Charles Schwab

Year 2000 Project

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YEAR 2000 PROJECT

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Document Control Sheet

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Introduction

Welcome to the Year 2000 Project Team at Charles Schwab! This manual will provide you with the information you need to orient yourself to the policies, procedures, and people comprising Charles Schwab's Year 2000 Project Team.

Audience

This document is intended for the Year 2000 Project Team at Charles Schwab.

Disclaimer

The material in this guide was current at time of inclusion. The Year 2000 Project is constantly evolving, and therefore the information in here is subject to change. References to detailed source documentation is included throughout this book; please refer to it for the most current information. This manual will be periodically updated.

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Welcome Aboard

The Year 2000 Project is a vast undertaking. Its mission-critical nature requires that all employees and contractors rapidly become acquainted with the Project's basic structure and operations. Further, all Team members must have at least a working knowledge of the means by which the Year 2000 Project Team interfaces with Charles Schwab as a whole, including but not limited to corporate structure, communications, roles, and support.

Why Are We Here?

"Briefly stated, this is the problem: The software on many computers employs a two-digit shorthand for the date, so that the year 1982, for example, is written as 82. Unless the data fields are changed to reflect the arrival of the new century, computers will interpret the '00' as 1900, with potentially frightening results."

The New York Times

"The actual depth of the problem is unknown. However, there is a consensus that it is a monumental, labor intensive, and meticulous process that is posing an unprecedented challenge to the resources of the computer software industry and business in general."

Ann Deering, ADVice Inc.

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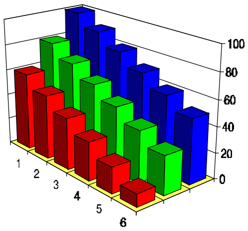
The New Millennium

Situation Analysis

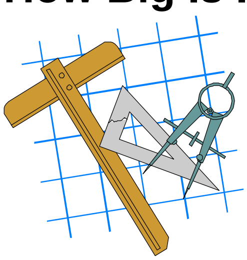


A phenomenon exists in the Information Technology industry today because many computer programs employ dates consisting of only two digits to represent the year (for example, 97 rather than 1997). In the past, this practice used substantially less computer disk space and saved corporations substantial sums of money for storage. This was considered a good business decision at the time, as it was generally accepted that these programs would be replaced long before the turn of the century. Financially, this was also a prudent decision as the estimated cost to fix this problem is considerably less now than what it would have cost to use four digit dates in the 60s and 70s.

This practice is no longer acceptable. Two digit fields produce problems with sorting, mathematical calculations, and comparisons when working with years between centuries. Systems will either fail, loop, or produce unpredictable data. We refer to this phenomenon as the Year 2000 Challenge.

This is a particularly large problem at Schwab since the brokerage business is highly date intensive. Some of the ways we use dates include: to calculate money market and margin interest, to determine settlement timing, to identify the correct calculation for commission changes, and to schedule dividend calculations and pay-outs.

How Big Is It?



This is the largest project ever undertaken by businesses! The scope of the Year 2000 Challenge is world-wide. It impacts systems such as payroll, purchasing, procurement, billing, and all other systems that perform any mathematical computation involving dates. Problems are encountered today in desktop software as well as old legacy mainframe applications. The Year 2000 Challenge is not limited to PCs and mainframes: Microwave ovens, heating systems with clocks, security systems, elevators, automobiles, insurance policy files, medical record files, mortgage calculations, and power grids are also potentially impacted.

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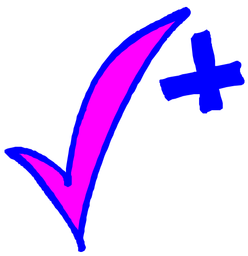
The estimated cost of rectifying the problem world-wide is between one and three *trillion* dollars. The risk of not addressing the problem is significant: loss of business revenue or business closure is certain. Business experts estimate that upwards of 30% of businesses world-wide will go out of business if they are not prepared. Sixty-five percent of U.S. companies will need to abandon new development efforts in order to gear up for the Year 2000 Challenge.

Information Week predicts that only 35% of all U.S. companies will be ready by January 1, 2000.

What Is Being Done at Charles Schwab?



Charles Schwab established a Project Office in October of 1996 directed by Roger Neaves, Senior Vice President of the Year 2000 Project. Wayne Fieldsa, Senior Vice President of Retail Brokerage Operations, is directing the Business tasks. Parkash Ahuja is the Senior Vice President of Administrative Services, which encompasses Facilities. Together, SITE, Business, and Facilities have formed a partnership to address the Year 2000 Challenge. This partnership is the Year 2000 Project Team. The Year 2000 Team is responsible for communications, financial tracking, strategy and planning, business planning impacts, standards development, vendor management, tools assessment, contract services, renovation, testing strategies, user acceptance testing, implementation, and post-implementation. The Team will ensure that computer systems function properly and without failure during and after century date changes.

The project size and scope is enormous. Thousands of work hours are required for assessment and planning, data conversion, testing, and implementation. Our dependence on the active participation of all the business units, vendors with whom we exchange electronic data, Schwab subsidiaries, and third-party software vendors poses significant challenges to the success of the Project.

The Mission of the Project

Our mission is to identify all systems within the scope requiring date change modifications, prioritize the conversions based on the needs of the business, convert the data, test the changes, and implement mission-critical systems by year-end 1998. This provides us with one full year to test the changes to ensure that the business functions remain fully operational and intact.

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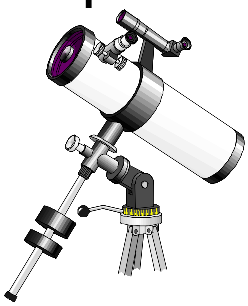
Strategy Papers

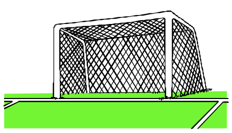
There are numerous documents available detailing the strategies for ensuring that Charles Schwab enters the new millennium with all its business functions intact. These papers are located on the shared public hard drive in the folder <\\n0009sfo\public\Year 2000 Project\>. Please refer to "The Shared Public Drive" section in this document for further information about the network drive, the information stored there, and its organization.

Scope of the Year 2000 Project at Charles Schwab



The Year 2000 Project mission is to ensure that all technological processes in Schwab are Year 2000 compliant so that the business will continue to operate into the next millennium without system failure at the same level of excellence our customers expect. The project scope includes all Schwab production computer and communications components. The Project Team has oversight responsibility for Schwab subsidiaries and facilities.

High - Level Project Goals



The High-Level project goals are to:

- 1997
  - ◊ Conduct an analysis of systems
  - ◊ Create enterprise-wide awareness
  - ◊ Complete detailed plans
  - ◊ Complete inventory of vendors
  - ◊ Convert trading subsystem: Purchase and Sales Reconciliation
- **1998**
  - ◊ Conduct Beta testing for Streetside testing
  - ◊ Complete conversions for Streetside Trading Test
  - ◊ Complete all mission-critical conversions by 12/31/1998
  - ◊ Complete validation of systems hardware and systems software

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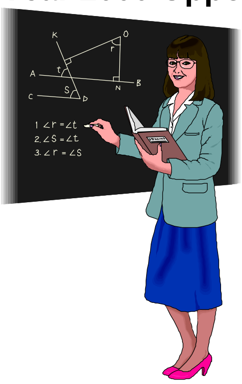
- **1999**
  - ◊ Participate in industry-wide testing
  - ◊ Complete re-certification and ongoing validation

Year 2000 Opportunities



Addressing the Year 2000 Challenge presents some exciting business growth opportunities for Charles Schwab & Co. Inc. Some competitors may be distracted in this endeavor due to the financial commitment and the resources required to bring systems into compliance, thereby increasing Schwab's market share. Charles Schwab has the opportunity to broaden its understanding of its systems, upgrade system inventory, and drive its efforts towards legacy retirement.

Scope Of Year 2000 Project Legacy Efforts

There are more than 270 DATACOM databases in use by more than 80 Legacy applications at Charles Schwab & Co. Inc. The majority of these tables are shared by multiple applications. Many of them have keys containing dates, and nearly all of the databases have at least one date field. There is a Web page available on the Schwab Intranet discussing IDMS retirement, Oncall lists, DB2, etc. You may view this information by visiting the SchWEB at <http://schweb.schwab.com/home>, clicking on SITE, and then clicking on Database Engineering and Service.

The Problem

Dates starting in the year 2000 will not process correctly when combined with dates in the current century unless century information is added to the year data. The Legacy system stores and processes most dates in a two-digit format. There are several methods available for correcting the problem, all of which are complicated by the size and interrelated functionality of the Schwab Legacy systems. The many interfaces to non-Legacy systems and outside processors complicate matters further. Each available conversion method has advantages and disadvantages, and all may be employed in some capacity to convert the Legacy systems. A primary method will be chosen for consistency. Rules will be developed for guidance in choosing the best method for each situation.

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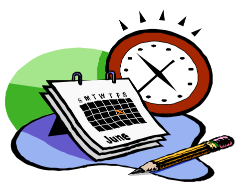
The Impact

A large number of Legacy components require changing in a very short period of time. Current estimates are:

- 80 applications
- 140,000 date references
- 22,875 date-conditional/arithmetic statements
- 4,000 COBOL programs
- 736 Online transactions
- 8,000 Batch jobs
- 280 DATACOM databases
- 1,200 COBOL programs that update DATACOM databases

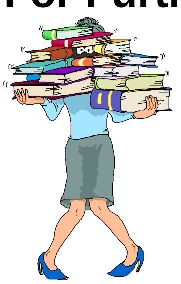
Databases have a single physical definition and are shared across applications. Conversion units based on shared data can be very large even within an application.

The Year 2000 Date Standard



The Date Standard establishes a common method for the retrieval, use, display, and storage of date information on all platforms. These include but are not limited to COBOL, HPS, Assembler, and EASYTRIEVE programs. We are in the process of developing detailed standards for client-server platforms that will be added where appropriate. We expect that developers for client-server platforms will use the four digit year. Please refer to the folder <\\n0009sfo\public\Year 2000 Project\Y2K Standards\> for the complete Year 2000 Date Standard document, which is in several sections. The Date Standard is subject to change; therefore, it is a good idea to periodically check the above referenced folder.

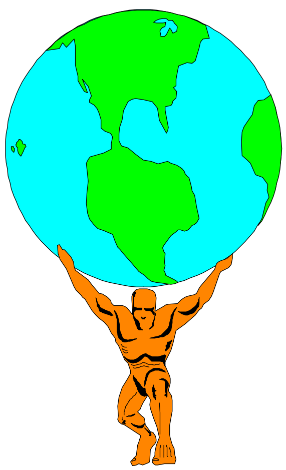
For Further Information



For further information, please visit the Year 2000 Project site at <http://n2000sch/y2k>. The Year 2000 Communications Plan, is located on the shared public drive, at <\\n0009sfo\public\Year 2000 Project\Project Planning Docs\Communications\COM_Communications_Plan.doc>.

The Year 2000 Project Team at Charles Schwab

The Year 2000 Project Team is a group of individuals working in three distinct areas: SITE, Business, and Facilities. This section outlines the organization and responsibilities of the Year 2000 Project Team . The diagram on the next page depicts a high-level view of the Year 2000 Project Team. The second diagram depicts the organizational structure of the Year 2000 Project Team. The remainder of this section is excerpted verbatim from the document <\\n0009sfo\public\Year 2000 Project\Project library\Working\Y2K_strategy.doc>, except for the section describing roles and responsibilities and the Facilities section, which are separately referenced.



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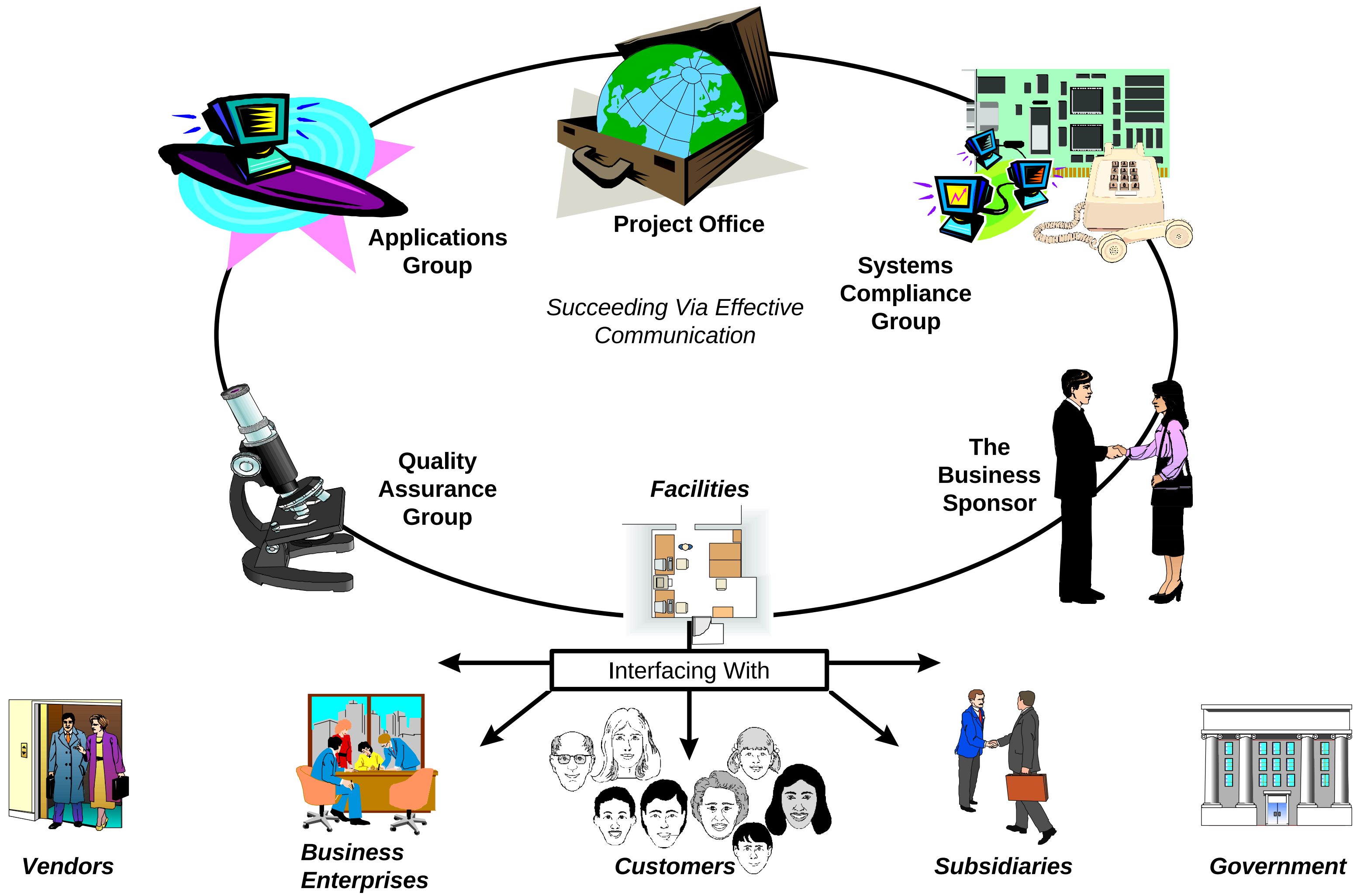
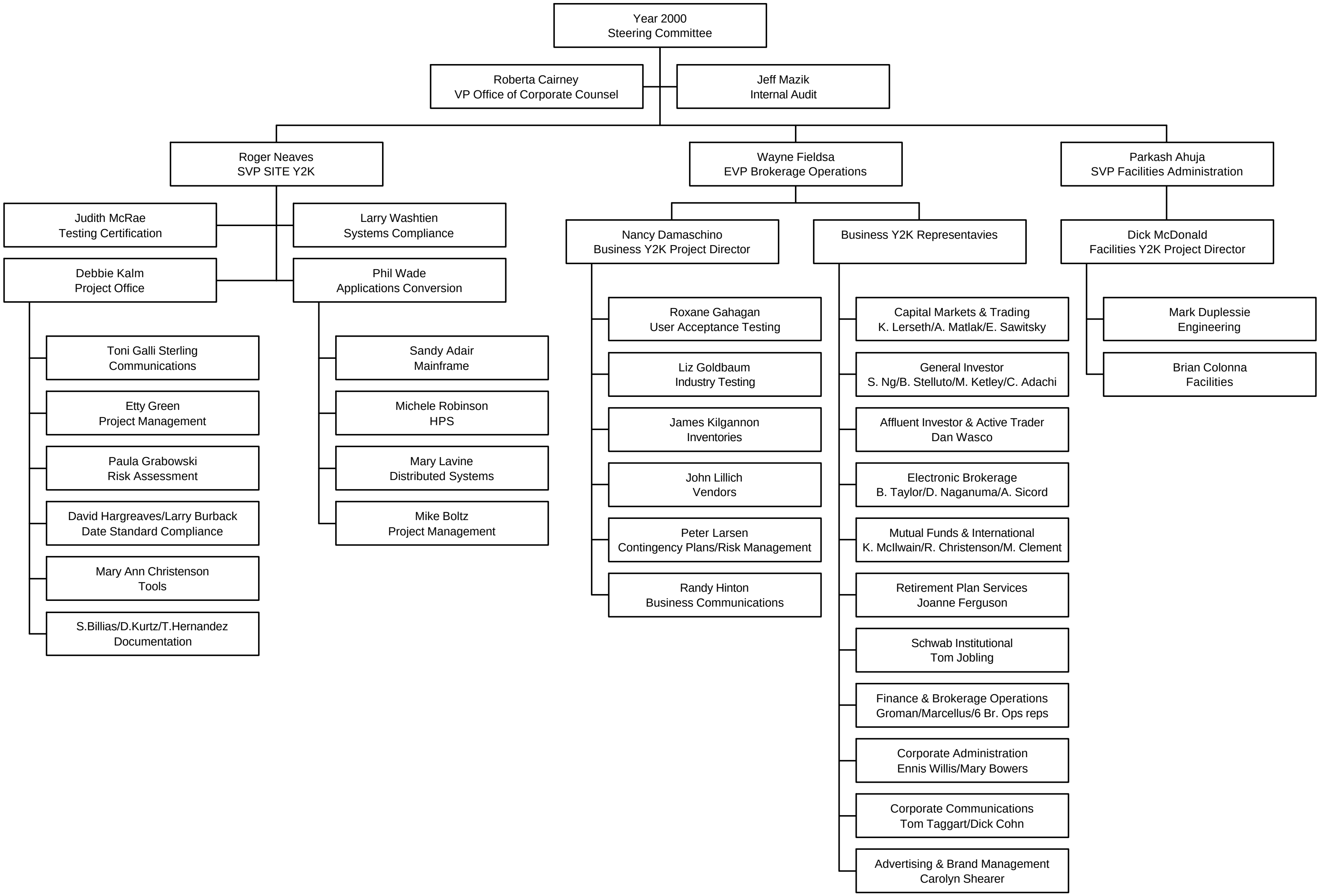
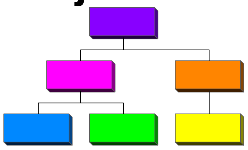
The Year 2000 Project Team Divisions - Working as one for the common goal.



