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Executive Summary

Overview

Stage 4 of the NASA-wide Electronic Publishing System is the final phase of its implementation through the prototyping and gradual integration of each NASA center's electronic printing systems, desktop publishing systems, and technical report servers to be able to provide to NASA's engineers, researchers, scientists, and external users the widest practicable and appropriate dissemination of information concerning its activities and the result thereof to their work stations. The inclusion of NASA Headquarters as a node essentially completes a totally distributed set of report servers for formal and nonformal publications as identified by Figure 1. Currently, no standard software package (single) exists across all NASA centers for either word processing or graphics, and manually pasting figures into documents is still prevalent. In addition to differences in software utilization, no standard platform across all NASA centers exists for producing the documents. Common sense dictates that it is neither appropriate nor cost-effective to define a standard set of software and compel all NASA's engineers, researchers, and scientists to conform. Rather, a common output format, such as Adobe PostScript, will be sought from among the set of software; the electronic document distribution system would only need to handle the single common output format.

The report is presented by an introduction, seven chapters, and six appendices; the Introduction describes the purpose, conceptual framework, functional description, and technical report server (TRS) of the Scientific and Technical Information (STI) Electronic Document Distribution (EDD) project. Chapter 1 documents the results of the prototype STI EDD in actual operation, e.g., the electronic distribution of the source document to its printed output and the distributed on-line access to technical reports available at each NASA center. Metrics identifying the number of accesses on the NASA Technical Report Server (NTRS) and on the NASA Public Affairs Information Server (NPAIS) from the period July through December 1995 are displayed by Table 1 - 13 and Table 1 - 14, respectively. A number of abstracts, reports, and fact sheets are displayed by Table 1 - 15. A profile by subject division for abstracts available from the Center for AeroSpace Information Technical Report Server (CASITRS) are displayed by Table 1 - 16.

Although in a prototype stage, the actual demonstration of print on demand, which was achieved through the distributed production of the NASA Headquarters phone directory at each center, is documented. In the past, printing was accomplished by the NASA centers as shown by

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1Decision to exclude Headquarters as a node was made in December 1995.
the top band of Figure 2. The lower band of Figure 2 shows a fully operational electronic publishing process. The middle band of Figure 2 describes the current process. A second application included a file server that was designated the Public Affairs Information Series Server for the storage and retrieval of Public Affairs fact sheets and information summaries. Finally, a third application was added to document the pre- and post-processing steps involved during the preparation of a technical report to be published by a typical NASA researcher or engineer at a center.

![Figure 2. Comparative printing processes.](image)

Figure 3 displays a conceptual macro view of the publication process from its conception to its storage, printing and on-line retrieval. Details are covered by Chapters 2, 3, and 4. Chapter 2 documents each NASA center's post processing publication process. Chapter 3 documents each NASA center's STI hardware, software, and communication configurations. Chapter 4 documents each NASA center's network topology. Chapter 5 documents lessons learned. Chapter 6 documents the STI standards and guidelines, and Chapter 7 documents STI EDD policy, practices, and procedures.

The appendices contain supporting information. Appendix A documents the STI EDD Project Plan jointly agreed to by all the participating NASA centers (Project Plan reflects status as
November 1994; deliverables are reflected in Appendix C). Appendix B lists all the team members for the STI EDD project. Appendix C displays the progress of the STI EDD project from its start to its completion with its final delivery identified as this joint technical memorandum. Appendix D documents how a user accesses the on-line reports. Appendix E describes the creation of an hypertext markup language (HTML) file for a typical NASA fact sheet.

Recommendations

Conceptually, the prototype STI EDD project has demonstrated its potential value for the dissemination of scientific and technical work accomplished by NASA’s engineers, scientists, and researchers. The statistical profiles, Tables 1 - 13 through 1 - 16 show the World Wide Web activity for the period July through December 1995. As of December 31, 1995, the prototype STI EDD was not fully integrated as a NASA Technical Report Server or a NASA Public Affairs Information Server; however, the prototype system has achieved its goal of devising a concept that is sound and feasible for the provision of scientific and technical information to the Agency, as well as to the public. In achieving a fully operational STI EDD, it is recommended that:

1. Headquarters Scientific and Technical Information Office continue to support the STI EDD full implementation across the Agency through the use of an Executive Notice or Policy Directive.

2. The STI EDD Committee be formally established with members from each NASA center, including the Center for AeroSpace Information, to coordinate and resolve Agencywide STI policy issues and interoperability for the exchange of scientific and technical information within the Agency and between agencies, as well as with commercial organizations and foreign countries.

3. Langley Research Center, who has been designated as the operations manager of the Center for AeroSpace Information, also lead the implementation of the STI EDD project, taking into consideration the initial creation of the technical publication to its availability on each center’s technical report server or the availability for printed copies on designated networked high-speed production duplicators.

4. Langley Research Center continue its role as the system administrator for the NASA Technical Report Server.

5. Dryden Flight Research Center continue its role as the system administrator for the NASA Public Affairs Information Server.

6. Each NASA center take on the role of continual maintenance of the center's technical report server and public affairs information server, as well as its integration to the Agency's networked high-speed production duplicators.

