language about simulator capabilities (initial email by 2002-04-12) and work with Myers as necessary to incorporate needed new language in this document.

c) Myers noted that more attention could profitably still be paid to solar system and pulsar sections of the document, although the latter is critically dependent on hardware outside the baseline scope of the project.
ACTION: All to send Myers suggestions improving discussion of solar system and pulsar requirements by close of business 2002-04-12 (Friday).

8. Summary and Conclusions

The document is accepted once it is revised according to the distributed replies to received comments and to satisfy the actions of this meeting. No further consultation with the SSR is required.

ACTION: Myers to update the document by 2002-04-23.
ACTION: Glendenning to arrange to publish final document and review report on the web.

Summary of Required Actions:

- Myers to update the document by 2002-04-23.
- Glendenning to arrange to publish final document and review report on the web.
- Myers to ensure that the description of priorities is sufficiently clear in the document.
- All to send Myers missing scientific enumerated list items by close of business 2002-04-12 (Friday).
- Myers to add received enumeration items and ensure that a general caveat about their completeness is added to the document. No change is required to the TBD items that do not directly address scientific functionality.
- All to send Myers suggestions for removing or clarifying "squishy" requirements by close of business 2002-04-12 (Friday).
- Myers to address received corrections to "squishy" requirements in the document.
- Lucas to organize a discussion of benchmarking strategy at the April Granada meeting, with recommendations to ALMA computing management.
- Myers to tie the performance requirement in 1.1-R4 to a more explicit underlying scientific need of users and the project.
- Myers to introduce some general text (non-requirement) about the desirability of reusing effort between the pipeline and the off-line package.
- Lucas and the SSR to produce a prioritized list of simulator capabilities.
- Gurwell to consult ALMASW-11 language about simulator capabilities (initial email by 2002-04-12) and work with Myers as necessary to incorporate needed new language in this document.
- All to send Myers suggestions improving discussion of solar system and pulsar requirements by close of business 2002-04-12 (Friday).