Charles Schwab Year 2000 Project Organization



Project Team Organization



The Year 2000 Project is the partnering of the SITE Organization, Business, and Facilities. Each has established teams dedicated to the Year 2000 solution.

The SITE Year 2000 Organization has been divided into four interrelated project teams all reporting to a single Senior Vice President. These project teams and the primary roles they play are:

Project Office: The Project Office provides the infrastructure and oversight to Year 2000 Project. Key among the services provided are:

- managing key decision points ensuring that tasks are given appropriate attention
- ensuring that communication is properly handled within the Year 2000 Team, across Charles Schwab organizations, and to our customers
- providing overall project management standards and guidance
- providing support for Year 2000 tools
- identifying and providing liaison to other departments, such as the STS, Legal, Audit, Compliance, and Finance, as well as Schwab's subsidiaries
- providing audit and enforcement of Year 2000 date compliance for non-Year 2000 development efforts

Applications: The Applications Team identifies business functionality that must be renovated to ensure Year 2000 compliance. The Applications Team will renovate or coordinate the renovation of all applications across Schwab's technological platforms based on prioritization prepared jointly by the SITE and Business Year 2000 Project Teams. Applications to be renovated include legacy, HPS (SAMS), distributed applications, and application packages.

Systems Compliance: **-** The Systems Compliance Team identifies all mainframe and distributed systems software and hardware, network software and hardware, and voice software and hardware that must be renovated to ensure Year 2000 compliance. The Systems Compliance Team will work with each identified vendor to make sure that their product is Year 2000 compliant. After validating that compliance information from the vendor is accurate, the team will work with ETS and STS representatives to facilitate implementation of compliant versions, as needed.

Quality Assurance: The Quality Assurance Team has oversight responsibility for the quality of the Year 2000 applications development effort and for the overall Year 2000 project work. In this capacity, the QA Team develops and enforces standards for Year 2000 compliance and assists the Business Year 2000 Team in performing end-to-end testing to ensure that all renovated applications are Year 2000 compliant. The QA Team is responsible for assisting the Business Year

2000 Team in coordinating and conducting tests to validate Year 2000 compliance with regulatory agencies. Additionally, the QA Team ensures that certification testing performed for systems hardware and software compliance is consistent with Quality Assurance Year 2000 standards.

The Business Year 2000 Project Team has been divided into five interrelated project teams from Strategic Initiatives reporting into a single Senior Vice President. These project teams and their primary roles are:

- Vendor Relations
  - ◊ survey vendors for information related to date compliance
  - ◊ test appropriate interfaces
- User Acceptance Testing
  - ◊ define prioritization of appropriate changes
  - ◊ direct the business enterprise activities to define and execute user acceptance testing including business analysis, test script preparation, and test execution
- Contingency Planning
  - ◊ perform risk assessment
  - ◊ direct the business enterprise representatives in creating contingency plans
  - ◊ test contingency plans
- Inventory
  - ◊ collect non-SITE inventories
  - ◊ update and manage non-SITE inventories
- Regulatory Liaison
  - ◊ manage Streetside testing
  - ◊ provide liaison to regulatory agencies
- Business Communications
  - ◊ develops and delivers Year 2000 communications to Enterprise Representatives

The Facilities Year 2000 Project Team reports to a single Senior Vice President. This section of the Project is responsible for ensuring that Schwab buildings and facilities are Year 2000 Compliant. Their primary efforts are managed with the assistance of Johnson Controls.

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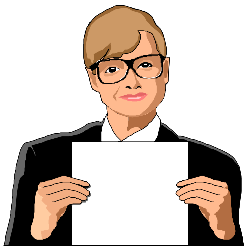
Roles and Responsibilities



The Schwab Year 2000 Project is a collaborative effort between the Business Units and SITE. The scope of the project is enormous as it impacts every Schwab business enterprise. It is the largest project ever undertaken by Schwab. As such, this effort is more a project management challenge than an application development project. Understanding all critical tasks and ensuring that they are all accounted for by a responsible person will ensure that no known work is left undone. The success of the project is largely dependent on the cooperation of every Schwab employee and certainly on the cooperation and active participation of members of the Year 2000 Project Team and Business Sponsors.

The Year 2000 Project Team has a thorough Roles and Responsibilities document available on the shared public drive at <\\n0009sfo\public\Year 2000 Project\Project Library\Master\New_Roles_&_Resps.doc>.

Each team member should have a clear understanding of his or her roles, responsibilities, and obligations, and should be aware of the contribution and work of others in the completion of a deliverable. Understanding one's own responsibilities as well as those of management, peers, and staff results in clear and open communication, improved teamwork, and better performance.

To provide for the most efficient working environment, some basic assumptions can be made:

- Management will be available within 24 hours for high priority and mission-critical issues.
- Reasonable and appropriate funding will be available to the Project Team.
- Peers will participate in and provide input to the planning process.
- Team members will:
    - ◊ be aware of each others' roles and responsibilities
    - ◊ be allowed sufficient time for tasks
    - ◊ ask for assistance/consultation when needed
    - ◊ review work of others and provide feedback as requested or immediately request an extension
    - ◊ escalate issues as soon as they have been identified.

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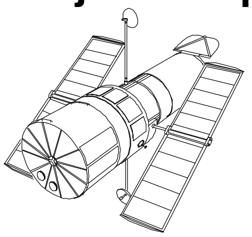
Project Scope



Changes need to be made to our systems to ensure that they are able to store and process dates beyond 12/31/1999. This will require the manual review of over 8,000,000 lines of code accessing databases on multiple platforms. Approximately 240,000 lines of code are impacted.

The objective of project scope definition is to focus resources on those areas most critical to our business.

Project scope includes all Schwab production computer and communications components, made up of:

- legacy, HPS, distributed, and intranet/Internet applications and application packages
- mainframe and distributed systems hardware and software
- voice hardware and software, and network hardware and software
- In addition to complete responsibility for effecting changes or upgrades for the above in-scope items, the SITE Year 2000 Project Team has oversight responsibility for Schwab subsidiaries.
- facilities

Project scope excludes:

- effecting changes for subsidiaries
- forms
- business system applications and reports not supported by SITE, such as FOCUS, Paradox, and Oracle database applications
- hardware and software equipment not supported by SITE, such as PC hardware and software purchased by the individuals or business Enterprises
- suppliers and service providers, such as PG&E, Brinks, Moore Business Forms, and providers of printed material

Finally, project scope excludes fixing deficiencies detected which are not Year 2000 related. Such deficiencies will be escalated through normal problem management procedures.

For those areas outside project scope, communications will go out via normal Schwab media including TDAY, SCHWEB, and E-mail providing information to guide individuals in changing their own systems. Depending on business justification and criticality, consulting and resources may be provided by the Year 2000 Project to assist in conversion needed for these systems. This may require additions to the Year 2000 budget.

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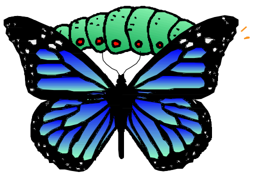
Project Phases



As with all development projects, the Year 2000 Project comprises the basic IT life-cycle phases: analysis, design, coding, testing, implementation, and post-implementation support. However, due to the magnitude of work required to achieve Year 2000 compliance within a fixed time frame, additional phases are required. This section briefly describes each of the phases of the life-cycle for the Year 2000 Project:

Awareness/Mobilization

"Raising Year 2000 awareness is a goal that has been linked to obtaining executive sponsorship."[1] Executive sponsorship is key to the success of this project. It is required to ensure that:

- overall project strategy is approved
- appropriate resources are dedicated to the effort
- the project receives the highest possible priority
- project communications originate from Executive Management and are delivered to the entire organization
- identified risks are appropriately managed

Once executive sponsorship is obtained, efforts to maintain awareness must continue by communicating project status and issues to the board, the audit committee, business enterprises and executive management. Further, awareness must be carefully managed to control and coordinate communication with our customers and shareholders.

Schwab has cultivated this awareness by establishing the sponsorship of the Chief Information Officer and Executive Vice President, Dawn Lepore, and the Senior Vice President of Brokerage Operations, Wayne Fieldsa. This backing enabled mobilization of the SITE and Business Year 2000 Project Teams, the establishment of the Year 2000 Steering committee, the formation of the Year 2000 Project Office, and the partnership between SITE and the business enterprises. Planning, the final stage of mobilization, was enabled by the establishment of these organizational areas.

[1] *The Year 2000 Software Crisis*, William M. Ulrich and Ian S. Hayes

Inventory

There are many computer related components where the Year 2000 problem can exist. Obviously, the problem is in the date fields stored in permanent files, temporary files and databases. However, this same problem also exists in

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application program logic where dates are manipulated in software developed in-house by SITE or business enterprise technicians or purchased off the shelf.

Besides the date fields in files and program logic, the Year 2000 problem exists in many types of equipment, both computer hardware and others. For example, most PC clocks cannot handles dates beyond December 31, 1999. The key characteristic of equipment that may have the Year 2000 problem is that it contains computerized chips. In addition to mainframe and personal computers, this problem may occur with printers, voice response units, and other non-computing electronic devices.

Finally, the technical infrastructure supporting business applications may also have Year 2000 problems. Examples include the network across which our data flows and mainframe and PC operating systems.

Schwab has taken an inventory of the SITE supported hardware and software including applications, support systems, network, and voice components. To complement this inventory, the business enterprises are consolidating inventories of their systems components along with inventories of suppliers, service providers and electronic data interfaces.

Impact Assessment

The objective of impact assessment is to identify all occurrences of non-compliant date references within each component included in the inventory. This information is consolidated to develop overall project estimates to remediate non-compliant references.

For mainframe applications software, impact assessment is completed with the assistance of automated tools. Tools acquired from Viasoft and Computer Associates identify date occurrences within all our applications software. Using both Schwab-specific parameters and industry accepted defaults, these tools apply algorithms to the assessment to produce project time estimates.

For other components, vendor surveys, user surveys, and high-level analyses were applied to the inventories to identify potentially impacted items. Time estimates for the remediation of these components were manually calculated by categorizing each inventory into comparable clusters, estimating the average time required for unit level remediation and applying those estimates to the overall inventory.

Analysis

High-level enterprise-wide analysis will be used to identify interdependencies across project areas, as well as to finalize prioritization of application remediation and system certification.

Following this activity, detailed analysis on each conversion/validation unit will be completed to create detailed plans for remediation and certification activities.

Remediation

Remediation is the industry term used to describe applications and systems software coding changes required for Year 2000 compliance. To complete remediation, choices must be made to determine the approach to achieve compliance from among a variety of alternatives. Refer to the Remediation Phase of the Applications Strategy for a more detailed description of the remediation options.

Testing

Testing of modifications is estimated to represent 50 to 60 percent of the overall compliance effort, based on industry averages obtained from the Gartner Group. Much of our testing effort will be focused on building an appropriate testing environment for compliance and creating a repository of regression test beds that can be leveraged beyond the Year 2000. The success of the testing effort is largely dependent upon the cooperation and active participation of the business units.

To ensure that the Year 2000 does not impact other SITE development efforts, Schwab has constructed dedicated mainframe and distributed Year 2000 test environments. These dedicated environments will be designed for expedited and repeatable testing activities. Further, these environments will be isolated from other development activities, which ensures that Year 2000 and general SITE development do not impact one another.

The objectives of testing are to ensure that current day processing is not adversely affected by Y2K remediation efforts, and that specific dates will not compromise our business processing.

The SITE Year 2000 Team will perform baseline testing. This entails running production data through existing production code, running the same production data through remediated code, and comparing the results. The results should be the same. This method ensures that our current-day processing is not adversely affected.

The SITE and Business Year 2000 Teams will also perform user acceptance testing and boundary testing. This entails manipulating dates in our testing environment and executing test cases that will specifically test how our business processes work for the dates. As the User Acceptance Test plans are developed for an application, the specific boundary testing requirements for that application will be identified. Some of the dates included in boundary testing are:

- 99/99/99 - this value is often used to indicate something other than a date
- 09/09/99 - this date is often used to indicate something other than a date
- 12/31/99 - last business day of 1999
- 01/03/2000 - first business day of 2000

- 01/01/2000 and 01/02/2000 - test only if the application processes on weekends
- 01/31/2000 - last business day in January 2000
- 02/28/2000 - day before leap year day in 2000
- 02/29/2000 - leap year day in 2000
- 03/01/2000 - day after leap year day in 2000
- 12/31/2000 - last day in 2000

Implementation

For applications, the implementation phase includes:

- scheduling production installations
- data conversions
- planning for possible back-out and contingency activities
- migration of components from the Year 2000 test environment following the Year 2000 change management process
- coordination of business certification for the post-implementation phase
- other change management related activities including ticket completion and approval

For hardware and software components, the Year 2000 Systems Compliance Team provides oversight during the distribution and production installation of the compliant hardware and software.

Post-Implementation Support

For each implementation, the SITE Year 2000 Project Team will be responsible for ensuring that the modified components execute successfully for a short time following the implementation. There is also an additional post-implementation support phase for the Business and SITE Year 2000 Project Teams. This is the support needed to correct any Year 2000 related defects occurring after 12/31/1999 and execution of contingency plans as necessary.

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Risk Management

Risk Management Process

Year 2000 Project Risk Management includes the processes concerned with identifying, analyzing and responding to risks associated with Year 2000 development, certification, and implementation activities. Risk assessments will be coordinated by both the Year 2000 Business Sponsors and the Year 2000 Project Office. The Business Sponsors will be focusing on the business risk assessment while the Year 2000 Project Office is focusing on the technical risk assessments. Risk Management includes the following major processes:

- Risk Identification: determining which risks are likely to affect the project mission, documenting the characteristics of each, and categorizing the risk events.
- Risk Criteria Definition: identifying criteria to determine the potential impact of a risk as well as criteria to determine the effectiveness of risk response control.
- Risk Quantification: evaluating risks and risk interactions to assess the possible range of outcomes, in terms of probability of occurrence, monetary impact, customer impact, and additional pre-defined criteria.
- Risk Response Development: responding to risks through alternative strategies, mitigation actions, and contingency plans.
- Risk Response Control: executing risk management plans, responding to changes in risks over the live of the project, and measuring the effectiveness of mitigation actions and contingency plans.