7. Each NASA center participate in the integration of electronic document availability authorization (DAA) and report documentation page (RDP) as part of the publishing processes, i.e., creation to its archival and dissemination.
Strategic Enabling Technology

The NASAwide Electronic Publishing System consists of an enabling capability for each of the five Strategic Enterprises (Aeronautics, Mission to Planet Earth, Space Technology, Scientific Research, and Human Exploration/Development) to access, via the World Wide Web, its scientific and technical works and/or print-on-demand information (text, graphics, and images) within and across the five enterprises.

When fully implemented, this enabling capability will allow the NASA centers and Headquarters to perform wide-area, networked print-on-demand environments, as well as to provide a central source for retrieving NASAwide STI on line at each user’s workstation. The prototype STI EDD project has established technical report servers at each NASA center. Additionally, with the exception of Dryden Flight Research Center, each NASA center will have a networked print-on-demand, high-speed production duplicator capable of printing quality print products.
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A—Team Members
B—Phasing Schedules
C—Accessing NASA Public Affairs Information Server (NPAIS)
D—Creating an HTML File and Setting up an xTRS
Acronyms and Abbreviations

APAIS  ARC Public Affairs Information Server
ARC    Ames Research Center
ATRAS  Ames Technical Report Server
BOC    Base Operations Contractor
CASI   Center for AeroSpace Information
CASITRS CASI Technical Report Server (RECON Select)
DFRC   Dryden Flight Research Center
DPAIS  DFRC Public Affairs Information Server
DTRS   Dryden Technical Report Server
EDD    electronic document distribution
EDMS   electronic document management system
FTP    file transfer protocol
GIF    graphics interchange format
GPAIS  GSFC Public Affairs Information Server
GSFC   Goddard Space Flight Center
GTRS   Goddard Technical Report Server
HQTS   NASA Headquarters
HPAIS  Headquarters Public Affairs Information Server
HTML   hypertext markup language
HTTP   hypertext transfer protocol
IEEE   Institute of Electrical and Electronic Engineers
JPAIS  JPL Public Affairs Information Server
JPEG   Joint Photographic Experts Group (Standard for still image compression)
JPL    Jet Propulsion Laboratory
JPLTRS JPL Technical Report Server
JPAIS  JSC Public Affairs Information Server
JSC    Johnson Space Center
JTRS   Johnson Technical Report Server
KDN    Kennedy Data Network
KMAN   KSC Metropolitan Area Network
KPAIS  KSC Public Affairs Information Server
KSC    Kennedy Space Center
KWAN   KSC Wide Area Network
KTRS   Kennedy Technical Report Server
LAN    local area network
LaRC   Langley Research Center
LTRS   Langley Technical Report Server
LePAIS LeRC Public Affairs Information Server
LeRC   Lewis Research Center
LeTRS  Lewis Technical Report Server
LPAIS  LaRC Public Affairs Information Server
MPAIS  MSFC Public Affairs Information Server
MSFC   Marshall Space Flight Center
MTRS   Marshall Technical Report Server
NPAIS  NASA Public Affairs Information Server
NSI    NASA Science Internet
NTRS   NASA Technical Report Server
OLE    object link entry
<table>
<thead>
<tr>
<th>Abbreviation</th>
<th>Description</th>
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<tr>
<td>PAIS</td>
<td>Public Affairs Information Server</td>
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<tr>
<td>PDF</td>
<td>Portable Data File</td>
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<tr>
<td>PON</td>
<td>Payload Operations Network</td>
</tr>
<tr>
<td>PSCNI</td>
<td>Program Support Communications Network Interface</td>
</tr>
<tr>
<td>RECON</td>
<td>Research Connection</td>
</tr>
<tr>
<td>RDP</td>
<td>report document page</td>
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<tr>
<td>SCAN</td>
<td>selected current aerospace notices</td>
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<tr>
<td>SODN</td>
<td>Shuttle Operations Data Network</td>
</tr>
<tr>
<td>SPAIS</td>
<td>SSC Public Affairs Information Server</td>
</tr>
<tr>
<td>SPC</td>
<td>Shuttle Processing Contractor</td>
</tr>
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<td>SSC</td>
<td>Stennis Space Center</td>
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<td>STRS</td>
<td>Stennis Technical Report Server</td>
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<tr>
<td>STI</td>
<td>Scientific and Technical Information</td>
</tr>
<tr>
<td>TCP/IP</td>
<td>Transmission Control Protocol/Internet Protocol</td>
</tr>
<tr>
<td>THB</td>
<td>thumbnail file</td>
</tr>
<tr>
<td>TIFF</td>
<td>tagged image file format</td>
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<tr>
<td>URL</td>
<td>universal resource locator</td>
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<tr>
<td>TRS</td>
<td>Technical Report Server</td>
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<tr>
<td>WAIS</td>
<td>Wide Area Information Server</td>
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<tr>
<td>WAN</td>
<td>wide area network</td>
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<tr>
<td>WWW</td>
<td>World Wide Web</td>
</tr>
<tr>
<td>XDOD</td>
<td>Xerox Document On Demand</td>
</tr>
</tbody>
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FTP Sites:

ARC 128.102.194.143
LeRC 139.88.70.110
LaRC tebtre.larc.nasa.gov
DFRC ftp.dfrc.nasa.gov
GSFC xdod.gsfc.nasa.gov 128.183.32.184
JPL jpl-64-mosaic
JSC 139.169.18.100
MSFC eagle.msfc.nasa.gov
KSC 128.217.62.1
CASI casi1.casi.sti.nasa.gov

A - 3
Appendix B—Phasing Schedules

Each center participating in the prototype STI EDD project has a specific set of schedules for its implementation of the technical report server. A composite schedule reflecting the integration of each center’s tasks are displayed by Figure B - 1 with supporting schedules displayed by Figures B - 2 to B - 9.

