

Subject: Progress report aips++ project, January 1992
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Please find below my report on the aips++ activities for the first month of work.

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Progress report on the aips++ project.

The aips++ project is, at the time of this writing, in its fourth week. I will deal with the various areas in which work has been done under the following headings:

- organisation and facilities
- user requirements
- uvw data processing
- image handling
- user interfaces
- basic libraries
- system organisation and tools
- intellectual property rights
- CIC
- software acquisitions

1. Organisation and facilities

The accomodation (apartments and rooms in Alden House) has worked out well, as have the tiny 42 square feet offices. Due to some late and unexpected arrivals (Maryland) we ran a bit short in everything, but arrangements have been made to take care of everyone adequately. Every participant has an IPX on his desk and there is a communal 486 PC available for some special programs.

We had a C++ course in the week of 20 January. This was heavily downgraded from what was the original intention to a medium difficulty level. From what I felt to be the case from the "progress reports" on training from the participants my expectations had dropped, hence the downgrading. It turned out even worse than I expected: virtually none of those who came here had analysed/designed/written a smallish problem as a training exercise. As this constitutes the largest part of the half-year ramp up to proficiency, much of that ramp up now needs to be done here in the months ahead. This will affect progress and the result achieved by July. The course was found too difficult by four of the about twenty participants, far too easy by one and right-on by the others, a pretty good batting average.

A consultant is in the process of being hired. He will join the group for three days (Saturday, Sunday and Monday) each month. He has degrees in Astronomy and Computer Science and seven years experience as a leader of OO/C++ projects at Bell Labs.

2. User requirements.

We received a total of nine documents detailing user requiremnts. These covered the requirements from the individual consortium members and odd comments send in by users that had seen the NRAO document. These nine documents have now been merged by Bob Hjellming into a single draft, full of repetitions and waffly. Although we could circulate the document, Bob prefers to do a bit more work on it before circulation. It is, of necessity, a document where wording is left almost untouched, which must lead to large amounts of duplication.

The work groups, about which more below, have taken the original documents and extracted those points relevant to their area, cutting out duplication as much as possible. We do might merge the resulting documents to provide an alternative merged user specification which is closer to the work that will actually be done.

The work documents form the basis for the problem domain analysis that is going on at this moment. The result of that analysis and the initial design will result in the setting of priorities later this month.

Bob Hjellming and Brian Glendenning also spent a lot of time trying to formulate a methodology for object oriented analysis with a start in the astronomy domain. This methodology was discussed extensively and will be the basis for the Green Bank and Charlottesville analysis efforts. It maps pretty accurately into the methodologies discussed in the OO design/analysis books and the graphics CASE tools available for that purpose.

3. uvw data processing.

A workgroup consisting of Bob Sault, Dave Shone, Mark Holdaway, Chris Flatters and Sanjay Bhatagar has produced the uvw data processing requirements report. This has been circulated and is being extended to cover VLBI and single dish requirements in more detail. The group is now in Green Bank, where they have joined seven domain experts to have a first go at the analysis of this area. The others are: Tim Cornwell, Roger Noble, Johan Hamaker, Rick Fisher, Phil Diamond, Bob Hjellming and Ed Fomalont. The result of this meeting will be a report, edited by Tim Cornwell and Dave Shone, expected by the end of February. The meeting is chaired by Lloyd Higgs.

4. Image handling

This area is handled by a workgroup consisting of Lloyd Higgs, Brian Glendenning, Peter Teuben and Mark Calabretta. User requirements have been defined as a check list against entire systems that are being considered for adoption. The group concentrates on defining a general display model and of coordinate systems. It is also engaged in a thorough examination of CIC.

5. User interfaces

This area is handled by Friso Olon, Brian Glendenning and Peter Teuben. The activity in this area concentrated on an evaluation of KHOROS, or at least that part of KHOROS that is of interest to the aips++ project. Other studies deal with help files and history files. They are still in the early stages.

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6. General libraries

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The foundation area of libraries for matrix and vector arithmetic, container classes and portability interfaces is dealt with by Mark Stupar and Bob Payne. They expect a first discussion document outlining the contents of these classes and general implementation issues by the end of this month. A discussion of graphics base classes has been postponed until after a joint review with the image handling/user interface group has been completed. The general feeling is that we might go with CIC and Interviews, but that is a very early indication. The PEX library is also being considered.

7. System configuration and tools

Mark Calabretta has written a survey of the system configuration proposal for aips++. This has been circulated and commented upon, and is now being finalized. He is also working on a system installation proposal and expects that to be available in another few weeks. The last part in this series will be a proposal for networking, which he hopes to be able to work on later during his stay in CV.

We are evaluating a number of release management systems to help us in the development of aips++ code and documentation, and intend to present a proposal for an acquisition at the March steering committee meeting.

Chris Flatters has finished a proposal for source code documentation. This has been circulated and a final version will be distributed end February. We intend to adopt a book by Plum on C++ programming style as our de facto programming standard. Some work is going on concerning a general standard for user documentation and help files. We are inclined to go with Texinfo as our prime tool, but a definite decision still needs to be taken.

8. Intellectual property rights

Our lawyers have advised us that the only protection of intellectual property rights that is valid internationally is through copyright. As we will have source code from many different contributors (CIC, GNU, KHOROS come to mind, and there will certainly be others), the only thing that seems to be reasonable to do is to allow different copyrights clauses on different files, and arrange beforehand for re-distribution licences, where needed. As a consequence, CIC could take out its own copyright and licence the consortium members (but no one else) to re-distribute CIC source code.

This leaves the protection on the aips++ source code the consortium members write themselves. Copyright must be owned by someone. There might be some problems in deciding, among the consortium members, who that should be. There would not be great problems if we made the code pure public domain. That would create the minimum of complications and disputes. Opinions, please.

9. CIC

The representative for CIC (Chris Gunn) has arrived in CV. He will provide various presentations to the aips++ group and participate in discussions. Although the first reaction to the CIC effort was favorable, we have to ensure that CIC does fit well into a general, effective display model. We expect a recommendation with regard to the adoption of CIC as an integral part of the aips++ project by the end of February.

10. Software acquisitions.

The fact that aips++ is being developed by an international consortium has made it possible to negotiate very good deals with software vendors, who hope to get important exposure for their product. We expect that the first deal that has been negotiated will be signed this week. It allows members of the consortium to buy PV-WAVE for a sixty percent discount on whatever their local price is. We will be happy to provide details to those interested. NRAO intends to buy for each site at least one copy that can be served to individual workstations.

A second deal that we are evaluating/negotiating is for a system configuration management system TeamNet, that has been build around the concept of distributed development. I expect to provide more details in my next report.