Creating a common framework for risk management within the Year 2000 Project provides the project team and senior management with:

- re-useable processes, tools, and techniques for risk identification and mitigation
- uniform metrics to measure mitigation actions
- consistent means to communicate risks and mitigation actions
- facilitation of process improvement through identification of recurring risks

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Project Office Strategy

Mission Statement

The mission of the Project Office is to oversee activities performed by the Year 2000 Applications, Systems Compliance, and Quality Assurance teams. Through this oversight, the Project Office is able to promote consistency across teams and ensure that appropriate priority and attention is given to all tasks. The Project Office provides infrastructure support to the Year 2000 Project by coordinating generalized and centralized functions such as project management practices, documentation standards, Year 2000 tools, and vendor support. The Project Office additionally provides a central group responsible for the audit and enforcement of Year 2000 date compliance throughout Charles Schwab development teams.

The role of the project office becomes even more critical once implementation begins. Ongoing monitoring, communication, reporting, coordination, and knowledge transfer are required to ensure successful completion of the Year 2000 initiative.

Scope Statement

The Project Office consists of the following sub-groups, each responsible for a particular aspect of the overall infrastructure:

Project Management Coordination

- Defines standards for the creation, distribution, management, and tracking of project plans across the Year 2000 teams.
- Assists in the creation of high-level project plans and detail project plan templates to be used by the all other project teams.
- Maintains the enterprise-wide project plans and notifies management of issues, problems, or variances that could impact the project along with recommendations for resolution.
- Maintains a broad perspective at all times to ensure coordination of tasks across project teams and with the rest of the organization.
- Defines roles and responsibilities for all Year 2000 Team members and for major Year 2000 Contacts.

Tools Support

- Partners with Applications and Quality Assurance team members to define requirements for Year 2000 specific tools, and investigates and recommends tools to support these requirements and provide tool support to project team members.
- Coordinates training and consulting provided by tool vendors.

- Responsible for maintaining communications with vendors whose tools have been purchased for the Year 2000 Project. Such communication includes:
  - ◊ technical inquiries from Year 2000 technicians
  - ◊ version upgrades and corrections
  - ◊ license agreement coordination and renewal
  - ◊ coordination of consulting and training

Communications

The Communications Coordinator champions all communications activities for the Year 2000 Project while working closely with the Business Communications Coordinator, Legal, and Compliance. Communications include internal communication, communications to and from our customers, vendors, regulatory agencies, governmental agencies, and shareholders.

The coordination of outgoing messages requires the development and execution of a process for obtaining approval from Compliance, Internal Audit, the Office of Corporate Council, Corporate Communications, and Year 2000 Senior Management. Refer to the Communications Plan for a list of target audiences, recommended messages, and communications vehicles for outgoing messages.

Incoming messages from customers should be routed to the Communications Coordinator for logging, tracking, and response. Each message must be logged to fulfill audit requirements. A standard responses for inquiries is available for customers. Consult the Frequently Asked Questions section of this document and the Year 2000 Project Team's web site at <http://n2000sch/y2k> for more information.

Documentation

- Defines standards for the creation, distribution, storage and archival of all Year 2000 Project Library documents.
- Supports the SITE and Business Year 2000 Project Teams by assisting with technical writing, document re-formatting, and the creation of meeting minutes.
- Ensures that the Year 2000 Project Library supports audit and regulatory requirements.

Risk Management

- Defines and executes the process for identifying, documenting, quantifying, and minimizing risks associated with the Year 2000 problem.
- Coordinates contingency planning for potential Year 2000 problems.

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Date Standard Compliance

- Maintains and enforces the Year 2000 Date Standard ensuring that all SITE development work performed by non-Year 2000 staff adheres to these standards.

In addition to these specific sub-groups, the Project Office Manager is responsible for providing liaison to the Year 2000 Key Contacts, including:

- Legal: Communicates project status to the Office of Corporate Council, obtains approval for communications and contract negotiations, and ensures that periodic review for Year 2000 liability insurance is completed.
- Purchasing and contract negotiation: Ensures that procedures are modified to include Year 2000 compliance assurances for purchases, as well as obtaining approval for Year 2000 Project acquisitions.
- Finance: Prepares and manages the Year 2000 Project budget, provides Schwab finance department with budgets, accruals and variances, prepares quarterly project report card, prepares quarterly enterprise reports (QER) and prepares Investment Opportunity documentation (IO).
- Audit/Compliance: Provides responses to inquiries for Year 2000 Project information generated by Audit and Compliance, as well as providing input to their Risk Reporting.
- Schwab Technical Services (STS): Identifies necessary Year 2000 Charles Schwab Support Organizations within STS and resolve issues between the SITE Year 2000 Project Team and STS technicians and management.
- Enterprise Technical Services (ETS): Coordinates development efforts and funding with the ETS organizations.
- Senior and Executive Management reporting: Coordinates development of a monthly management reporting mechanism for the Year 2000 Project, presents Monthly Management Report to Senior Management, and prepares Year 2000 presentations for Senior Management and others.

Phases of Project Office

Awareness/Mobilization

At the inception of the Year 2000 Project the Project Office must assume primary responsibility for overall project startup tasks. These tasks include:

- definition of the organization structure
- obtaining sponsorship of key support personnel, including but not limited to a reasonable allocation of dedicated time in support of the Year 2000 Project
- creation of roles and responsibilities for the Year 2000 Project Team members and support personnel

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- initial awareness campaign targeted at Senior Management
- coordination of initial education for Year 2000 Team members
- development and publication of the Year 2000 Date Standard
- creation of overall project management structure and strategy
- coordination of initial pilots to validate tool selection and conversion

As these tasks become formalized, many of them become primary responsibilities of the Project Office beyond the mobilization and awareness phase.

Remaining Project Phases

The Project Office has oversight authority over all other project teams throughout the Year 2000 Project life cycle.

Applications Strategy

Mission Statement

The mission of the Year 2000 Applications Team is to complete modifications to production application software to ensure that processing which projects to the Year 2000 and which is invoked in the Year 2000 will occur correctly. The Year 2000 program modification will incorporate all aspects of the Compliance Statement defined in the General Strategy section of this paper
with the following expansions to that statement:

- Compliance does not necessarily mean the physical expansion of dates. Both date expansion and procedural windowing will be used for remediation.
- Compliance will not include expansion of dates on internal reports or on transactions that have dates that are display only. Exceptions may be granted for sufficient business justification (for example for ambiguous data or data which is critically relied upon).
- Modifications made to dates for compliance will not cause interruption in operation. However, deficiencies in existing program date logic will not be corrected as part of the Year 2000 scope.

It is imperative that these changes be done according to the schedule dictated by the project plans since this project has a fixed deadline. Quality must also be tightly controlled, both within the Applications Team as well as by the Quality Assurance Team.

Prioritization of applications changes will be critical to the success of this endeavor since:

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- there is not enough time to make the necessary changes to bring all applications software into compliance
- testing with regulatory agencies will occur during 1998
- some applications will fail before the year 2000 if their processing projects future dates

Scope Statement

In Scope Items

Applications changes will be made by the Applications Team to all production application software including:

- mainframe legacy application software and application packages
- mainframe HPS software (SAMS)
- distributed application software and application packages

The Applications Team will be responsible for partnering with the Business Sponsors and the Project Office to prioritize their work. The Applications Team will own responsibility for the analysis and coding of the necessary changes. The analysis will include high level and detailed estimates of the size of each conversion unit via inventories and impact assessments. The coding will be performed by Year 2000 applications developers, or coordinated by Year 2000 Applications management and performed by other SITE development teams or by outsourcing consultants.

The Applications Team will complete unit testing to ensure the changes are consistent with Year 2000 Compliance. They will complete systems testing of conversion units to ensure that the code turned over to the Quality Assurance Team is complete and that the components within each conversion unit interface correctly with one another. They will correct all defects identified by the Quality Assurance Team during compliance and user acceptance testing. They will coordinate the production implementations and provide any post-implementation support needed.

The Applications Team is also responsible for correcting Year 2000 software failures as they occur before the Year 2000. This will occur when future dates are projected, as in the case of LEAPS which are issued with two year expiration dates.

Since upgrade of COBOL I programs to COBOL II is required for Year 2000 compliance, this upgrade will be included within the scope.

Tool evaluation and selection are the primary responsibility of the Project Office. However, the Applications Team must partner with the Tools Support group within the Project Office to ensure that tools selected fulfill needed functions and are usable by applications developers. This will include participation in tool pilots and training applications developers. Ultimately, the application developers will own the tools selected.

Out of Scope Items

Compliance will not include expansion of dates on internal reports or on transactions that have dates that are display only. Exceptions may be granted for sufficient business justification (for example for ambiguous data or data which is critically relied upon).

The applications that will be included in this project are those currently supported by the SITE organization. Conversion of applications systems outside the production environment is outside the scope of the Applications Team. The scope does not include business system applications and reports not supported by SITE, such as FOCUS, Paradox, and Oracle database applications. Special Processing Runs (SPRs) run in production executing non-supported applications or systems are also outside the scope of the Year 2000 Applications Team.

Finally, project scope excludes fixing deficiencies detected which are not Year 2000 related. Deficiencies in existing program date logic will also not be corrected as part of the Year 2000 scope. Such deficiencies will be escalated through normal problem management procedures.

Phases of Applications

In addition to the normal phases of development: analysis, design, coding, testing, implementation, and post-implementation support, the complexity and size of this project requires additional phases. Inventories and assessments must be done iteratively to ensure that all conversion units are complete and sized properly. Pilots are needed to validate conversion strategies and tool usage. Coordination with other development teams outside the Year 2000 effort must be stepped up to minimize duplication of efforts.

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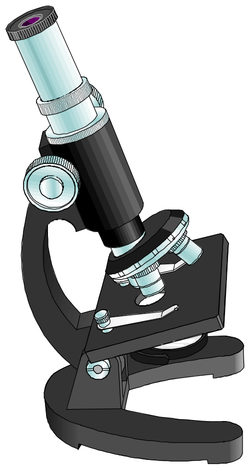
Quality Assurance Strategy

Mission Statement



Quality is everyone's responsibility on the Year 2000 Project. The Quality Assurance Team will ensure that applications continue to meet business and customer requirements through the century change to the year 2000. This will be accomplished by supporting developers in their quality role and providing them with processes and testing standards to carry out the most comprehensive possible level of testing on these applications. In this way, applications will not fail.

Refer to the Quality Assurance Strategy document for information regarding the quality assurance approach the team will follow during the life of the Year 2000 Project. The document includes strategies that describe conducting code and test reviews, references to quality procedures that assure quality deliverables, procedures that outline change control management and configuration management, and issue/problem management.

Scope Statement

The Quality Assurance scope includes:

- providing guidelines and criteria for the Year 2000 Project that enhance the overall quality of the Year 2000 organization with focus in the areas of communication, meetings, calendar management, and documentation
- overseeing and coordinating a testing process that supports the compliance statement defined in the General Strategy section of this paper
- setting organization quality objectives and monitoring compliance to these objectives
- monitoring and tracking program issues
- facilitating application requirements reviews, renovation code peer reviews, unit test peer reviews, and integration test peer reviews
- developing the application Year 2000 compliance test criteria which will be implemented via test plans created by the Applications Team, the Year 2000 Business Team, and the Quality Assurance Team
- working in partnership with the Year 200 Business Team to create application User Acceptance Test (UAT) plans
- supporting the UAT effort by creating appropriate data and executing tests that support the scripts created by the Year 2000 Business Team.
- ensuring applications and their external interfaces are tested for Year 2000 regulatory compliance and that certification is completed

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- conducting a Operations Readiness review prior to the application production implementation
- monitoring application post-production implementation
- partnering with Year 2000 Applications and Systems Compliance teams to develop the requirements for the test environment, including hardware, system software, and support tools
- collecting and reporting defect data through all phases of the program
- providing quality assurance oversight for Year 2000 development performed by non-Year 2000 teams and subsidiaries by implementing compliance guidelines and monitoring certification sign-off
- providing quality assurance consulting to other groups
- obtaining certification of non-Year 2000 applications by participating in the non-Year 2000 application user acceptance tests
- providing Quality Assurance oversight to Systems Compliance
- setting and enforcing standards and processes for:
    - ◊ overall quality assurance strategy
    - ◊ application testing
    - ◊ systems compliance certification
    - ◊ walk-thru, review and sign-off standards
    - ◊ quality assurance metrics and metrics evaluation criteria
- performing periodic enterprise-wide full scale production simulation testing of Year 2000 date processing
- participating in regulatory and industry-wide testing

The Quality Assurance scope excludes:

- performing Year 2000 applications unit test
- performing Year 2000 applications system test
- developing test plans for Year 2000 development performed by non-Year teams, subsidiaries, and forms
- conducting code reviews for Year 2000 development performed by non-Year 2000 teams, subsidiaries, and forms
- conducting unit testing, system testing, baseline testing, or user acceptance testing for Year 2000 development performed by non-Year 2000 teams, subsidiaries, and forms

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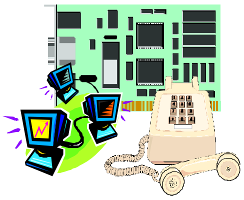
Phases of Quality Assurance

The Quality Assurance strategy defines the approach to quality that the project team will follow during the life of the Year 2000 Project. The strategy defines guidelines for:

- conducting reviews
- application testing for all phases
- application production implementation
- use of standard tools
- change management processes
- configuration management processes
- issue/problem management processes

Systems Compliance Strategy

Mission Statement



The mission of the Systems Compliance Team is to certify all systems software and hardware which participate in the operation of mainframe and distributed systems as Year 2000 compliant. In addition to all detailed work to complete this mission, the Systems Compliance Team is closely coupled with the Applications and Quality Assurance Teams in its responsibility for construction of the physical architecture for the computers used to remediate and test all applications. The Mainframe and Distributed Systems Compliance Teams are closely linked, since an integrated testing environment is being constructed for the enterprise.

Scope Statement

Compliance of system software and hardware is essential to ensure the continued execution of the applications software that operates within it. Refer to the Compliance statement defined in the General Strategy section of this paper for a detailed definition of compliance.

Mainframe system software and hardware components include:

- IBM’s MVS operating system and all of its sub-components
- CPU’s which support MVS.
- All peripheral devices which are channel attached to an MVS host, including printers at Brisbane, tape and disk drives, etc.

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- All third party software packages which are licensed by Charles Schwab and execute on an MVS host in batch, on-line, or real-time mode.
- all database software
- all teleprocessing monitors
- utilities, such as sorts
- tools, such as compilers
- Any software written by Schwab which executes as a start task.
- Tools written by Schwab which are used in conjunction with or which directly supplement licensed 3rd party software.

Distributed system software and hardware product types within this scope include:

- standard Retail workstations, for example Compaq or IBM
- high-end servers used for infrastructure, such as Compaq, Sun, or IBM
- operating System Software, such as Windows NT, Netware, DOS, or UNIX
- infrastructure applications, such as TIVOLI or SMS
- utilities and monitoring tools, such as HP Openview
- databases, such as MS Access, SQL, or Oracle
- printers
- network components, such as Cisco routers and Cabletron hubs
- voice related infrastructure, such as PBX and ROLM

A software product is determined to be in scope if it is SITE certified and officially supported. Software not supported by SITE, such as software purchased by the individuals or business enterprises, are not within the scope of the Distributed Systems Compliance Team.

A hardware product is determined to be in scope if it used with any in-house installed, written or customized software. Equipment not supported by SITE, such as PC hardware purchased by the individuals or business Enterprises, are not within the scope of the Distributed Systems Compliance Team.

Additionally, hardware not connected to a computer such as fax machines and telephones are not within scope.

Phases of Systems Compliance

The Systems Compliance Strategy defines the approach that will be followed to ensure Year 2000 compliance for mainframe systems software and hardware. The strategy defines guidelines for:

- collecting inventory information
- determining vendor Year2000 compliance

- maintaining Year 2000 compliance information
- maintaining Year 2000 compliance for new acquisitions
- defining software and hardware validation strategies
- defining criteria for classification of components
- defining criteria for replacement/upgrade/retirement of software or hardware
- defining certification processes and criteria
- defining review processes and procedures
- defining requirements for the Year 2000 mainframe test environment
- defining post-implementation support requirements

Business Strategy

Mission Statement

The mission of the Business Team is to ensure that all of Charles Schwab software, hardware and vendors have been identified, remediated, are adequately tested, and are certified for Year 2000 compliance.