Figure B - 1  Prototype STI EDD Composite
Figure B - 2  Goddard Space Flight Center
Figure B - 3  Lewis Research Center
Figure B - 4  Ames Research Center
Figure B - 5  Langley Research Center
Figure B - 6  Center for AeroSpace Information
Figure B - 7  Jet Propulsion Laboratory
Figure B - 8  Dryden Flight Research Center
Figure B - 9  JSC/MSFC/KSC/SSC Centers and Hqts

Significant events leading up to each of the major deliverables are highlighted below:

1. FAX to team, request for network topology at each participating center 12/16/94
2. Coordination with JPL regarding inclusion in NTRS as JPLTRS 1/5 - 6/95
3. Tech Focus Group VITS, presentation by Joint STI EDD Team - status 1/23/95
4. FAX to team, request for input to joint TM 1/30/95
   a. Draft 1 - Chapters 2, 3, and 4 2/28/95
   b. Draft 2 - Chapters 2, 3, 4, and 5 3/17/95
   c. Draft 3 - Chapters 2, 3, 4, 5, and 6 4/7/95
   d. Final Working Draft - Introduction plus all chapters 5/1/95
   e. Joint Working Session at LeRC plus use of VITS 5/15/95
5. Coordination with DFRC regarding inclusion in prototype STI EDD project 1/30/95
6. Coordination with JSC regarding inclusion in prototype STI EDD project 2/3/95
7. Coordination with KSC regarding inclusion in prototype STI EDD project 2/3/95
8. Coordination with MSFC regarding inclusion in prototype STI EDD project 2/6/95
9. Coordination with SSC regarding inclusion in prototype STI EDD project 2/6/95
10. Budget memo sent to Budget Office for Code M STI EDD participation 2/13/95
11. Initiate file transfer testing between STI EDD file server sites 2/8/95
12. Fax joint plan addendum to Code M centers for their review 2/14/95
13. Initiate EDD application - Headquarters Telephone Directory 2/28/95
14. Initiate EDD application - Public Affairs Fact Sheets 3/17/95
15. Coordinate Implementation Hqtr's Telephone Directory - Code JOB-1 & JT 5/9/95
16. Presentation to ITMSC Standards and Architecture Sub-Board 6/14/95
17. STI EDD VITS - Center status 6/19/95
18. Coordination with LeRC/MSFC/JSC - NPAIS 6/27-29/95
19. Presentation to Code U, Life & Microgravity Sciences & Applications 7/12/95
20. Coordination with Code JOB-1 & JT - GPO/Covers/Elec Interface Issues 8/21/95
21. STI EDD Workshop at LeRC 8/22-8/23/95
22. Headquarters to be included as a node in the STI EDD Project 9/28/95
23. Headquarters excluded as a node in the STI EDD Project 12/95
Prototype STI EDD Composite Schedule

Figure B - 1. Prototype STI EDD Composite.

Headquarters was included as a node in the STI EDD project on September 28, 1995. Integration into the scheduling of input to the Joint TM is shown by Figure B - 9.
PROTOTYPE STI EDD PROJECT
EVALUATION AND IMPLEMENTATION TASKS
GODDARD SPACE FLIGHT CENTER

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
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</tr>
</thead>
<tbody>
<tr>
<td>Prototype STI EDD Proposal</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Initial MOU Signed By GSFC</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Joint STI EDD Project Plan</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Acquisition - Prototype STI EDD System</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LaRC Technology Transfer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation Cycle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI Office Project Review Board Approval</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>GSFC Meetings/Major Deliverables</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>NSSDC Mtg/Interim LaRC Tech Support/Interim Deliverables</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

\[ \n\] Scheduled Start/End
\[ ▼ \] Scheduled Completion

Figure B - 2. Goddard Space Flight Center.
Lewis Research Center Schedule

PROTOTYPE STI EDD PROJECT
EVALUATION AND IMPLEMENTATION TASKS
LEWIS RESEARCH CENTER

Task Descriptions

- Prototype STI EDD Proposal
- Initial MOU Signed By LeRC
- Joint STI EDD Project Plan
- Acquisition - Prototype STI EDD System
- LaRC Technology Transfer
- Evaluation Cycle
- STI Office Project Review Board Approval and EDD Project Briefings
- LeRC Meetings/Major Events

