AdaNET Dynamic Software Inventory(DSI) Management System Prototype
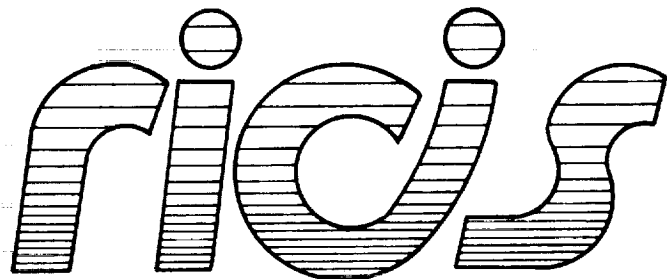## Component Acquisition Plan

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May 1989

Research Institute for Computing and Information Systems
University of Houston - Clear Lake

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The RICIS Concept

The University of Houston-Clear Lake established the Research Institute for Computing and Information systems in 1986 to encourage NASA Johnson Space Center and local industry to actively support research in the computing and information sciences. As part of this endeavor, UH-Clear Lake proposed a partnership with JSC to jointly define and manage an integrated program of research in advanced data processing technology needed for JSC's main missions, including administrative, engineering and science responsibilities. JSC agreed and entered into a three-year cooperative agreement with UH-Clear Lake beginning in May, 1986, to jointly plan and execute such research through RICIS. Additionally, under Cooperative Agreement NCC 9-16, computing and educational facilities are shared by the two institutions to conduct the research.

The mission of RICIS is to conduct, coordinate and disseminate research on computing and information systems among researchers, sponsors and users from UH-Clear Lake, NASA/JSC, and other research organizations. Within UH-Clear Lake, the mission is being implemented through interdisciplinary involvement of faculty and students from each of the four schools: Business, Education, Human Sciences and Humanities, and Natural and Applied Sciences.

Other research organizations are involved via the "gateway" concept. UH-Clear Lake establishes relationships with other universities and research organizations, having common research interests, to provide additional sources of expertise to conduct needed research.

A major role of RICIS is to find the best match of sponsors, researchers and research objectives to advance knowledge in the computing and information sciences. Working jointly with NASA/JSC, RICIS advises on research needs, recommends principals for conducting the research, provides technical and administrative support to coordinate the research, and integrates technical results into the cooperative goals of UH-Clear Lake and NASA/JSC.
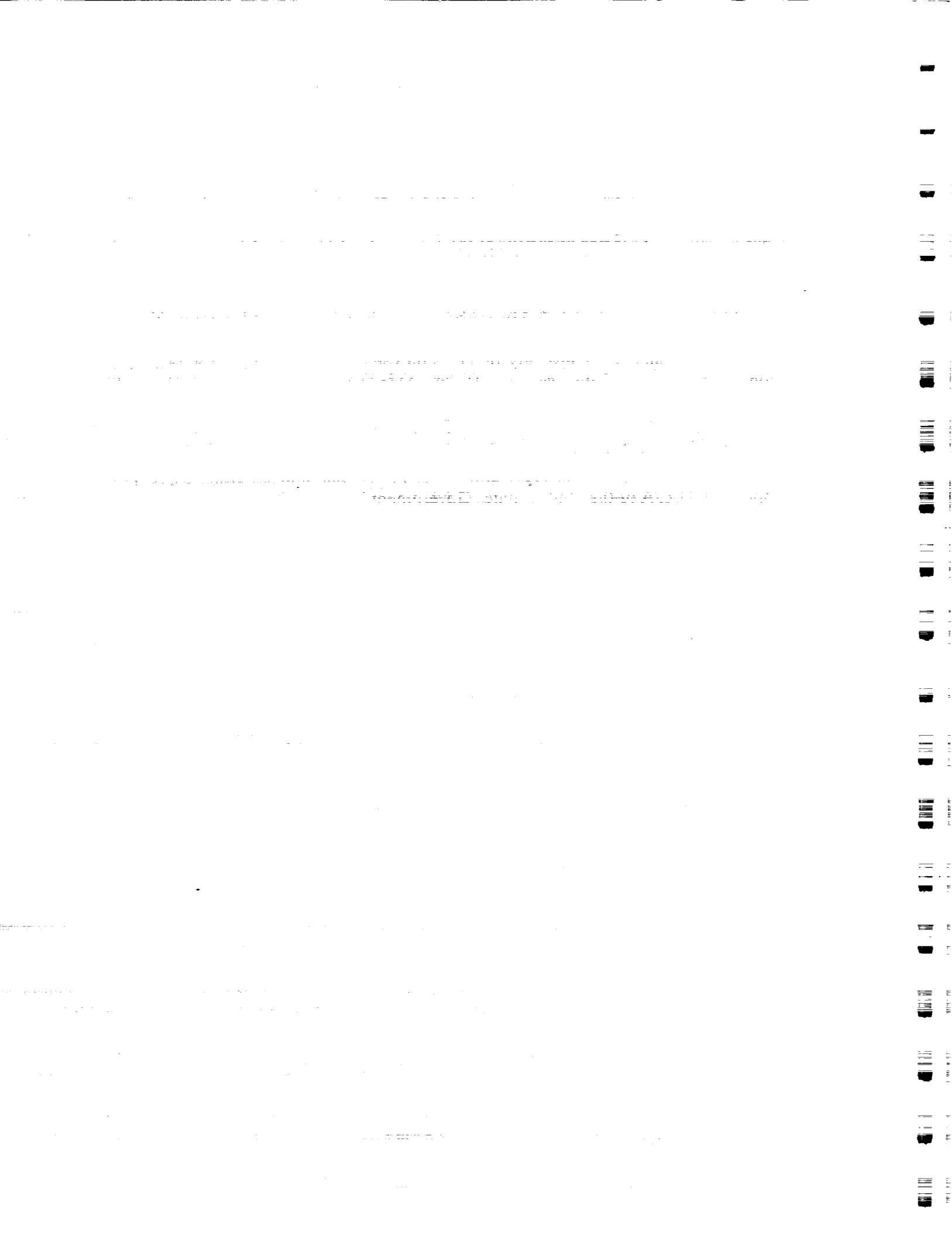
ADANET DYNAMIC SOFTWARE INVENTORY(DSI) MANAGEMENT SYSTEM PROTOTYPE
Component Acquisition Plan

