Music

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Archive Set

Stanford Linear Accelerator Center
SLAC Library
(415) 926-2411

Memorandum

To::	ADCC
From:	Web Coordinating Committee, Pat Kreitz
Subject:	Proposed Web Support Coordinators (WSC's)
Date:	6/20/96

Mission:

- Provide divisional/group Web technical assistance and management
- Guide and support Web authors and users
- Manage group AFS space
- Implement security and other policy measures
- Work closely with appropriate Web Coord. Ctte. representative to ensure:
  Web space and information are organized to meet the group's/division's needs
  local Web practice conforms to Lab/division/group policies and procedures
  needs are communicated to appropriate groups
- Form steering committee for SLAC's Web User Group (SWUG)

Reports to:

- Web Coordinating Committee
- WSC Chair will be an *ex officio* member of Web Coord. Ctte.

Composition & Structure:

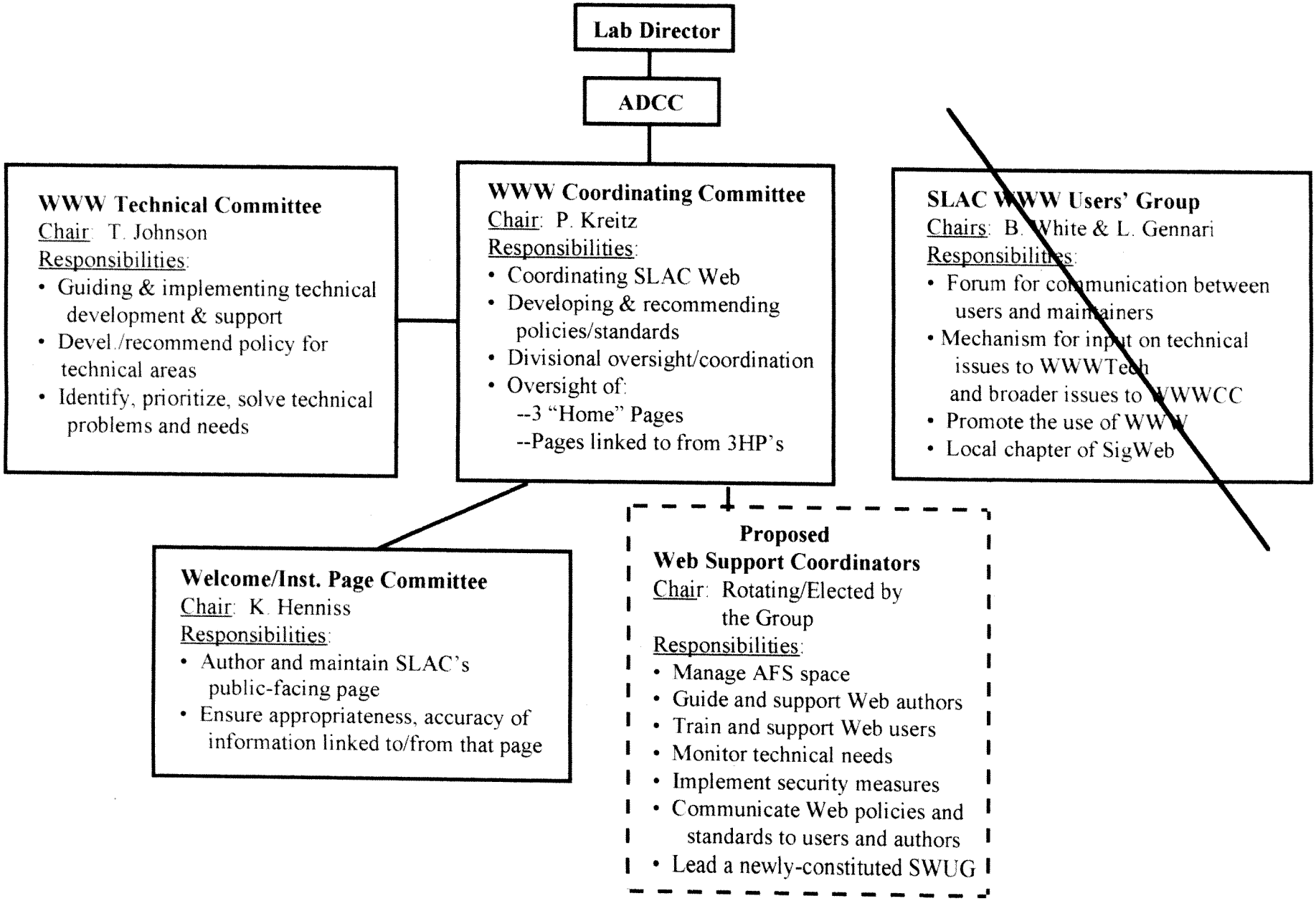
1. Each Web Coordinating Committee member will work with the appropriate Associate Director to identify and appoint the Web Support Coordinators for that division.
2. To aid this group in getting organized, Sharon Minton, from the Web Coord. Ctte., will serve as the interim, three-month, WSC Chair.
3. The WSC will assume responsibility for a Web User Group (formerly SWUG co-chaired by Laurie Gennari and Bebo White).

Action Needed:

1. **Approve Web Support Coordinators.**

2. **Working with your Web Coordinating Committee member, AD's formally appoint their Division's WSCs.**

Proposed Web Management (6/20/96)



P. Kreitz - Version: 5/13/96

Stanford Linear Accelerator Center
SLAC Technical Information Services
SLAC Library
(415) 926-2411

Memorandum

To: ADCC
From: Web Coordinating Committee, Pat Kreitz
Subject: Web Support Coordinators: Potential Membership List
Date: 6/20/96

Web Coordinating Committee: Membership:

Pat Kreitz (Chair)
Andrea Chan, PEPII-BaBar
Les Cottrell, SCS
Kathryn Henniss, Directorate Alternate
Tony Johnson, WTech. Chair, *ex officio*
Ruth McDunn, ES&H
Sharon Minton, BSD
P.A. Moore, Directorate
David Whittum, Technical Division
Stephane Willocq, SLUO & Exp. Grps.

Web Support Coordinators: Potential Membership List:

BSD
Sharon Minton
Sarah Jones

Directorate
Kathryn Henniss
Diana Gregory

ES&H
Ruth McDunn

PEPII/BaBar
Tanya Boysen
Andrea Chan
Steve Meyer

Research Div.
Sharon Jensen TH
Laurie Gennari TP
Harv Galic LI
Charlie Young EA
Jochen Swiening EB
Lilian DePorcel EB
Tom Glanzman EC, BaBar
Perry Anthony EFD
Christian Bula EI
Andrew Lee EK
Sayana Shabad EK
Karen Heidenreich SLD
Joe Perl SLD
Les Cottrell SCS
George Crane SCS
Ilse Vinson SCS
Bebo White SCS
Joan Winters SCS

SSRL
Lisa Dunn
Alan Winston
Heinz-Dieter Nuhn

Technical Div.
David Whittum TSP
Tor Raubenheimer TSP
Bob Boeninger MD
Barry Prentiss MD
Rob Richards MD
Gregory Sherwin CD
Cheryl Hultquist AD

Stanford Linear Accelerator Center
SLAC Library
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Memorandum

To: ADCoC
From: Pat Kreitz
Subject: **Individual Home Pages DRAFT Policy**
Date: 4/16/96

DRAFT SLAC WWW Individual Home Page Policy

Individual home pages on SLAC servers represent the SLAC Laboratory as well as the individual. They are communications which must comply with the "appropriate use" requirements found in federal law and in provisions of SLAC's contract pertaining to the proper use, protection, accountability and disposition of government property. The individual in developing his/her home page must use these government-owned information technologies only in support of his/her official duties because, as the existing policy states: "SLAC information resources and networks may only be used for work related to SLAC". In order to assure all relevant parties that no misuse of resources occurs, SLAC reserves the right to sample file contents at any time.

The individual home pages on SLAC servers should be considered professional home pages and the content must be limited to information regarding the person's professional life and activities at SLAC. This may include information about locating the person, anything that might normally appear in a professional resume, a description of the SLAC relevant activities, documents (including text, pictures, sounds and multimedia) relevant to SLAC activities subject to appropriate approvals required by patent and copyright agreements and any other organizational approvals (such as experimental data publication policies) which may exist. The pages may also be required to have certain style and content such as the owner's name and e-mail address. These elements will be determined by the SLAC WWW policy committee.

Links in SLAC individual home pages must be limited to other SLAC pages which comply with this policy and non-SLAC links which are relevant to SLAC activities or other subjects which would normally appear on a professional resume.


SLAC Web Security Policies

Last Update: April 15, 1996

Why do Users have to Worry about Web Security?

By its nature the pages on the World Wide Web are highly visible to people all over the world including, unfortunately, a small minority of Internet users who might be tempted to exploit the Web to gain unathorized access to SLAC computers or information. The Web has developed very rapidly and partly as a result of this there have been many well publicised cases of security problems with Web browser and server software. Even commercially developed Web software has been prone to serious security problems.

By exploiting such weaknesses, or by exploiting weaknesses in software developed at SLAC and used with the Web, or by exploiting misconfigured Web server or client software at SLAC, it could be possible for someone on the Internet to gain unauthorized access to SLAC computers and/or to information stored on SLAC's computers. In the worst case this could result in destruction of information stored on SLAC's computers, or even damage to apparatus controlled by these computers.

Government laboratories such as SLAC have proven to be tempting targets for hackers. In 1995 an intrusion into SLAC's network from the Internet resulted in SLAC having to sever its connection to the Internet for several days, inconveniencing many remote collaborators who were prevented from performing their normal work at SLAC. In addition considerable manpower had to be expended checking for and removing effects of the break-in and beefing up security to prevent similar intrusions in the future. Although this attack was probably not performed using the Web, and we have so far seen no evidence of attempted break-in via the Web, it is to everyone's benefit to take reasonable precautions to prevent such intrusions taking place in the future.

In order to reduce the potential for such break-ins SCS staff monitor security related news groups and official security advisories (CERT) and take steps to prevent the exploitation of known security holes. Due to the widely distributed nature of the Web it is necessary for all Web users, and particularly Web page or cgi-script authors, to be aware of the security problems inherent in the Web, and to take appropriate steps to prevent security breaches.

The policies described below have been developed to minimize the exposure to Web breakins with an acceptable expenditure of effort/resources, while maintaining an environment in which the tremendous potential of the Web can be effectively exploited by SLAC groups. It must be understood that there is an implicit conflict between the requirements of security, the desire to exploit this new technology for SLAC's research and adminstrative needs, and limited manpower. Even with the implementation of the policies described here it is not possible to assure 100% the security of SLAC's Web environment. The level of security described here is thought to be adequate for most of SLAC's current requirements, however it is not adequate for applications which may affect personnel safety or for secure personnel records.

Policies

Servers

In order to provide reasonable security and server reliability and availability, we recommend that:

- SLAC provides a well maintained central Web server for use by all groups at SLAC. This should minimize the demand for multiple servers.
- Requirements for additional Web servers should be documented and brought to the WWW-Tech for discussion and approval if appropriate. Guidelines for appropriateness will need to be worked out based on experience.
- No new Web servers should be set up at SLAC without review and approval by the WWW-Tech and/or some higher authority.
- Any SLAC authorized Web server will be dedicated to the Web server task and maintained by staff who will:
    - keep current with security patches, evaluate and expeditiously apply as appropriate;
    - keep the operating system at a level supported by the vendor;
    - upgrade (server and application software and hardware) and provide capacity planning;
    - ensure the administrator of the server, or a designate, will be available during working hours to resolve problems;
    - keep and make available a current list of phone numbers where administrators or designates may be reached in a critical situation outside normal hours;
    - provide high availability;
    - provide users with the ability to audit use via logs and monitor exceptions;
    - provide backup of data
    - provide backout procedures for installations of new software or configurations;
    - properly restrict access to information;
    - regularly attend the WWW-Tech meetings and provide updates on progress and problems as well as new software functions available.
- As part of the management of the central server the the following will be provided:
    - an automated indexing facility and user search tool for the SLAC Web pages;
    - a simple way for users to designate that Web pages are to be available to only SLAC nodes;
    - evaluation of new servers and functions (e.g. replication) and recommendations for use as appropriate.

CGI Scripts

WWW CGI (Common Gateway Interface) scripts run as an extension of the Web server and thus have the same access rights to hosts/file/network resources that the server has. Such scripts can thus cause damage (such as gain unauthorized access or deny service) if the script is not carefully written. Problems can be either inadvertent -- aka, bugs -- or deliberate if the script has flaws that allow it to be subverted by a remote user/cracker. Experience has shown that most initial versions of CGI scripts written at SLAC have contained security holes. We therefore:

- restrict installation of CGI scripts to authorized installers (installers will be authorized by SCS for the central server);
- recommend that people use existing CGI scripts with good security pedigrees.

Some support for user-written CGI scripts is provided including:

- a documented simple wrapper which facilitates testing and applies some simple security checks;
- keeping track of CGI script ownership;
- documentation on how to reduce security exposures for CGI scripts, which is required reading for new CGI script authors.

Should more support be requested, or if there is disagreement as to the importance of the expressed need, then the user will need to document the requirements and bring them to the WWW-CC.

Clients

Note that at the moment these policies do not address client-side security problems such as those associated with Java and Javascript.

From Style Cttee.

Summary of Recommended Elements for All SLAC WWW Pages

The SLAC WWW Style Committee recommended a minimal set of page elements be present on pages in the SLAC Web to ensure a modicum of informational consistency.

This page provides a quick summary of the recommended elements and their scope of applicability. For more discussion, the reader is directed to the WWW Style Committee's May 15, 1995 report, which may be found at:

`http://www.slac.stanford.edu/slac/www/wwwtech/wwwstyle/report.html`

Date

Every SLAC WWW page should have a date. The date may appear at top or the bottom of the page, may be a modification date or creation date. Having a date provides users some context in which to evaluate the information on a page. For this reason, many people prefer to put the last-modified date at the top of their pages.