Figure B - 3. Lewis Research Center.
## Ames Research Center Schedule

### PROTOTYPE STI EDD PROJECT
**EVALUATION AND IMPLEMENTATION TASKS**
**AMES RESEARCH CENTER**

<table>
<thead>
<tr>
<th></th>
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</tr>
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<tbody>
<tr>
<td>Prototype STI EDD Proposal</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>Initial MOU Signed By ARC (Replaced by Joint Plan)</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>Joint STI EDD Project Plan</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>Acquisition - Prototype STI EDD System</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>LaRC Technology Transfer</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>Evaluation Cycle</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>STI Office Project Review Board Approval</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>ARC Meetings/Major Milestones</td>
<td>![Chart]</td>
<td>![Chart]</td>
<td>![Chart]</td>
</tr>
<tr>
<td>Preparation of Joint TM</td>
<td>![Chart]</td>
<td>![Chart]</td>
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</tr>
</tbody>
</table>

**Figure B - 4. Ames Research Center.**
PROTOTYPE STI EDD PROJECT
EVALUATION AND IMPLEMENTATION TASKS
LANGLEY RESEARCH CENTER

<table>
<thead>
<tr>
<th></th>
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<tbody>
<tr>
<td>Prototype STI EDD Proposal</td>
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</tr>
<tr>
<td>Joint STI EDD Project Plan</td>
<td></td>
<td></td>
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</tr>
<tr>
<td>LaRC Technology Transfer</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation Cycle - Implementation NTRS (LaRC/ARC/GSFC/CASI/PL/DFRC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI Office Project Review Board Approval</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>LaRC Meetings/Major Events</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Preparation of Joint TM</td>
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<td></td>
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</table>

Figure B - 5. Langley Research Center.
PROTOTYPE STI EDD PROJECT
EVALUATION AND IMPLEMENTATION TASKS
CENTER FOR AEROSPACE INFORMATION

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<tr>
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<td>Prototype STI EDD Proposal</td>
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<td>AS</td>
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<td>Joint STI EDD Project Plan</td>
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<td>AS</td>
</tr>
<tr>
<td>LaRC Technology Transfer</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
</tr>
<tr>
<td>Evaluation Cycle</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
</tr>
<tr>
<td>STI Office Project Review Board Approval</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
</tr>
<tr>
<td>CASI Meetings/Major Events</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
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<tr>
<td>Preparation of Joint TM</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
</tr>
<tr>
<td>Status Reviews (Bi-weekly Meetings)</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
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<tr>
<td>Simulation Modeling</td>
<td>AM</td>
<td>J</td>
<td>AS</td>
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Figure B - 6. Center for AeroSpace Information.
PROTOTYPE STI EDD PROJECT
EVALUATION AND IMPLEMENTATION TASKS
JET PROPULSION LABORATORY

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<tr>
<td>Statement of Work</td>
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<td>Setup Team</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Evaluation Cycle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI Office Project Review Board Approval and EDD Project Briefings</td>
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<td>JPL Meetings/Major Events</td>
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</table>

Figure B - 7. Jet Propulsion Laboratory.
## PROTOTYPE STI EDD PROJECT
### EVALUATION AND IMPLEMENTATION TASKS
#### DRYDEN FLIGHT RESEARCH CENTER

### Task Descriptions

<table>
<thead>
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<th></th>
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</thead>
<tbody>
<tr>
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<td>Statement of Work</td>
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<td>Setup Team</td>
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<tr>
<td>Evaluation Cycle</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>STI Office Project Review Board Approval and EDD Project Briefings</td>
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<tr>
<td>Public Affairs Information Series Server Implementation</td>
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<td>DFRC Meetings/Major Events</td>
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<tr>
<td>Preparation of Joint TM</td>
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<td></td>
<td></td>
</tr>
</tbody>
</table>

![Gantt Chart](image)

Figure B - 8. Dryden Flight Research Center.
### PROTOTYPE STI EDD PROJECT
---
**EVALUATION AND IMPLEMENTATION TASKS**
JSC/MSFC/KSC/SSC/HQTS

<table>
<thead>
<tr>
<th>Task Descriptions</th>
<th>1995</th>
<th>1996</th>
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</thead>
<tbody>
<tr>
<td>Initial Coordination JSC/MSFC/KSC/SSC</td>
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<td></td>
</tr>
<tr>
<td>Joint STI EDD Project Plan - Addendum</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Johnson Space Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Marshall Space Flight Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Kennedy Space Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Stennis Space Center</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Major Events/Milestones</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Headquarters Inclusion</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

- **Scheduled Start/End**
- **Scheduled Completion**
- **Slippage To Later Milestone**

---

**Figure B - 9. JSC/MSFC/KSC/SSC/HQTS.**
Appendix C—Accessing NASA Public Affairs Information Server (NPAIS)

Using Netscape for Windows

Instructions for using Netscape for Windows are provided below. The same-step by-step instructions can be used for using Netscape for the Macintosh.

Step 1 Double click on the Netscape icon in Program Manager. If you have the Netscape Home Page as your default, double click on **Net Directory**; this will give you a Home Page listing for Step 2.

Step 2 Double click on **Government**; this will give you the next Home Page listing for Step 3.

Step 3 Double click on **Agencies**; this will give you the next Home Page listing for Step 4.
Step 4 Scroll down the Home Page and double click on Independent; this will give you the next Home Page listing for Step 5.

Step 5 Double click on NASA; this will give you the next Home Page listing for Step 6.