Preface

This research was conducted under the auspices of the Research Institute for Computing and Information Systems by Lionel Hanley of GHG Corporation. Dr. Charles McKay, Director of SERC, at the University of Houston-Clear Lake served as RICIS technical representative.

The views and conclusions contained in this report are those of the author and should not be interpreted as representative of the official policies, either express or implied, of NASA or the United States Government.

AdaNet

PHASE 0 SUPPORT FOR THE ADANET DYNAMIC SOFTWARE INVENTORY (DSI) MANAGEMENT SYSTEM PROTOTYPE
Project No. RICIS SE. 24

AdaNet Dynamic Software Inventory (DSI) Management System Prototype Component Acquisition Plan

Research Institute for Computing and Information Systems (RICIS)
Cooperative Agreement NCC-9-16

Revision #01
May 1989

University of Houston Clear Lake
2700 Bay Area Blvd
Houston, Texas 77058-1068

GHG SE 24-1

ADANET
AdaNet Dynamic Software Inventory (DSI) Management System Prototype Component Acquisition Plan

Prepared by
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Houston, Texas

Under
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for
Research Institute for Computing and
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University of Houston Clear Lake
Houston, Texas

MAY 1989

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Table of Contents

1. INTRODUCTION

1.1 Identification of Volume

This is the Component Acquisition Plan Volume of the Software Management Plan for the AdaNet Dynamic Software Inventory (DSI) Management System Prototype.

1.2 Scope of Volume

A component acquisition plan contains the information needed to evaluate, select, and acquire software and hardware components necessary for successful completion of the AdaNet Dynamic Software Inventory (DSI) Management System Prototype. This plan will evolve and be applicable to all phases of the DSI prototype development.

1.3 Purpose and Objectives of Volume

The purpose of this plan is to provide information on what software and hardware resources are currently available for development of the DSI prototype and the procedures to evaluate, select, and acquire other software and hardware resources which may be necessary.

It is not the intent of this document to specify what software and hardware resources are to be used.

1.4 Volume Status and Schedule

Version 2 supercedes version 1 and is to be delivered to the Software Engineering Research Center (SERC) at the University of Houston Clear Lake by February 15, 1989.