Owner

Every SLAC WWW page should have an owner. The owner is the person who assumes responsibility for the maintenance of the page, and is a point of contact for information or for reporting technical problems (like broken links) on a page. By convention, page owner information usually appears at the bottom of the page (often in italics) and should appear as an anchor to "`/owner/<userid>`".

Titles/Headers

Every HTML page should have a `<title>` tag. It is recommended that the titling information in the first `<h1>` on the page (or in the titling graphic) be consistent with the text in the `<title>`. Providing users with titling information in a prominent way at the top of each page provides essential and immediate context for the information contained on that page.

Institutional Identifiers

Every SLAC WWW page should have an "institutional identifier." This may be a text or graphical button, and should be a link to the home page of the sponsoring organization. Many pages at SLAC thus would have either the word "SLAC" or a button version of the SLAC Home Page graphic as a link to one of the SLAC core pages. For pages that are created as part of a large collaboration like SLD, the institutional identifier may be a link to the SLD Home Page, which in turn links to one of the SLAC core pages.

Legal Information

Only the central SLAC *home* pages need have a link to the SLAC Disclaimer.[1] If a page has a proper institutional identifier (see above), then it is never more than one link away from a page which points to the disclaimer.

---

1. This has been verified with SLAC legal counsel.

WWW Style Committee Report

May 15, 1995 SLAC

To: WWW Technical Committee
From:
WWW Style Committee -- P.A. Moore, Chair
Re: Recommendations for style of SLAC Web pages

This report was endorsed by the SLAC WWW Technical Committee, May 31, 1995.

Background and Introduction

The WWW Style Committee was created as an *ad hoc* committee by WWW Technical Committee to explore a number of stylistic issues raised about SLAC's institutional presence on the Web, and to recommend some general guidelines regarding present and future page design at SLAC. The original charge to the group solicited recommendations for (a) required elements (including some kind of institutional identification) for Web pages at SLAC, and (b) the structure of SLAC's home page and related pages.

Members of the committee are chair, P.A. Moore (`xanadu@slac.stanford.edu`), Karen Heidenreich (`karen@slac.stanford.edu`), Kathryn Henniss (`henniss@slac.stanford.edu`), Judy Nowag (`jbn@slac.stanford.edu`), and Joan Winters (`winters@slac.stanford.edu`).

The committee met over a four-month period (February through May, 1995), during which time the members reviewed numerous Web documents. The Committee also received input from other members of the SLAC community involved with the Web, which was taken into consideration in drafting this report.

This report outlines the recommendations of the WWW Style Committee, as follows:

Part 1:
Overview and Operational Definitions
Part 2:
Recommended Page Elements
Part 3:
A Model for the SLAC Laboratory Core Pages

Part 4:
Further Issues

This document's URL is
`http://www.slac.stanford.edu/slac/www/wwwtech/wwwstyle/report.html`.

Part 1: Overview

It is recognized that the Web has been a part of communications technology and publishing for the past two years and that much has changed in that short a time. Much more is likely to change in the next few years as well. The recommendations listed below form a snapshot of current opinion, and are subject to review in the future to test their validity and may be modified based on new developments.

The Committee recognized from the outset an implicit tension between:

1. Creating an attractive and consistent look-and-feel as well as promoting informational consistency for the site's Web pages, and
2. Giving page authors wide latitude in organizing their pages in a way that best suits the needs and tastes of their groups.

The Committee's recommendations have been made with the intention of promoting some degree of *informational* consistency for Web pages at SLAC, while avoiding extensive recommendations regarding consistency of *format*. While the absence of strong format requirements will undoubtedly result in a less uniform look to SLAC's Web space, the Committee felt strongly that the need for *informational consistency* outweighed the need for *format consistency*, which in any event would involve the imposition of stylistic requirements that many groups would resist, as input from several people the Committee consulted has indicated. Furthermore, we are sensitive to the fact that a number of page authors volunteer their time.

The following recommendations are therefore intended to promote a basic level of informational consistency across all SLAC Web pages, while allowing for considerable departmental and individual differences in page layout.

Operational Definitions

The following definitions are used in this document:

Web page

An HTML file viewable on the World Wide Web (WWW).

SLAC Web page

A Web page that lives on a SLAC computer. While broadly construed this term would include "personal" pages served from SLAC computers, the Committee's recommendations do *not* extend to such pages. In fact, the issue of personal pages is one that the Committee determined to be important, but beyond the scope of the WWW Style Committee's charge.

home page

A page which constitutes an intentional entry point into a group/department/institution/collaboration's page space on the Web.

institutional page

A brochure-like page containing high-level descriptive information about an organization.

core pages

A primary group of pages, including home and institutional pages which provide intentional entry points into the Web space of an organization (= group, department, institution, or collaboration). The SLAC laboratory core pages reflect the three-page model described below. Other organizational schemes do exist for core pages, *e.g.*, SLD's two-page model.

owner

The individual(s) responsible for providing and maintaining information on a page. This will usually be the person or people who implement(s) the page, but in some cases the owner and the person who generates the HTML file may be distinct. Multiple owners as well as primary/secondary owners may be appropriate.

Part 2: Recommended Page Elements

The following elements are recommended for SLAC Web pages:

- owner
- titles/headers
- date
- institutional identifier(s)
- legal information

The scope of each recommended element is addressed in the discussion of each element, followed by a brief summary of the recommended elements and their applicability.

Owner

The Committee most strongly recommends that SLAC Web pages indicate the pages' *owners* (see Operational Definitions above). Including this information provides a point of contact for readers who may have feedback about the page. As well, it ensure a mechanism for professional accountability regarding the pages' currency and/or appropriateness. The page owners are also the people who should be contacted for fixing broken links.

According to emerging Web style conventions, the owner information usually appears at the bottom of the page, often in an `<address>` tag.

At SLAC, we recommend that page owners use the `/owner` script (or some functional equivalent) for displaying this information. The SLAC `/owner` script, the syntax of which may be found by viewing the source for the SLAC Template Page, displays information about the individual (phone number, email address, office location, and mail stop) drawn from a centrally maintained database, currently **binlist**.

Use of the SLAC `/owner` script also provides a mechanism for identifying all page owners at SLAC for the purposes of disseminating information relating to page ownership, responsibility, and broken links.

Titles/Headers

As part of good HTML practice, every Web page should have a <title>. A page's `<title>` and the titling text in its header material should be consistent. The titling information on the page may appear in a prominent graphic element like a banner or in the first `<h1>` tag.

Date

The WWW Style Committee recommends that all pages bear a *date*. Having a date on a page provides readers with an idea of the currency of the information. For this reason, many Web page authors prefer to put the date at or near the top of the page, as a way of informing the reader right away whether the information has been changed recently. In other cases (as with some search forms), page authors may prefer to put the date at the bottom of the page, to minimize the amount of "header" information preceding the page's content.

In cases of pages which display information drawn from a dynamic database, it may be useful for page authors to distinguish between:

- the date that the page was created, and

- the date that the database was last updated.

The Style Committee makes no recommendation about the location of the date, or whether the date on a page is a modification date (e.g., "Last updated 8 May 1995") or a creation date (e.g., "Created 1 January 1995"), but encourages all page authors to include some kind of date information somewhere on their pages.

Institutional Identifier(s)

Institutional identifiers, which may be graphical or textual, provide readers with context for the information on the page. When the institutional identifier is also a hypertext link, it provides an additional navigational tool for the reader.

The Committee recommends that an icon or the word "SLAC" be used on every SLAC home page as a link to the SLAC Institutional Page. In addition, the Committee recommends that the word "SLAC" appear in the title of each home page at SLAC (e.g., "SLAC Technical Publications Department" or "SLAC Environment, Safety, and Health Division"). Including "SLAC" in a home page's title not only provides institutional context for the page's information, but it also aids in information retrieval when automated indexing tools are used.

While for the home pages of most groups within SLAC (like the Technical Publications Department or the ES&H Division) it makes sense to have "SLAC" in the title, for larger collaborations involving many institutions like BaBar or SLD, the appropriateness of "SLAC" in providing context for the page's information is less clear. The Committee's recommendation is correspondingly relaxed in these cases. However, when such home pages reside on servers owned and maintained by SLAC, the Committee considers it appropriate for there to be a link to one of the SLAC core pages (see discussion of SLAC core pages below) somewhere on the page. An icon or text element pointing to one of the SLAC core pages is sufficient. This link back into SLAC Web space ensures access to the SLAC disclaimer (see next section).

Legal Information

Legal information such as disclaimers, privacy statements, and/or copyright are a part of doing business as a DOE facility, consequently, a link to the standard SLAC disclaimer shall appear on each of the two SLAC home pages (see discussion of the model for SLAC core pages below) only. See the preceding paragraph for discussion of how accessibility to this information is obtained.

Recommended Elements: Summary

In summary, **all** SLAC Web pages should have owner, date, and an institutional identifier. Title and header information should be consistent. For all SLAC **home** pages (except for those of large groups/collaborations), the institutional identifier should be "SLAC" (or some graphic equivalent), and the title of the page should contain the word "SLAC". For the home pages of large groups/collaborations, the page's title need not include the word "SLAC" but a link back to one of the SLAC core pages is strongly recommended. Both SLAC home pages (see discussion below) should in addition have a link to the standard disclaimer.

Regarding page style, we do recommend that page authors consult other page owners and Web experts at SLAC. Many HTML style guides exist, both online and in print, and the Committee further encourages page authors to consult such documents. (An annotated bibliography of online HTML Style Guides is being prepared, and will be ready for the SLAC Web community sometime in June.)

Though it contains no information on the medium of hypertext, *The Chicago Manual of Style* is recommended as a resource for issues regarding standard English usage and punctuation.

Part 3: A Model for the SLAC Laboratory Core Pages

We recommend a three-page model for the SLAC laboratory core pages, as described below.

The core pages at SLAC shall consist of (1) an institutional, or "brochure" page, and a pair of working home pages: (2) a "sparse" home page and (3) a "dense" home page (see diagram).

The "Institutional Page" contains general information considered to be primarily of interest to visitors to SLAC WWW space, while the home pages provide information that is more oriented towards SLAC users, although it is recognized that there may be considerable overlap between these two broadly defined user categories. Since the Institutional Page creates SLAC's most public-oriented presence on the Web, it is appropriate for this page to contain more graphics than the two working home pages.

The "Sparse Home Page" (and its related pages) will function like a top-level, generalized table of contents to SLAC WWW space, while the "Dense Home Page" is a more exhaustive, index-like reference page. The current production SLAC Home Page is an

example of a "dense" home page.

The proposed sparse page would consist primarily of the first- or first- and some second-level headings from the dense home page, which in turn link to separate HTML pages containing all the links under that heading on the dense page. In its simplest realization, the dense home page would be a concatenation of all of the pages directly linked from the sparse home page, though the Style Committee is still working on enriching this aspect of the model.

The evolution of the dual home-page scheme is a response to user feedback indicating that there are legitimate preferences for each type of access to SLAC's rich information space.

Experienced Web users can set their browsers to default to whichever of the three core pages best suits their needs.

It remains to be decided which of the three SLAC core pages (institutional, sparse home page, or dense home page) should be designated to come up in response to the request **http://www.slac.stanford.edu/**. The questions are, do we

- accommodate the SLAC user and therefore have the default URL (http://www.slac.stanford.edu/) present the sparse or dense page, with prominent links to the institutional page and the other home page, or do we
- accommodate the "general web user" and have the default URL present the more general institutional page first, with prominent links to both the sparse and the dense home pages, which are more oriented towards members of the SLAC community?

Until the three-page model is fully implemented, the Style Committee leaves open the question of which page should come up as the default.

Part 4: Further Issues

As mentioned in the Introduction, the WWW Style Committee has intentionally kept the extent of its recommendations narrow, choosing to offer a few simple and focused suggestions that are both easy to implement and compatible with a wide variety of page designs, in keeping with the preferences of the SLAC community.

Due to the conditions of the charge and constraints of time, this report makes no recommendations on the following topics:

- menu bars
- page length
- tables of contents
- differences between Web *pages* and Web *documents* (the latter referring to materials converted to online formats from a printed source)

In spite of a healthy aversion to unnecessary bureaucracy, which was voiced by several members of the SLAC Web community in responses to the earlier draft version of this report, *and which members of the Style Committee share*, we nonetheless recommend that a small, representative group of people be appointed by the Associate Director of the Research Division, to serve as a Web Policy Group. Those chosen should represent as many different groups from the lab as possible. Each person selected should have more than a passing familiarity with the Web.

The purpose of such a group would be to set policy on matters like personal pages and privacy on the SLAC Web, authorization to set up servers, and responsibility for server maintenance, as well as to appoint subgroups to address special issues as they arise.

Some members of the WWW Style Committee will continue to meet during summer of 1995 to develop and implement the three-page model for SLAC core pages, and to deal with residual issues not covered in this report (e.g., menu bars). Subsequently, the WWW Style Committee will reconvene on an as-needed basis, as new issues arise. People who wish to comment on style issues are encouraged to do so by sending email to **www-l**, by posting messages to **slac.www.general**, and/or by attending meetings of the SLAC WWW Users Group (SWUG).

[Go Back to the Top]

Last updated Thursday, June 22, 1995

Henniss

Stanford Linear Accelerator Laboratory
SLAC Laboratory Library
(415) 926-2411

Memorandum

To: Chuck Dickens
From: WWW Technical Committee
Subject: Recommendations for WWW support
Date: 10/5/94

ASJ, [illegible]

The WWW Wizards, an ad hoc Web implementation group at SLAC has been asked to identify the resources which would be needed to formally support WWW within SCS and to integrate it into the Laboratory's future computing environment.

