SPECIFICATIONS FOR THE PIPELINE DISPLAY SYSTEM
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1. GENERAL ORGANIZATION

1.1 The system should be capable of handling maps up to 8k x 8k, although the typical map size will be much smaller (less than 1K).

1.2 For application software it would be adequate to implement a subsection capability with a limit of 1k x 1k (or less if address space is still a problem). i.e. even though the total map may be 2k x 8k it would not be necessary to operate on more than a 1k x 1k subsection.

1.3 DISPLAY will have read only access to maps on GRIDDER's disk.

1.4 Maps generated by the display system will presumably be written on DISPLAY's disk. Does the user need to know where the maps are and have the ability to move them from system to system?

1.5 There must be the equivalent of CATLST to list or display the users catalogue. Expanded use of wild characters for catalogue display and maps selection should be investigated.

1.6 A mechanism for map selection is needed. This could be implemented by menu, name, or by catalogue number.

1.7 The equivalent of probe must exist to monitor the status of jobs in the pipeline.

1.8 It must be possible to select a full set of line channel maps as a single entity.

2. DISPLAY RELATED FUNCTIONS

2.1 Transfer a map, or subsection of a map, to the I^2S for display.

2.2 Transfer a reduced map (skipping an integral number of pixels) to I^2S for display.

2.3 Generate annotation for all displays, i.e. contour plots, I^2S display, gray scale (via I^2S). This should include annotated wedge (or list of contours) and axis labeling.

2.4 Intensity-hue display of any image pair. Mainly to be used for amplitude and phase display.

2.5 Comparison of two images using blink and/or split screen functions. See AIPS for a good implimentation.

2.6 Software to control the I^2S functions. See the description of the proposed control panel for more details.

2.7 Control of the user 2D interaction device.

2.8 DICOMED output functions. Include transformation to generate the same colors as visually perceived on the monitor.

2.9 Control of the Escoffier Image Storage Unit.

2.10 Interactive use of the display to set up (and display) windows for use by other programs.

2.11 To interactively generate flagging files from a display of UV data. This information could be sent to the DEC10 (FLAGGER) or straight to GRIDDER. The present antenna based index level flagging should be implemented, and possibly correlator based flagging at the scan level.

2.12 Interactive vector display of horizontal or vertical sections through a map.
2.13 One-dimensional plots of the the above displays on the VERSATEC.

3. DATA ANALYSIS PROGRAMS

3.1 To interactively measure coordinates and pixel values using the I^2S display and the cursor.
3.2 A simple algorithm for estimation of discrete source parameters (amplitude, position, and size).
3.3 Statistical analysis of a subsection of a map (mean, rms, histogram).
3.4 Print values from a subsection of a map on the line printer (or the VERSATEC) using sensible scale factors. User should only specify precision and optionally the maximum value.
3.5 Average, or sum, a group of line channels.
3.6 Some simple algorithms for combining maps e.g.
$$A* MAP_1 + B* MAP_2 = C* MAP_3$$

4. THE USER INTERFACE

4.1 User input and program control.
    (i)   Use a superset of the DEC10 command scanner
    (ii) Interactive fill-in for input parameters obtained from the I^2S or the graphics device. This could be implemented as follows: allow the user to give a special character which turns on the cursor, after positioning the cursor and pressing the cursor button the values of the cursor position are entered as the input values for that key word.
    (iii) Optional form-fill-in capability for specifying the input parameters.
    (iv) A subset of the DISPLAY command scanner could be used for the rest of the pipeline (all except the interactive graphic input). Identical software should be used as far as is possible.
    (v)   Use of FTN77 to implement the command scanner. This gives more options for our long term planning and will be easier to export.
    (vi) The command scanner should be implemented on a normal text terminal.
4.2 The main user interface to the I^2S will be via a control panel. This will be described separately.
4.3 Hard copy (line printer or versetec?) of any output page. A page is a logical unit referring to the output produced by specific function, for example all the output from the source fitting program will be one page.

5. CONTROL OF THE PIPELINE PROGRAMS

5.1 Submission of jobs to the pipeline should be done through MAPCON and the structure used should be identical for jobs submitted from either the DEC10 or the display system .

5.2 It should be possible to submit any of the following programs
from DISPLAY:

                    MAKMAP
                    SOURCE SUBTRACT
                    GRID (UV to baseline-time etc)
                    Fourier transform a map or map subsection
                    CLEAN
                    SELFCAL
                    FITS READ/WRITE
                    (EXPORT ?) may not be best done from DISPLAY
                    (BACKUP ?) may not be best done from DISPLAY

RDE/er

Distribution

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