Step 6 Double click on Dryden Flight Research Center; this will give you the next Home Page for Step 7.
Step 7 To access the NPAIS Home Page, use the following URL: http://www.dfrc.nasa.gov/PAIS; this will give the next Home Page, go to Step 8.

Step 8 Scroll down the Home Page till you can access the Dryden Flight Research Center; go to Step 9.

Step 9 Double click on Dryden Flight Research Center to access Home Page for DPAIS On Line Fact Sheets; go to Step 10.
Step 10  Scroll down the Home Page listing until you reach **Dryden Fact Sheets**; go to Step 11.

Step 11  Double click on **Dryden Fact Sheets** and go to Step 12.

Step 12  Select the fact sheet you want by double clicking on **B-52 Launch Aircraft**; go to Step 13.
Step 13 Scroll down the Home Page until you see the specific key word you desire to do further research on; go to Step 14.

Step 14 Double click on the key word X-15 to enable the execution of keyword searching against the NASA Technical Report Server; go to Step 14.

Step 15 Scroll down the Home Page to view the specific title pages that the key word found. The NTRS will list all hits by xTRSs currently available; go to Step 16.
Step 16  To obtain the abstract of the list of titles available, double click on The X-15 Airplane - Lessons Learned; go to Step 17.

Step 17  At this step, you will have the abstract which you can now print out on your local printer by double clicking on the Netscape Print Button; go to Step 18.

Step 18  Double click ok to print the abstract on your local printer. Results of the printed abstract are shown by Step 19.

At step 12, you have the functionality to print the Document Title as shown by Step 19, or to print the file in PDF or PostScript, if you have available on your PC the necessary software. Note that the size of the PDF and PostScript files are shown.
Appendix D—Creating an HTML File and Setting up an xTRS

Introduction

This appendix was created from excerpts taken from an instruction course on the "Authoring HTML Documents/Home Page," taught by Ms. Robin Dumas, Information Systems Services, Section 392, Jet Propulsion Laboratory. Requests for her instruction manual may be directed to her on e-mail at Robin.C.Dumas@jpl.nasa.gov. The following text will provide the process used in creating an html file using a Public Affairs Office Fact Sheet prepared by DFRC as an example. Before an html file can be created, it must first be converted from the word processing file format to a text file format and then html tagged. Graphics are converted to gif format. In the Public Affairs Office environment, the word processors used are Personal Computers and MacIntosh machines. Conversions are displayed by Table D - 1. Table D - 2 provides a list of HTML tags and their definition. Following Figure D - 4 are instructions on setting up an xTRS.

<table>
<thead>
<tr>
<th>Software</th>
<th>Personal Computer</th>
<th>MacIntosh</th>
</tr>
</thead>
<tbody>
<tr>
<td>PageMaker</td>
<td>Export text only, e.g., abc.txt</td>
<td></td>
</tr>
<tr>
<td>Microsoft Word</td>
<td>Save as text only, e.g., abc.txt</td>
<td></td>
</tr>
<tr>
<td>WordPerfect</td>
<td>Save as ASCI (DOS) text only, e.g., abc.txt</td>
<td></td>
</tr>
<tr>
<td>Graphics</td>
<td>Save as abc.gif file</td>
<td>Save as abc.gif file</td>
</tr>
</tbody>
</table>

