

December 21, 1993

MEMORANDUM

To: Dr. Robert Zimmerman
From: W. David Wimberly
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Subject: 1993 Progress/1994 Projections

This report will summarize the past year's accomplishments within my area of responsibility, almost exclusively BASIS, and identify goals for 1994.

1993 Progress

Laying the Foundation

Significant effort was expended completing the foundation and building blocks for constructing BASIS applications. This effort started with the implementation of NSM version 2 and the initial development of our Program Generator in late 1992. It continued with 1993 activity in the following 5 areas, all critical parts of the system wide architecture being used to implement the BASIS applications.

UAF Program Generator

The use of the Natural ISPF *macro* facility, which allows us to write Natural programs that write Natural programs, has made it possible for us to easily generate standardized programs that are basically debugged and yet rich in features. It also permits us to make corrections or enhancements in a base model and then regenerate programs so that those same changes are automatically implemented. This has been, and will continue to be, a *tremendous* aid in our development. We have now developed, fine tuned, and implemented in our program generator 4 maintenance program models, 4 list models for online browsing of data, 4 utility function models (menu, error, help, and startup processing), and 2 models for TARGET processing.

TARGET Support Facilities

TARGET (Transaction And Review Gateway via Electronic Transmission) is the University's electronic transaction processing facility. It was conceived in 1991 but did not come to life until this year. There are essentially three parts to TARGET:

1. The TARGET administration system, a stand alone application discussed later.
2. The TARGET processing functions that create transactions, present those transactions for review, and post appropriate updates to the application data base when final approval is obtained. The models for these processing functions are part of the Program Generator previously discussed and part of the BASIS applications addressed later.
3. A suite of support utilities, all recently completed, that work with the TARGET administration system data and/or the TARGET processing functions. These include:

- A routine that establishes the list of reviewers for a transaction, essentially the routing chain (although multiple reviewers may be permitted to review the same transaction at the same time).
- A routine to update the status of a transaction based upon a review activity and keep it moving through the routing chain.
- A routine to create up to 10 comments to be associated with a transaction.
- A routine to list the comments that have been entered for a transaction.
- A routine to present the reviewers that have been established for a transaction and the status or action taken by each.
- Two standard facilities for listing transactions, one for transactions pending review by a specified desk and another for transactions entered by a specified reviewer in a given status.
- A routine to display the applications and commands where transactions are pending review by a given desk, and permit selection of an application and command to access. (This function may be invoked from the Natural signon screen where a message is displayed whenever there are transactions pending review by a user's desk.)
- A routine to generate a notice to the originator of a transaction when one of his/her transactions is rejected.

Desk Based Security

The NSM architecture was modified to incorporate a "desk" entity, to associate users with desks, and to define access rights to applications in terms of the desks assigned to users rather than the user's personal ID. There were numerous reasons for this change, the most significant being:

- It will reduce the workload associated with the administration of security for our applications because personnel turnover will only require replacing the user assigned to a desk versus updating each ID's access to numerous applications. The savings will multiply as the number of applications and the number of users increase, both of which will be happening with the implementation of BASIS.
- It will reduce the workload associated with the administration of TARGET transaction routing definitions. These routing paths are defined in terms of desks so that changes in personnel do not mandate updates to the routing tables. Since one transaction review point (a desk) may be defined for hundreds or even thousands of separate conditions, this savings will be significant.

Desk IDs were initially assigned to users in a random manner on a one-on-one basis. However, the system permits multiple individuals to be assigned to the same desk and even permits one individual to have two desks (intended to be used on a temporary or interim basis).

User Notices

A general purpose facility was developed to track and display user notices. These are short text messages that serve to notify a user of a condition or situation that has occurred as a result of activity within an application. When notices exist for a user, a message is displayed on the signon screen indicating the number of notices that exist. An option is then available to display these notices and to purge them once they are no longer of value. The only form of notice currently used is one generated for the originator of a transaction when that transaction has been rejected during a TARGET review process.

Short Text Manager

A general purpose text management facility is needed to facilitate the entry and update of lengthy descriptions that are anticipated to accompany some requisitions, purchase orders, contracts, etc. Many sophisticated features are needed in this facility. However, development of a complete text manager has been deferred because of a lack of available resources. In lieu of this ideal solution, a "short text" management facility was developed to allow explanations and extended descriptions to be entered and tracked for GJIM transactions. These descriptions are limited to 10 lines of 72 characters with only rudimentary editing capabilities provided (insert lines, split lines, and join lines). The text is stored in the file and format that is planned for the complete text manager.

New Applications

The following applications were developed in 1993 and are scheduled for production use in 1994.