Scope Statement

The scope of the Business Year 2000 Team includes User Acceptance Testing for all application systems remediated by the SITE Year 2000 Team. As defined above in the General Strategy section, these include:

- legacy, HPS, distributed, and intranet/Internet applications and application packages
- mainframe and distributed systems hardware and software
- voice hardware and software, and network hardware and software

In addition to the SITE components, the scope of the Business Year 2000 Team includes:

- ensuring that service bureau solutions, suppliers, service providers, and non-customer third parties necessary to the Schwab business are Year 2000 compliant.
- business system applications and reports not supported by SITE, such as FOCUS, Paradox and Oracle database applications

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- hardware and software equipment not supported by SITE, such as PC hardware and software purchased by the individuals or Business Enterprises
- providing primary liaison to regulatory agencies and defining requirements for the Year 2000 Applications Team and the Year 2000 Quality Assurance Team.

Facilities Strategy

The Facilities Year 2000 Project is responsible for ensuring compliance of Schwab's utilities systems. Johnson Controls was contracted to undertake much of the day-to-day work under the oversight and management of the Facilities Year 2000 Project Team. Much of the responsibility of ensuring Facilities compliance falls to Schwab's landlords, however the Facilities Year 2000 Project is responsible for ensuring compliance should any landlord fail to upgrade their Schwab-occupied facilities.

Mission Statement

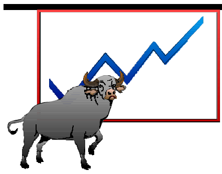
The mission of the Facilities Team is to ensure that all Charles Schwab facilities, have been identified, remediated, are adequately tested, and are certified for Year 2000 compliance.

Scope Statement

The scope of the Facilities Year 2000 Project includes, but is not limited to building systems which are comprised of the following:

- Automation
- Computers
- Fire/Life Safety Equipment
- HVAC (Heating, Ventilation, and Air Conditioning)
- UPS (Uninterruptible Power Supplies)
- Lighting
- Security
- Elevators
- Energy Management
- Parking
- Access Control

What is Charles Schwab?



First Commander Corporation was incorporated in 1971 and evolved into Charles Schwab & Co. Inc. in 1973. Since then, Charles Schwab has continued to develop and offer the finest in cutting-edge services and products to its clients. For example, Charles Schwab was the first brokerage firm to provide customers with a 24-hour-a-day, 7-day-a-week order entry and quote service in 1982. In 1984, Charles Schwab managed $5.1 billion in customer assets. By 1996, that number had grown to $253.2 billion, a reflection of the excellent quality and value offered by Charles Schwab. Investors have also profited from Schwab's success: Between the end of 1991 and the end of 1996, Charles Schwab stock appreciated over 470%, rising from $6.75 per share to $32.

The Nine Business Enterprises

In order to provide the extensive range of products and services that it does, Charles Schwab is divided into nine sections called Enterprises. Following is a list of each of the nine Enterprises as well as brief descriptions of their individual functions and products.

Schwab Institutional

Schwab Institutional comprises three separate businesses that together account for roughly 30% of all the client assets in custody at Schwab. Services for Investment Managers (SIM) serves the fee-based advisor market and has grown from having under $500 million in client assets managed by investment managers in 1987 to over $47 billion today. Services to Corporations (STC) comprises Schwab's efforts in the rapidly growing 401(k) market. Schwab International is building services for international investors, beginning in the United Kingdom and in Europe.

Business Strategy Enterprise

The Business Strategy Enterprise helps Schwab's business leaders with decisions of strategic impact, both in helping Schwab tackle day-to-day challenges and in thinking about and planning for long-term issues, opportunities, and the best way to take advantage of them.

Electronic Brokerage (EB)

EB is one of Schwab's newest and fastest growing business Enterprises, helping customers employ ever-evolving technologies to realize their financial dreams. EB designs and develops high-tech products and services to better serve investors, acquires and retains new clients via marketing campaigns, and provides high-quality service and support. The Electronic Brokerage is accessible at <http://www.schwab.com>. Some of the products offered by the Electronic Brokerage include:

- SchwabNOW!™ Internet trading, research, and information, accessible via <http://www.schwab.com>
- SchwabNOW!™ through AOL, CompuServe, and Microsoft Investor
- E-Schwab® (Windows and Macintosh) World Wide Web based trading
- StreetSmart® (Windows and Macintosh) investment software
- StreetSmart Pro® (Windows) investment software
- The Equalizer® (DOS) investment software for non-Windows PCs

Site Information Technology Enterprise (SITE)

SITE helps Schwab grow and flourish by partnering with the other eight enterprises comprising Charles Schwab to operate efficient systems company-wide and anticipate future business and technology needs. Since the Year 2000 Project works intimately with SITE, it is important that all Year 2000 Project Team members be familiar with some of the key elements within SITE.

Distributed Support Services

These services are provided by Service Locations, which are geographic groupings of Schwab Business units that include service centers, branches, and other regional and operational offices. Currently six Service Locations have been implemented, with their support staff located in Denver, Indianapolis, New York, Orlando, Phoenix, and San Francisco. Any problems encountered within the Service Location, regardless if it is within a service center, branch, or operational unit must be reported directly to the appropriate Service Location support staff via the SITE Services Help Desk telephone number. Service Locations are tasked with:

- <u>Support</u>: initial problem determination, diagnosis, troubleshooting, and problem ownership through to resolution.
- <u>Administration</u>: configuration, security, inventory, backups, and maintenance of all distributed systems.
- <u>Management</u>: local monitoring, trending, reporting, and day-to-day capacity management of all distributed systems.

The following table lists the Service Locations, Service Location managers, and telephone numbers.

Service Location	Service Location Number	Service Location Manager	Manager's Number
Denver	(303) 639-2750	Donna Abbate	(303) 639-2715
Indianapolis	(317) 596-6800	Latham Brown	(317) 596-4350
New York	(718) 522-9010	Greg Sbordone	(718) 780-0807
Orlando	(407) 661-2900	Lane Davis	(407) 661-2823
Phoenix	(602) 355-7930	Ed Escobedo	(602) 553-7513
San Francisco	(415) 636-3100	Dave Lichtenhan	(415) 636-3016

Change Management

Change Management services enable functional areas to proactively manage the constantly changing resource requirements within the enterprise. It is responsible for ensuring that system software, hardware, applications, and network resources are updated in a controlled manner across all environments and platforms.

The change process initiates when a change is requested. This is done by writing a change ticket using the Info Management System (being replaced by REMEDY). Changes are then reviewed in a series of meetings so that their impact on the enterprise can be assessed. Once a change is approved, testing can be initiated. Successful testing allows for the change to be implemented in the production environment.

Change Management contacts for developers outside the Year 2000 Project are:

- Year 2000: David Hargreaves (67815) or Larry Burback (68715)
- Legacy: Tom Mitchell (602) 431-3002
- CASIM(HPS): Frank Dancy (415) 627-8861, or CASIM OPS (415) 627-8792
- Distributed (UNIX, NT, Win): Susan Villalon (415) 636-8619
- Distributed Change Scheduling/Coordination: Al Sanft (415) 627-8834
- Mainframe System, Telecom, and Facilities: Paul Graham (415) 636-8118

Corporate Information Center

The Corporate Information Center is located on the 24th floor of 120 Kearny Street. It is open from 8AM to 5PM and houses many resources including a reference collection to answer your business questions, an on-line database providing access to 2,500 business and technical magazines, technical handouts, and access to the Schwab computer network. Please call 636-6726 for assistance.

Phoenix Data Center

The Phoenix Data Center (PXDC) is the home for mainframe, Windows NT, and UNIX production systems. These systems reside on the following processors: an HDS Skyline Processor for mainframe services, an HDS mainframe for FOCUS processing, and several Sun Microsystems UNIX boxes and Intel-based Windows NT processors. PXDC is also the home of the Mainframe Operations and Network Control groups.

If anyone in SITE experiences a problem with these services, they may call the PXDC Customer Service Unit which will assist in problem identification, tracking, and routing. PXDC Customer Service can be reached at (602) 431-3000.

Mutual Fund Enterprise

The Mutual Fund Enterprise focuses on building upon Schwab's past successes and becoming a premier provider of third-party and proprietary funds, and supporting both the Retail and Institutional customer enterprise segments. Some of the products and services offered by this Enterprise are:

- Schwab Mutual Fund OneSource® Service
- Schwab Mutual Fund Marketplace®
- SchwabFunds®
- OneSource® Portfolios (Growth and Allocation)

Finance Enterprise

This critical Enterprise is divided into two groups: The Controller's Office ensures that all of Schwab's financial records are in order and provides the financial reports about Schwab's results and plans, as well as ensuring that Schwab's financial processes keep pace with the growth enjoyed by the Company. The Treasury ensures that Schwab has the financial strength to meet its obligations and provides funding to the other Enterprises within Schwab.

Retail Enterprise

To Schwab's customers, Retail is the face and voice of Charles Schwab. There are nearly 6,000 employees in this Enterprise comprising two-thirds of Schwab's workforce. Retail also accounts for two-thirds of Schwab's customer assets. Retail has the sole goal of becoming the undisputed financial services provider of choice for individual investors. To accomplish this, Retail has branches located in 46 states, 300 cities, and Puerto Rico offering a wide array of services tailor-made to suit the needs of various customer segments, including:

- Schwab 500 Brokerage™ for active traders
- Schwab Select Service™ for active traders
- Schwab AdvisorSource™ for advice on selecting a personal financial planner
- Multilingual services offered through Asia Pacific Services and Centro Latinoamericano
- Telebroker®, offered in English, Spanish, Mandarin, and Cantonese
- VoiceBroker® (soon to be offered in Mandarin and Cantonese)

Capital Markets and Trading

This Enterprise is where "Charles Schwab meets the Street". CM&T executes thousands of trades for Schwab customers daily through major NASDAQ market-maker Mayer and Schweitzer and operates on several exchange floors. Some of CM&T's products, services, and locations are:

- Schwab International Services
- Charles Schwab Ltd./London
- ShareLink Investment Services plc (United Kingdom - a Schwab subsidiary)
- Global Investing Service
- Schwab Europe
- Schwab Hong Kong
- Schwab Cayman Islands
- Schwab Puerto Rico
- Institutional Brokerage Services
- Washington Research Group
- Pacific Stock Exchange specialist posts
- Boston Stock Exchange specialist posts

Corporate Administration

Purchasing, Legal, Travel, Benefits, and ICAD: This Enterprise helps Schwab management identify and mitigate potentially serious risks to Schwab. Corporate Administration employs 500 people and offers over 20 services. Through the services of Corporate Administration, Charles Schwab remains a diverse yet cohesive organization that has earned, and continues to earn, a reputation for excellence and innovation.

What is an ETS?

ETS stands for “Enterprise Technology Solution”. The team that inventoried and restructured the work done by SITE in January, 1995 coined the term to reflect and support the new (enterprise) business model adopted in late 1994. It was also designed to change the old applications viewpoint which, in the mainframe world, did not need to include specifics of technical platforms. Additionally, there are “mini” enterprises like Active Trader and Affluent Customer which are customer segment enterprises within the overall Retail Enterprise.

In SITE there are five “ETS” reflecting each of the Customer and Product business enterprises, and one ETS for all support Enterprises (Finance, HR and SITE). The ETSs within SITE are:

- ETS Retirement Products
- ETS Retail
- ETS Schwab Institutional
- ETS Electronic Brokerage
- ETS Capital Markets

Charles Schwab Subsidiaries

Charles Schwab & Co. Inc. has numerous subsidiary corporations, each of which contributes products and services to further broaden Schwab’s far-reaching line of investment tools. Key among these subsidiaries are:

- Mayer & Schweitzer, Incorporated
- Charles Schwab Management Investment, Incorporated
- The Charles Schwab Trust Company
- Performance Technologies, Incorporated
- TrustMark, Incorporated
- Schwab Retirement Plan Services, Incorporated
- ShareLink (United Kingdom)

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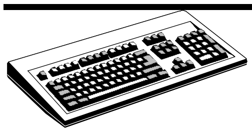
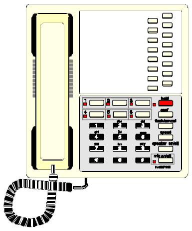
Your Work Space



A key step in your orientation is to acquaint yourself with the details of using such necessities as the telephone, voice-mail, your PC, a few selected applications, and the Schwab network. This section will help you in using your work space to its full potential right from the start.

The San Francisco Service Location will set up your computer, e-mail, network access, and telephone in your work space prior to your arrival. Please do not start your computer or attempt to access your PhoneMail until the Service Location informs you that your work space is ready to go.

Your Telephone



This section describes how to use the many features of your telephone. Please note that your telephone system may not have all the features listed below.

Getting Acquainted

- To reach someone in the Charles Schwab San Francisco offices, dial the last five digits of the receiving party's complete telephone number.
- Dial 0 to reach the Charles Schwab PBX Operator.
- Dial 9 for an outside line.
- Dial 9 then 1 + area code + number for long distance calls to non-Charles Schwab locations.

Use the Schwab internal telephone network for long distance calls between Charles Schwab locations as follows:

- Dial 8, the three digit code for the Schwab facility you wish to dial (shown below), and the last four digits of the extension you are trying to reach:

◊ Phoenix Service Location	845
◊ Phoenix Datacenter	880
◊ Indianapolis Service Location	887
◊ Denver Service Location	882
◊ Orlando Service Location	884

Employees are encouraged to keep personal telephone calls to a minimum.

NOTE: You may be unable to make certain long distance calls from your telephone. Access your long distance carrier to place a calling card call.

- Should you experience difficulty with your telephone, please refer to the section "Getting Help" in this document.

Basic Features

- Hold: Press HOLD and hang up. To reconnect, press the line button of the held call and pick up the receiver. To place a second call, see Consultation Call.
- Transfer: This feature allows you to transfer a call to either another extension or the operator. Press TRANSFER, dial the extension to which you wish your call transferred, announce the caller, and hang up.
- Connect: Press CONNECT to:
  - ◊ accept a camped-on or parked call
  - ◊ obtain a newly available outside line
  - ◊ reconnect with a transferred call or alternate between parties

Answering Calls

- Pick-Up: This allows you to answer a call made to someone else's extension on your own extension. You must know the other extension number. From a dial tone, press PICK (or dial * 3) and dial the number of the ringing extension.
- Group Pick Up: This variation on Pick-Up allows you to pick up a call to an extension in your pick-up group without knowing the other extension's number. From a dial tone, press PICK twice (or dial * * 3) to use this feature.

Forwarding Calls

- Call Forwarding: Call Forwarding allows you to have calls to your extension ring at another extension. From a dial tone, press FORWARD (or # 9), dial the extension to which you want your calls forwarded, and hang up. To cancel Call Forwarding, press FORWARD (or dial # # 9) from a dial tone and hang up.
- Park: This feature allows you to forward a call which is then placed on hold at the forwarded extension. Press PARK (or press FLASH then dial * 6), dial the new extension number, and hang up.

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Making Calls

Your telephone has a number of other features:

- Save and Repeat: You may save a telephone number you have dialed so you can re-dial the number later by pressing the SAVE/REPEAT button. From a dial tone, dial your telephone number (inside or outside).
- Camp-On: If the extension you dial is busy, this feature allows you to stay on the line and wait until it becomes available. To use Camp-On, listen for the busy signal and stay on the line. To cancel, hang up.
- Callback Camp-On: This extension of Camp-On calls you back when the busy extension you dialed is free. To use this feature, listen for busy signal then press CAMP (or FLASH # 1) then hang up. Your telephone will call you back with a long ring once the busy extension is free. To cancel, press CAMP (or FLASH # # 1) from a dial tone and hang up.
- Consultation Call: You may speak privately with a second party while your first call remains on hold. Press FLASH during a call and dial the extension number or 9 + outside number. To reconnect with the first party, press CONNECT again.
- Conference Call: You may include up to eight parties in a conversation. Call the first person and then use the following procedure to add each new party: Press FLASH during a conversation, dial the next extension number (or outside number), then press CONF (or FLASH * 4) to connect to each new party. Should the call be refused, busy, or unanswered, press CONNECT to re-connect with the rest of your conference.
- Station Speed Call: This feature allows you to store your own frequently dialed numbers. To set a Station Speed Dial number, press STA SPEED twice (or # # 3) from a dial tone, dial your station speed code or press desired auto-dial button, dial the number you wish to reach (remember include a 9 in front of the number if it requires an outside line to complete), and hang up. To use this Speed Dial number: Press STA SPEED once (or # 3) from a dial tone and dial your station speed code. Alternatively, you may press the desired auto-dial button from a dial tone if your telephone is so equipped.