Table D - 2 HTML Tags

<table>
<thead>
<tr>
<th>HTML Tag</th>
<th>What it means</th>
</tr>
</thead>
<tbody>
<tr>
<td>&lt;html&gt; &amp; &lt;/html&gt;</td>
<td>Indicates that file is an html file, where / represents ending point</td>
</tr>
<tr>
<td>&lt;title&gt; &amp; &lt;/title&gt;</td>
<td>Indicates text that will be in browser window box</td>
</tr>
<tr>
<td>&lt;body&gt; &amp; &lt;/body&gt;</td>
<td>Indicates main body of file</td>
</tr>
<tr>
<td>&lt;h#&gt; &amp; &lt;/h#&gt;</td>
<td>Indicates level of heading where # represents levels 1, 2, 3, 4, 5, or 6</td>
</tr>
<tr>
<td>&lt;p&gt;</td>
<td>Indicates paragraph break</td>
</tr>
<tr>
<td>&lt;br&gt;</td>
<td>Indicates line break (no extra space)</td>
</tr>
<tr>
<td>&lt;hr&gt;</td>
<td>Indicates horizontal rule</td>
</tr>
<tr>
<td>&lt;b&gt; &amp; &lt;/b&gt;</td>
<td>Indicates bold text</td>
</tr>
<tr>
<td>&lt;i&gt; &amp; &lt;/i&gt;</td>
<td>Indicates italic text</td>
</tr>
<tr>
<td>&lt;tt&gt; &amp; &lt;/tt&gt;</td>
<td>Indicates fixed width text</td>
</tr>
<tr>
<td>&lt;pre&gt; &amp; &lt;/pre&gt;</td>
<td>Indicates fixed width text in which tabs and line breaks are displayed in the same locations as in the source html file</td>
</tr>
<tr>
<td>&lt;blockquote&gt; &amp; &lt;/blockquote&gt;</td>
<td>Indicates indented text separated from surrounding text</td>
</tr>
<tr>
<td>&lt;address&gt; &amp; &lt;/address&gt;</td>
<td>Indicates address text at end of file</td>
</tr>
<tr>
<td>HTML Tag</td>
<td>What it means</td>
</tr>
<tr>
<td>------------------</td>
<td>-------------------------------------------------------------------------------</td>
</tr>
<tr>
<td><code>&lt;ol&gt;</code> &amp; <code>&lt;/ol&gt;</code></td>
<td>Ordered (numbered) list</td>
</tr>
<tr>
<td><code>&lt;ul&gt;</code> &amp; <code>&lt;/ul&gt;</code></td>
<td>Unnumbered list</td>
</tr>
<tr>
<td><code>&lt;li&gt;</code></td>
<td>Indicates line item of list</td>
</tr>
<tr>
<td><code>&lt;dl&gt;</code> &amp; <code>&lt;/dl&gt;</code></td>
<td>Indicates definition list</td>
</tr>
<tr>
<td><code>&lt;dt&gt;</code></td>
<td>Indicates word being defined</td>
</tr>
<tr>
<td><code>&lt;dd&gt;</code></td>
<td>Indicates text of definition</td>
</tr>
<tr>
<td><code>&lt;img src = &quot;filename&quot;&gt;</code></td>
<td>Indicates in-line image file where filename is name of file</td>
</tr>
<tr>
<td></td>
<td>Must be a .gif or .xbm file format</td>
</tr>
<tr>
<td></td>
<td>Keep under 30Kb, since larger files take longer to display</td>
</tr>
<tr>
<td><code>&lt;a href = &quot;filename&quot;&gt;link anchor&lt;/a&gt;</code></td>
<td>Indicates link to another file (.html, .tiff, .jpeg, .au, etc)</td>
</tr>
<tr>
<td></td>
<td>Where filename = name of file being linked, and</td>
</tr>
<tr>
<td></td>
<td>Link anchor = text indicating hypertext link</td>
</tr>
<tr>
<td></td>
<td>Filename must include pathname</td>
</tr>
<tr>
<td></td>
<td>Use for larger image files</td>
</tr>
<tr>
<td></td>
<td>Relative pathname Used when linking related documents which will remain in one directory or on one file server, e.g., &quot;contents.htm&quot;</td>
</tr>
<tr>
<td></td>
<td>Absolute pathname Used when linking unrelated files, or linking to another Home Page or server Must include entire pathname scheme://host.domain/path/filename where scheme = type of link, host = server, domain = where the server is known, path = directories, and filename = name of file e.g., &quot;<a href="http://techinfo.jpl.nasa.gov/sec644/authoring_html/toc.html">http://techinfo.jpl.nasa.gov/sec644/authoring_html/toc.html</a>&quot;</td>
</tr>
</tbody>
</table>

**Source Document**

The first couple of paragraphs of a Fact Sheet have been extracted and are displayed below:

HTML tagging is shown by the next section.

**F-8 Digital Fly-By-Wire Fact Sheet**

The Digital Fly-By-Wire (DFBW) concept utilizes an electronic flight control system coupled with a digital computer to replace conventional mechanical flight controls.

The first test of a DFWB system in an aircraft was in 1972 on a modified F-8 Crusader at the Dryden Flight Research Facility, Edwards, Calif. It was the forerunner of the fly-by-wire flight control systems now used on the space shuttles and on today's military and civil aircraft to make them safer, more maneuverable, and more efficient.

**Background**

In the first few decades of flight, pilots controlled aircraft through direct force -- moving control sticks and rudder pedals linked to cables and pushrods that pivoted control surfaces on the wings and tails.
HTML Tagged Document and MOSAIC Display

Figures D - 1 to D - 3 displays a fully tagged html file which includes the hyperlink to a gif file.

Removal of all tags would represent the source document in ASCII format. The ASCII format is created by saving the source document as an ASCII file from whatever Desktop word processing software was used to create the fact sheet. Explanation and use of the tags are contained in Table D - 2. Figure D - 4 displays the first page of the Fact Sheet by MOSAIC on a PC. By comparing the source document with Figure D - 1, the creation of Figure D - 4 can be accomplished. Specifically, the steps are as follows:

**F-8 Digital Fly-By-Wire Fact Sheet gives:**

```
<HTML>
<HEAD>
<TITLE>F-8 Digital Fly-By-Wire</TITLE>
</HEAD>
<BODY>
```

**Indicates start of html file**

**Indicates start point of header**

**Indicates title**

**Indicates end point of header**

**Indicates start point of main body of file**

D - 3
In the first few decades of flight, pilots controlled aircraft through direct force -- moving control sticks and rudder pedals linked to cables and pushrods that pivoted control surfaces on the wings and tails.

Fleet F-8s were the first carried based plane with speeds in excess of 1000 mph. LTV won the Collier Trophy for its design and development. Total production was 1,261.
F-8 Digital Fly-By-Wire

The Digital Fly-By-Wire (DFBW) concept utilizes an electronic flight control system coupled with a digital computer to replace conventional mechanical flight controls. The first test of a DFWB system in an aircraft was in 1972 on a modified F-8 Crusader at the Dryden Flight Research Facility, Edwards, Calif. It was the forerunner of the fly-by-wire flight control systems now used on the space shuttles and on today's military and civil aircraft to make them safer, more maneuverable, and more efficient.