TARGET

This application is used by the TARGET Administrator to define and maintain the necessary data components required to support electronic transaction processing. The most critical information is the criteria used to determine what desks will be established as review points for the various TARGET transactions. This application is made up of 15 commands and 79 Natural objects.

PSB/Title Subsystem

PSB stands for Personal Services Budget, a module of the BASIS I (Human Resources) project. In 1993 we developed a small portion of the PSB system, a subsystem for maintaining critical title information. This subsystem served as the training ground for one BASIS I analyst and provided the development and testing environment for our program generator models dealing with "effective dated records". The system also incorporates a new basic design for our title information, intended to minimize redundant information and yet provide full support capabilities throughout BASIS. The OCCUPATION table is already being used by both the Leave Accounting system and the GJIM system. This application is made up of 24 commands and 76 Natural objects.

UPS/ Vendor Subsystem

UPS stands for University Procurement System, a module of the BASIS II (Purchasing/Accounts Payable) project. This sophisticated vendor maintenance facility was designed to address all of Purchasing's requirements and especially the shortcomings of the MSA system. It provided the training ground in Natural, NSM, and our program generator for the two BASIS II analysts. It also helped test and refine the program generator. This application is made up of 26 commands and 117 Natural objects.

Leave Accounting

The Leave System will be the first BASIS application to go into production, scheduled for January 1994. This system is a radical departure from the old way of doing leave reporting. It is based upon distributed entry and access (as are all BASIS applications), capture of leave information on a "by day" basis, classification of absences into 25 various reasons/options, and incorporation of overtime reporting and comp time tracking. This application is made up of 32 commands and 158 Natural objects.

GJIM

The General Journal Interface Module will replace the online MSA entry of adjustment-type transactions. It has been tailored to meet the needs of specific types of accounting changes to facilitate and enhance campus wide use. Departments will use it for funds transfers, expenditure transfers, and inter-departmental invoices. Financial Affairs and selected offices will also be able to perform account changes and miscellaneous unrestricted journal entries. GJIM is scheduled for production use starting in March. This application is made up of 28 commands and 110 Natural objects.

NSM-MS

The NSM Maintenance System is not a new application, but it did undergo major revisions during 1993 to support the transition to "desk-based" security. It was modified to provide maintenance facilities for desks, associate users with desks, redefine all application security in terms of desks versus user IDs, provide online list facilities for browsing this data, and incorporate special value-based security so that the management of desks and their assignments to employees can be performed by departmental representatives.

CAUCUS Planning

The University of Arkansas is hosting the 9th CAUCUS conference (Cooperative ADABAS Users of College and University Systems) on April 24-27, 1994. This is one of the largest and most active Software AG user groups and the CAUCUS conferences provide an excellent forum for exchanging information related to SAG product use in the field of education. The BASIS development team is the conference planning committee. There has been a great deal of effort put into planning and preparation: organizational structure and assignment of responsibilities were defined, an overview of the conference was prepared, a budget developed, promotional activities undertaken, the "Call for Papers" prepared, and two mailings sent to over 1000 people.

1994 Plans

It is extremely difficult, if not impossible, to develop firm plans (which include delivery dates) for application development projects. Most people do not understand *why not* and many are unwilling to accept this position. Some of the reasons we have not been, and probably will not be, successful in doing this for BASIS follow:

- There is no clear and specific definition of the features or functions desired in the new systems. This is not entirely bad since during the analysis we are critically examining the old way of doing things and openly entertaining new approaches and methods for addressing problems. Given this lack of definition and the evolutionary nature of the system requirements, there is no way to anticipate the effort that will be required and thus determine a completion date.
- The requirements of systems are changing even during the development process.
- The tools being used for development are new, and the development staff lacks the necessary experience with those tools to be able to accurately project the development effort. (We are very close to the point of overcoming this deficiency, but then again we need to integrate imaging in some future modules and keep hearing about client-server, downsizing, etc.).
- There is an inadequate commitment of human resources, especially from the user offices. Assignment to these projects is almost always in addition to an already full-time

workload. Another example is the lack of a Project Director. There is no one with overall responsibility for the project and the authority to *force* decisions to keep things moving along. Consequently, we end up in the position of trying to develop systems that please everyone, which results in very lengthy development cycles.

- The scope of the projects being addressed are huge. We are being very ambitious about our goals, and we do have real and critical needs to address. But, the resources committed to these projects are extremely frugal. We have a bare bones staff trying to deliver highly sophisticated, complex, integrated applications which incorporate distributed entry and access with electronic approvals.

The only way to be able to develop firm plans is to have a firm definition of what is being developed. In the past we have attempted to develop functional specifications for systems and to obtain formal approval of those specs. The concept is that no changes are permitted after that point. The reality in our environment has been that it doesn't matter what the specs say, if it is not what is needed the system has to be changed. Also, for a system like BASIS the effort to develop the specs would be such a lengthy process it would not be practical (no one wants to wait that long before getting something). And finally, this "waterfall" methodology is generally considered outdated and is being replaced by "Rapid Application Development", "Prototyping", "Time Box", or other methods.