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PhoneMail

Part of your new hire package should include a slip with your telephone number, internal extension number, and your PhoneMail access information. You may wish to note these numbers below for convenience:

My Telephone Number: ___________________________

My Internal Extension: ______________________________

External PhoneMail Access: ___________________________

Internal PhoneMail Access: ___________________________

My Initial PhoneMail Password: ___________________________

My Personal PhoneMail Password: ___________________________

Accessing PhoneMail

To access your PhoneMail box:

1. Dial the access number. To access your PhoneMail box from outside the 415 area code, dial 1(800) 648-5300.
2. If you are dialing from your own extension, press #. If calling from elsewhere, dial your five digit extension followed by #.
3. Dial your password, followed by #. You should change the assigned password for security reasons.
   A. Access your PhoneMail and press 9 for options
   B. Press 3 to change your password
   C. Enter your new password followed by #
   D. PhoneMail verifies your password

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PhoneMail Messages

To listen to your messages, press 3. The following table lists your options during and after listening to messages.

While Listening To Messages:	**Dial:**
skip to end	* 2
skip to previous	* 7 2
replay message	* 7 3
replay last few words	* 7 8
skip ahead a few words	* 98
replay message time	* 7 7
After Listening To A Message:	
delete message	6
save message	4
replay message	7 3
After Deleting Or Saving A Message:	
record and send answer	1
call sender	7 0
forward message	9
next message	#

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Recording A Personal Greeting

To record your personal greeting, follow this procedure:

1. Access your PhoneMail box
   A. Press 8 for answering options
   B. Press 1 for personal greeting
   C. Press 1 again and begin recording
2. Dial *73 to replay the greeting you just recorded
3. Dial *61 to delete and re-record the greeting
4. Dial *# when you have completed recording

Recording Your Name

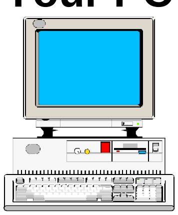
To record your name for use within PhoneMail, follow these steps:

1. Access your PhoneMail box
2. Press 8 for answering options
3. Press 4 for recorded name
4. Press 1 and record your name
5. Dial *# when you have completed recording

Advanced Features

Please refer to the ROLM *Quick Reference Guide For PhoneMail Users*, which should be included in your new hire package. If you do not have one of these booklets please call the San Francisco SITE Services (Help Desk) at 63100.

Your PC



Before using your PC, please take a moment to set up your chair, keyboard tray, mouse, and other ergonomic equipment to your preferences. When you turn on your PC, adjust the monitor brightness, contrast, and other settings. The screen should be set as far away as practical to avoid eye strain. As you work, be sure to take periodic breaks to stretch and relax your hands, wrists, and fingers. Focus your eyes on objects at varying distances. Take a brief walk and perform other minor exercises while you work.

Your computer has been assigned a “k” number which identifies it to the network domain. A sticker on your machine shows this number and an IP address which identifies your machine to the Internet and the Schwab internal Intranet. You will need the “k” number when speaking with the Help Desk.

Powering Up and Logging On

Once your PC boots up, you will see a prompt asking you to press the [CONTROL]+[ALT]+[DEL] keys (simultaneously) to log on. This brings up the logon screen prompting you for your user ID, Domain (From), and password. You should have been issued a slip with this information as part of your New Hire Package.

The first time you long on, you will be prompted to change your password. Follow the on-screen instructions and be sure to select a password that cannot be readily guessed. Your name, family members' names, birthdays, social security numbers, etc. can be readily obtained. A random selection of characters (both lower and uppercase) and digits is highly recommended.

Tips And Techniques

To modify your computer's settings, open the Main window and modify the desired settings within Control Manager. Be extremely careful when modifying settings! If you are not absolutely sure of what you are doing, do not attempt to make any changes!

Windows NT is a powerful and stable operating system. Should you encounter any difficulties, the following resources are available to help you:

Windows NT also includes a useful application called "Introducing Windows NT". To use this item:

1. open the Main window
2. double-click the "Introducing Windows NT" icon

You should log off the network at the end of the day. Be sure to save your work and back it up to either floppy or your H drive directory, and close all open applications prior to signing off.

Using E-mail

Microsoft Exchange is the standard e-mail client for the Year 2000 Project Team. This program allows you to send and receive e-mail, access e-mail remotely, create address books, attach files, and file messages in custom folders, to name a few features. Open Exchange and click Help for more information. You will be given an e-mail account and your name will be added to the global address book so anyone within Charles Schwab can find you.

- Your e-mail account name within Schwab is your last and first names, for example Doe, Jane.

Internet users may send e-mail to you at <firstname.lastname@schwab.com>. You can send e-mail to any Internet e-mail account.

To set up Exchange on your computer:.

- Select “Microsoft Exchange Server” and select the server you were assigned to (most likely N1009SMX).
- Your mailbox is <lastname>,<firstname>. Do not enter any other information in the Mailbox field.

Exchange is an intuitive program which is easy to use even if you have never used an e-mail program.

Receiving E-mail

When MS Exchange is open, it constantly checks for new mail and notifies you when a new message is received by playing a brief sound. You may toggle the sound on or off as well as customize several other options by clicking Tools and selecting Options on the toolbar.

- Double-click on any message to read the message. Unread mail is displayed in bold type. You can delete, save, reply to, or forward the message.

Sending E-mail

To send an e-mail:

1. Click Compose then New Message.
    A. In the “To” field, enter the e-mail address of the recipient or click the To button to bring up a list of names.
    B. Type in the last name of the person you are e-mailing in the box above the name list. Often only the first few letters are required for you to see the name of your recipient in the list.
    C. Click the person’s name to highlight it, then click the To button in the center of the window.
2. Repeat the above steps for each person who should receive your e-mail
3. Click OK
4. Enter a subject for your message
5. Type your message
6. Click the envelope icon to the right of the e-mail window. If spell check is enabled, MS Exchange will prompt you for changes. Your message is sent upon completion of the spell check.

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E-mail Folders

E-mail messages can be saved in folders for archival and organizational purposes. The default folders are:

- Inbox: Where new messages and messages not deleted or moved to another folder are displayed.
- Outbox: All e-mail you have sent since you last purged the folder
- Deleted Items: E-mail you have deleted from other folders. This feature allows you the chance to retrieve e-mail deleted by mistake. Once you close Exchange, this folder is purged and messages are permanently erased.

You can create folders to suit your needs. Please refer to the comprehensive on-line help for details.

Distribution Groups

You may create, edit, and delete groups of recipients so that one e-mail message can be mass distributed. Please refer to the extensive on-line help offered within MS Exchange for details.

There is a distribution list called ALLSITE in the master list of names. E-mail sent here will distribute your message to all SITE full time employees. There is also ALLCONS (all SITE contractors). The Year 2000 Project team uses Y2K for distributing e-mail to the entire Project Team and Y2K Tech Leads for distributing e-mail to the designated technical lead persons on the team. Please use this and other mass distribution lists judiciously.

Attachments

You may attach files to your e-mail messages by clicking Insert within the message composition box, selecting File, and using the dialog box that appears to find your file and send it. Please note that you may only send files of roughly 10 megabytes or less.

Using Netscape with E-mail

The Netscape Web browser also supports e-mail and on-line news groups. For example, you may click a link on a page saying “Send e-mail to author” and have MS Exchange launch with a pre-addressed message box ready for you to enter your message. If your Netscape Web browser is not already set up to send and receive Exchange E-mail, you may perform the following procedure to

1. In Netscape, select Options/Mail and News Preferences.
2. In the Servers panel, fill out the following fields:
    A. Outgoing Mail (SMTP) Server: <smtpsmx> (same for all Schwab employees).

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   B. Incoming Mail (POP3) Server: Enter your Exchange Server name, followed by the extension <nt.schwab.com>. To obtain this information:

      1. In Exchange, select Tools/Services.
      2. Highlight Microsoft Exchange Server and select Properties.
      3. In the General tab, copy the Microsoft Exchange Server name.

   C. POP3 User Name: Enter your domain name/Windows NT user ID/alias. In this example, the POP3 User Name is: SFODOM/sbillias/90777. To obtain your alias:

      1. In Exchange, select Tools/Address Book.
      2. Find your own name and select File Properties.
      3. In the General tab, note your Alias number from the Alias field.

   D. Mail Directory: Enter the path to your Netscape mail files. Use File Manager if necessary to find your Netscape mail folder. In this example, the Mail Directory is <C:\program files\netscape\navigator\mail>

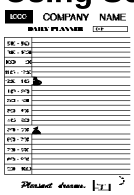
   E. Make sure that the radio button for "Messages are copied from the server to the local disk, then:" is set to "Left on the server."

3. In the Appearances panel, make sure that the "When sending and receiving electronic mail" radio button is set to "Use Netscape for Mail and News."
4. In the Composition panel, make sure that you have a path established for the Mail file field in "By default, copy outgoing message to the file:" You can locate the path to your Netscape mail folder in File Manager. In this example, the Mail file path is C:\program files\netscape\navigator\mail\sent
5. In the Identity panel, enter your name and full E-mail address in the appropriate fields.
6. Click OK to close the Mail and News Preferences panels and accept your new settings
7. Exit and Restart Netscape

Advanced Features

MS Exchange has many features available to you such as spell checking, address book lists, etc. Please select Help within MS Exchange for complete information on using the advanced functions.

Using Schedule +



MS Schedule+ is another powerful and easy to use application. As in any other Windows application, clicking Help or pressing [F1] within the application provides you with comprehensive help. The first time you open Schedule+, you will be prompted to create a new schedule. An electronic organizer displays tabs for items such as daily tasks, weekly tasks, and contacts.

- Fill out the electronic “yellow pad” exactly as you would a paper document.
- Click File, Open, and Other’s Appointment Book to schedule time on someone else’s calendar.

> NOTE: If you cannot access the intended person’s calendar, please contact Kim Soibelman at extension 78715 and ask her to schedule the other person for you.

Schedule+ is also used to reserve conference rooms for meetings. To do so:

1. Click File, then Open, then Other’s Appointment Book.
2. Scroll down until you see your desired conference room listing. You may type in the first few characters of the name (i.e. “SFO, 101) to refine the search.
3. Double-click to open the room’s calendar. Add your meeting to the schedule exactly as you would add items to your own schedule. The meeting is now scheduled. If for some reason your desired date and time are not available, you will need to begin this process over again.

Printers

There are three printers available for the Year 2000 Project on the 24th floor of 101 Montgomery Street. One is near the southeast corner of the building. The other is on the north side next to the wall. The printer IDs are:

- Southeast corner: <\\n0006sis\h0618sis> and <\\n0006sis\h028sis>
- North wall: <\\D00024dsf\H0008dev>

Printers at 101 Kearny:

- West side: <\\n0007sis\h0719sis>

Use the following procedure to connect your PC to a printer:

1. Open the Main window within Windows NT .
2. Select Print Manager.
3. Click Printer
4. Click Connect to a Printer.
5. In the dialog box that appears, type in one of the above two names and then click OK. You should see an icon with the printer ID in the Print Manager window.

You may now print documents using either of the above printers. If you are located away from these printers, you may use the ID of any printer near your workstation. Printers have stickers on them listing their network IDs.

Changes Or Upgrades

Under no circumstances download anything from any source at any time! Doing so places the network at unacceptable risk for viruses which could result in impairment or destruction of various business functions. If you need to add or update software on your computer, contact your supervisor for approval. Installing or changing software without approval can lead to serious consequences including dismissal.

Mainframe

Logging on to the mainframe is a straightforward process. Within Windows NT, open the Extra! Application. You will be prompted to select from one of four sessions. Pick one and press [ENTER] or click OK. You will see the System Access Menu once you are connected to the mainframe. This screen allows you to access one of the two main areas of the mainframe: BETA (Legacy brokerage system) and TSO (Time Sharing Option).

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BETA

BETA, or Legacy brokerage system, is the end-user side of mainframe operations. This is where you input and receive information using existing programs as opposed to creating or modifying programs. A useful analogy is that of Windows NT, which is an existing program used but not modified by, end users.

You will be issued a BETA ID and initial password upon joining the Year 2000 Project Team. A BETA ID is typically a 6 character identification with the format dpxx or dqxx, where xx is either your initials (if available) or random characters. Your initial BETA password is the same as your NT password.

To log on to BETA, select Brokerage or one of the other BETA options within the System Access Menu. You will see a prompt asking for your user ID, password, and new password.

1. Type in your user ID and press [TAB].
2. Type in your initial password. This is the same as your Windows NT password. Press [TAB]
3. Type in your new password. This may be the same as your new NT password or something different, at your discretion. Press [ENTER]. You will be asked to re-enter your new password for confirmation. BETA will periodically remind you to change your password.

TSO

TSO, or Time Sharing Option, is the developer side of mainframe operations. This is where you create or modify programs.

You will be issued a TSO ID and initial password upon joining the Year 2000 Project Team. A TSO ID is typically a four character identification with the format pgmxxx, where xxx is either your initials (if available) or random characters. Your initial TSO password is the same as your NT password.

To log on to TSO, select one of the TSO options within the System Access Menu. You will see a prompt asking for your user ID, password, and new password.

1. Type in your user ID and press [TAB].
2. Type in your initial password. This is the same as your Windows NT password. Press [TAB].
3. Type in your new password. This may be the same as your new NT password or something different, at your discretion. Press [ENTER]. You will be asked to re-enter your new password for confirmation. TSO will periodically remind you to change your password.

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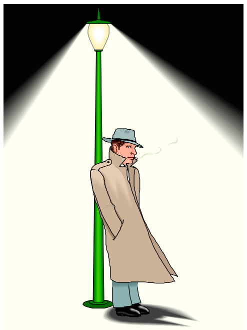
A Word About Passwords



You have three sets of user IDs and three passwords. These are:

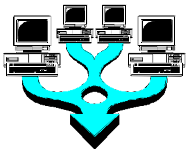
- Windows NT
- BETA
- TSO

Your user ID serves to identify you to the system. System Administrators use user IDs to assign access levels to each person. For example, the Year 2000 Project Document Coordinators have read and write access to the Project Library folder while other Team members may not. This ensures that other Team members cannot accidentally move or modify documents and templates. By the same token, Document Coordinators do not have access to folders containing code, etc.

Passwords serve to inform the system that you are really you. The different levels of password security are designed to ensure that system integrity and security are maintained. Passwords are good for 30 days and you may not repeat your last 14 passwords. A good idea might be to change your NT password and mainframe passwords at the same time to avoid having to constantly memorize new ones. You have the choice of making all your passwords identical or different.

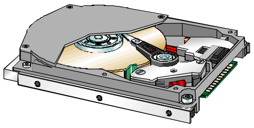
When selecting a password, be sure to make it hard to guess. Birthdays, pets' names, etc. are not ideal candidates for passwords. Random characters and digits are recommended.

The Network



Your PC is connected to a network of other PC's, printers, and servers collectively known as a domain. When you open File Manager you will see the drives on your computer (typically A, C, and D) as well as the network drives comprising the domain of which you are a part. The shared public drive ("Public" network drive) is where all shared files are. All files should be saved here in their appropriate folders. The domain name for the shared public drive is <\\n0009sfo\public>.

The Shared Public Drive



Within the shared public drive are numerous directories. Of these, the ones of interest to you is the <Year 2000 Project> folder for SITE, <SI_Shared\Year 2000> for Business, and all the sub-folders contained within them. You may think of the folder structure as branches on a tree where the trunk is the drive itself, the main branches being the key folders in the drive with the smaller branches being the sub-folders underneath them. In this manner information is kept in a highly organized and logical fashion. For example, if you needed the minutes of the Technical Lead meeting on July 22, 1997, the logical place to look would be:

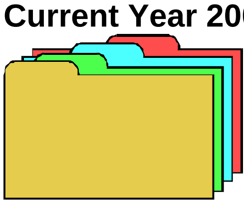
<\\n0009sfo\public\Year 2000 Project\Minutes\Staff & Tech Leads Meetings\>

Following is a list and brief discussion of the main folders under the SITE folder <\\n0009sfo\public\Year 2000 Project\>. Please note that the folder structure is evolving and therefore this information may not be current.

There are, of course, many folders under most of the main folders. Many of the folders are set as read-only, meaning that only certain people can modify their contents. Should you need to modify the contents of a folder marked read-only, please contact your supervisor.

Please note that all Year 2000 Project documentation belongs on the shared public drive. Please contact one of the Document Coordinators for assistance with any documentation needs you may have.

Current Year 2000 Project Folders



The following sections provide details on the documents stored in each folder within the Year 2000 Project folder. The folders approximate the project organizational structure. There is a folder for each area that will require Year 2000 compliance, for example HPS or PDX, and folders for different groups within the project such as Training and QA. Additional folders may be added as the project progresses. Many of the high-level folders contain sub-folders which serve to further organize and categorize Year 2000 information. At least one point of contact is provided for each folder.