There are currently a number of technical tasks that must be successfully addressed to ensure that the basic software and hardware required for successful performance of WWW at SLAC are in place. The tasks, schedule, and requirements detailed below will ensure, among other results, that user delays will be reduced, interface and compatibility problems (to the extent possible) will be minimized, and that software used is upgraded to the latest versions. However, the technical timeline below is dependent on the UNIX server, described below, and so the date on which the timeline starts is the effective operating date of that server.

We have also included a brief synopsis of some of the more administrative support activities that are ongoing and listed some of the tasks or issues that should be addressed in the future.

I. Hardware & Software Support:

A. Future support of WWW on VM should be limited to:

- Migration of most WWW support from VM to UNIX is detailed in the technical tasks timeline below.
- For the near-term (at least 2 years), some WWW support will need to remain on VM to provide access to critical information, such as the Library databases on SPIRES. As the Library's VM migration plan progresses, we will know what VM support will be required beyond the next two years.
- The Web is developing fast and although those developments might allow us to plan a move from VM, some continued re-upgrading of SPIRES/VM will have to continue (again, for possibly the next two years).

B. Hardware and software requirements for a UNIX WWW server include:

- A draft Purchase Requisition (#28551F) has been prepared which includes the recommended hardware for a stand-alone, production WWW server on UNIX. This PR specifies a CU-55-85-32-P46 SPARC server 5 model 85 with 32 MB memory and one 1.05 GB internal SCSI-2 hard disk. It is recommended that processing of this PR and the subsequent delivery and installation of the machine be expedited.
- Because the Web is growing so fast and SLAC is planning on using it as a common communication vehicle, there will be a need for more disk space and possibly more servers within a year. A program should be put in place for monitoring and upgrading the hardware and software.

- This server will be configured with the latest version of the CERN HTTPD server code and other necessary software products necessary to support SLAC service (e.g., "getstats" for log file processing; file icon libraries; cgi script support libraries, etc).

C. Technical Tasks Workplan & Schedule:

This section presents the timelines and goals for moving the WWW service from its current home on SLACVM to UNIX. Currently there are an average of 6 FTE meeting for 2 hours per week to plan and administer this implementation.

These timelines have been developed by the WWW technical committee to address the following concerns:

1) The manpower available for this project is timeshared with other more formal responsibilities and consequently limited and not necessarily available at the precise time it is needed. We have therefore designed a migration path that parallelizes (as opposed to paralyses) as much of the tasks as possible to minimize delays.

2) The current VM server is very heavily used, and it will take a considerable time to contact all the remote sites that have links to our pages and get them to update their links. The reliability of these services reflects on SLAC and therefore we have designed a migration path that aims to retain as reliable a service as possible during the transition time.

3) Our WWW service is one of the oldest in the world and has expanded wildly beyond the expectations of its original implementors. Rapid advances in WWW technology coupled with a local policy that prevents staff from spending time improving VM services have prevented us from keeping the VM server at an acceptable level which would allow it to respond to this increased demand. Our WWW VM server response rate is so slow that outside users are turning to alternative information sources rather than using, for example, HEP at SLAC through our Web interface. As part of the migration scheme to UNIX, we plan to reorganize the files accessible from the server to ensure future maintainability.

4) Currently there are no plans to move the SPIRES service off of VM. Consequently as part of the migration off of VM we need to put some effort into interfacing reliably to the VM SPIRES. We foresee a need for modest continued support of the SPIRES-WWW interface on VM as long as SPIRES remains there. This effort should be viewed as part of the effort required to migrate users off of VM.

5). The migration we have planned consists of the following phases and is dependent upon more FTE being assigned to these efforts. As problems identified below are resolved, choices will be made that might change the timeline.

Phase 0 (Now)

- Most documents served and maintained on SLACVM.
- Problems: VM server is unreliable, slow (single threaded), not HTTP/1.0, VM going away (eventually).

Phase 0.25: (Timescale 1 week/40 manhours)

- Install new CERN VM server on VM. This server has limited HTTP/1.0 support and has been running in test mode at SLAC for sometime. It is believed to fix the "truncated page" problem encountered by users of Mac Mosaic when accessing the SLAC pages.

Phase 0.5: (Timescale 6 weeks /50 manhours)

• Install REXX VM server being developed for SLD. This server will give full HTTP/1.0 compliance, and provide the automatic "redirection" services required for implementation of the remaining program.

Phase 1: (Timescale - 3 months from start date (date on which UNIX server is installed & running)/300 manhours)

- UNIX server installed, configured, tested and running (80 manhours)
- Plan new URL scheme for long term use (80 manhours)
- Proxy support established (40 manhours)
- Most documents served from VM.
- ALL documents also available from UNIX server, as follows:

Document Type	*How Served*
SPIRES	Served from UNIX via a new TCP/IP-QSPIRES gateway (See single-threading problem below in bullet 2)
Other SLAC pages	Served from UNIX using CERN-proxy support, actually fetched (transparently) from VM

- This scheme gives us a transition period when documents are available from both UNIX and VM, during which time we can persuade external sites to update their links and begin the process of migrating the documents from VM to UNIX.
- To do this we will use the CERN proxy support provided by the CERN server that will already be installed on the UNIX server. For reliable SPIRES support, our current best conclusion is that we will have to develop a TCP/IP-QSPIRES interface that will run on UNIX and fetch the information from SPIRES on VM. This will enable us to provide "multi-threaded" access to the SPIRES database, which is the only way to reliably handle the volume of traffic we are seeing. However, some time will need to be found in advance to study this single-threading problem. (100 manhours)
- Begin process of persuading people to change their links to point to UNIX server. In addition to t he traditional methods of page link notification, we will actively seek out webmasters at remote sites and ask them to update their links to point to the new UNIX server.

Phase 2: (Timescale - 6 months from start date/426 manhours)

- Migrate documents (and their maintenance) from VM to UNIX. The move will be transparent to end users but will involve a substantial amount of work moving the pages and redoing the links. (250 manhours)
- A change management system must be designed and implemented before documents are migrated to UNIX to ensure an orderly migration and future maintainability. (40 - 120 manhours depending on system chosen--80 used as est.)
- As documents are moved, the UNIX server will be reconfigured to serve them directly (as opposed to via proxy), and the VM server will be programmed to use the "redirect" feature to forward document requests to UNIX. (16 manhours)
- Provide assistance to cluster page owners to guide them in moving pages, links, etc. (80 manhours)

Phase 3: (Timescale - 12 months from start date/48 manhours)

- We will continue to monitor the traffic connecting directly to the VM server (as opposed to going through the UNIX proxy server), and once this falls to a low level we will change the VM server to just return a message directing people to use the UNIX server instead. This should persuade the owners of any links still pointing to the VM server to change them.

- Finally turn off public WWW server on VM.

D. Networking support:

- Support for distributed environment applications, capacity, and user response time will need to be monitored and will probably need to be increased to provide adequate support for SLAC-wide use of WWW as a common access and communication tool.
- The need for this support is partly driven by increased Web use but is also affected by SLAC network evolution. This support is not costed against Web migration because it is planned as part of SCS's ongoing network support.

II. Ongoing Support Required:

It is critical to note that a substantial amount of the work detailed in this memo has, to date, been done during non-SLAC time by a small ad hoc group. More resources must be allocated if the deadlines and tasks outlined here are approved.

A. Issue/Policy/Support Documents needing completion or to be assigned:

- Privacy & Confidentiality Issues in SLAC WWW Information (J. Winters) status: complete
- Security Issues in WWW Environment status: under discussion
- Guidelines for WWW Page Creation: Standards & Procedures (J. Winters) status: under discussion
- WWW Server Management status: under discussion
- How to Get Started on the Web status: under discussion
- Legal/Copyright issues status: very preliminary discussion

B. SLAC staff training and support needed:

- Continue and make official the WWW (former Wizards) Technical Committee
- Establish a user group
- Provide PC/MAC Web support services
- Develop a comprehensive set of documentation
- Develop and offer a structured training program
- Orientation to the Web: perhaps offered weekly with sufficient space, connections, and equipment that the major platforms can be available for users to learn in a "hands-on" mode. Will require the creation of a canned training program that can be used by a cadre of part-time trainers.
- Formal training in page creation and maintenance
- Individual orientation to policy, procedures and problems for Web server owners.
- Upgrade the training lab to provide sufficient space, with appropriate equipment for both training and development efforts.
- Establish responsibility for software evaluation, acquisition and development.
- Recognize formally the need to keep key staff abreast of changes and new developments in this fast-evolving Web world. Establish adequate support for professional development, conference & meeting attendance, etc.
- Define and formalize responsibilities for the substantial areas of backup and security.
- Establish formal role for someone to provide subject/indexing access to SLAC Web documents and, perhaps, core documents elsewhere.

C. Ongoing/New support needed for WWW:

- SCS support currently: 1.9 FTE distributed over approx. 6 people
- Non-SCS support currently: 2.5 FTE distributed over approx. 9 people
- Additional support needed (either through reassignment or new FTE): 6.25 FTE

2 FTE in SCS (in areas such as training, PC/MAC support)
.25 FTE in Library (indexing & organizing access to external information)
1 FTE in Tech Pubs as a specialist in online documentation
3 FTE in Divisions/Groups as managers of their Web information

July 20, 1994

To: WWW Wizards Committee

From: Chuck Dickens Chuck Dickens

Subject: Request for Recommendations

Returning from vacation Aug 16th

The report of the VM Phaseout Committee has indicated the important role which WWW will occupy in the future computing environment of the laboratory. Consequently, SCS support of WWW must have a high priority.

Your committee is well aware of user concerns regarding the availability and robustness of WWW service. Long response time for rather trivial operations such as BINLIST is a common complaint. Off-site users of the SPIRES HEP interface often experience unsatisfactory delays. These concerns do not bode well for a service which will be so important in the future.

Your committee has accepted responsibility for the support of WWW. So far, this support has been conducted on a rather *ad hoc* basis. I would like to see this effort more formalized so that we may adequately plan for the support which SCS is obligated to provide. I therefore request that your committee provide me with a written report which includes the following:

* a proposed plan for the future support (if any) of WWW on VM;
* recommended hardware and software requirements for a UNIX WWW server;
* a proposed workplan and schedule for the following milestones:
  - cessation of WWW development on VM;
  - commencement of a production WWW service on UNIX (e.g., a SLAC front page on UNIX);

Please provide this report to me by September 1, 1994. Thank you for your cooperation.

To WWW Tech. Attn.
This is the
final report
(without the
last few
graduating
editors)
-PK

Final Report of VM-Phaseout Committee

Introduction

In the past, people at SLAC used a dumb terminal to log on to the IBM mainframe and did their work using the tools provided by VM. Recently, increasing numbers of dumb terminals have been replaced by IBM PCs, Macintoshes (both henceforth to be referred to generically as PCs) or X-terminals; nevertheless, many people still use these machines predominantly to log on VM, since VM is where they find tools needed to get their work done. In the near future this will have to change, because SLAC is moving away from the IBM mainframe towards a distributed (read network based), client-server computing environment; soon VM will disappear. It is obvious that the transition to this brave new world of computing must be carefully managed or people will find it disruptive and individual productivity will be impaired.

Several months ago the VM Phaseout Committee was created and charged with the task of providing a road map for the transition process. It became our responsibility to draft a time line for the transition and identify issues which must be handled well for the process to go smoothly. Our committee met for several months and heard from interested parties; we also held a lab-wide open meeting to get input from the rest of the SLAC community. The purpose of these meetings was to identify the various ways in which people use VM to get their jobs done and to make sure that our new computing environment can provide equal, or better, functionality. We also attempted to ascertain how much of the needed hardware and software was already in place, and how much would have to be provided during the transition process. Both types of information will be necessary if we are to make the transition both affordable and relatively painless.

Obviously, whenever people are forced to move from a familiar way of doing things to something new there will be a certain level of pain; however, we hope that if we do our job well, we can keep this pain at a minimum. Because no plan is ever perfect and no committee can anticipate all the problems which will arise in an operation of this type, we realize that it will be necessary to begin slowly and to be flexible, within the broad outlines of the plan, so as to proceed to our goal without incurring excessive costs to the laboratory, or impairing individual productivity. The transition will not be easy; the process will require the good will and cooperation of everybody at the laboratory. There will be times that, as in the past, we will have to call upon members of the user community to aid in the transition process. It is our belief, however, that if we all work together, we can make the transition a smooth one, and we will be able to take advantage of the exciting opportunities our new environment will provide.

The Plan

Our aim is to proceed with the transition process as aggressively as possible, subject to the constraints that it be affordable and not impair productivity. We have adopted a two-track procedure to divorce the problem of moving *most* users off VM, from the thornier problems of moving SPIRES and the Business Services Division (BSD) off VM. We are of the opinion that migrating users off VM within eighteen months can be accomplished, but this will require that SCS create on-line help files, establish training classes and establish a procedure to make sure that all necessary physics computing tools will eventually migrate to the UNIX environment. In particular, as we discuss in the body of the report, we envision that World Wide Web (WWW) technology will provide the backbone of our on-line help system. This is because WWW documents are in a platform independent format and commercial, as well as freeware, viewers exist for all supported platforms.

Since so much of the new environment will depend upon accessing network services it is crucial that during the first year SCS focus on insuring that networking becomes robust and easy to access, from both UNIX accounts and desktop environments.

Reading The Plan

In the next few sections we list requirements which must be met before VM can be shut down. We wish to emphasize that these requirements are intended to be a checklist of tasks which must be completed before the conversion process can be considered complete; i.e., the time when *all users* can be forced off VM. This list is *not* to be interpreted as a list of things which must be happen before the conversion process can begin. Obviously, some goals must be met early on in the process, if the transition is to go smoothly. Other goals can be met at a later stage of the transition process without seriously impeding progress towards the goal of moving most users off VM within an eighteen month period. For example, there is no reason why moving people in the publication department off VM should be adversely affected by a delay in providing a prioritized batch-scheduling system for UNIX. On the other hand, it is important that the Standards Committee move quickly to provide a recommended configuration of hardware and software for both IBM PCs and Macs. Clearly, to expedite the process, these early recommendations should be for systems which we currently know to be practical and workable, they need not be optimal. As experience is gained these recommendations should be modified to reflect what has been learned during the transition process. It should be up to SCS, as part of the management of the transition process, to establish the order and time frame in which various goals will be met.

