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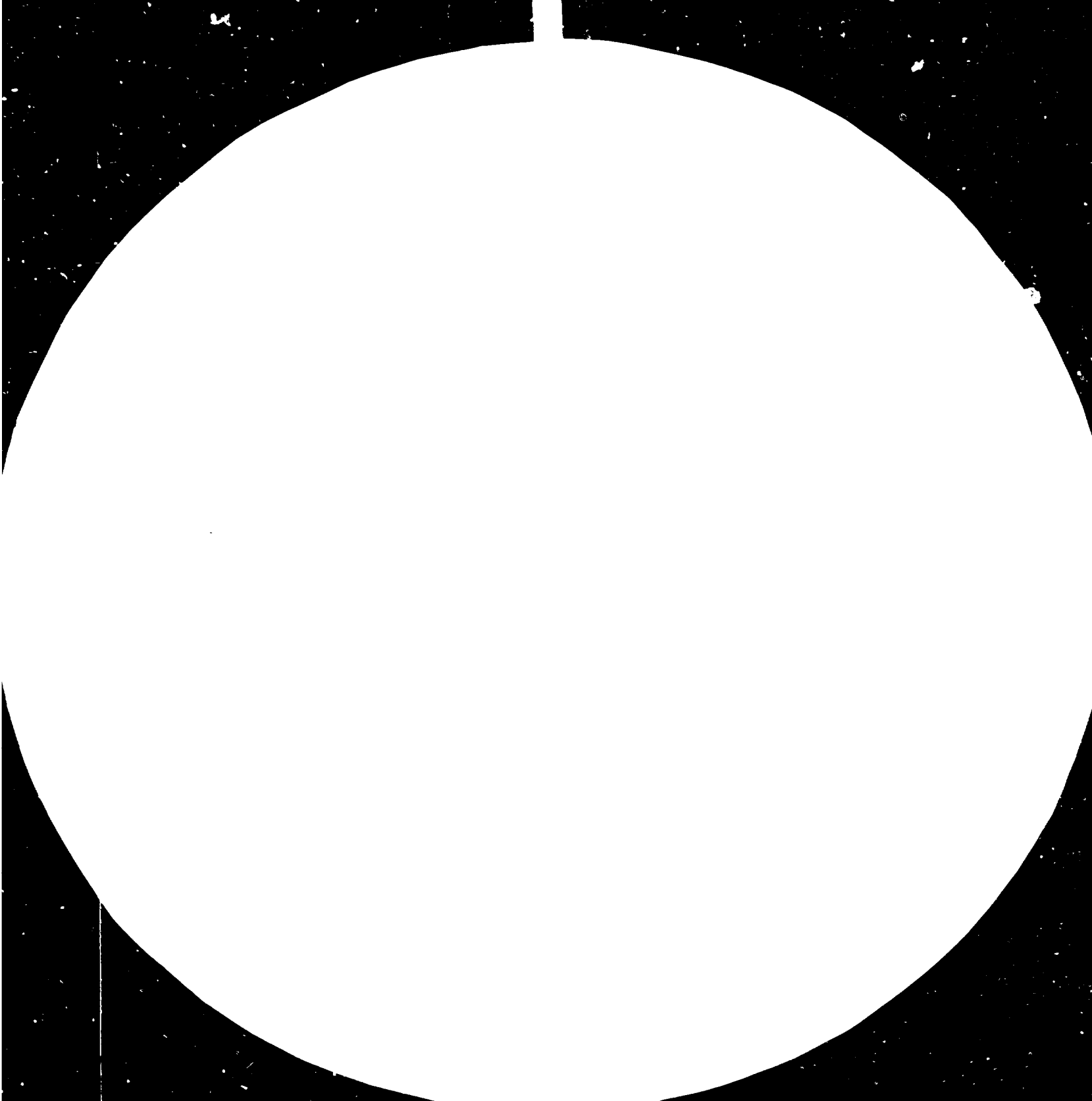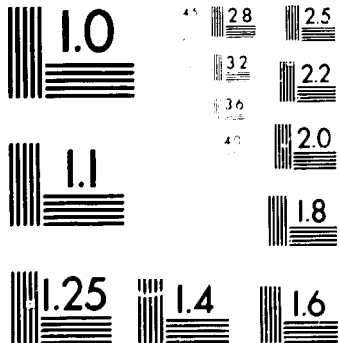
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MICROCOMPUTER PROCESSES AT VITA:
AN OVERVIEW*