The preliminary Version 1.0 of this document is due at the University of Houston Clear Lake on 3 February 1989. Revisions of this document will include more thorough procurement procedures.

1.5 Volume Organization and Roll-Out

This volume is rolled-out of the Software Management Plan.

Sections 1 and 2 of this volume identify it, describe its purpose, and cite other related documents. Section 3 provides resources, budgets, schedules, and organization related to component acquisition activities. Section 4 is intended to provide a purpose and description of a software or hardware component which is to be acquired. Since this is a plan for acquisition of all components, this section is not applicable.

Section 5 describes the procurement activities and events conducted by the acquirer and identify who will be responsible, where the activity will be performed, and when the activities will occur for each planned procurement. Acquisition requirements are in section 6 which describes the specific requirements and standards to be followed during component acquisition.Section 7 is a detailed discussion of the activities which will take place during component acquisition.

Section 8 contains a list of abbreviations and acronyms, and section 9 a glossary. Section 10 is available for notes and section 11 is the appendix.

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2.0 RELATED DOCUMENTATION

2.1 Parent Documents

The following is the parent of this volume:

1) Software Management Plan of the AdaNet Prototype System, February 1989, Software Engineering Research Center (SERC) at the University of Houston Clear Lake.

2.2 Applicable Documents

The following documents are referenced herein and are directly applicable to this volume:

1) Clear Lake Conceptual and Implementation Models for Life-Cycle Support Environments, Dr. Charles W. McKay, Software Engineering Research Center (SERC) at the University of Houston Clear Lake, 1988.

   Management Plan Documentation Standard and Data Item Descriptions Volume of the Information System Life-Cycle and Documentations Standards, Release 4.2C, 8/5/88. Washington: NASA Office of Safety, Reliability, Maintainability, and Quality Assurance.

2.3 Information Documents

None.

3.0 RESOURCES, BUDGETS, SCHEDULES, AND ORGANIZATION

The information in this section is only for the activities directly related to component acquisition.

3.1 Business Practices Definition and Revision Process

3.1.1 Definition of Activities

GHG Corp. is to be responsible for obtaining information on the specification, pricing, and availability of components identified as needed for the DSI prototype development. An initial evaluation of the information will be presented to all members of the DSI prototype team by GHG Corp. After final component evaluation and selection is made, GHG Corp. will work with the appropriate organizations to see that the component is made available as quickly as possible.

In addition to the above activities, GHG Corp. will maintain a constant search of the market place for software and hardware components which may be applicable to the DSI prototype development. GHG will inform the appropriate members of the DSI prototype team of any components that may be beneficial to the work of the team.

3.1.2 Method and Approach

TBD

3.1.3 Reporting, Monitoring, Revision

GHG will provide UHCL with the trade studies of components that

3.1.3.1 Component Acquisition Reports

For each component that any member of the DSI prototype team requests GHG to obtain information, a report will be produced by GHG which contains a summary of all candidate components, an initial evaluation of the candidates, and a suggested selection. A rationale for the selection will be given which includes the methods used in the market survey to identify candidate components, the methods and criteria used in the evaluation, and the determining factors which prompted the selection. Guidelines will be given for the DSI team members who will be responsible for the final evaluation and selection.

After final evaluations and selection has been made, a report that details the evaluation and selection will be produced by GHG. The report shall include all of the requirements placed on the acquisition, the standards used, the methodologies employed, and an associated rationale for each.

3.1.3.2 Acquisition Request Acknowledgement

When a request is received for GHG to help in the acquisition of a needed component, the request will be acknowledged by phone within 1 working day. With 3 working days, a written acknowledgement will be made which will include any information on candidates which have already been identified, an initial assessment of the availability of a component to meet the need, and an estimate for the time it will take to conduct a more through market survey and complete an initial evaluation and selection.

3.1.3.3 Market Survey Reports

GHG will maintain a repository of information on all products and components which are identified during routine market surveys as possible candidates for use in the DSI prototype. The information will be organized according to product type. A summary report of all product information will be maintained and will be available at all times.

As components which may have a significant impact on the DSI project are identified by GHG, the entry which goes in the summary report will be distributed to the members of the DSI team who may have a need for the component.