The First Year: Moving Users Off VM

Despite our best efforts, the conversion process will be a voyage into uncharted territory, it should begin slowly because we will learn about the problems we failed to anticipate we proceed. At present, we expect that a considerable amount of on-line WWW documentation will have to be generated but we haven't got a clear picture of the magnitude of this task. We also expect that SCS will be able to use outside agencies to teach people to use the some of the supported tools on their PCs; however, some SLAC specific classes will have to be taught in-house. Despite their advertised simplicity, these machines are not easy to learn to use, especially in a network environment, and maintaining a certain warm fuzzy feeling in the user community is important.

Since the only way to get a clearer picture of the magnitude of some of these tasks it is important to begin by converting small trial-groups of users to their new way of life. We expect that in the first year we will sequentially convert four trial-groups, each of which will be divided into several subgroups, with each subgroup chosen from a specific laboratory division. We suggest that the overall management of the trial-group be in the hands of a single person in SCS who, with the aid of a person in each of the subgroups, will manage the user conversions. It will be the responsibility of the SCS manager to maintain contact with each subgroup and determine what help they need; see to it that the necessary on-line WWW (and other) help files are generated in a timely fashion; identify training classes which SCS must provide and areas where outside vendors can be used effectively; identify and smooth over problems which might arise just because some of the people in a division will be converted before others in the same division (e.g. each division will have to work out a modus-vivendi for sharing files and resources during this period).

Clearly, the first test group will have the most difficult time, but they will get the most help. We expect that succeeding groups will have an easier time making the transition for several reasons: first, the input from the first test group should allow SCS to fill in the gaps in the help information to be found on WWW; second, necessary training classes should be identified and at least some of them should be in place for the second groups; third, missing software tools which failed to migrate to UNIX should be identified and the problems should be fixed; finally, the people who have made the transition will serve as a *local* resource for the groups which follow them.

We will require the people in the test groups to relinquish their VM accounts and make a complete transition to the new way of doing things. They will, where necessary, be given new equipment, will have their files moved to a central file server (which will allow for automatic backup) and will rely upon the network

for email, netnews, SPIRES, WWW, etc. Disk space where these users will store files which are to be automatically backed up, and where supported software can be centrally accessed, will be provided by SCS. It is assumed that the transition process will begin before a global strategy for establishing PC file servers is in place, so the initial disk-space will probably have to be on UNIX machines which are mounted by the PCs under NFS. As SCS moves towards a more sophisticated and/or more easily supported model, this can be changed.

The choice of new hardware and software configurations for these people will be made in consultation with the Standards Committee. *In general, during the first year, the process of replacing dumb terminals and under-powered PCs by network capable PCs and X-terminals will have to begin in earnest. The business services division must develop simplified purchasing procedures for the requisite equipment and software, so that unnecessary delays are not encountered during the transition.*

It is important that SCS promptly designate someone to create the first test groups and that person should appoint the people who will coordinate with them. This person will have the responsibility of staying in contact with each group and seeing to it that problems are promptly solved. Missing help information must promptly generated, network glitches must be reported and smoothed out, hardware and software problems must be fixed and the information fed back to the Standards Committee. During the third month of this period the members of the second test groups should be identified. Obviously, since we will be relying upon WWW to a large degree, current delays in accessing our WWW server must be significantly reduced.

Before the end of a three month period the first test group should have completed its transition, if this has not happened SCS should take a look at the process and understand why things are taking longer than expected. After a one or two week consolidation period, during which SCS evaluates the problems which have arisen and makes whatever changes seem necessary in the process, the second test groups should begin their switch-over to the distributed environment. This process should be repeated every three months for the first year.

While the bulk of the attention will be paid to making sure that everything goes smoothly for users at the laboratory, some attention must be paid to making sure that people who have to work from home don't suffer a loss of functionality. In particular, this means that people without VM accounts must have a way of logging in remotely to either their PCs or a UNIX workstation in order to carry out their duties. As part of this support for people working from home we think that some effort must be made early in the first year to port Unified Graphics to the UNIX workstations and provide Tektronix and PostScript drivers for this environment. This is so people who have to work with programs like Conversational HandyPak

(CHP) have a convenient way to do this from home. This is of particular importance to people in Radiation Physics and in the Technical Division, who often have to log on at peculiar hours.

In addition to continuing to support familiar forms of remote access, SCS should begin investigating alternative ways of supporting home users in the network environment. A study of when and to what degree we will support remote network access via SLIP and ISDN must begin during the first year of the transition. Currently SLIP access to network services is possible by obtaining a Stanford SLIP and so SCS has not needed to take on this task. At present Stanford supports point-to-point ISDN service and so whether we can effectively join with them or will provide our own ISDN access to SLAC users, is an issue which needs to be resolved.

By the end of the first year, the problem of distributed printing must be solved. This means that many of the current Imagens must be replaced by networkable, PostScript printers. Purchasing procedures for these machines must be developed, so that the process is not unnecessarily impeded. We recommend that SCS the Standards Committee develop a list of acceptable (supported) printers, without going through the procedure of creating yet another printer selection committee.

While it is not an issue related to the demise of VM, the issue of providing X-terminal support for SLUO users is related to the general problem of moving to a distributed computing environment. After all, a part of the transition strategy must concern itself with supporting the increased functionality people will come to expect. The question of how SLUO members will gain access to additional X-terminal capability must be addressed by the laboratory in the first year. If local finances make it difficult to increase the number of X-seats at a sufficient rate to meet the needs, then it will be necessary to allow SLUO members to bring machines from their home institutions and install them on the SLAC network. Clearly this will raise support problems. SCS should take a proactive role in this problem and attempt to work out, in consultation with SLUO members, a set of procedures which will make this option workable for both sides. We expect that SLUO members will be receptive to the fact that SLAC will probably have to require that these machines come from the list of supported platforms to be used at SLAC.

The Second Year: Moving Users Off VM

If everything goes well with the first four transition groups, the second year will be devoted to moving the remaining VM users off the mainframe. After the beginning of the second year no new VM user accounts should be issued and recalcitrant

users should be forced off the machine. This will require an education period, during which people are warned that the impending transition is coming and that they must move to a PC can operate in the new environment, or obtain a UNIX account which they can use to do their work. Recommended PC hardware/software combinations which are known to work in the SLAC environment will be provided by the Standards Committee. Obviously, the key to making this step as successful as possible will be good advance publicity concerning what is about to happen. After the warning period the remaining users should be divided up into several blocks and each group should successively make the changeover.

During this second year SCS should be making recommendations as to whether or not ISDN is a reasonable and cost-effective alternative for accessing SLAC computing services from home.

The First Year: SPIRES and Business Services Division (BSD)

SPIRES

Moving SPIRES databases off VM will be more problematic. There are more than one thousand SPIRES databases in existence, of which only a small number are being currently accessed and updated. Many of these databases, however, contain information which is vital to the functioning of the laboratory. Some of these, e.g. DEPOT, PHONE, ELDREQ, IKE and MFG, can be converted to other formats such a ORACLE; however, it will take a considerable amount of manpower to effect these conversions. Other databases, in particular HEP and BOOKS, will be impossible to convert to ORACLE format, because much of the needed functionality provided by SPIRES just isn't available. The main problem is that SPIRES runs efficiently only on a VM system and full access to a SPIRES database requires a VM account. People who manage SPIRES databases will have to be provided with VM accounts throughout and probably after the eighteen month transition period. Fortunately, this will be a small group of people; we estimate that in all there will be fewer than eighty accounts of this type which have to be maintained.

In keeping with the two track approach which we have adopted to shutting down VM, SCS should focus its attention on improving the way in which users can access all SPIRES databases from other platforms. In particular, the WWW interface to SPIRES should be enlarged to handle WWW-forms, so that multiple queries and some database management tasks can be performed without logging on to VM. *During the first year SCS should make all possible efforts to inform all users that they can access WWW in many ways from a variety of platforms. In particular,*

that networked PCs can use local Mosaic (or commercial WWW) viewers, and all users can access it from a UNIX account either from an X-based browser such as Midas or X-Mosaic, or from a line-mode based browser such as LYNX. Users should be encouraged to use WWW to access address and phone-number information, seminar information, etc. Obviously, every effort must be made to increase the number and efficiency of our WWW servers so as to minimize the delays which now sometimes occur when one is attempting to access these facilities.

Eventually alternative ways of running SPIRES must be found, if we are to be able to realize any cost savings by shutting down the mainframe. At present, a PC/370 (this is a PC with a special VM card), a UNIX workstation running SPIRES under a software emulator, or an AIX machine with a special VM card in it, present the only alternatives to moving SPIRES to another platform. Currently the UNIX emulator is not fully satisfactory, especially in the area of input and output (IO). During the first year SCS should begin to study the use of multiple PC/370 or AIX machines (with the special VM card) as SPIRES servers. In particular, early in the first year we should set up each of these machines and study the way in which they functions, with particular attention paid to questions pertaining to input-output.

Those SPIRES databases which can migrate to ORACLE should begin to do so. This should happen on a lower priority basis and can be done by the interested parties in collaboration with SCS. From testimony given to our committee it is clear that the biggest issue in many of these conversions is establishing some formal dialogue with SCS in order that the person doing the conversion not do something which will end up not being supported in the near future. *SCS should, in collaboration with people responsible for databases such as DEPOT, IKE, etc, establish a conversion procedure for databases eventually destined to move to ORACLE.*

BSD

Another issue which must be fully resolved before the mainframe is shut down relates to the Business Services Division and related operations such as Personnel. At present BSD relies upon VM for a great deal of its computer services, although a plan for moving BSD operations to another platform is under development. Clearly, this plan will have to move ahead during the first year of the transition process and hopefully the acquisition of the new system will be completed in this time period.

The Second Year: SPIRES and Business Services Division (BSD)

SPIRES

During this year the development of WWW interfaces to SPIRES services should continue. The purpose should be to isolate the way users access SPIRES services, from the machine which provides the services. In this way, SPIRES can eventually migrate to another platform without causing another upheaval in the way in which users accomplish their work.

Since SPIRES is not a developing technology, it is necessary that we investigate alternative technologies for the more distant future. Some effort should be expended on this question during the second year. In particular, we would encourage the library to explore the possibility of a CRADA with some supplier of object oriented databases, with the eye to developing an object database which has the necessary functionality to make it a good substitute for SPIRES.

BSD

It is expected that BSD will have completed its acquisition of its new office system and accounting software by this time. During the second year of the transition process we expect that BSD will be running both the VM and new systems in parallel to insure that they have a backup system in place and that everything is working correctly.

The Third Year and Beyond

The plan for the third year and beyond will strongly depend upon how well the early part of the transition has gone. If either the PC/370 SPIRES server or UNIX-based SPIRES server works, and if BSD has completed severing its ties to VM, then there would appear to be no obstacle to shutting down general access to VM. This could result in substantial savings to the laboratory. At the beginning of the third year we must have in place a policy for exactly how long SCS will maintain archives and old VM backups.

Summary of Recommendations

This section is a condensed summary of the general recommendations made in the full report.

Moving Users Off VM

We plan to eliminate most mainframe user accounts within eighteen months from the start of the transition process. We assume that, depending upon their needs, users will move to networked PCs or X-terminals and use local software on these platforms to carry out their duties. Recommended hardware and software configurations for each of the supported platforms, PCs, Macs and X-terminals, will be specified by the Standards committee. Streamlined procedures for purchasing these hardware and software combinations must be established by Business Services. To the degree that they must access VM services, such as the many vital SPIRES databases, we need to provide access to these services in ways which do not require logging on to the mainframe.

Services Which Must Be Preserved

To insure that the transition doesn't adversely affect the performance of people who rely upon VM to get their work done, we have tried to identify the ways in which people actually use VM and make sure that the same functionality is available on the platforms to which they will move. While the specific mix of services which people access depends, to a degree, upon their job description there are a core of applications which nearly everyone relies upon, be they in Tech Division, Business Services, Research Division, etc. These are:

- ☐ Text-editing
- ☐ Email
- ☐ Netnews
- ☐ SPIRES (a partial list)
  - HEP
  - BOOKS
  - DEPOT
  - PHONE
  - ELDREQ
  - IKE

- MFG
- ⋮

- ☐ Printing
- ☐ TEX
- ☐ Sharing files (GIME)
- ☐ Archiving Files
- ☐ Backing up data
- ☐ AID – for getting pointers to where to look for help information.

Items which are of greater interest to people in Tech Division and Research Division are:

- ☐ Graphics
  - Unified Graphics (UGS)
  - Topdraw
  - Conversational Handypak
- ☐ Programming
  - FORTRAN Compilers and debuggers
  - C Compilers and debuggers
  - C++ Compilers and debuggers
- ☐ Batch processing
- ☐ High speed access to mass media

Recommendations

We have implicitly assumed that all PCs that are purchased in the future will be network capable and configured to fit smoothly into the SLAC environment.

- *To make it easy for users to know what to buy we recommend that SCS, in consultation with the Standards Committee and others in the five SLAC divisions who have experience in this area, create a list of recommended machine and software configurations (for IBM PCs, clones, and Macs), which are known to work well in the SLAC environment. This list should be made readily available to users over WWW.*

Insofar as general services go, PCs and X-terminals provide adequate to very good tools for editing text files, handling email, reading netnews, printing files to networked printers, sharing files, using TEX to produce files with equations (including

the ability to preview the file) and searching SPIRES databases (using Mosaic or Midas browsers on the World Wide Web (WWW)). Insofar as these issues are concerned, the major requirement for a smooth transition will be that the users must be trained to access familiar tools from an unfamiliar context.