Legacy

This folder contains documents relating to the Legacy Mainframe updates being performed as part of the Year 2000 Project. This includes task lists, spreadsheets of DASD sizing estimates, and draft and working copies of strategy and analysis documents before they are entered into the Project Library. The sub-folder *Datacom* contains information specific to the Datacom databases residing within the Legacy environment.

Contact person for the folder: Gale Brewer 67126

Y2K Standards

This folder contains the document entitled *Year 2000 Date Standard* that sets the standards for developers internal and external to the project to adhere to when creating or revising program, to ensure that all future development is Year 2000 compliant.

Contact person for the folder: Stephen Billias 68715

Tools

This folder contains information regarding the use of the COBOL conversion applications such as MDI and PDX. Viasoft information will also reside here. Anyone desiring Viasoft information should contact Mary Ann Christenson.

Contact person for the folder: Mary Ann Christenson 78606

Distributed Applications

The Distributed Applications folder contains documents and other information pertaining to the inventory and Year 2000 assessment of distributed applications. Backup inventory documents are stored in the *Inventory Backup Documents* sub-folder.

Contact person for the folder: Mary Lavine 77153

Outsourcing

This folder contains files supporting decisions related to outsourcing Year 2000 Project personnel and other resources..

Contact person for the folder: Debbie Kalm 67087

Regression Testing

This folder stores information pertaining to the regression testing of remediated applications. Regression testing is where modified programs are tested to ensure that the modifications do not negatively impact functionality.

Contact person for the folder: Jim Anthony 67741

Purchase and Sales

This folder is where information on Purchase and Sales (P&S) resides. It is sub-divided into four sub-folders:

- P&S Move Matrix: Contains the table move orders
- P&S Job Conversion: Contains the specifications for converting P&S tables
- Status: The status of P&S conversions
- Testing: contains a record of the P&S conversion testing process

Contact person for the folder: Sandy Adair 67019

Project Library

This folder contains all document that are part of the Year 2000 Project Library. The library is organized into three folders:

- Working, where documents in progress are Project Library

- Archived, where previous versions of Project Library documents are stored
- Master Index, where the approved documents constituting the Project Library reside

See the document entitled *DOC_Project_Library_Procedures* for additional detail on the organization and function of the Project Library folder.

Contact person for the folder: Stephen Billias 68715

DB2

This folder contains a listing of DB2 databases. The sub-folder *TABLES* contains lists of tables within each database, while the DATEHITS sub-folder contains all the date impacts for tables within databases.

Contact person for the folder: Christy Varona 67434

Repository

This folder contains a Microsoft Access database which acts as a repository for the Year 2000 Project. Detailed information has been captured relating to Legacy, HPS, and Distributed applications. It is expected that information will be added on an ongoing basis.

Contact person for the folder: Etty Green 68573

Audit

The Audit folder contains a record of Audit meetings.

Contact person for the folder: Debbie Kalm 67087

HPS

This folder serves as a repository for documents, messages, analyses, etc. regarding HPS conversion.

Contact person for the folder: Ginny Vasil 68202

New Employee

This folder contains the New Employee Orientation Package and other files from Year 2000 Project Team members providing information useful to new employees. The *Orientation* sub-folder contains information especially useful for helping new employees get a rapid start on the Year 2000 Project Team.

Contact person for the folder: Tony Hernandez 67906

Quality Assurance

The QA folder houses documentation for the Quality Assurance aspect of the Year 2000 Project. QA is defined as the process overseeing the actual hands-on testing of converted applications and/or data.

Contact person for the folder: Judith McRae 67713

Training

This folder contains educational information on a variety of topics.

Contact persons for the folder:	Tony Hernandez	67906
	Toni Galli Sterling	68854

Staff information

This folder contains information relating to project organization and resources, including:

- organization chart
- telephone list
- e-mail list
- out-of-office calendars
- other useful information pertaining to staff issues

Contact person for the folder: Kim Soibelman 78715

Minutes

This folder contains the minutes of various meetings, including:

- Staff
- Technical Leads
- Legal
- International

Contact person for the folder: Tony Hernandez 67906

Project Planning Documents

This folder contains the Microsoft Project-generated project plans for the Year 2000 Project. High level plans already released to senior management are also kept in the Project Library folder.

Within the Project Planning Documents folder is a second folder entitled Project Planning Standards containing the template for creating Year 2000 Project plans and resource and assessment planning documents. The various sub-folders within this folder contain planning information broken down by the specific areas being addressed by the Year 2000 Project Team. Some of these sub-folders are:

- Assessments
- Distributed Applications
- Network
- Quality Assurance

Contact person for the folder:	Etty Green	68573

DistEnv

This folder is where Distributed Environment information resides. This includes Year 2000 compliance information for distributed platforms and applications, the Year 2000 Web page, and other Internet/Intranet information, and other subjects. Some key sub-folders are:

- <u>inetpub</u>: Where the Internet/Intranet information resides
- <u>Plans</u>: This sub-folder details the plan by which Year 2000 compliance in the Distributed environment will be assured.

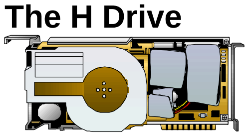
Contact person for the folder:	Mary Lavine	77153

Date Standard Compliance

This folder primarily serves as a repository for e-mail pertaining to the Year 2000 Project's Change Management Audit function. Emails are stored so that a log is maintained should any Audit issue arise.

Contact person for the folder:	David Hargreaves	67815

The H Drive



There is a drive, <\\n0004sis\home\> which contains a folder <userid> for each person on the Year 2000 Project Team. This allows you space on a network drive for use as an archive, backup, or data storage location.   You may create and delete folders, move data back and forth, and delete files within this folder. The H drive is a good place on which to store backups of your work in the event your computer's hard drive fails. Your directory on the H drive is:

<\\n0004sis\home\userid>, where <userid> is the same as your Windows NT user ID. For example:

<\\n0004sis\home\jdoe>

NOTE*:* From Windows, you will see the directory <\\n0004sis\home\> as <P:> The directory listing in Windows will then read thus: <H:\jdoe>

The Use Of Templates For Year 2000 Project Documents

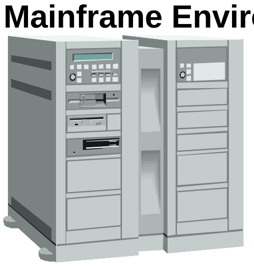
High quality documentation is critical to all work accomplished by the Year 2000 Project Team. Without it, no one outside the Project will be able to use the Team's output. Your position involves the creation of documentation. Please refer to the document <\\n0009sfo\public\year 2000 project\project library\master\doc_project_library_procedures.doc> for complete information on creating and formatting documents.

A Document Coordinator can assist you with your documentation needs. All documentation placed on the network must conform to Project standards regarding formatting and style.

Systems Environment

This section describes the Mainframe and Distributed Environments at Charles Schwab.

Mainframe Environment



This section provides a high level overview of the Mainframe Environment at Charles Schwab, including logical partitions (LPARs) and the mainframes themselves.

Overall View - Partitions (LPAR's):

Logical partitions are a means by which one mainframe may be logically subdivided into separate virtual computers. This is analogous to partitioning a PC hard drive into separate drives, each with its own drive letter and directory assignment. In this case, however, it is the mainframe itself being subdivided to behave like two or more separate computers. Following is a brief discussion of the partitions. The mainframes themselves are discussed separately.

- CS01: This mainframe partition runs the older Legacy system using Datacom and IDMS databases. This is a production environment, meaning it is engaged in performing the actual real-world work required for Schwab's business activities. CS01 runs both real-time (on-line) and non real-time (batch) processing. Batch processing is loosely defined as the non-real-time calculations and other logic performed to update the databases. An example is the nightly updating of customers' balances and positions. Critical trading functions transition to CS05 at about 11pm for batch processing, and are typically transitioned back to CS01 at about 2am.

- CS02: This partition serves as a test platform for system software testing. System software includes such things as operating systems, sort utilities, etc. which are required for the computer to function. New releases of the MVS operating systems are tested here, for example. This is a non-production environment.
- CS03: CS03 serves as an application development environment. In other words, this is where new programs are coded or modified and tested. This should not be confused with CS02; a loose analogy might be to think of CS02 as a PC where new versions of MS Windows are installed and tested, with CS03 being a PC where new versions of MS Word for Windows are coded and tested. Like CS02, CS03 is a non-production environment.
- CS04: Here is where the FOCUS decision support tool is located. FOCUS is a tool allowing Schwab personnel to generate reports based on various methods of sorting and analyzing data. This is a production environment.
- CS05: Should CS01 and/or CS06 ever go down for any reason, CS05 is activated to act as Host Fallback, or backup machine for processing Schwab critical information. This partition acts in a production capacity during emergencies. Static data of all critical trading functions is stored here, with the SEC, ORF, TRD, and LED databases being updated daily. Host Fallback works in a production capacity during the period of roughly 11pm to 2am nightly to allow CS01 to run batch jobs.
- CS06: Schwab is in the process of migrating from the older Legacy system to SAMS. This is a production environment. It is also where HPS resides. HPS is a tool used to develop SAMS applications.
- CS07: This is the testing environment where the Emergency Contingency Planning group tests and maintains Schwab's disaster recovery services Efforts are always underway to improve the reliability and functionality of Schwab's emergency production environments. Duplicate data is stored here.
- CS20: The Year 2000 Project Team uses this partition. CS20 is the Year 2000 equivalent of CS03. It is here that applications are developed, tested, and run through rigorous Quality Assurance to ensure that they are Year 2000 compliant.
- CS29: This partition is also used by the Year 2000 Project Team. CS29 is similar to CS02 in that CS29 is where the Team tests system software (MVS, etc.) to ensure Year 2000 compliance.

Phoenix Datacenter

The Phoenix Datacenter is home to four mainframes:

- Hitachi Skyline: The Hitachi Skyline is one of the largest and fastest mainframes in the world. It has a 6-way processor and handles 1.7 million transactions per second at peak. It uses the CICS environment and has 5 Application Owning Regions and 2 Print Owning Regions. This mainframe runs CS01.
- IBM 9x2: This machine hosts CS02 with its SAMS/HPS applications..
- IBM 9672-R42: CS04 runs on this mainframe.
- IBM 9672-R34: The Year 2000 Project Team uses this mainframe which hosts the CS20 and CS29 partitions.

San Francisco Datacenter

This location hosts an IBM 9672-RX5 which runs CS02, CS03, CS05, and CS07.

Distributed Environment

Overall View

Service Locations are centers for support and processing of the distributed applications and are most aligned with our NIS's (National Investor Service) which are regional hubs for branch support and calls. Each Service Location is linked to several branches and is a production environment meaning that each Service Location conducts actual Schwab business.

Location of Service Locations

- Phoenix
- San Francisco
- Denver
- Indianapolis
- Orlando
- New York
- Phoenix Datacenter which is part of the distributed network

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Environment

The Distributed Environment is loosely defined as any hardware and software not part of, or running on, a mainframe. As such, it consists primarily of Windows NT clients (workstations) with UNIX and NT servers. As of September 1997, Schwab has rolled out more than 11,000 NT workstations to personnel in the field and this number continues to rise. UNIX servers access remote systems using the Andrew File System. In addition to NT servers, the Distributed Environment includes some AIM servers which allow Schwab branches to access quotes and other market information provided by Reuters. There are also some Novell networks, primarily in San Francisco.

San Francisco Service Location

The San Francisco Service Location is a production environment just like other Service Locations, however it also houses a development environment containing the CAB (Crash and Burn Lab) for system software testing. Applications development is also supported in the development environment via DEV (the developers' lab), the testing environment (SCIT), and the certification environment (CERT). The Service Location also supports the various Local Area Networks (LANs) running Windows 3.1, NT, and 95, as well as OS/2 and Novell. Schwab uses both Ethernet and token ring type LANs.

As mentioned above, DEV is the application development environment. This is where applications are coded and developed into their beta, or testing form. From there, the finished applications go to the SCIT lab for rigorous testing including functionality (making sure the application does what it is intended to do), debugging (removing flaws or errors in coding), and acceptance (making sure the recipients or end users of the new application accept the new application for implementation into production). As a final step, applications extensively tested one last time in the CERT lab before finally being certified as ready for implementation into a production environment. This long process is designed to ensure that Schwab uses only top quality applications, thus continuing Schwab's tradition of excellent customer service.

Phoenix Datacenter

The distributed environment does have its centralized aspects, and these are handled by the Phoenix Datacenter. Examples of applications falling into this category include Active Trader statements and a utility for imaging customer statements on a computer monitor called COLD.

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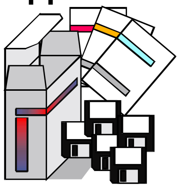
Applications: What Runs On The System



Mainframe Legacy

- On-line transactions - some important ones are:
  - ◊ NUMB - equities trading
  - ◊ MFOE - mutual funds trading backup system
  - ◊ STOK - obtains quotes for securities
  - ◊ DIRT - employees directory
  - ◊ Falcon - keypunch entry
- Batch
  - ◊ runs under CA scheduler (soon to be replaced)
  - ◊ core of critical batch path is DEVELOP - PRDDVL1 (draw batch)
  - ◊ Monthly statements
  - ◊ Year end (takes 2 days to process)
- Databases used: Datacom, IDMS, DB2
  - ◊ IDMS is being phased out with no new applications being developed using it.

Mainframe - HPS

- On-line transactions - some important on-line systems include:
  - ◊ MROE - Mutual Fund Order Entry
  - ◊ ARTE - Aggregation, Routing, and trade execution for mutual funds
  - ◊ MAM - Margin Account Monitoring
  - ◊ BP&T - Balances, Positions, and Transactions

Products And Services

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This section highlights a few of the many on-line products and services offered by Charles Schwab.

- Streetsmart for Windows - Investment software package for customers
- Streetsmart PRO - Investment software package for customers
- SchwabNOW! - Mutual fund trading
- Schwab Select Service - For customers having two or more trades per month with at least $25,000 in assets
- E-Schwab - Electronic trading
- Schwablink - GEIS link for Schwab Institutional to place trades
- Web trading - Internet

Voice Technology Solutions

- Telebroker - telephone trades (over half our call volume comes through here) - uses VRU/periphonics
- VoiceBroker - recognition pilot using Telephony; taking 20% of our quote calls in 15 states
- Service Broker - Provides touch tone access to BP&T balance while customer is on hold (COLD)

Distributed Applications

- Distributed software, including:
  - ◊ MS Office - for word processing and spreadsheets
  - ◊ Marketcolor (AIM) - for quotes
- Standard Development Tools
  - ◊ HPS
  - ◊ Powerbuilder
  - ◊ Visual Basic
  - ◊ Microfocus or IBM COBOL
  - ◊ C and C++
  - ◊ UNIX Scripts
- Applications include:
  - ◊ Peoplesoft GL, AP and HR
  - ◊ Offloads (orders and PCOB) - revisiting projects to see if objective of reducing MIPS is met
  - ◊ AT Statements - for Schwab 500, employees, and active traders

  - ◊ On Demand - OLRS replacement using COLD (Computer Output Laser Disks)
  - ◊ Data Warehouse - replacing mainframe FOCUS decision support systems
  - ◊ IWIN - Launch On Demand, MarketColor, IWIN via IWIN Dashboard - IWIN includes Elec Lib, BETA help, Mutual Funds Performance Guide, Business calc, HomeBase for Screendrop
  - ◊ SOMS - replacement for Sles systems/marketing tool
- Databases used:
  - ◊ DB2 on mainframe
  - ◊ ORACLE
  - ◊ DB2 - 6000

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Security

CLASSIFIED

- Mainframe: Mainframe security is provided by a software package called "Top Secret"
- Distributed environment
    - ◊ Systems Administration: A group of people assigned to run the network. Two of their primary tasks are the granting and revocation of access to various aspects of the network and constantly monitoring network traffic to intercept any attempt at unauthorized use.
    - ◊ Firewall: A firewall is a purpose-built computer that monitors attempts to log on to a network and prevents unauthorized access.
    - ◊ NT security: Windows NT has a comprehensive system of password and user level protection to prevent unauthorized access to both individual workstations, files, and the network.

