

MICROVAX-BASED DATA MANAGEMENT AND REDUCTION SYSTEM FOR THE REGIONAL PLANETARY IMAGE FACILITIES

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This abstract is a progress report for the RPIF prototype image data management and reduction system being jointly implemented by Washington University and the USGS, Flagstaff. The system will consist of a MicroVAX with a high capacity (~300 megabyte) disk drive, a compact disk player, an image display buffer, a videodisk player, USGS image processing software, and SYSTEM 1032 - a commercial relational database management package. The USGS, Flagstaff, will transfer their image processing software, including radiometric and geometric calibration routines, to the MicroVAX environment. Washington University will have primary responsibility for developing the database management aspects of the system and for integrating the various aspects into a working system. This abstract stresses Washington University's role in the development of the prototype system.

The MicroVAX system will replace the current BIRP search, retrieval, and videodisk display system for planetary image data. The new system will have more capability than BIRP in that it will allow one to: 1) search a high level catalog for standard RPIF holdings, such as Viking Lander Team Data Record prints; 2) get background information on planetary missions, spacecraft and imaging instruments; 3) search selected SEDR data sets; and 4) perform image processing procedures on digital image data, including radiometric and geometric calibration. In addition, the database management portion of the system will provide capabilities to easily update the database and to sort the data by user-chosen parameters.

Initial prototype systems are in place at Washington University and the USGS, Flagstaff. The prototype effort is concentrating on Viking and Voyager digital data products, since digital image data and documentation from those missions are currently most accessible. These data should also be in demand over the next several years in order to support the upcoming Galileo and Mars Observer missions. In addition, an initial high level catalog of standard RPIF holdings will be included.

The RPIF database will contain a variety of information on the datasets housed in the RPIFs. Examples of datasets are: strip contact prints of Voyager images, Viking Orbiter image mosaics, 1:5 million scale geologic maps, and digital tapes of Viking Orbiter images. The database can be thought of as being divided into a descriptive level (high level) and a detailed level. The high level catalog information for a dataset will include such things as a description of the dataset, the data format and location of the product within an RPIF, where and by whom the data were produced, and a brief list of references where further documentation can be found. The database will also include frequently requested information on planets, planetary missions, and spacecraft instruments (particularly calibration information), and general information on the RPIFs, such as where they are located and who the directors and data managers are. The database will not include a large number of documents and references. Instead, it will catalog a few key references to provide users with a starting point for finding additional reference material. The detailed level catalog will

contain selected SEDR data similar to that found in BIRP files. Additional detailed data will be added to the database in the future.

It is expected that users of the RPIF database will have a wide range of expertise in computers as well as planetary science, although the system will be primarily used by planetary scientists and graduate students. In addition, RPIF visitors from the general public, such as science teachers, may occasionally access the database. Thus, the design of the RPIF database system will have to account for the varying capabilities and needs of this diverse set of users. TAE (Transportable Applications Executive) is being used to provide a friendly, menu-driven user interface to the system. Interaction with the database will be through the use of TAE, augmented with SYSTEM 1032 forms. The interface will support menus and on-line help, which will allow novice users to access the data with a minimum of assistance. The interface will also have the capability of allowing more advanced users to quickly access data by directly entering commands and executing command procedures. The same user interface will be used for both the database and image processing functions, so that users can access the database and process data within a single environment.

A major part of the information stored in the high level and detailed catalogs will also be integrated into the central Planetary Data System (PDS) catalog and database being developed on the Britton-Lee database machine at JPL. The MicroVAX database design is compatible with the PDS catalog. We have taken advantage of the relevant database design work already done by PDS and have also made the needs of the RPIFs known to PDS in order to influence their further design work. A certain level of compatibility between the RPIFs and PDS will be important for users who need to access both database systems.

The MicroVAX prototype project will be completed by March 1987 and will then be available for testing and evaluation by the RPIF Directory and Data Managers. It is important to note that during 1986 the RPIF Data Managers have assumed an active role in helping compile information for the high level catalog. At their meeting in March 1986 they each agreed to take responsibility for at least one planetary mission, submitting catalog information to Washington University for all data sets produced by that mission. We hereby acknowledge those contributions and thank the RPIF Data Managers for their help.