- *This will require that SCS be given the resources to conduct training classes and produce on-line help documentation, both for UNIX and via WWW. In particular, SCS should provide training classes for each of these platforms on: using of UNIX or PC text editors; using the UNIX or PC versions of EMail; using WWW effectively to search for information. Training people to use commercial products such as word-processors or spreadsheets can be most effectively provided by outside vendors.*

The minimum information that must be provided during the conversion process, in order to aid users moving to PCs or X-terminals is:

- *a list of recommended UNIX and PC editors which are known to work well in our environment. It should make sure that documentation on how to use these tools is readily available both in on-line form (over WWW) and in printed form. During the first two years of the transition process we should also maintain Xedit readable forms of this documentation on VM.*
- *a list of recommended EMail applications which are known to work well in our environment for each of the supported PC platforms. This list should be made available over WWW.*
- *a recommendation about the UNIX Email system which SCS will actively support. On-line and printed documentation explaining how this system works should be made available.*
- *at least one recommended netnews reader for each platform. Some on-line documentation as to how to use these readers should be available over WWW.*

In addition to this on-line information, we recommend that

- *SCS provide classes which teach users how to access TEX and other word-processing tools on any of the supported platforms. As in the past, we would expect that people teaching these classes could be drawn, on a volunteer basis, from the user community. They should also provide on-line WWW documentation which explains how to run TEX on each supported platform.*

Moreover, because life on a network is never going to be completely perfect, we recommend that

- *SCS provide on-line documentation explaining the operation of FTP. They should also provide some elementary classes to explain the ins and outs of basic networking to naive users. The lab must provide resources to support*

this effort.

Although printing files located at SLAC from a printer located at a remote site is in principle easy, security concerns make it currently inadvisable for us to export local file systems off the SLAC site. For this reason, a SLUO member who logs in to SLAC from his home institution cannot print a file on his local printer without engaging in some computer gymnastics. To avoid this we must quickly move from our current, relatively insecure NFS filesystem, to one like AFS which will allow us to relatively securely export local file systems to remote collaborators. This is the way in which problems, one example of which is the remote printing of files, can be easily solved. We therefore recommend that

- *AFS and Kerberos must be brought on line as quickly as possible. Until that time, and until the various PC platforms have reliable ports of AFS and Kerberos available for them, it is important that remote users be able to print files from a SLAC machine on a remote printer. This means that an lpr capable of forwarding a file to a specific remote host be made available on UNIX at the earliest possible time.*

Managing SPIRES databases can, at present, only be done by logging on to VM and automatic backup of data on PCs will not be done. The SPIRES problem is under study and the issues involved are discussed in the body of this report. Briefly, the problem is that currently SPIRES only runs efficiently on a machine running the VM operating system. Since the SPIRES HEP database is used by physicists from all over the world and since so much of the laboratory's day to day business depends upon accessing other SPIRES databases, we cannot afford to shut down the mainframe until a way of successfully running SPIRES on another platform can be found. At present three possible approaches to this problem present themselves: one is to run SPIRES on one or more PC/370's and use these as SPIRES servers; another is to run SPIRES on an AIX machine with a special VM card and use it as a SPIRES server; yet another, is to run SPIRES under a VM-emulator running on a fast UNIX workstation.

- *At present we feel that the PC/370 or AIX machine with a VM card are promising solutions and urge that they be aggressively pursued during the first year of the transition process.*

In order to facilitate the isolation of the user from the particular platform which is running SPIRES we recommend that

- *every effort should be made to support and extend WWW access to important databases as soon as possible. If and when management of a SPIRES database becomes possible over WWW, the users should be apprised of the change in a timely fashion and trained to use the new methods.*

Archiving and retrieving files, as well as automatic backup of user data, are issues which fall into the area of networking, but which affect all users. Tools for creating and maintaining new archives exist on the UNIX platforms and will be accessible from all desktop machines. The real issue is retrieving old VM archives from a UNIX machine or a PC. This appears to be a solved problem at the present time and the main issue is, once again, one of user education. This issue is discussed in the main section of this document and we make the following recommendations.

- *SCS must develop and distribute tools for retrieving old VM archives for all supported platforms and train people in the use of these tools. On-line, WWW, documentation explaining the way in which one can access old archives must be created as soon as possible.*

  A new archiving facility, with functionality similar to that provided on VM, must be installed for the new distributed environment. Documentation which explains the features of this system, and its use, must be created for WWW. It is very important that we develop a policy which specifies how long future archives will be maintained.

Automatic backup of data on UNIX machines is no problem; automatically backing up data kept on desktop machines is another issue. The process of doing backups is intrinsically less selective than archiving data and at present there does not seem to be a satisfactory way of carrying out centralized automatic backups of PCs.

- *The recommended solution to this problem is to have a central file server, which can be transparently mounted by PC users, where they will store data which they wish to have automatically backed up. This machine will be configured in such a way that SCS can take care of backups in a manner similar to the way things currently work under VM.*

The Research and Tech divisions have other reasons to worry about the loss of VM. First of all, VM provides a significant number of compute cycles and a programming environment which people understand. Second, the mainframe by its very nature provides much greater input/output bandwidth than is currently available over the network. Finally, at present the mainframe provides the mechanism whereby users access with both silo tape cartridges and 4-mm and 8-mm media. These issues are covered in more detail in the body of the report, wherein the following recommendations are made:

- *Because of the nature of distributed computing where the functions of data storage, batch control, and number crunching are provided by different compute platforms separated by network connections, care must be taken to design a system that will provide the same throughput, or better, of jobs that VM does.*

- *To make up for compute cycles which will be lost additional compute servers must be in place, and users provided with the opportunity to be trained in their use, before VM is phased out.*
- *The development of a prioritizing batch system must in place before VM is phased out.*
- *Tape access from Unix must be available before VM is phased out, including not only silo cartridges but also 4 mm and 8 mm media.*
- *Adequate bandwidth between fileservers/tapeservers and the batch and interactive compute servers must be in place before VM is phased out.*

In addition to these general questions there is another question, namely the continuation of support for people working from home.

- *The laboratory, particularly the people in SCS, should continually be mindful of how their future decisions will impact people who have to work from home, often at inconvenient hours. The work these people do is vitally important, and usually must be done in a very timely fashion. It is important that they avoid any action which will make it harder for these people to do their job.*

People in both Radiation Physics and Tech Division often have to access lab computing resources from home and use programs which generate graphical output which must be displayed on their screen. Currently this is easily done from the mainframe since most of this software uses Unified Graphics and the Tektronix drivers which it provides. While Topdraw and Conversational HandyPak run on UNIX workstations, the versions we have are not based on UGS and they only provide PostScript and X-window output. While it is possible to run X-windows from home over a SLIP connection, performance is slow. We recommend:

- *To avoid expensive and counterproductive duplication of effort SCS should support the porting of UGS, UGS based TopDraw, and UGS based Conversational Handypak, to our UNIX platforms. It is our understanding that Bob Beach's code is in good enough shape that porting the kernel will not be difficult; the majority of the work will be the creation of Tektronix and Postscript drivers. Apparently a port of current SLAC UGS code and the creation of Xwindows, PostScript and Tek4010 drivers has been done by Arthur E. Kreymer at Fermi Lab. The current release includes a port of Topdraw and the associated Mortran and UGS files. This port runs on AIX, IRIX, SunOS 4 and ULTRIX systems. It is available by anonymous ftp from FTP.FNAL.GOV. It is our understanding that this version will be supported by Dr. Kreymer. If this port proves satisfactory in our environment then our contribution to the effort might be reduced to simply providing Tektronix 4105 support.*

Detailed Considerations

This part of the report contains a more complete description of the material summarized in the earlier sections. This material is, with minor modifications, what was presented to the lab-wide meeting for their consideration.

Preliminaries

In the future SLAC computing will more closely approximate the model used in laboratories and universities around the world; namely, there will be a large number of desktop computers (i.e. Macintoshes, IBM PCs, etc., all henceforth to be generically referred to as PCs), X-terminals and UNIX workstations, communicating with one another over a network. This setup will allow each person to use a platform which best serves his or her individual needs, access those tools which they need to get their work done, and freely exchange information with others. Of course, this freedom will mean different things to users in the research and tech divisions and those in publications, business services, etc; it will also be constrained by cost considerations. People who don't need to deal directly with UNIX machines will probably choose to go the PC route and thus, have ready access to the wealth of shrink-wrapped software available for these platforms. On the other hand, people in the research division, who will most probably need to work on UNIX machines, might wish to have either an X-terminal, or a PC running X-windows, on their desktop. In any event, so long as all of these platforms provide a minimum level of common functionality, all users should be able to freely share information and access all necessary computing resources. It is the purpose of the transition plan to identify exactly what constitutes a common set of tools, and to insure that they are in place when the transition process begins in earnest. In addition, since the transition to this new environment will involve learning new ways of doing things, it is the committee's job to identify areas in which SCS will have to provide on-line documentation and training classes in order to help prepare people to make the change-over.

An Early Benefit Of This Transition

Those of us involved in facilitating this transition believe that *eventually* our computing environment will be richer and perform better than in recent years; however, forcing change necessarily causes some pain. Telling people that something unpleasant is good for them, that they will be happy at some future date, is rarely convincing. Promising someone that they will have a better mail program, or better text editor, really doesn't mean much, if they are quite satisfied with the one they have and see no need for something new. Although many of the benefits of

the distributed environment will become apparent only after one has achieved a level of comfort with the new way of doing things, there is one benefit of this move which should immediately improve computing for everybody at SLAC. Namely, everyone will have easy access to the World Wide Web (WWW) through a point and click interface. It is our belief that WWW will provide a way of restoring the collegial atmosphere which existed in SLAC computing in the early 80's, before the Balkanization of our environment by the helter-skelter move to multiple platforms. The general decline in our ability to easily share experience and information has not gone unnoticed by most of our users; the opportunity to start reversing this trend should be welcomed by all.

For those unfamiliar with the World Wide Web, it is a platform-independent way of accessing information stored in the form of hypertext documents. These documents can be accessed by running a WWW-viewer. There are viewers of this type for all the platforms which will be supported at SLAC, among them: Midas, for use with X-windows; Mosaic, which is available for most PCs as well as for UNIX machines; lynx, for convenient line-mode access from any terminal, or when logging on to a UNIX machine from home.

When a SLAC user runs his or her WWW-viewer, the first thing they will see is the SLAC home page. This document contains both graphical and textual information; it also contains links, displayed as hi-lited text, to other documents. If the user clicks on one of these links the viewer will display a new document which contains material related to the subject mentioned in the original hi-lited text. This additional information can be, among other things, another hypertext document, a picture or sound file, or a PostScript file. WWW can also be used to access databases, so WWW-viewers will provide users with access to familiar tools such as binlist, netnews and SPIRES. It can also provide access to preprints, maps of the lab and the surrounding area, help for getting UNIX accounts, help with understanding the elements of networking, help with running Fortran/C/C++ programs, help with TEX, etc. Much of this information will be generated by people in SCS; however, it is likely that, as in the past, we will have to call upon members of the SLAC community to help in the preparation of some of this material. At the very least, in order to facilitate group wide and group-to-group communication, we will be encouraging people to create and manage home pages for their own groups. Handled properly, WWW can partially fill the role of providing a platform-independent way for us to help one another, as we did when we all resided on VM and shared CMS help files and REXX execs. If we make full use of this opportunity, we can go a long way to restoring the sense of community we enjoyed in the 80's. This alone will make the transition worthwhile.

Basic Hardware Needs

In the preceding paragraphs we talked about PCs, X-terminals and UNIX workstations, functioning together in a network environment. While UNIX workstations and X-terminals always come configured to operate in a network environment this has not generally been the case with PCs. While most Macintosh computers currently being purchased at SLAC come configured for ethernet, it has not been customary to purchase PCs and PC clones which are network capable. In order to avoid confusion as people start to place purchase orders to upgrade their PCs to successfully networkable machines, we strongly recommend that *SCS, in consultation with others in the five SLAC divisions who have experience in this area, create a list of standard, recommended, machine and software configurations (for IBM PCs, clones, and Macs), which are known to work well in the SLAC environment.*

Given the rapid pace of change in the PC marketplace, these recommended configurations should be just that, a statement of configurations that are known to work in the SLAC environment and for which the lab will provide a well defined level of support. We believe that if most users are made aware of a list of recommended, supported, machines, they will voluntarily limit their purchases to this list.

Implicit Assumptions

Throughout this document we refer to "SCS, or the Standards Committee". This clumsy phrase is used because we are aware of the fact that there is a Standards Working Group, chaired by Chuck Boeheim, which is trying to address issues related to setting standards for supported hardware and software. We expect that when this committee completes its job it will be replaced by a Standards Committee. In what follows, where we suggest that "SCS, or the Standards Committee" make specific recommendations, we are referring to this yet to be created body. If, during the early stages of the transition no such committee has been created, then we assume that the current Standards Working Group will function in its place.

Another implicit assumption which is made throughout this report is that, when we say something like "SCS should provide documentation", this will be taken to be both a statement to SCS that they should do a specific job, and the recognition of the fact that this job is important and SCS must be provided with sufficient resources to do it.

Alternatives To Tools Now Provided By VM

Discussions with a variety of users leads us to the conclusion that, at present, VM is used for the following limited set of services: email, netnews, text-editing,

binlist, access to SPIRES databases (such as HEP, DEPOT, PHONE, ELDREQ, IKE, MFG, etc), printing files, sharing files, TEXing documents, running TopDraw, Conversational Handypak, and/or UGS, archiving files, retrieving old archives, backing up data and running Fortran and C programs. While this functionality, and more, will be available in the new distributed environment, the interface used to access it will be different. In this section we touch upon each of these items in turn and list the alternative tools which exist at the present time. We also point out which areas are problematic and what has to be done to eliminate these problems.