Network

- The distributed environment uses TCP/IP on the WAN outside of SF
    - ◊ Managed by HP Openview, hope to implement TIVOLI soon
    - ◊ Primarily Ethernet-type LAN environment
    - ◊ OCS gateways (RS6000 boxes) are used to allow communications between the TCP/IP protocols and SNA. Gateways are connected to 3745's mainframe front-end processors.
    - ◊ Metrobackbone uses FDDI ring which has IPX (for Novell) and IP traffic only
- Telecom
    - ◊ PhoneMail (ROLM PBX from Phoenix)
    - ◊ Inbound carrier for 800 numbers - AT&T
    - ◊ Outbound carrier - Sprint
    - ◊ Frame Relay - Data service connecting National Investment Services NIS), branches, vendors, and HQ (call switching technology)
    - ◊ Compuserve - used for Streetsmart, e-Schwab, and home dialup
    - ◊ GEIS (GE Information Services) - used for Schwablink
    - ◊ Aspect ACD - (automatic call distribution) switches route 00 calls to call centers

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Problem Management

INFO

INFO helps the Year 2000 Project Team manage the ways in which we identify, locate, and repair data processing problems which might stem from trouble with hardware, software, procedures, or documentation. Information collected about a problem is stored in a problem record which may be updated as new information becomes available. INFO also builds a database of problem records, thus allowing the Team to search for any previous similar problems and their resolution. Comprehensive help is available from within the INFO tool itself. INFO is used extensively by Change Management.

REMEDY

REMEDY is not presently in wide use, however it is being phased in to replace INFO. REMEDY is a trouble ticketing system allowing multiple groups within the Project to keep track of problems arising within their areas. Groups may also gather statistics on the tickets created for assessing root causes of problems. REMEDY will be used on the Year 2000 Project.

Network Diagrams

The following diagrams provide a high level overview of the Mainframe and Distributed Environments. While the information is subject to change, the diagrams do provide a good idea of the Schwab technology architecture.

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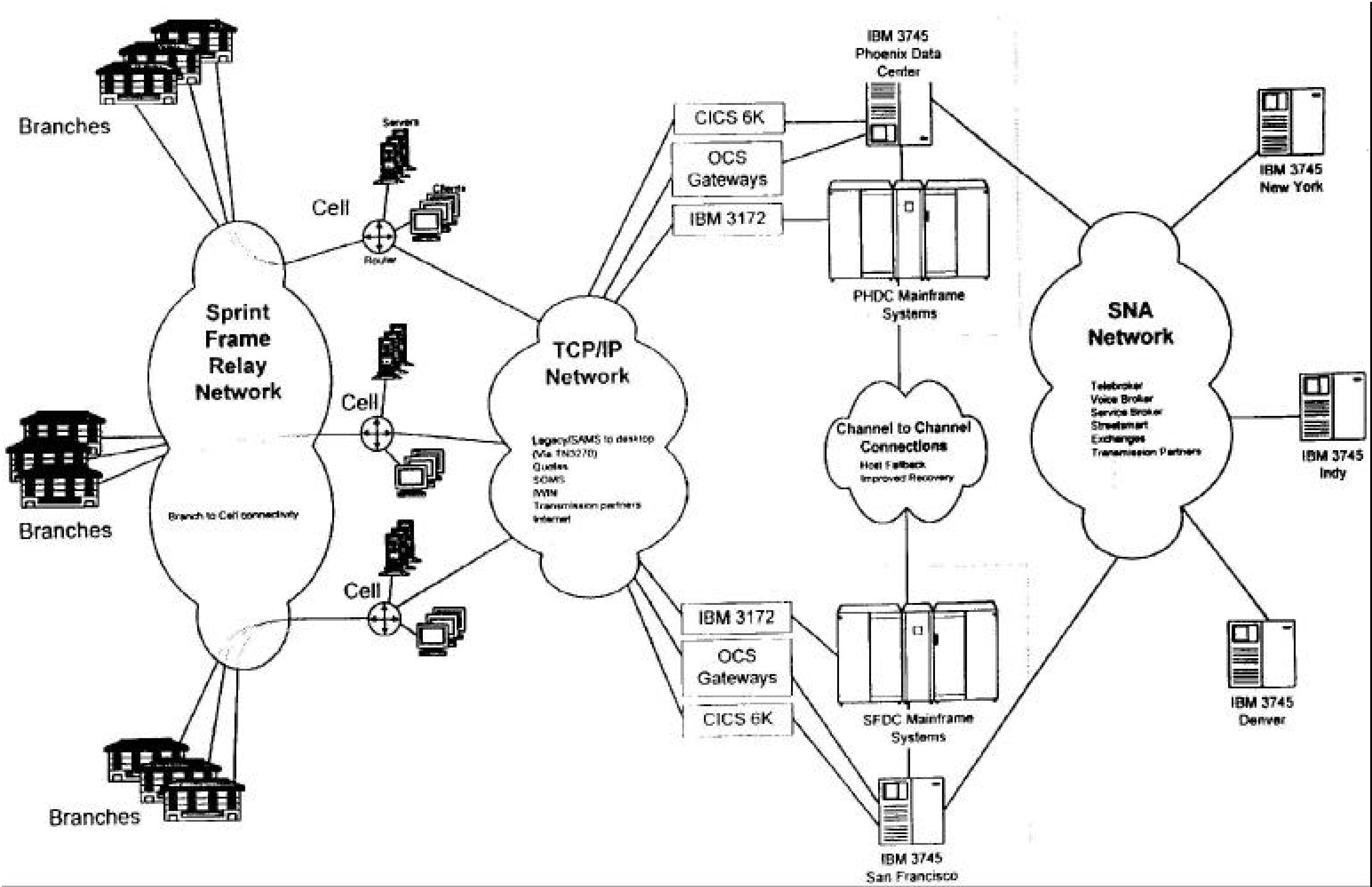
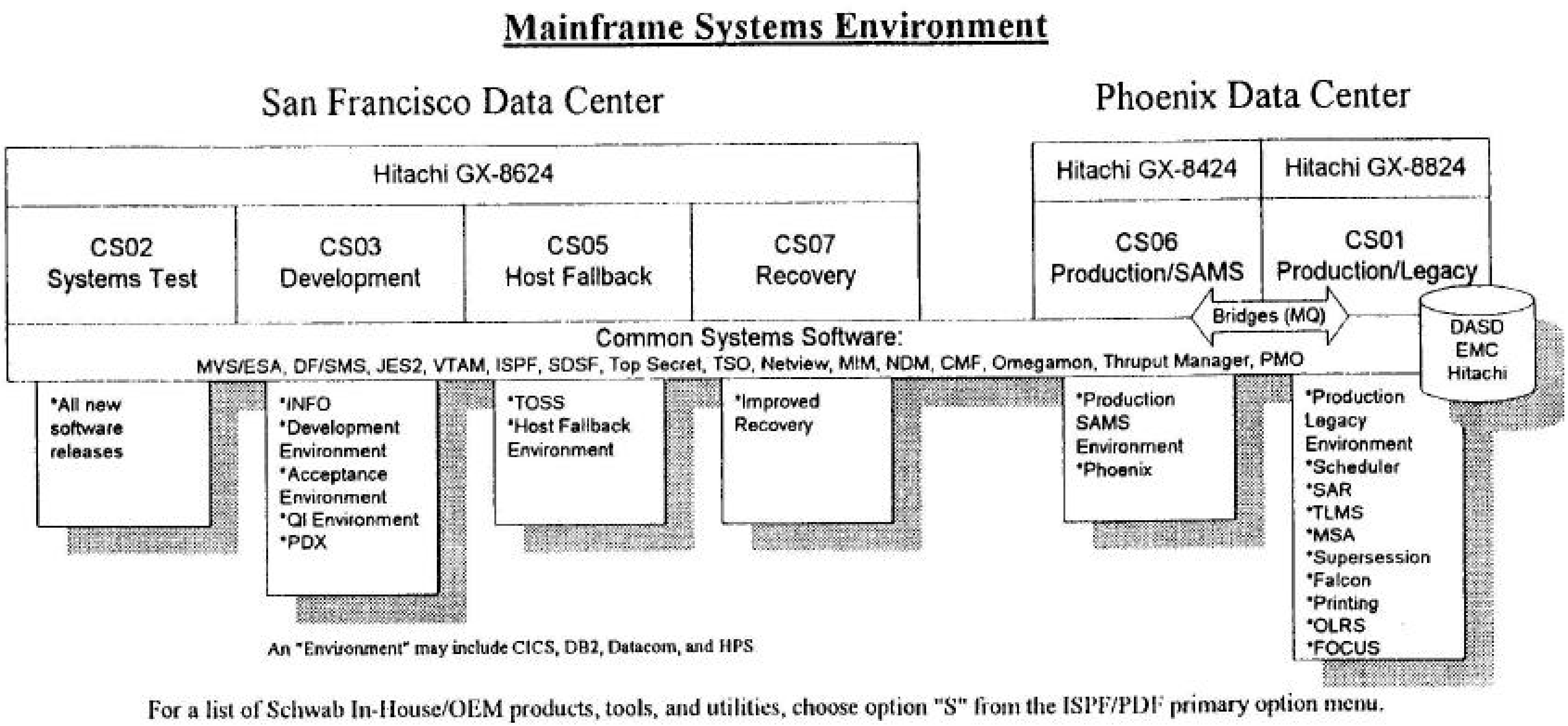
This diagram provides a high-level view of the entire Schwab network.

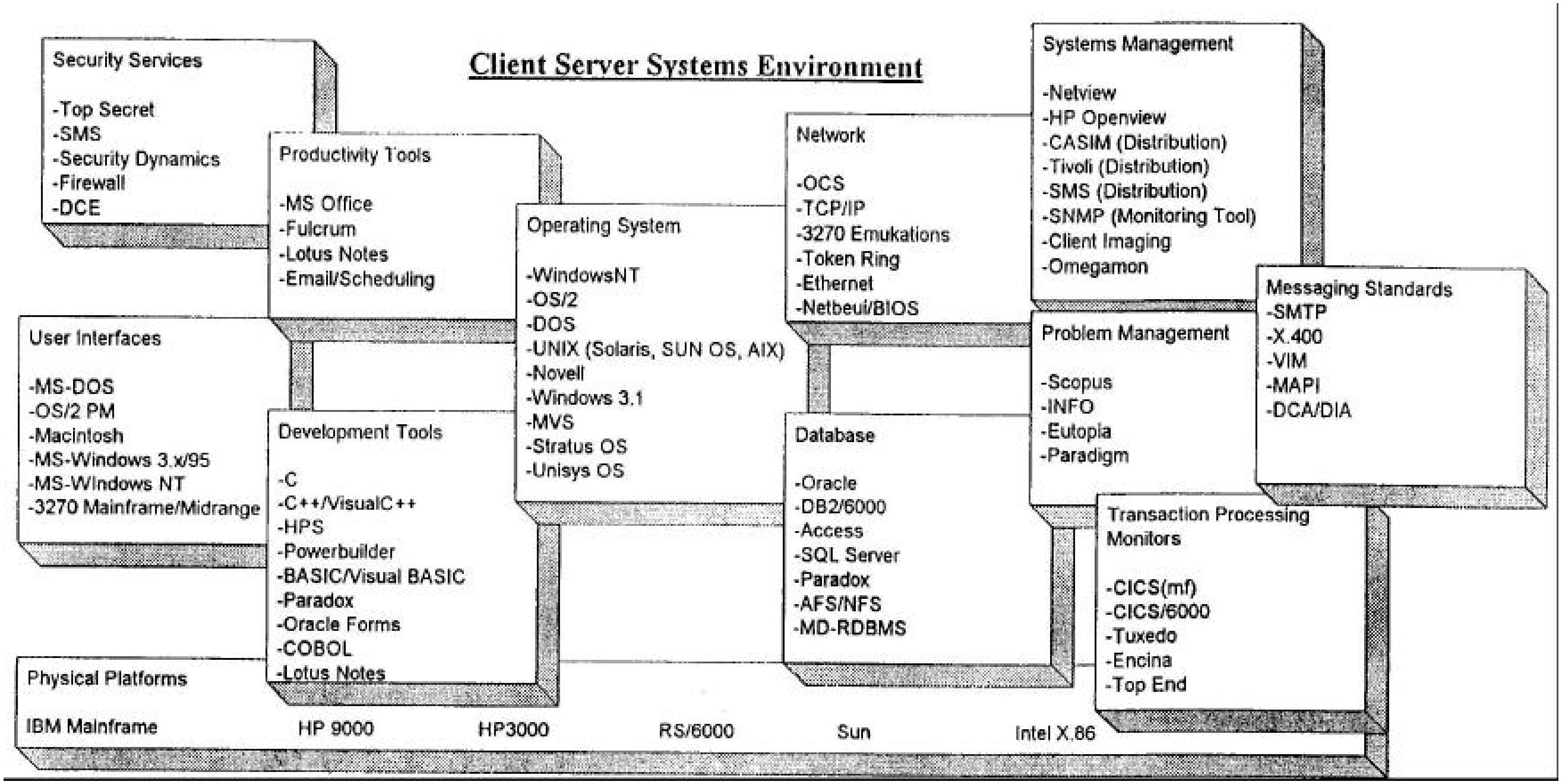


This diagram depicts the Schwab mainframe

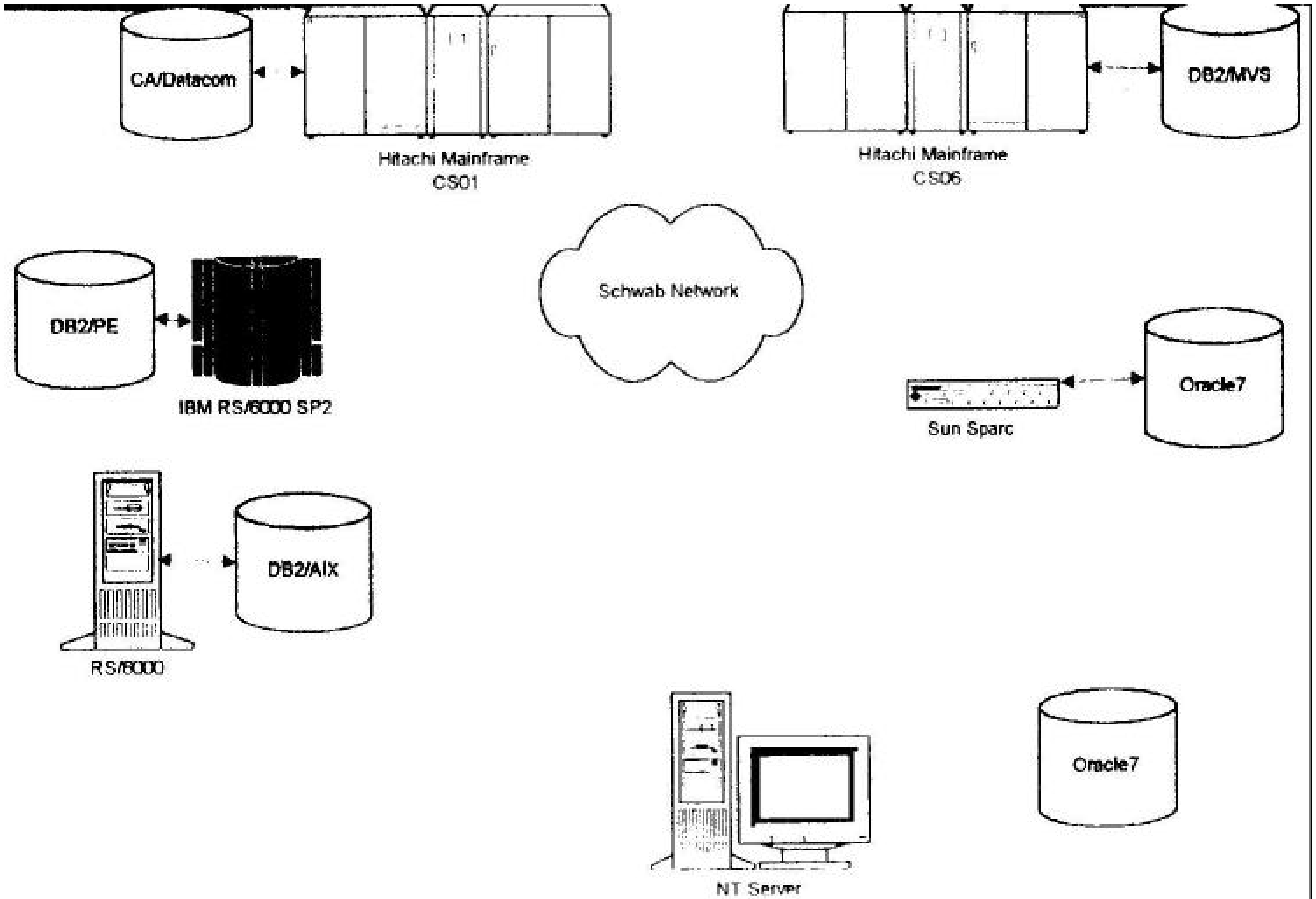
environment



The Distributed Environment is shown on this diagram:



This diagram shows how the Schwab databases are set up:



What You Need On-line

No single source of information is ever complete. At Schwab, a number of resources are available to help your research, most of them based on the Schwab Intranet, or on the Internet. Within Schwab, use the corporate Intranet located at <http://schweb.schwab.com>, or the Year 2000 Project site at <http://n2000sch/y2k>.