Background

In the first few decades of flight, pilots controlled aircraft through direct force -- moving control sticks and rudder pedals linked to cables and pushrods that pivoted control surfaces on the wings and tails.

Figure D - 4. MOSAIC display.

Notes:

You will need to install some version of WAIS on your machine. The best version of WAIS is freeWAIS-sf:


freeWAIS-sf has a very powerful and flexible indexing mechanism. Its use is covered in Appendix A.
If you do not wish to install freeWAIS-sf, and already have another version of WAIS installed at your site, I can offer the following SunOS binaries: (the source has been lost ;)

If you use this version of waisindex, use:

```
waisindex -pos -export -t html -d xtrs_index $YEARS/*.html
```

Put your "citations + abstracts" in <b>refer</b> format.

refer format has been around for a while. On SunOS systems, you can <tt>man addbib</tt> for more information.

Sample refer citations can be viewed at: <a href="http://techreports.larc.nasa.gov/trs/examples.html">http://techreports.larc.nasa.gov/trs/examples.html</a>

A compressed tar file of all LTRS contents in refer format can be viewed at: <a href="ftp://techreports.larc.nasa.gov/.waters/waters.tar.Z">ftp://techreports.larc.nasa.gov/.waters/waters.tar.Z</a>. This is provided for reference only -- you do not have to do anything with these contents.

There is nothing magic about refer; you can use some other format if you wish. You'll be on your own though for adapting / creating filters to process other formats.

There is a Perl program to process the refer citations. This program (and its library) have binary characters in them and they must saved to disk prior to viewing them. In other words, you must save the links without actually viewing them. A copy-n-paste will not work!!!

```
unshift(@ INC,"/ump/csb/home/mlrYltrs/bin");
require("accent.pl");
```

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<p><tt>bib</tt> is very easy to use. Here are some sample invocations:</p><ul><li>To take <tt>many</tt> refer files, and convert them to <tt>many</tt> .refer.html files to be used for <tt>waisindex</tt>:</li></ul><pre><code>bib -ha -hk *.refer</code></pre><li>To take <tt>many</tt> refer files and convert them to a <tt>single</tt> .html file <tt>with abstracts</tt> for browsing</li><pre><code>bib -ha *.refer >> all-years-abs.html</code></pre><li>To take <tt>many</tt> refer files and convert them to a <tt>single</tt> .html file <tt>without abstracts (i.e. just citations)</tt> for browsing</li><pre><code>bib -h *.refer >> all-years-cit.html</code></pre><li>The source code for NTRS is available at: <a href="http://www.larc.nasa.gov/ntrs/ntrs.pl">http://www.larc.nasa.gov/ntrs/ntrs.pl</a> This is for your knowledge only; you do not have to install NTRS or use anything from this script to set up your technical report server.</li><li>A csh script that I used to maintain LTRS is in <A href="#appb">Appendix B</a>. It should help you automate maintainance for your site.</li><li>Your technical report server should support, at a minimum, 2 functionalities:</li></ul><dd>1. Searching</dd><dd>2. Browsing</dd>
Searching is the trickiest to implement, but is the part used most significantly in NTRS.

- The following may be of use to your site as well:
  - user feedback form: http://techreports.larc.nasa.gov/ntrs/feedback.pl
  - abstract entry form: http://techreports.larc.nasa.gov/ntrs/abstracts/pl
  - No promise is made about their quality, code aesthetics, or anything else. ;-)

The e-mail list for NTRS feedback and notices is:

Please e-mail m.l.nelson@larc.nasa.gov if you want on or off this list.
The current members of the list are at: http://techreports.larc.nasa.gov/ntrs/ntrs-admin.txt

The following services are being worked on:

- Parallel searching in NTRS (Ming Maa, Michael Nelson)
- Gateways with non-WAIS databases (Ming Maa, Michael Nelson, Jeff Robinson, Alberto Accomazzi)
- Fielded searches (not too much interest in this of late)
- NTRS acting as a proxy to resolve the long URL / firewall problem (Ming Maa, Michael Nelson)

For the example given below, it assumes that your HTML files are following the correct HTML 2.0 specifications and have the following tags (white space and case are not important):

```html
<It HTML>
<It HEAD>
<It TITLE>...
</It TITLE>
</It HEAD>
<It BODY>
```

freeWAIS-sf does not support the <tt>waistindex ... -t html ...</tt> construct. Instead, it has the concept of a *format* file, where the user builds the description of how the files should be indexed. It is useful for all types of files, not just HTML files. This format file is also how fielded searches would be added if you are ready to take that step.
&lt;lt/BODY&gt;
&lt;lt/HTML&gt;

&lt;/pre&gt;
&lt;hr&gt;
&lt;p&gt;
&lt;tt&gt;waisindex&lt;/tt&gt; would then be invoked like:

&lt;p&gt;&lt;img src="http://www.larc.nasa.gov/images/top_divider.xbm"&gt;&lt;p&gt;
&lt;code&gt;
  waisindex -pos -export -T HTML -t fields -d xtrs_index $YEARS/*.html
&lt;/code&gt;
&lt;p&gt;&lt;img src="http://www.larc.nasa.gov/images/bottom_divider.xbm"&gt;
&lt;p&gt;
This assumes the existence of a file &lt;tt&gt;xtrs_index.fmt&lt;/tt&gt;. This format file would look something like:

&lt;/p&gt;
&lt;hr&gt;
&lt;pre&gt;
  &lt;lt/record-end&gt; /&lt;lt/BODY&gt;&lt;lt/HTML&gt;&lt;/&gt;

  &lt;lt/layout&gt;
  &lt;lt/headline&gt;/&lt;lt/TITLE&gt;&lt;/&lt;lt/TITLE&gt; /&lt;lt/TITLE&gt; 80 /&lt;lt/TITLE&gt;
  &lt;lt/end&gt;

  &lt;lt/field&gt;/&lt;lt/HTML&gt;
  stemming TEXT GLOBAL
  &lt;lt/end&gt;/&lt;lt/BODY&gt;&lt;/&gt;

&lt;/pre&gt;
&lt;hr&gt;
&lt;p&gt;
You will need a separate format (.fmt) file for each database you index. This file tells &lt;tt&gt;waisindex&lt;/tt&gt; to use the string between the &lt;lt/TITLE&gt;&lt;/&lt;lt/TITLE&gt; tags as the string for the headline. The headline is the list of "titles" that one sees immediately upon doing a WAIS search. The "80" in this line indicates to only use the first 80 characters. The format file also tells &lt;tt&gt; waisindex&lt;/tt&gt; to index everything between the &lt;lt/HTML&gt;&lt;/&gt; tag and either one of the tags: &lt;lt/HTML&gt; or &lt;lt/BODY&gt;.

&lt;/p&gt;
&lt;hr&gt;
&lt;p&gt;

&lt;/p&gt;
&lt;a name="appb"&gt;&lt;/a&gt;
&lt;h2&gt;Appendix B: A Sample Script for xTRS Maintainence&lt;/h2&gt;
&lt;hr&gt;

&lt;/pre&gt;
#!/bin/csh -x
# Update abstract lists, WAIS indexes

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set REFER_ROOT=/ump/csb/home/mln/reports/refer
set WAIS_ROOT=/usr/local/wais/wais-sources
set WAIS_TMP=$WAIS_ROOT/wais_tmp
set LTRS_HTML_ROOT=/ump/csb/home/mln/http/lttrs

foreach year ($argv[*])
    cd $REFER_ROOT/$year
    bib -ha -hk *.refer
    cd $LTRS_HTML_ROOT
    bib -ha ../reports/refer/$year/*.refer > new.19$year.html && mv new.19$year.html 19$year.html
    bib -h ../reports/refer/$year/*.refer > new.19$year-cit.html && mv new.19$year-cit.html 19$year-cit.html
end

cd $LTRS_HTML_ROOT
bib -ha ~/reports/refer/??/*.refer > new.abs.html && mv new.abs.html abs.html
bib -h ~/reports/refer/??/*.refer > new.cit.html && mv new.cit.html cit.html

# # update WAIS indexes
# # builds the indexes in a temporary directory, then copies them overtop of
# the existing indexes to minimize service interruption
# # does not try to do incremental builds

cd $WAIS_TMP
/ump/csb/home/mln/lttrs/bin/waisindex -pos -export -t html -d ltrs_index ../reports/refer/??/*.html
mv ltrs_index.* ..

# # final updates
# # (generates the waters tar file)

cd
(cd ../reports/refer ; make-waters )

</pre>

<hr>
<p>
<hr>
<p>
<A HREF = "http://www.larc.nasa.gov/larc.html"> <IMG SRC="http://www.larc.nasa.gov/images/75small.gif">LaRC Home Page </A>


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**Title**


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**Abstract**

This evaluation report contains an introduction, seven chapters, and five appendices. The Introduction describes the purpose, conceptual framework, functional description, and technical report server of the STI Electronic Document Distribution (EDD) project. Chapter 1 documents the results of the prototype STI EDD in actual operation. Chapter 2 documents each NASA center's post processing publication processes. Chapter 3 documents each center's STI software, hardware, and communications configurations. Chapter 7 documents STI EDD policy, practices, and procedures. The appendices, which are contained in Part II of this document, consist of A) STI EDD Project Plan, B) Team members, C) Phasing Schedules, D) Accessing On-line Reports, and E) Creating an HTML File and Setting Up an xTR. In summary, Stage 4 of the NASAwide Electronic Publishing System is the final phase of its implementation through the prototyping and gradual integration of each NASA center's electronic printing systems, desktop publishing systems, and technical report servers to be able to provide to NASA's engineers, researchers, scientists, and external users the widest practicable and appropriate dissemination of information concerning its activities and the result thereof to their work stations.

**Subject Terms**

Electronic publishing; Duplicating; Cost analysis; FTP; Network duplicating; Cost benefit analysis; Return on investment; Justification

**DISTRIBUTION / AVAILABILITY STATEMENT**

Unclassified - Unlimited

Subject Category 82

Availability: NASA CASI (301) 621-0390.