3.1.3.4 Status and Lessons Learned

On the first of each month, a status and lessons learned report will be distributed to all DSI team members. This report will identify the market areas that have been surveyed, the new products and components that have been reviewed, any new information regarding acquisition procedures, all product summary information that has been distributed to DSI team members during the previous month, and any other information related to component acquisition.

3.1.3.5 Restrictions, Turnaround Time, and Report Formats

There shall be no access restrictions on any of the reports generated by GHG in accord with this component acquisition plan. Copies of all reports and information will be maintained at GHG for the duration of the contract period during which this acquisition plan is used.

All reports generated by GHG under this plan will be made available within 1 working day. While verbal requests for reports will be sufficient in most cases, the 1 day turn around can only be guaranteed when written notice is given. Requested reports may be picked up at GHG or delivered by GHG to the appropriate site. Arrangements for delivery shall be made at the time of the request. Reports will be available in hardcopy, WordPerfect, and Microsoft Word formats. WordPerfect and Microsoft Word versions will be available on 5.25" 360k or 1.2M floppy diskettes. Unless otherwise requested, reports will be delivered as hardcopy.

3.2 Work Breakdown Structure (WBS)

TBD

3.2.1 Activity Definition

TBD

3.2.2 Cost Account Definition

TBD

3.3 Resource Estimation and Allocation to WBS

TBD

3.3.1 Schedules

TBD

3.3.2 Funds and Budgets

TBD

3.3.3 Organization

TBD

3.3.4 Equipment

GHG currently has the majority of the equipment which has been identified as necessary for the support of all functions to be performed for component acquisition throughout the life-cycle of the DSI prototype.

The equipment which has been identified includes an IBM AT-class machine or compatible, WordPerfect and Microsoft Word word processors, laser printer output, and a photocopy machine.

The equipment which GHG does not have is WordPerfect. This item shall be purchased by GHG under the contract for Phase 1 of the DSI prototype.

All property management of the above equipment will be done by GHG Corp.

3.3.5 Materials, Facilities, and Other Resources

All materials, facilities, and other resources which have currently been identified as necessary to support the functions to be performed by GHG in accord with this component acquisition plan will be supplied by GHG. These items include, but are not limited to, office space, desks, paper, phones, postage, and other normal office supplies. GHG shall be responsible for the operating costs for the above items.

3.3.6 Management Reserves

TBD

3.4 Work Authorization

The following is a description of the work authorization process in terms of the actions required to initiate component acquisition or report generation.

3.4.1 Component Acquisition

After the need for a component has been recognized, GHG must be informed of the need so that the process of component acquisition can begin. While in some instances a verbal request may be sufficient, a written request is the only binding authorization for component acquisition.

The request should include in as much detail, the nature of the component desired and the need it is to fill, possible candidates which may have already been identified by the requestor, unacceptable candidates accompanied by a rationale for each rejection, a schedule for the acquisition, a cost ceiling, and any other information which may help to identify candidates, reject inappropriate components, and expedite the component acquisition.

3.4.2 Report Generation

To initiate the generation of any report listed in section 3.1.3, a request must be made to GHG that includes a description or title of the report desired. Unless otherwise requested, the latest version of the report will be delivered in accord with section 3.1.3.5.

As with the initiation of the acquisition process, a verbal request may be sufficient, but a written request is the only binding request.

4.0 PURPOSE AND DESCRIPTION OF THE DSI PROTOTYPE

Please refer to the Concept Document for the DSI Prototype.

5.0 PROCUREMENT ACTIVITIES PLANNING

This section describes the procurement activities and events conducted by the acquirer and identifies who will be responsible, where the activity will be performed, and when the activities will occur for each planned procurement.

5.1 Procurement Package Preparation

The justification for acquisition of a component must be described in relation to existing resources and the alternatives considered.

5.1.1 Existing Resources

The following is a list and a description of resources currently available for the DSI prototype development.

5.1.1.1 Personnel

UHCL -	Dr. Charles W. McKay, Pat Rogers, Paul Brown, Karen Gunter
Ford -	Carl Lanham, Gary Cridland, Helen Watson, Joe Lozar
GHG -	Lionel Hanley, Gary O'Neal

5.1.1.1 Hardware and Associated Software

Harris HCX-9 (Unix bsd4.2 based computer)
   The Harris is to be the main host machine. It is on this machine that most software development will take place, and all configuration management will be done. Software currently available on the Harris includes:

   - HAPSE (Harris Ada Programming Support Environment)

   - Oracle relational database management system

   - VI and EMACS text editors

   - Ford RSL (Reusable Software Library)

It is suggested that a configuration management tool such as CCC be purchased for the Harris.