With this as background, I provide the following *goals* for 1994.

Utilities

There are still more utilities and system support functions needed for BASIS. The following are those that are known, but we can also expect new needs to arise.

Text Manager

We hope to get a full-featured Natural based text management facility developed in 1994. This should include formatting and indenting options; block move, copy, and delete capability; support for fairly lengthy text; and the ability to copy text from other text entities.

TARGET Facilities

There are still several TARGET support functions which need to be developed. These include: routines to print, archive, and delete TARGET transactions; online list facilities to identify TARGET transactions that have remained in a given status longer than desired; enhancement of some TARGET administration screens so that more information is available in one place; and investigation into our ability to send a screen image of a TARGET transaction with additional text as e-mail. There is also another TARGET processing program model that must be developed to handle the electronic approval of transactions involving "effective dated" data.

Applications

We plan to continue through 1994 with the analysis and development of subsystems that will collectively become BASIS. Where possible, these modules will be implemented in a production status so that immediate returns can be received. However, it must be recognized that some re-work will be required as subsequent modules are developed and integrated into previously implemented BASIS applications.

Hourly Time Sheets

The analysis of requirements and some prototyping of this module has already begun. There are significant challenges involved and some complex interactions related to the determination of overtime involving vacation/sick leave data, dual jobs, and varying time reporting periods. Major decisions have yet to be made, but this system should be completed in early 1994.

Travel Authorizations

This is the next BASIS II module targeted for development. Only limited analysis has been performed to date, but this system will initially need to interact with the MSA BC/AP system and may use the UPS Vendor Subsystem. It will then have to undergo revisions when the full BASIS Purchasing/Payables system comes up. Development of this module should also be completed in early 1994.

General Ledger Test System

There is a real and growing need for good basic test systems. The GL and other accounting tables are at the heart of all our systems and so will be the first component of a new test environment. This will require obtaining a representative set of data so that all reasonable conditions and situations can be simulated in testing, but not require processing the volume of data contained in production. Our idea is to grow BASIS applications around this well defined and known entity. This effort should also be completed in early 1994.

Labor Distribution/General Ledger Interface

There are currently many inefficiencies in the processing and tracking of payroll accounting data. This is essentially a back-end process that is performed after the payroll is run. As such, it is a good module to peel away from MSA and redevelop according to BASIS standards. The online entry of retroactive adjustments is one of the major enhancements being planned. Of course, when BASIS payroll arrives, changes will be required to this new system, although they should be minor. It is very difficult to say when this new module will be completed since no analysis has been done, but we are hopeful that it can also be operational by mid-year.

Contracts and Bids

There are considerable information requirements for defining and tracking Purchasing Contracts and Bids. Eventually this data will be used by and integrated into the remainder of the BASIS Purchasing system, but it will have little value until future modules are developed. In spite of this, these components are likely candidates for development in the second half of 1994.

Internal Orders

Internal orders is a term used to refer to the requisitioning and charge back processing required to support the on-campus high volume service providers such as physical plant, the bookstore, the telephone office, and printing services. Processing requisitions for these services through BASIS will be a major change to these organizations but is required if we are to do available funds checking. Although there is little consensus regarding how internal orders should be handled, we are hopeful that this module can be developed and implemented in 1994. It should be a great lead-in to doing the full purchasing system and yet doesn't require any check writing and possibly no receiving.

Personal Services Budget

This module will be the replacement for our current BUDGET application. We have many firm ideas about how this system should be designed, yet there are still many questions outstanding. The general concept is that Budget will drive Payroll, that the identification of the Company Cost Centers to be charged for salary expenses will come from the Budget application and not be stored within Payroll. (This information is duplicated within both systems currently.) This will be a major application and is one step away from the real monster, Payroll. Significant development should be completed on the Personal Services Budget system in 1994, and hopefully it can be ready for the budget cycle in the spring of 1995.

Personnel

The development of a system to track personnel information for the University is another BASIS I module that should be able to be developed relatively independent of the MSA Payroll. The processing requirements for this subsystem are expected to be straightforward while the determination of exactly what data should be captured, how it should be coded, and who will maintain it will likely be subjects of great debate. We should see the initiation of this project during 1994.

CAUCUS '94

This conference will be held in late April. A great deal of work will be required during the first 4 months of the year preparing for this event: selecting papers, preparing a program, lining up speakers, purchasing gifts, planning social events, and the list goes on. The BASIS staff is looking forward to the post-CAUCUS '94 period when they can get back to just being programmer/analysts.