TEXT-EDITING

At present VM users prepare TEX documents and type email messages by invoking XEDIT. XEDIT is a good, full screen, text editor and many users have grown to depend upon it to get their work done. The question of what alternative tool one will use to accomplish the same work, will have a different answer, depending upon what the user has on his or her desk. The current situation looks fine for PC users. The situation is somewhat more limited for those who go the route of an X-terminal or UNIX workstation.

PC Editors

For those who have a PC on their desk, there is a wide variety of options to choose from. In particular, for small memos, papers, letters, etc., that do not require equations, one can use word-processors such as Microsoft Word or Word Perfect. If one insists, one can even obtain an XEdit work-alike, KEdit, for IBM PCs and PC clones. In short, for PCs, there are many satisfactory replacements for XEdit which are easy to learn and use.

As part of the conversion process SCS, or the Standards Committee, should provide a list of recommended editors and word-processors which are known to work well in our environment. This list should be made readily available to users over WWW.

UNIX Editors

Text-editing in the UNIX environment will require greater adjustments on the part of VM users. For those who wish to keep their UNIX environment as vanilla flavored as possible, because they wish to use the same tools when they travel, the editors of choice seem to be VI and EMACS. Neither of these editors will feel at all familiar to XEDIT users; there will be a steep learning curve to overcome before an XEDIT user will become at all comfortable with them. There is a significantly less

powerful XEDIT look-alike on our AIX stations, it is invoked by typing **xe**. This editor looks a lot like XEDIT, although it does not provide some of the functionality one expects on VM. There is also a rather nice, PC-like editor, invoked by typing **ne**, which runs on AIX machines and Sun SPARC stations. It has the virtue that it doesn't need an X-windows interface in order to provide drop down menus and GUI-like file requesters. This editor works over any ASCII terminal, hence one can use it remotely over a telephone line, without any loss of function.

As part of the conversion process SCS, or the Standards Committee, should provide a list of recommended UNIX editors which are known to work well in our environment. It should make sure that documentation on how to use these tools is readily available both in on-line form (over WWW) and in printed form.

EMAIL

Email is one of the most heavily used applications on VM. The good news is, all platforms provide more than adequate Email capability, so it should not be difficult for people to handle their Email on any platform which will be supported in the future. The bad news is, the interface to each of these mail programs differs enough that switching between them can be confusing.

Email on PCs

There are many programs available for PCs (Macs, IBMs and IBM clones) which handle Email through a graphical user interface (GUI). Some of these applications even support an extended Email format, which allows one to include sound files and pictures in a mail message.

As part of the conversion process SCS, or the Standards Committee, should develop a list of recommended Email applications which are known to work well in our environment for each of the supported PC platforms. This list should be made available over WWW.

Email on UNIX

There are several main Email programs available for UNIX; two of the more popular ones are "mail" and "elm". Both programs are relatively easy to use and can invoke the UNIX text-editor of your choice for composing mail messages. While similar in functionality, they differ quite a bit in the way in which they work.

SCS, or the Standards Committee, should make a recommendation about the UNIX Email system which they will actively support. On-line and printed documentation explaining how this system works should be made available.

NETNEWS

There will be a wide variety of ways to access netnews in the new distributed environment. There are netnews readers available for most network capable PCs which provide a graphical user interface to netnews, and similar capabilities are available for X-window users. One can also obtain read-only access to SLAC relevant parts of netnews using WWW. There are also netnews readers which do not require X-windows available for UNIX; these programs work reasonably well. In short, netnews will not be a problem.

SCS, or the Standards Committee, should provide a listing which contains at least one recommended netnews reader for each platform. Some on-line documentation as to how to use these readers should be available over WWW.

BINLIST

Binlist is a program which VM users employ to locate information such as, room number, phone extension, logon status, etc., for people at the lab. In reality this program simply accesses a SPIRES database which can be accessed via WWW from PCs or UNIX machines. This is done by clicking on the link labeled **people at SLAC** or **particle physics people** and following the instructions for doing searches. The same functionality is also available on all UNIX machines, without running a Midas or Mosaic viewer; all one has to do is type **PERSON** *name* on the command line. If one is logging in from home and wants WWW access to this facility one can simply use the WWW lynx viewer. This viewer runs on any ASCII terminal and thus can be used over a telephone line. For someone logging in from home it provides a decent way of accessing WWW, although it doesn't allow one to display graphics files or postscript documents. In short, the functionality provided by BINLIST, will be accessible to all users, albeit under other names, regardless of the platform they choose to adopt.

Since information on how to find information about people using WWW is already available on WWW, nothing has to be done in this regard. Information describing the use of the PERSON command should be made available over WWW.

ACCESS TO SPIRES DATABASES

The general question of providing access to SPIRES databases while shutting down VM is a thorny one. Several solutions to this problem are actively being pursued, since there is more than one issue involved. Of the approximately 1000 SPIRES data bases which can currently be found on VM, only a small number represent databases which are actively being referenced and updated. Thus, the good news

is that the problem of converting active databases to another format, is limited to a small number of programs. The bad news is, converting these databases and utilities to a relational database, such as ORACLE, will require a large investment of manpower.

Let us consider the examples of the library, HEP, DEPOT, PHONE, ELDREQ, IKE, and MFG, database applications. Some of these databases, such as DEPOT, ELDREQ, can be straightforwardly converted to ORACLE databases. The only problem in doing this is the manpower it will take to make the conversion. For a moderate complex database like DEPOT, optimistic estimates say that the job will require one to two man-years to complete. Others, such as HEP and books, are not good fits to a relational database (read ORACLE) format, moreover there doesn't seem to be a commercial product which provides all of the functionality the lab requires from SPIRES.

Because full access to a SPIRES database requires a VM account, alternative methods of access will have to be provided when these accounts disappear. For those people who primarily access SPIRES databases, such as HEP, to make a query, WWW allows simple SPIRES searches. An improved way of carrying out more complicated searches using WWW forms is currently under development; thus, convenient access to HEP and books should be available over WWW before the transition process really gets going. For those people who have to update, or otherwise manage, a database such as DEPOT, IKE, or MFG, means of accessing these databases will be provided. Every attempt should made to isolate any new WWW interfaces developed for this purpose, from the server running the database. This will minimize the impact on the user, if and when future changes are made to the database engine.

Every effort should be made to support and extend WWW access to important databases as soon as possible. If and when management of a SPIRES database becomes possible over WWW, the users should be apprised of the change in a timely fashion and trained to use the new methods.

NOTE : While the previous paragraph discusses WWW access to SPIRES databases, this is not meant to rule out the possibility that some other interface, such as ORACLE forms, will be the preferred way to go. WWW was chosen as an example of what can be done and our use of it in this example is not meant to preclude other options.

PRINTING

It is imperative that printing files located on one's workstation, PC, or any other platform on the SLAC site, be made as simple and foolproof as possible. This means

that the laboratory must expand the number of networked, reasonably high-speed, PostScript capable, printers available to users.

Remote printing, i.e. printing of a file located on a SLAC machine at another site, is another issue that has to be addressed. Given the world-wide nature of the B-factory collaboration, we must make sure that remote printing of a SLAC document is as easy, in the future, as it is from VM. This is not quite as simple as it sounds, since security concerns keep us from exporting file systems off site. This means that the most straightforward way one can provide access to a remote printer, will not be available until AFS is up and running. In the meantime, the only UNIX supported way to accomplish this is to add every remote printer to what is called "the printcap configuration file" on every one of our UNIX machines, a solution which is not easy to support. Fortunately, a better solution is possible, if Willy Langeveld's lpr program, which we currently run on Amigas and VM, is ported to UNIX. This lpr allows a -h hostname option, which will allow a user to specify the remote machine which is to handle the printing job. This lpr requires no modification of files on SLAC's UNIX machines, it only requires that the specified printer be known to the remote host.

Clearly AFS and Kerberos must be brought on line as quickly as possible. Until that time, and until the various PC platforms have reliable ports of AFS and Kerberos available for them, it is important that remote users be able to print files from a SLAC machine on a remote printer. This means that an lpr capable of forwarding a file to a specific remote host be made available on UNIX at the earliest possible time.

TEX

For papers containing complicated equations, or papers to be electronically submitted to Physical Review, or papers where the best typesetting possible is important, access to TEX is mandatory. Fortunately, every platform, PC or workstation, provides a better TEX environment than that found on VM. In fact, whether one is running on a PC, X-terminal, or local UNIX workstation, one can not only TEX and print a file, one can preview it before printing it. The only problem with TEX in the distributed environment is that people have to be taught how to access it, either on their desktop or on a remote workstation.

In general SCS should provide classes which teach users how to access TEX and other word-processing tools on any of the supported platforms. As in the past, we would expect that people teaching these classes could be drawn, on a volunteer basis, from the user community. They should also provide on-line WWW documentation which explains how to run TEX on each supported platform.

SHARING FILES (GIME)

Currently VM users, from the most advanced to the most naive, know how to gain access to one another's files by using the GIME command. It is imperative that this sort of easy file sharing continue in the distributed environment. Clearly, for those of us who understand networking, FTP, NFS and TCP/IP, this is not a problem; however, since the transition process will involve people who are not computer-savvy, it should not be required that they understand all of networking to have this same functionality. Fortunately, since most of the less computer-savvy users will be running PCs on their desktops, access to the network will be through a GUI (graphical user interface) and much of the complexity of network access will be hidden from them. Unfortunately, since these same people will be sharing access to files located on UNIX machines, some problems will arise.

There is a well known problem associated with both FTP and NFS, namely that they can modify the protections on files and directories created from remote machines, depending upon the way in which they were started up. This means that users who transfer unprotected files from their machine to a group area, can have them arrive as read and write protected file. Similarly, a user who creates a directory on a remote machine using the tools provided by his or her local GUI can end up creating a protected directory without intending to do so. If this inadvertently happens, then any other user who expects to be able to access these resources will find them inexplicably unavailable; furthermore, it could well be that neither user knows enough about UNIX protection bits to even understand, not to mention fix, the problem. *Since this problem is bound to arise, it is necessary that SCS provide tools that are easy to use and simple to understand, to allow naive users to fix problems of this sort when they arise. We do not consider telling people to log on to a UNIX machine and use the chmod command, to be an adequate solution.*

In general, because life on a network is never going to be completely perfect, it is important that SCS provide on-line documentation explaining the operation of FTP. They should also provide some elementary classes to explain the ins and outs of basic networking to naive users. The lab must provide resources to support this effort.

ARCHIVING FILES

The ability to archive and retrieve files is a VM utility which people have depended upon for a long time. Clearly, since a great deal of personal and lab history is preserved in these archives, it is imperative that people continue to have access to VM archives during and after the transition process. It is expected that UNIX workstations will be able to recover old VM archives from tape, so this should not

be a problem. How this procedure will work for users who have PCs and do not have UNIX accounts, remains to be worked out. In any event SCS is well aware of the importance of preserving the user's access to old VM archives and will make sure that all users, on all supported platforms, will be able to access this facility.

SCS must develop and distribute tools for retrieving old VM archives for all supported platforms and train people in the use of these tools. On-line, WWW, documentation explaining the way in which one can access old archives must be created as soon as possible.

A new archiving facility, with functionality similar to that provided on VM, must be installed for the new distributed environment. Documentation which explains the features of this system, and its use, must be created for WWW. It is very important that we develop a policy which specifies how long future archives will be maintained.

Backing up data

Automatic backup of disks is different from archiving specific files, in that it is done indiscriminately and generates a much greater volume of data. It is also harder to read VM backup tapes on a UNIX machine.

SCS is currently testing a general facility for carrying out automatic and scheduled backups of UNIX machines. The details of this implementation remain to be worked out, but a facility capable of centrally backing up data on all networked UNIX machines is expected to be in place by winter of 1994. The problem of backing up PCs is more difficult. It is unlikely that an automatic mechanism for centrally backing up these machines will exist in the foreseeable future.

VM users have become very used to the fact that their files are automatically backed up on a frequent basis and can be used to recover from unexpected problems. In the future PC users will have to be trained to regularly back up data kept on their local machine. For users who do not wish to have to deal with this problem, SCS should provide a mechanism which permits a PC user to transparently maintain and access data on a central file-server. This will allow SCS to provide such users with the same services they have come to expect in the past.

Since VM backup tapes will probably not be readable by UNIX machines, a mechanism for retrieving data from old VM backups will be maintained throughout the transition period. Since this ability will become increasingly difficult to maintain after the transition is complete, a policy for phasing out access to old VM backups will be developed. This policy will be clearly defined and users will be encouraged to recover data which they will need in the future before access to old VM backup tapes disappears.

Other Roles For A Central Fileserver

It is important to note that making it easy for users to maintain files on a central fileserver will, in addition to making automatic backups of important data possible, allow for file sharing in a manner analogous to that provided under VM by the GIME command. We believe that, while maintaining a central fileserver will not solve everyone's problems, it will be an important part of the transition process.

Graphics (UGS, CHP and TopDraw)

In the past Unified Graphics, TopDraw, and Conversational Handypak were the default tools used by most people to produce graphics output. Since people needed to be able to display graphics output on dumb terminals, drivers for Tektronix emulators exist on VM. At first it was thought that, in the new UNIX and X-windows dominated environment, support for UGS could be dropped and the graphics standards of the UNIX world could be adopted. It has became clear that these expectations fail to gibe with reality in two ways. First, there really isn't a firmly established UNIX graphics standard to move to. For this reason many groups have entertained the possibility of porting UGS to UNIX on their own. Second, many people who need to get vitally important work done, *need* to be able to run jobs which produce graphical output from home, over a telephone connection. For these people it is imperative that it be possible to log in over a phone line to a UNIX machine and still be able to get graphical displays sent to a dumb terminal, or PC terminal program, which is capable of displaying Tektronix pictures.