Apollo 3500 (two available)
These machines are currently on lone to the University of Houston Clear Lake by Apollo. It is not clear how long these resources will be available. It is therefore suggested that the DSI prototype development avoid any dependence on these resources. This is not, however, to say that the Apollo's should not be used. Software on the Apollo's includes:

- TAGS design and requirements analysis tool from   Teledyne Brown Engineering

- VADS (Verdix Ada Development System)

It is hoped that DSSE (a configuration management tool from Apollo) will become available shortly.

Sun Workstations
Sun workstations are available at both GHG Corp. and at Ford Aerospace. Both have Ada compilers available. The use of these machines should be considered during the DSI prototype development.

IBM AT-class machines
AT-class are available at all DSI prototype development sites. These machines will be useful for editing and document production. All documentation for the DSI prototype development should be available on this machine in WordPerfect form. In addition, AdaGen (an E/R modelling tool is available on this platform.

MAC IIx
A MAC IIx is soon to arrive at the university. This machine may serve well as a document generator. In addition, RDD-100 from Ascent Logic Corporation (a requirements analysis program) will be available soon after the MAC IIx arrives.

5.1.1.3 Other Software

A variety of reusable Ada software components is available for use during the DSI prototype development. These include, but are not limited to the GRACE components, the Booch components, the CAMP (Common Ada Missile Packages) components, Ada X Windows Binding, Ada GKS binding, and a large number of other components available in the public domain. A more detailed list will be available during the next phase of the project.

5.1.2 Suggested Resources

The following is a list and a description of resources which have been identified as needed or nice to have for the DSI prototype development.

An Object Management System (OMS)would be nice for underlying object support. OMS's to consider include, but are not limited to Gaia, SLCSE, GEMStone, Probe, and OMS9.

An E/R modelling tool would be useful for a variety of the prototype efforts. As noted above, a copy AdaGen is currently available on AT-class machines. In addition, Excelerator is available at GHG and via the SSE.

Library Management tools would be nice to organize libraries of components used in the DSI prototype development. the Ford RSL is available on the Harris. An RSL is also available from Barrios and Unisys. In addition, some of the previously mentioned OMS's have built in library management facilities.

A "Black Box" test generator would be helpful. Such tools are available from Nokia and in the SLCSE environment from General Research.

High speed dial-up modem facilities would be very nice to have at all DSI prototype development sites. It would be necessary for the university to install additional phone lines and for the university, Ford Aerospace and GHG to acquire high speed modems.

Systems administration and operation is needed for all of the computer resources at the university. Such personnel would perform daily maintenance and operation of the machines such as backups, account creation, installation of software, etc.

5.2 Proposal Evaluation

The evaluation and selection of a software or hardware component will be done on a component by component basis. The entire DSI team should be made aware of any component needs so that any interested or informed person may be involved with the evaluation and selection of said component.

When the need for a component is recognized, the staff at GHG will be responsible for obtaining information on products which may satisfy the need. This information is to include, but not limited to, specifications, pricing, and availability. An initial evaluation of the candidate components will be made by GHG and these findings along with all of the product information will be presented to the DSI prototype team and a decision on the acquisition will be made.

The standards, practices, and methods employed in the component evaluation will be determined on a component by component basis.

5.3 Contract Negotiation

All final purchases and contract negotiations will be made by the appropriate purchasing department. Prior to the actual purchase, all contract negotiations will be handled on a component by component basis during candidate evaluation and selection proceedings.

Considerations which govern contract negotiations include, but are not limited to, cost and schedule adjustments, product adjustments, access rights, licence agreements, non-disclosure agreements, etc.

5.4 Procurement Risks

The largest and most obvious procurement risk is the amount of time necessary for the purchasing department to act on any purchase request.

At the university any major purchase (over $1000) must go out for written bids according to Texas State Law. In addition to the time taken by the university to initiate such a bid, the bid itself is open for 30 days. This is often followed by a delay of several weeks for the vendor to make delivery.