by

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Background

A small group of scientists, engineers, and business people with
a sense of social responsibility created VITA in 1959. It has
grown into a major private, voluntary organization that provides
technical assistance to people and groups in more than 100 devel-
oping countries. VITA is registered as a 501(c)(3) nonprofit
organization.

VITA serves as a link between the frontiers of science and tech-
nology and the gates of the village. It numbers among its ranks
some of the world's leading professionals, people who share their
time and skill to put science and technology to work for people
in the world's poorest countries. VITA seeks practical ways to
make such modern technologies as microcomputers, and communica-
tions satellites of direct benefit to the village. But it also
helps people to use their own skills and resources in new and
more efficient ways to provide food, water, energy, and shelter.
It has worked with academics, inventors, entrepreneurs, govern-
ments, and development organizations to develop and diffuse many
useful technologies.

The heart of VITA is its worldwide network of more than 4,000
engineers, business people, farmers, energy experts, and others
who volunteer their know-how to help others. A professional staff
works with these consultants to offer a wide range of services,
including by-mail problem solving and technology design, on-site
consulting, project planning,management, training, feasibility
studies, and publications.

VITA offers services in most technical areas, but emphasizes technologies in these fields: renewable energy applications, agriculture and food processing, water supply and sanitation, housing and construction, and small business development. In addition, it is a leader in helping developing countries use modern communications technology to meet their practical information needs in these critical areas.

Technical Information Service

VITA's core function for more than 22 years has been to provide effective technical information in response to written inquiries from people in developing countries. It has responded to more than 43,000 inquiries from small businesses, foreign governments, foreign aid agencies, universities, and individuals. People ask questions on everything from designing a windmill rotor to managing a small business. A trained staff of experts answers each request, using information from VITA's Documentation Center, volunteer experts, and worldwide institutional contacts. During 1982, VITA answered 2,507 inquiries on energy, agriculture, crafts and industries, food and nutrition, construction, water resources, and other subjects.

Much of the material in VITA's extensive Documentation Center is on microfilm and unavailable elsewhere. The collection will soon be accessible through a computerized bibliographic data base. The library, which exchanges information regularly with more than 200 other institutions, has a classification system that has been adapted by numerous other information centers throughout the developing world.

Discussion

During 1982, VITA made a major commitment to applying computers to a number of internal processes and overseas operations. This

was in response to two expert panel discussion groups on microcomputers and development that recommended, among other things, that VITA establish a firm technical footing and operational experience internally before attempting to get involved in any overseas activities. A further recommendation was that although many different applications were possible, VITA should select one or two specific problem areas that were already evident from an organizational point of view and concentrate on solving these before diffusing the computerization process too rapidly in the beginning that could lead to disastrous results.

Accordingly, the Volunteer skillsbank and manual bibliographic card catalog system for the 25,000+ technical documents in our library were selected for computerization. From the beginning, VITA was sensitive to the requirements for ultimately transferring all or part of its system to developing countries and therefore determined to design the system using popular mass-market microcomputers and off-the-shelf software that could easily be obtained overseas. Fortunately for VITA, USAID had already surveyed all of its missions to determine which computers were supporting mission projects and based on these results the Apple II and IBM PC were selected as worthy of attention for development purposes. VITA managed to obtain donations of two computers from the Apple Company and a third was purchased from existing grant funds allowing us to initiate the computerization process. Other hardware, including a 40 megabyte disk drive and videotape backup system, were added later.

Another set of decisions was made involving the use and development of software to be used within the organization. For those whose requirements were primarily technical, previous programming experience in BASIC and FORTRAN permitted development of programs that specifically dealt with raw data input (such as modeling windmill performance using wind speed, duration, direction, etc.). The individuals who developed these programs, already

employed by VITA, merely had to upgrade pre-existing skills provided through standard engineering curricula.