To avoid expensive and counterproductive duplication of effort SCS should support the porting of UGS, UGS based TopDraw, and UGS based Conversational Handypak, to our UNIX platforms. It is our understanding that Bob Beach's code is in good enough shape that porting the kernel will not be difficult; the majority of the work will be the creation of Tektronix and Postscript drivers. Apparently a port of current SLAC UGS code and the creation of Xwindows, PostScript and Tek4010 drivers has been done by Arthur E. Kreymer at Fermi Lab. The current release includes a port of Topdraw and the associated Mortran and UGS files. This port runs on AIX, IRIX, SunOS 4 and ULTRIX systems. It is available by anonymous ftp from FTP.FNAL.GOV. It is our understanding that this version will be supported by Dr. Kreymer. If this port proves satisfactory in our environment then our contribution to the effort might be reduced to simply providing Tektronix 4105 support.

In general, we believe that past experience has shown that SCS should have a person who, at least for part of his or her time, is charged with maintaining graphics tools at SLAC. This person should be responsible for maintaining the port of UGS and

TopDraw, and for the creation of WWW help information explaining the use of these tools. Once a satisfactory port of UGS to UNIX has been acquired, this person should be responsible for exploring new tools and standards as they arise, and planning for the systematic incorporation of these standards into our computing environment.

Fortran and C Software Development Tools

Good Fortran, C and C++ compilers and debugging tools are available under UNIX. What is missing is easy access to the information which explains the way in which one accesses these tools. SCS should develop WWW help files which explain what resources are available at the laboratory and how they are used. We suggest relying on WWW and not UNIX tools such as man, because man files which correctly explain these issues are not available on AIX machines. IBM workstations have their own Info-Explorer interface to help and the situation can confuse the novice user.

Replacement of the VM Batch Compute System

For certain users the most prominent effect of the VM phaseout will be the loss of the VM batch system, the CPU cycles it provides, its automated access to a robotic mass-storage system (the cartridge silos), and high-speed I/O bandwidth to mass storage media (disk and tape). The combination of high-speed data access, relatively large compute capability, and a well-designed batch scheduling system on a single mainframe provides an excellent environment in which to do number-crunching tasks, and its replacement must be attended to with serious thought. Fortunately, it appears that the lost functionality can be replaced by similar and probably enhanced capability on the SLAC Unix system.

However, because of the nature of distributed computing where the functions of data storage, batch control, and number crunching are provided by different compute platforms separated by network connections, care must be taken to design a system that will provide the same throughput, or better, of jobs that VM does.

CPU cycles

The first concern is the availability of raw CPU cycles. It is expected that VM will be replaced by a "compute farm" consisting initially of ten or so batch compute

servers, each of which is about half the raw compute speed* found on VM. Another set of compute servers will be provided for interactive use, intended for interactive software development and debugging, and for running "short" jobs.

It is expected that the initial farm will be upgraded in the near future with another ten or so compute servers, doubling its capability, and yielding far more compute capability than VM does at present. It should be noted that a pilot compute farm consisting of three compute servers exists already, and has been successfully used by a few physics groups.

These compute servers must be in place, and users provided with the opportunity to be trained in their use, before VM is phased out.

Batch Scheduling System

VM has had for many years a successful batch scheduling system that provides much flexibility in controlling access to VM compute resources. This system provides resource control based on group membership, estimated job resource requirements (CPU time, tape access, print requirements, etc.), and prior use of allocated resources. It has been fine-tuned over the years to provide optimal allocation of the VM resources available, and its operation is well-understood by most users.

A minimal batch system is already available on the SLAC Unix system. However, it does not at this time provide all the capability of the VM batch system (for instance, there is no mechanism to prioritize resource allocation based on previous use by a group on a daily or monthly basis). This situation is being investigated by SCS and indeed an agreement has been reached with IBM to collaborate on the development of an enhanced system which does provide more of a VM-like prioritizing batch system.

The development of a prioritizing batch system must in place before VM is phased out.

Automated Tape Access

At present the robotic tape silos are controlled, for the most part, by VM. However, they can also in principle be controlled by a Unix tapeserver, providing the same degree of transparency to the user that VM does. It is expected that tape access will be provided by staging through a tapeserver to one or more 60 Gbyte Unix

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* Since everyone has their own favorite method of calculating number-crunching capability, it is difficult to define exactly what "compute speed" is, but in this context it is used to provide an approximate estimate for comparison of the capability of VM versus the Unix compute farm.

fileservers, and then data will be transferred to/from the compute servers from the fileservers.

It is expected that, initially at least, tape access will be available **only from Unix and only through a staging system**. There will be no direct access to tapes, and no interactive use of tapes (which is also the case on VM). PC or Mac users who need to process a tape will need to logon to Unix to do it.

In the past, tapes on VM were also used to transfer data to and from off-site institutions by physically shipping the tapes. Current tape technology for sites which do not have robotic silos dictates use of 8 mm or 4 mm tape media. In order to continue data transfer by tape shipment, some access must be provided at SLAC for these tape media.

Tape access from Unix must be available before VM is phased out, including not only silo cartridges but also 4 mm and 8 mm media.

High-speed Access to Mass Media

Another major concern is the loss of high-speed access to mass media. The VM system, by its very nature as a mainframe, has very high speed access to its I/O devices. Currently SCS is evaluating various fileserver configurations that can provide a few 10s of megabytes/sec bandwidth between the compute servers and fileservers, which should be adequate for the typical physics analysis program. Note that this refers to large datasets usually staged from tape, and does not refer to personal or group data. That data will be on AFS fileservers of different design.

Adequate bandwidth between fileservers/tapeservers and the batch and interactive compute servers must be in place before VM is phased out.

Known Problem Areas

The Network

Speed and Robustness

The entire concept of a distributed, client-server, computing model depends upon speedy and reliable network access. We are, at present, engaged in the process of upgrading our installation, which is not currently capable of supporting the load that will be generated when all users move off VM. It is crucial that the SLAC network show significant improvement over its current level of performance, and that there are enough compute and WWW servers available to provide the

quick response to user demand required in a smoothly functioning operation. For example, at present access to WWW services is often unacceptably slow.

Network Expertise

Currently networking expertise is not accessible through a single central source. There are separate networking efforts maintained by SCS, the linac and various user groups. Much of the experience with managing the client side of networking PCs and Macs lies not in SCS, but out in groups such as ES&H and Group A. People like John Windberg and Romain Agostini (who does work half-time for SCS) have experimented on their own to find hardware and software combinations which work in our environment. A formal reexamination of this division of responsibility should be undertaken to determine the best way to proceed. Even if, after careful consideration, this division of responsibility is deemed to be a good way to proceed, we must create a centralized way of sharing the expertise of the various groups, with the general community. In an era of declining resources it is imperative that we avoid needless, repetitive, duplication of effort.

A Policy For Software Control

Another problem which arises in a distributed computing environment concerns the control of the number of users accessing a particular piece of software. In a distributed environment users will have easy access to remote machines, the ability to copy software installed on these machines, or the ability to run that software remotely. This raises copyright and acceptable-use issues. It is necessary that SLAC establish a formal policy about how access to software which is not site-licensed will be controlled. It would seem that we should encourage the development of a simple mechanism for bulk purchasing, or site-licensing, of required software. If we do not do this, then past experience makes it clear that we will have to buy software on a piece-by-piece basis. This will be much more costly to the lab, and will result in lengthy delays, as the requisitions have to wend their way through the acquisition process.

Software and Hardware Acquisition

It is important to point out that the way in which we manage the acquisition of software and hardware is an area that needs serious attention. If we do not find ways of streamlining the purchasing process, then it is inevitable that the transition process will be unnecessarily delayed, given the volume of new PCs and X-terminals which will have to be acquired in the near future. Most people at

the lab have first-hand experience of the lengthy delays encountered when a group attempts to make authorized purchases of needed equipment.

It is our understanding that the general problem of streamlining the purchasing process, both for hardware and software, is being considered by the Standards Working Group, and that this group believes that one benefit of establishing site-wide standards is that it will allow us to set up improved purchasing procedures.

Business Services

The changeover of the Business Services Division to a new computer system will be one of two issues, the other being SPIRES, which defines the rate at which VM can be completely phased out. Even the most optimistic projections would seem to place the period during which this changeover will take place to be about three years. During this period SCS will have to provide a way for the current VM-based accounting software to operate.

The Business Services Division also has special printing needs, which must be addressed as part of the transition process. BSD is one of the heaviest users of the high-speed line printer located in the computer center. This printer is currently on its last legs and the question of whether or not it should be replaced is under study. *It is the committee's opinion that this expensive step should not be taken without strong justification. We would encourage the committee overseeing the BSD conversion to look into this issue in some detail. They should decide if their needs couldn't be better met by installing modern, high-speed, PostScript capable, laser printers in secure locations in their own building.*

Working From Home

While solving the problem of support for Tektronix graphics under UNIX will allow people to continue working from home in much the same manner as they do now, this does not present an optimal solution for the more distant future. Clearly, as more and more people come to rely upon access to a graphical user interface, it will be necessary for them to have a way of accessing network services from home. A far from satisfactory, but minimally acceptable solution can be provided by fast modems and SLIP access. Eventually, a better solution will be provided by ISDN services, if and when they become available through the telephone company at a reasonable cost. While this will certainly not be the case in the next three years, it most probably will come about in the not too distant future.

The laboratory, particularly the people in SCS, should continually be mindful of how their future decisions will impact people who have to work from home, often at inconvenient hours. The work these people do is vitally important, and usually

must be done in a very timely fashion. It is important that they avoid any action which will make it harder for these people to do their job.

SLUO SUPPORT

As activity in the B-factory collaboration continues to increase the laboratory will have to address the fact that an increasing number of users will need access X-terminals. A policy as to whether these will be provided by SLAC or brought in by the outside user and attached to the SLAC network needs to be developed in the near future. At present there is confusion as to whether or not SCS will provide support for terminals brought in by outside users. Clearly, this is a matter of great consequence to SLUO members, and it must be addressed definitively at the earliest possible date.

Conclusion

At present we see no insurmountable obstacle to moving most users off VM within eighteen to twenty-four months from the start of the conversion process. We expect the complete phasing out of VM in a three to five year period, provided the monetary and man-power resources can be brought to bear on the problem of converting existing SPIRES databases to other formats. We see no reason why, if the lab pays attention to the details, provides the necessary training classes, and creates a robust WWW based help system, the transition process shouldn't go smoothly and result in an improved computing environment for everyone at the laboratory.

VM Phase Out Committee Members

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Glossary Of Terms

FTP
File Transfer Protocol. The Internet standard file transfer protocol for transferring text and binary files from one computer to another. In other words, a system for copying files from or to another computer, if you have an account on that machine.

Anonymous FTP
Also known as 'Anon FTP,' a service provided to make files available to the general Internet community. Anonymous FTP does not require that you have an account on a remote machine, in order to copy files from the remote machine to your machine.

NFS
Network File System. Protocols developed by Sun Microsystems to let you use remote files as if they were local. So, rather than using FTP to transfer a file, you can read, and edit on the remote computer using local commands. If you are running NFS, then it is possible to *mount* the file system of a remote machine, so that it looks to you as if it is part of your local computer. This makes the process of accessing files on a remote UNIX machine transparent to the user.

AFS
Andrew File System. Another protocol to allow one to access remote files as if they were local. So, rather than using FTP to transfer a file, you can read, and edit on the remote computer using local commands. The virtue of this file system is that it gives the user much more control of how files are accessed, and provides increased security.

Kerberos
A protocol for encrypting passwords to be transmitted over the network. Used with AFS, Kerberos allows one a more secure way of allowing remote users to access files on local machines without having to type a password for every transaction. The encryption insures that it is not simple to learn user passwords by eavesdropping on network traffic.

TCP/IP
Transmission Control Protocol/Internet Protocol. A common computer data standard combining transport and network level protocols. Often used with Ethernet

as a physical layer protocol. This is a software layer which underlies NFS or AFS. Typically, the average user doesn't need to know about this at all.

SLIP
Serial Line IP. A protocol that allows a computer to use the Internet protocols and become an Internet member with a standard phone line and a high-speed modem. Being superseded by PPP but still used. Having a SLIP account will allow a person to log onto the SLAC network from home.

PPP
Point to Point Protocol. A protocol that allows a computer to use the TCP/IP protocols and become an Internet member with a standard phone line and a high-speed modem. Supersedes SLIP.

VM
Virtual Machine. This term, as used in this document, really refers to the operating system of our IBM mainframe. It is the computing platform which most people at the laboratory have been using since the early 1980's.

X Window System (TM)
A popular window system developed at MIT and implemented on a number of workstations. It allows for a windowing interface, replete with drop down menus, buttons, etc., to a UNIX environment.

X-terminal
A terminal which is capable of running the X Window System. This is a smart terminal which contains a sophisticated micro-processor, but differs from a PC or workstations, in that it can't be used as a stand-alone machine for doing text-editing, etc.