One of the best ways to avoid delays in the purchasing department is to make no mistakes in the purchase request and to give them as much information as possible about the justification for the purchase. A little extra time spent on the paper work can save days or weeks on the delivery.

6.0 ACQUISITION REQUIREMENTS

6.1 Applicable Standards

The nature of the DSI prototype development defies the definition of standards to be followed during the acquisition of components. The emphasis must be placed on achieving the desired level of functionality within the given time schedule. If a standard is available for a particular type of component, then the existence of the standard should be taken into consideration during product evaluation.

If any standards are applied during the evaluation and selection of candidate components, they shall be recorded as part of the evaluation and selection criteria.

6.2 Business Practices, Resources, and Organizational Requirements

All requirements for the component provider's business practices, methods, reporting, metrics, etc., are set by the appropriate purchasing department in accord with the company or state requirements. In addition, any applicable NASA standards or requirements must also be recognized and satisfied.

Requirements being placed on the provider with respect to product support, upgrades, adherence to standards, etc. are to be decided on a component by component basis during candidate evaluation and selection.

If such requirements are made, they are to be recorded as part of the evaluation and selection criteria.

6.3 Engineering and Integration Requirements

Engineering an Integration requirements placed on the component provider will be decided on a component by component basis during candidate evaluation and selection. Such requirements may include, but are not limited to, use of specific tools or environments, use of specific programming languages, use of specific hardware, the "genericness" or reusability of the component, and special security or safety considerations.

If such requirements are made, they are to be recorded as part of the evaluation and selection criteria.

6.4 Risk Management Requirements

The Risk Management requirements placed on the component provider will be decided on a component by component basis during candidate evaluation and selection. If the acquirer is especially concerned and wants to specifically address areas of risk, this must be taken into consideration during candidate evaluation and selection.

If such requirements are made, they are to be recorded as part of the evaluation and selection criteria.

6.5 Configuration Management Requirements

Each component acquired for use in the DSI prototype will be subject to the configuration management policies defined in the configuration management plan. GHG will be responsible for insuring that all acquired components is properly placed under configuration control. Refer to the Configuration Management Plan of the Management Plan document for more detailed information.

6.6 Classification and Assurance Requirements

The Classification and Assurance requirements placed on the component provider will be decided on a component by component basis. If such requirements are made, they are to be recorded as part of the evaluation and selection criteria.

6.7 Delivery Requirements

Delivery Requirements placed on the component provider will be decided on a component by component basis within the guidelines established by the purchasing department handling the purchase.

If any special delivery requirements such as installation support, conversion of data, acceptance procedures, or training provisions are imposed on the provider, they are to be recorded as part of the evaluation and selection criteria.

6.8 Sustaining Engineering Support Requirements

Sustaining Engineering Support requirements placed on the component provider will be decided on a component by component basis. Such requirements may include, but are not limited to, technical assistance, upgrades of the product, product assurance including regression testing and recertification.

If such requirements are made, they are to be recorded as part of the evaluation and selection criteria.

7.0 ACQUISITION ACTIVITIES PLANNING

7.1 Acquisition Activities

The activities performed during component acquisition will be monitored and recorded by GHG. As such, GHG will be involved with all evaluations, selections, and negotiations which have an impact on component acquisition. In support of these activities, GHG shall provide as much insight into the evaluation as possible, including the identification of applicable standards if they exist. In addition, GHG will record the discussions for inclusion in acquisition reports.

GHG will work as closely as possible with the team members, their associated purchasing department, and the provider organization to insure that the component is available as quickly as possible. If the component is not delivered in satisfactory condition, or does not satisfy the need as described in the specification of the component, GHG will record the discrepancies and insure that the problem is corrected as quickly as possible.

GHG shall collect metrics and all other information concerning the component acquisition.

GHG shall insure that the component is properly placed under configuration management as defined in the Configuration Management Plan. Refer to the Configuration Management Plan for further description of the configuration management activities.

Within one week of the time the component is delivered, GHG shall review the acceptance testing of the component with the acquirer. The information obtained in this review will be placed in the final component acquisition report.

8.0   ABBREVIATIONS AND ACRONYMS

9.0   GLOSSARY

10.0   NOTES

11.0   APPENDICES