In addition to the purely technical applications, the skillsbank and technical bibliographic requirements were part of a wider range of management-type applications that required a slightly different approach. The choice here was either to hire expert consultants in an appropriate computer language to design complex systems from the ground up or to acquire a good data base manager software package that would allow VITA staff to develop the applications themselves with minimal outside assistance. The latter approach was chosen for the following reasons:

1. While learning the language of a data base manager still requires effort and time, the investment is not nearly what it would be to become an expert programmer.

2. Once the data base manager software has been mastered in developing the first application, succeeding applications are more easily accomplished without a continuing dependency on outside consultants. Existing in-house personnel can be trained to become proficient in the language and so increase the general competence of the staff over time.

3. The approach allows relatively fast hands-on experience with computers in an applications mode, such that staff--especially those reluctant to become acquainted with computers--can more easily see the value of computers assisting their work. This is especially important for the successful introduction of computers in developing countries.

There are no outstanding disadvantages to using a data base manager for multiple management applications. Because the data base manager "speaks" a high-level language, it is not always apparent at the outset whether it will accommodate all special

requirements, some of which become clear only as the system itself is developed. In such cases, add-on programs for these specific purposes can be created by experienced consultants. For example, while our particular data base manager proved itself more than adequate for most of our needs, it did not contain a sufficiently powerful string search capability useful for keyword searching. We subsequently contracted the specific task of constructing such a capability to an expert BASIC programmer with satisfactory results.

Yet a third area of interest for VITA is the use of microcomputers in communication applications. Often, this burgeoning field is either overlooked or not considered important in the initial purchase of a computer. However, in the United States and increasingly in developing countries, the possibilities that communication opens up are substantial. For example, with a modem and an adequate terminal program, the computer can communicate with and search individual data bases as well as large groupings of data bases (such as Lockheed's DIALOG). Increasingly, this is being made attractive through the expansion of value-added networks such as Tymnet and Telenet which make it possible to access these data bases via a local telephone in Country X for connection to the data base or grouping in Country Y. Telenet, for instance, now has service to 48 nations including 23 developing countries. Another service of potential benefit is electronic mail and computer ocnferencing which allows participants to leave messages for each other (and to allow interactive activities such as editing each other's documents useful for proposal preparation) without the need for the respondent to be present at the time the communication is sent. VITA now participates in four electronic mail services and computer conferences on a regular basis and maintains contact with its field office in Thailand thorugh a Telenet/computer conferencing combination.

Perhaps the most exciting project relating to computers and communication with which VITA is involved is the design, launch, and operation of a low-earth orbit satellite which will allow for reliable message store-and-forward using inexpensive personal computers and simple radio transmitting/receiving equipment. Ideal for locations that do not have access to common carriers or where use is cost prohibitive, PACSAT (so-called for the packet radio techniques used in the digital information exchange) may well revolutionize the way Third World countries communicate with developed countries and with each other for certain applications. Since PACSAT will be discussed in greater detail during this conference, it is not treated more here. Appendix A is a short synopsis of the project.

Future Projections

VITA intends to continue its drive towards computerization, both at the headquarters office and overseas (four of VITA's field projects use Apple computers in various capacities). Recently awarded a donation of used equipment originally worth nearly a half million dollars, VITA is extending computer literacy training to much of its staff in such applications as word processing and financial spreadsheets. Many other applications using the data base manager are also being planned (mailing lists, logs of mail received, personnel records, etc.). We will be developing new projects and joint ventures that put the power of computers at the service of users overseas in the most practical yet inexpensive ways possible. Such projects may include computer-assisted education, computer assembly, and training. In addition, VITA now offers its biannual documentation center training program with a microcomputer component as well as offering the microcomputer portion as a stand-alone course. It was given for the first time last October to sixteen participants from Asia, Africa and Latin America with considerable success. In-country training may also be initiatived, particularly in Latin America.

VITA believes that the world is being forever changed with the advent of the information revolution. While not abandoning its traditional role of providing top quality information on small- and medium-scale technologies, VITA is taking advantage of the latest advances in high technology to make that information more accessible and useful.