Date: Tue, 20 Sep 1994 09:42:49 -0700
To: dine@scipp.ucsc.edu
Subject: Re: fine tuning

Hi Michael
The formula for the charged Higgs mass shows that it will be heavy for heavy squarks and/or small tan beta. The amount of fine tuning depends somewhat on the singlet vev, which depends on the Yukawa
coupling of the singlet to the new quarks. This could also be bounded from above by requiring that the Yukawa not be so big as to give a low energy Landau pole and from below by requiring that the new particles be sufficiently heavy.
My conclusion so far about fine tuning, from random experimentation, is that for tan beta near 1-2 and for some range of singlet vevs and squark masses a charged Higgs mass
of 500-600 GeV doesnt represent severe fine tuning. I would consider doing a systematic study, in order to bound the charged Higgs and susy particle masses, but dont want to scoop anything from Bagnasco. The fine tuning I have considered is whether k and lambda have to be tuned to be near a phase transition for SU(2) times U(1) breaking.
Regards
Ann

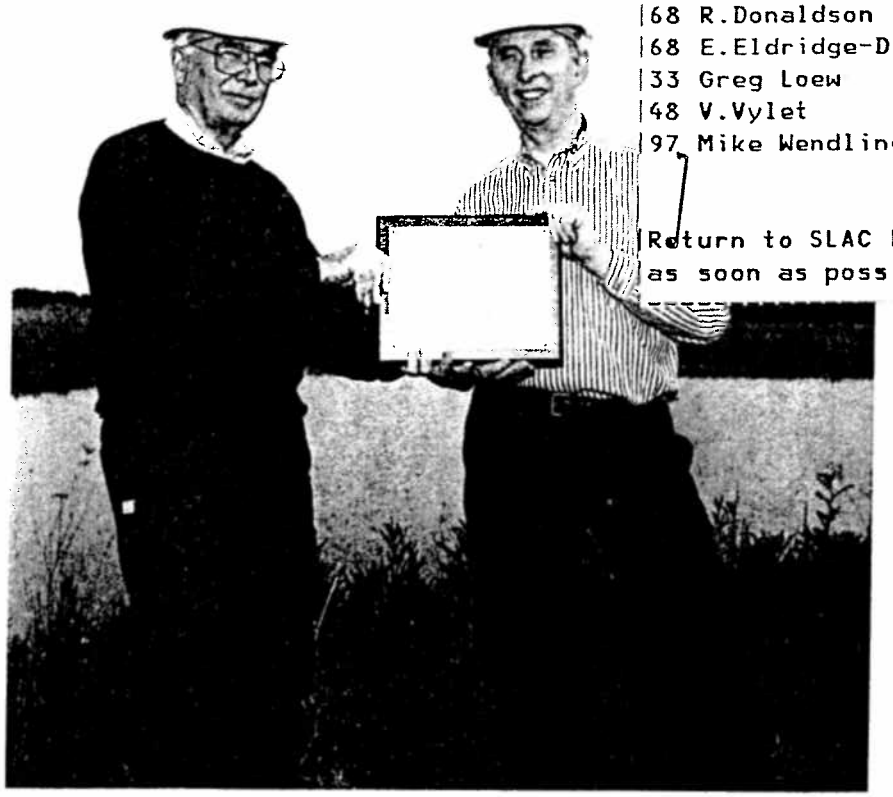
FermiNews

The Newsletter of the Fermi National Accelerator Laboratory

DUCKS, GEESE AND DOE RECOGNIZE FERMILAB WETLANDS

From last month's Congressional debate on the Clean Water Act: *"Only a psychiatrist could explain to me why the ducks and geese...are so much better at delineating wetlands than five federal agencies. At least they can figure out where to land, and they have never landed in the parking lot at the Sands Hotel which, by the way, has been declared the jurisdictional waters of the United States of America."*—Representative Jimmy Hayes of Louisiana.

Ducks and geese do land in Fermilab's new 8.5-acre wetland along Indian Creek, in the center of the Main Injector accelerator ring. And the Main Injector Project itself has landed an award for the quality of the fledgling wetland. On May 23, WILLIAM FOWLER (AD) and DON COSSAIRT (ES&H) accepted on behalf of Fermilab the Department of Energy's 1995 Office of Energy Research NCO Quality Award for Environmental Planning.



Physicist William Fowler conveys wetlands award to Director John Peoples in the award-winning wetland.

In a letter announcing the award to Director JOHN PEOPLES, DOE's Director of the Office of ES&H Technical Support, Joseph Maher, wrote, "Construction of the Main Injector required the taking of 5.7 acres of wetlands, the loss of which was mitigated by a replacement of 8.55 acres of wetlands in the same watershed of Indian

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FermiNews

Friday, June 16, 1995 • Volume 18, Number 10

COMPUTER MISUSE BRINGS FOUR EMPLOYEES SUSPENSION

Improper use of a Fermilab computer and the communication network resulted in suspension without pay for four Laboratory employees in recent weeks. In addition, a user received a strong warning that further evidence of improper use would result in suspension from access to Fermilab's site and computers.

In each case, when Laboratory management learned of network access to sites with predominately inappropriate material, Associate Director TOM NASH requested that the Computing Division immediately conduct an investigation of the individual's computer files. The investigations revealed storage on the employees' workplace personal computers of graphic images clearly unrelated to Fermilab's scientific activities.

"A published statement governs the use of computers at Fermilab," Tom said. "I wrote to all employees on October 13, 1994, enclosing the Laboratory's statement on the use of computer facilities. These suspensions show how seriously we take the policy, and how strictly we plan to enforce it. Our ability to preserve the free and open scientific atmosphere at Fermilab requires that employees exercise common sense in the use of computers and the network."

The Computing Division records the destination, source and length of all data entering or leaving the Laboratory on the network. The Computer Protection Program Manager (CPPM), IRWIN GAINES, and his assistants, monitor this information for indications of abuse.

In this issue of *FermiNews*, the Laboratory publishes a new policy statement on Publishing and Accessing Information on Electronic Networks (see page 3). The policy addresses the new and powerful capabilities of the Internet and World Wide Web. It is based on work over the last month by the Computing Division, which will issue related procedures and guidelines to assist managers, employees and users.

Improper use of computers also includes "hacking," attempts to access a computer without authorization. "With the summer here, supervisors should be sure to remind temporary employees that hacking of Fermilab or outside computers is a particularly serious no-no," Tom said. Employees who have questions about proper use of computers and networks should consult their supervisors or Irwin Gaines.

WETLANDS

continued from page one

Creek. The wetlands mitigation project was thoughtfully planned and implemented, and has a good chance of success."

Federal laws require replacement of wetlands lost to construction, but not all new wetlands stay wet. Accounts abound of wetlands that revert to dustbowls as soon as developers leave town. Brian Smith, a wetlands scientist of the environmental engineering firm Consoer Townsend Envirodyne, who helped plan and design Fermilab's wetland, believes that successful wetland creation requires a combination of "good science, enough funding—and rain. When wetlands fail, it is usually for lack of one or more of these factors."

Fermilab's Fowler, who oversaw the Environmental Assessment for the Main Injector Project, which included the wetland, estimates the construction cost of the wetland at $700,000.

ROD WALTON (ES&H), Fermilab environmental scientist and a technical consultant to the project, supported Smith's view. "Good science at Fermilab included careful siting of the wetland in a place that required minimal excavation, surrounded by natural wetlands," he said. "There is already a band of forested wetland along Indian Creek; we just added to it. Then we had two wet summers in a row."

Rod explains that wetlands serve three main functions in the environment. They provide floodwater storage to prevent downstream flooding; they preserve species diversity; and they have a high capacity for cleansing water, preventing pollutants from moving downstream.

Clarence Hickey, NEPA Compliance Officer for DOE's Office of Energy Research and ER Director Martha Krebs presented the award for the wetlands at a ceremony in Washington, DC. No ducks or geese were present.—*Judy Jackson* ■

Lab Reissues Electronic Network Publishing and Accessing Policy

The technology of the international computer network (Internet) and the evolving applications and standards that support it (especially the World Wide Web) provide unprecedented power to access and publish information almost instantaneously. Its impact on the collaborative field of high-energy physics is particularly profound. It is an ideal tool for communication in the field. Fermilab strongly encourages its use.

This new capability comes with new challenges and individual responsibilities since this technology invites a much more immediate and wide dissemination of information. Despite the new power of this technology, the fundamental policy of Fermilab, and of its parent agency, about information and the use of government property remains unchanging and simple:

1. Fermilab's single mission is science and the Laboratory will maintain an open scientific environment where the free exchange of ideas is encouraged and protected.

2. The use of government property is for the government's purposes only.

There is no real conflict between these two principles since Fermilab's mission is for the government's purposes. The problem is in the interpretation of which ideas and what information are in the interests of Fermilab's science and open environment. Fermilab's policy is to take the broadest possible interpretation. There is a large gray area, and to protect the free exchange of ideas, it is the responsibility of every Fermilab employee and user to use common sense and good judgment.

Some material is not in the gray area. Sexually related material is clearly inappropriate, and when found either on Fermilab computers or posted externally from a Fermilab network address, Fermilab will initiate disciplinary action, including, at minimum, suspension without pay for employees, or suspension of site and computer access privileges, for users. In some cases, certainly those involving the felonious possession of pornography involving children, the government will take criminal action. Other legally prohibited material, such as interstate gambling information, could also bring severe disciplinary or criminal sanctions.

Many people access the network and its postings. Most of them are from outside the scientific culture, and they may not understand how a particular posting may be related to the government's business. Therefore, it is Fermilab's policy that material which is published or posted with external visibility must be clearly related to Fermilab's scientific mission.

The ease of use of this technology breaks down traditional mechanical barriers to publication prior to review. The disappearance of these barriers does not permit bypassing established rules and procedures regarding publication. For the purposes of these rules and procedures, electronically posted information with visibility external to the Fermilab community are to be understood as public documents.

The many crosslinks possible (on the Web, for example) and their ephemeral nature, means that pointers (links) to external addresses can quickly become a source of embarrassment. Employees and users should use common sense in displaying links on pages with Fermilab addresses; a link should only point to material that is predominately appropriate reference material—and likely to stay that way.

The head of the Directorate's Office of Public Affairs has the responsibility for maintaining a home page and auxiliary pages presenting Fermilab to the public. Other Laboratory entities may also provide such public information. In each case, there must be an individual, approved in writing by a division/section head or a scientific spokesperson and identified on the electronic page, with responsibility for the material. Division/section heads and spokespersons are responsible for determining the classes of material that should be posted for external (as opposed to Fermilab community) access.

Under the oversight of the associate director for computing and information, the Computing Division, through a Lab webmaster, will manage and lead the use of the World Wide Web and related information systems. The Computing Division will disseminate rules and procedures to implement the policy described here and in related policy statements, and will provide evolving technical guidance particularly with regard to protection of material not released for external viewing. The Computing Division also prepares related documents such as *Proper Use of Fermilab Computing Facilities* and *Responsibilities of Fermilab Computer Users.*

STATUS; NO ACTION TAKEN

SLAC MEMORANDUM

November 4, 1994

TO: D. Leith
FROM: J. Winters and the Rest of the WWW Technical Committee
SUBJECT: Privacy and Confidentiality Issues in SLAC WWW Information
cc: C. Dickens

EXECUTIVE SUMMARY

World Wide Web (WWW) is a graceful and powerful Internet tool for accessing and manipulating information around the world. Its use has burgeoned in the past year, expanding far beyond its origins in HEP. The global audience does not know the SLAC context, nor perhaps anything about the institution. SLAC needs to find a new balance between open access to information, an integral part of the SLAC, WWW, and HEP traditions, and restricted access as SLAC's privacy and confidentiality needs require. Current WWW software limitations also affect the model.

Some information like confidential enterprise data and papers in progress are generally too sensitive to be put on the Web at all. Other information like accelerator operations logs and *The Interaction Point* may most appropriately be restricted to those logged in from the SLAC Internet address. However, material that is useful to distribute should generally be made available to the global WWW community. Lab management should encourage information owners to contribute material to the Web and maintain it. This sharing will help restore a collegial atmosphere to SLAC computing.

Institutional responsibility for putting information on the Web, specifying its accessibility (SLACwide or global), and removing it lies with the group leaders or their designates. Group leaders must also authorize all WWW servers because with current technology, they can present serious security issues if incorrectly configured.

Individual information providers are accountable for materials they place on the Web. Before installing their first item, providers must have a discussion with their group leaders on privacy issues. For subsequent items providers must interrogate themselves about the consequences of making the material available. Group leaders can modify the status of any item. To promote informed decisions, SLAC must proactively develop a common view of what types of information need what kinds of privacy restrictions and publicize the model through presentations, discussions, and on-line and printed documents.

This privacy proposal tries to strike a balance between making SLAC information available on the Web in a timely and minimally onerous fashion while meeting SLAC's needs to restrict access to a subset of its information. The model may well evolve as WWW technology improves. To implement the proposal, more resources must be dedicated to SLAC's WWW effort.

1). touches security only via authorize for servers + passw. security issues.

2). Makes gp leaders responsible for www pages under them.

3). Mechanism for - thinking about issues // consulting

4) → support documents → articles / presentations

5). No mechanism for resolution if gp leaders disagree!!

(this will come up again with SECURITY!

responsible?

ON WWW PRIVACY AT SLAC

The following proposal provides some background on the World Wide Web (WWW or the Web) and information access policies at SLAC, describes privacy and confidentiality problems in WWW, analyzes various aspects, and recommends ways for dealing with the issues.

N.B.: This document only addresses problems pertaining to the privacy and confidentiality of SLAC information on the Web. (These are hereinafter collectively referred to as "privacy" issues.) To implement the proposal, extra resources must be dedicated to WWW. Some of these will be used to develop related documents that treat WWW security, page creation standards and procedures, server establishment, and other topics. Without proper resources people will bypass the rules and procedures that do exist.

BACKGROUND

World Wide Web is a powerful, fluid, and flexible tool for sharing and manipulating information in diverse formats across platforms globally, from plain text and Postscript through hypertext, images, movies, and sound. People may also search data bases and perform other computing tasks remotely.

WWW was conceived at CERN by Tim Berners-Lee in 1989 and has spread very rapidly around the world in the past year. One recent estimate put growth in bytes retrieved at 1% per day!* Although WWW started as a tool for HEP collaboration, it is now being used not only by research laboratories and universities, but also by businesses, governments, not-for-profit organizations, and even individuals.

Since its inception SLAC has practiced an open information policy as part of its computer environment. Most on-line material has been readable by anyone who had computing privileges here. (In VM, that meant a READ password of ALL on most minidisks.)

The Web provides an opportunity for SLAC to extend its open information environment to people and groups around the world. This occasion also requires new decisions about the public or private nature of individual documents.

* Matthew Gray, Web Server Maintainer, Student Information Processing Board, MIT.