You may access various search engines on the World Wide Web including <http://www.yahoo.com>, <http://www.webcrawler.com>, <http://www.excite.com>, or <http://www.altavista.com>..

For Year 2000 Project information or documentation, please refer to the <\Year 2000 Project\> folder on the shared public drive.

Getting Help

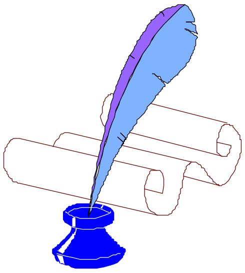
The Help Desk provides assistance for problems encountered within your work space such as computer problems, telephone problems, etc.

The Help Desk may be reached at 63100.

When you call the Help Desk, help them to help you by providing the following information:

- What you are having trouble with:
  - ◊ If you are calling for telephone help, provide the make and model of your telephone.
  - ◊ If you are calling for computer help, provide the "k" number of your computer (from the sticker on your machine, for example k1303sis).
  - ◊ For application help, the application you need help with.
  - ◊ Which network domain you are on.
- What system you are using (Mainframe, Windows NT, etc.).
- What you were doing when the error or problem occurred.
- When was the last time the machine worked properly.
- If other people near you are experiencing similar problems.
- What LAN, if any, you are on.
- Your logon ID and telephone number (but not your password!).
- What error messages, if any, you are receiving.

The Documentation Process



The Year 2000 Project Team includes several Document Coordinators to assist you in the creation, editing, and review of Project documentation, as well as to maintain the Project Library. High quality documentation is critical to all work accomplished by the Year 2000 Project Team. Without it, it will be difficult for someone outside the Project to use the Team's output. Your position may involve the authoring and/or modification of documentation. Please refer to the document <\\n0009sfo\public\year 2000 project\project library\master\doc_project_library_procedures.doc> for complete information on creating and formatting documents. Document Coordinators are available to assist authors.

Authors creating a new document should use the document template, located on the shared public drive in the Year 2000 Project\Project Library\Master folder. The *DOC_Project_Library_Procedures* document (referenced above) in that same folder explains the use of the template. Authors who have already created a document without using the template should have a Document Coordinator convert the document into the template format before it is sent out for review.

For project-wide consistency of style, tone, and appearance, every document which will ultimately be stored in the Project Library should be formatted (if necessary) and edited by a Document Coordinator for formatting, grammar, punctuation, style, and other non-content revisions before you send it out for review and approval. Every document entering the Project Library has high exposure and is available for viewing by everyone at Charles Schwab, including internal and external auditors. Document Coordinators will also assist you in planning your 0document and offering suggestions as to layout, organization, etc.

Here are the steps for the editing process:

1. When your document is ready for formatting and editing, send the document to Stephen Billias. He will assign the document to one of the Document Coordinators (Tony Hernandez, Dana Kurtz, or Stephen Billias) for review. He will also notify Etty Green, Project Management Coordinator, that the document has been received and assigned for editing. Stephen will inform the author within one day which Document Coordinator is assigned to edit the document. The assigned Document Coordinator will format the document if necessary and edit it within two business days. The revised file will then be returned to its author. Authors may select one of two options for Document Coordinator edits:

    A. After formatting the document to Project standards (if necessary), the Document Coordinator will make editing changes using Microsoft Word's "Mark Revisions While Editing" option. The document is then returned to the author for review. The author may approve or reject the revisions electronically. A Document Coordinator will gladly assist authors unfamiliar with the electronic revisions features of MS Word.

B. The assigned Document Coordinator indicates suggested changes on a hard copy of the document and returns it to the author, who may make the changes or indicate approval/rejection of the edits and return the document to the Document Coordinator for data entry.

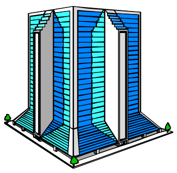
2. After the editing process, authors are responsible for distributing the document for review. For all standards, the Year 2000 Project Technical Leads serve as reviewers. They include Sandy Adair; James Anthony, Stephen Billias, Gale Brewer, Larry Burback, Mary Ann Christenson, Paula Grabowski, Etty Green, Richard Hamai, David Hargreaves, Thom Johnston, Debbie Kalm, Owen Leibman, Richard McClure, Carol McIntosh, Judith McRae, Ben Shelburne, Sarah Slaughter, Toni Galli Sterling, Debbie Taylor, and Ginny Vasil.

3. As stated in *Project Library Procedures*, the document is not moved into the Project Library until after the author obtains signature approval from the appropriate managers. When all revisions based on peer review and management approval are accomplished, please return the document to Stephen Billias for entry into the Project Library. Subsequent revisions will be tracked on the Document Control Sheet by version number and the document will be checked out of and into the Project Library if revisions need to be made.

4. Authors wishing help with revisions or with the process of checking documents out of and into the Project Library for revisions may contact Stephen Billias at 68715.

Getting Your Bearings

Year 2000 Project Team Facilities



The SITE Year 2000 Project Team is located at 101 Montgomery Street on the 24^{th} and 22^{nd} floors. The Business Sponsor's location is 333 Bush Street. Following is a list of some key facilities, particularly those located at 101 Montgomery.

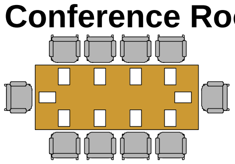
Security

You must check in at the Security Desk in the lobby and obtain a blue badge. Your supervisor will arrange for you to be fingerprinted and issued a permanent badge. To gain access to the building, press the badge against the sensor on the black stiles in the lobby. You *must immediately* notify your supervisor and Security if your badge is lost or stolen. If you forget your badge, you may obtain a temporary pass at the Security desk in the lobby. Security's telephone extension is 78696 for the front desk, or 77911 in the event of an emergency.

Elevators

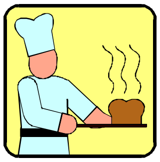
There are three elevator banks at 101 Montgomery Street (1-4, 5-16, and 17-28). The 17-28 bank is on the north side of the lobby as you enter. Should you inadvertently board the wrong elevator, you may switch over at the 9^{th} and 15^{th} floors (the 17-28 bank of elevators stops on the 9^{th} and 15^{th} floors only on the way down or if someone on the 9^{th} or 15^{th} floors summons the elevator).

Conference Rooms



Located on floors 5, 7, 8, 11, 12, 18, 19, 20, and 24, conference rooms are typically located near the elevator banks and are sometimes referred to by address of the building and floor number. 101-24 indicates the 24^{th} floor conference room at 101 Montgomery. This information is subject to change as some conference rooms are being modified into workstations for new personnel. Please contact Kim Soibelman at extension 78715 for current conference room information.

Cafeteria



Located on the 9th floor of 101 Montgomery, the Schwab Cafe serves breakfast until 10:00AM, lunch from 11:00AM to 1:30PM, and snacks from 1:30PM to 5:00PM. There are also vending machines on the 10th floor with an assortment of snacks and drinks.

Interoffice Mail

You will be issued a box in the interoffice mail space which is organized alphabetically. The mail space is located on the east side of the building near the elevators. Your mail box will be on the floor to which you are primarily assigned.

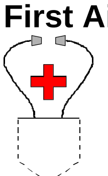
Restrooms

Restrooms are located on the east side of the building by the elevator shafts.

Coffee/Tea/Cocoa Service

This self-service area is on the west side of the building.

First Aid Kit



Located on the wall by the coffee area, the first aid kit contains an assortment of minor medications and bandages. There is also a disposable mask available in the unlikely event CPR is required. Please take a moment to familiarize yourself with the first aid kit, its contents, and use.

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Emergency Instructions:

All employees must be familiar with the yellow instruction booklets posted on the bulletin boards just outside the elevators.

> NOTE: Tony Hernandez (Document Coordinator) is the designated Floor Warden for the 24th floor at 101 Montgomery Street, and is always ready to respond to any emergency. His extension is 67906.

General

In the event of an emergency, remain calm. Should an emergency occur, you will be notified by the public address system or by your Floor Warden as to the nature of the emergency. If you discover an emergency, take charge of the situation until relieved by your Floor Warden, someone with experience or training in emergencies, or professional response resources. In any emergency your priorities are, in order:

1. Report the situation or assign someone to do so.
2. Protect yourself and those around you.
3. Act to mitigate the situation using any training or experience you have and common sense.

Unless otherwise notified, remain on your floor unless it is unsafe to do so. Following are some guidelines to assist you in appropriately responding to general emergencies, medical situations, fires and earthquakes:

- In an emergency, dial 9-911 to reach the Emergency Dispatch Center.
- To contact Security in the event of an emergency, dial 77911.
- When reporting an emergency, be sure to speak slowly and clearly. Give the following information:
    - ◊ Who: Give your name and extension.
    - ◊ What: Describe the nature of the emergency (medical, fire, etc.). Be as specific as you can so as to elicit the appropriate response.
    - ◊ Where: The exact location of the emergency, for example “101 Montgomery Street, 24th floor, north side”.
    - ◊ When: Report the time the emergency started or was discovered as accurately as possible.
    - ◊ Why: Report the cause of the emergency if you know it.
    - ◊ How: Report the means by which the emergency was caused or the means by which the emergency is spreading, as well as any action being taken to mitigate the situation.

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- Stay on the line. Do not hang up until instructed to do so. Follow any directions you are given.

Medical

The following guidelines apply to all medical emergencies:

- Report the situation.
- Protect yourself and others.
- Aid the person in distress to the extent that you are able, using any training or experience you have, and common sense.

Fire

In the event of a fire, remember the following guidelines:

- If you discover the situation, Report, Protect, and Act.
- Never use elevators in the event of a fire. Always use the stairs. If you are physically disabled or need assistance, wait by the nearest stairwell and ask for help.
- If there is smoke, stay as low to the ground as possible. Wrap cloth, preferably wet, around your nose and mouth to help filter the air. Never stand or raise yourself up into any smoke.
- If the fire is on your floor or higher floors, evacuate down. If the fire is below you and you must evacuate, go up. It may be preferable to stand by at your location so as not to impede response resources by using the stairwells. Further, leaving the stairwell doors closed will impede the spread of smoke and fire. You will be given directions on when and where to evacuate if necessary.
- Follow all directions given by your Floor Warden, the public address system, or professional responders. If there is any conflict in the instructions given, always listen to those given by professional responders above all others.

Earthquake

Schwab locations are designed to withstand major earthquakes. It is safer to be in the building than outside. During an earthquake:

- Remain calm.
- Move away from windows, glass doors, file cabinets, or any large objects that might cause injury if they shift or fall. Take cover under a desk or table and wait for the earthquake to pass.

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After an earthquake:

- Remain calm.
- Report, Protect, and Act to mitigate any secondary emergencies (fire, medical, etc.).
- Do not use the telephone system except to report emergencies.
- Elevators will move to the nearest floor and open their doors. Do not use the elevator to evacuate even if they are still functional! Assist those who require aid in evacuating.
- Always be alert to the possibility of aftershocks, which can be as strong as the initial temblor.
- Shut down any electrical items such as computers, etc. Be especially sure that any heat generating appliances such as coffee makers are turned off.
- Do not smoke.
- Do not use any heat or flame generating or emitting devices for any reason.
- Listen for and obey any instructions given by your Floor Warden or other response personnel. If any instructions conflict, listen to those directives issued by professional responders (firefighters, police, etc.) above all others.

Emergency Information Sheet

While it is highly unlikely that any emergency will occur, it is nevertheless important to have emergency information on hand for each Team member. It is critical to have information on hand pertaining to any medical condition or medication. Many medical conditions may have confusing or conflicting signs and symptoms, or the presence of a medical condition may alter the treatment protocol for other unrelated emergencies. For these and other reasons, an Emergency Information Sheet exists. All Team members are requested to fill out the Emergency Information Sheet and to make sure the Administrative Assistant has a current copy.

While it is critical to have this information on hand, it is equally important that the confidentiality of all Team members be preserved. For this reason, all Emergency Information Sheets will be filled out by the Team members themselves. The Team member shall then place his or her completed sheet into a sealed envelope marked "<Name>'s Emergency Information Sheet". The Administrative Assistant will maintain the envelopes in a file. Envelopes may only be given to the Team member whose information is contained therein. Envelopes shall be opened in the event of an emergency. It is the responsibility of each Team member to ensure that her or his information is complete and accurate. A sample Emergency Information Sheet appears on the following page:

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Emergency Information Sheet

All personnel should maintain a valid copy of this information on file with the Administrative Assistant to ensure an appropriate response in the event of an emergency.

Name:____
Manager:____
Cubicle #:____

In case of emergency:

Contact #1:____
Address/Telephone #__________________________________

Contact #2____
Address/Telephone #__________________________________

Please list any medical condition or medication which must be taken into account in the event of an emergency. This information is strictly confidential and will help responding resources provide prompt and correct treatment. Please also include any drug allergies you are aware of. Continue on back if necessary.

____
____
____
____
____

Please give the name and telephone number of your primary doctor or hospital: ____

When you have completed filling out this sheet, place it in a sealed letter size envelope. Write your name and the words "Emergency Information Sheet" legibly on the envelope and give it to the Administrative Assistant. This information will be kept confidential unless you request your envelope. Envelopes shall only be opened in the event of an emergency.

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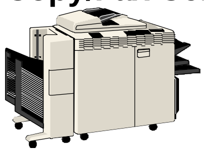
Copy/Fax Center:



Photocopiers and fax machines are located near the coffee service on the west side of the building. The fax numbers for 101 Montgomery are:

- 24th floor: (415) 627-7566
- 22nd floor: (415) 626-7018 (NOTE: this fax machine belongs to the travel group. Use of the 24th floor fax is preferable).
- 333 Bush Street: (415) 395-6868
- 120 Kearney Street: (415)637-3096

NOTE: There are copiers available on each floor, as well as a Copy Center located at 101 Montgomery Street on the 11th floor.

Supply Shelves

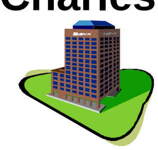
An assortment of office supplies is available on a self-serve basis from the shelves on the west side of the building for your Schwab-related use. Should any required items be out of stock or if you require ergonomic supplies (footrests, etc.) please notify Kim Soibelman who's desk is in the northeast corner of the 24th floor. Her extension is 78715.

NOTE: There are floor maps posted on the bulletin board near the elevators depicting the location of the above mentioned facilities for the 24th or 22nd floors, and offices of all the Year 2000 Project Team members. Please take a minute to familiarize yourself with the floor layout.

333 Bush Street

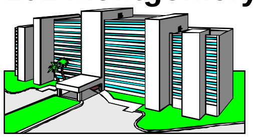
The Year 2000 Project Business Sponsor and Business Domain Experts are located in this building on the 10th floor. Fax, copy, coffee, restrooms, etc. are located on each floor.

Charles Schwab Locations



For employees not familiar with San Francisco, getting around can be confusing. Following are addresses, transit information, a Bay Area map, and other useful tips to assist you in becoming acquainted with your new surroundings. The *San Francisco Access Guide* is one of many books providing great detail about San Francisco. It is available in most local bookstores.

101 Montgomery Street

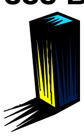


Cross street is Sutter. This building houses Schwab's headquarters. There are three banks of elevators in the building (1-4, 5-16 and 17-28). The cafeteria is on the 9^{th} floor with vending machines on the 10^{th} floor. Conference rooms are located on floors 5, 7, 8, 11, 12, 18, 19, 20, and 24. The Year 2000 Project Team is located in this building on the 24^{th} and 22^{nd} floors.

120 Kearney

Between Post and Sutter Streets. Enter via Galleria shopping center and go up staircase to entrance on second floor. This building has four banks of elevators (garage, 3-14, 15-25, and 26-37). Conference rooms are located on floors 11 and 28. You may also enter through Kearny Street.

333 Bush



Between Montgomery and Kearny. Conference rooms are located on floors 4, 9, and 10.

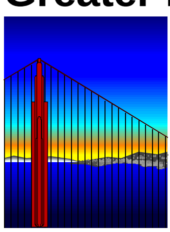
444 Market

Shaklee Building. SITE and ETS are located here.

Other Locations

Charles Schwab occupies other locations at 88 Kearny, 101 Market, and at 241, 345, and 580 California Street.

Greater Bay Area



As can be seen on the map on the following page, San Francisco is located in the heart of a region abounding with resources, commercial, residential, and of course natural:

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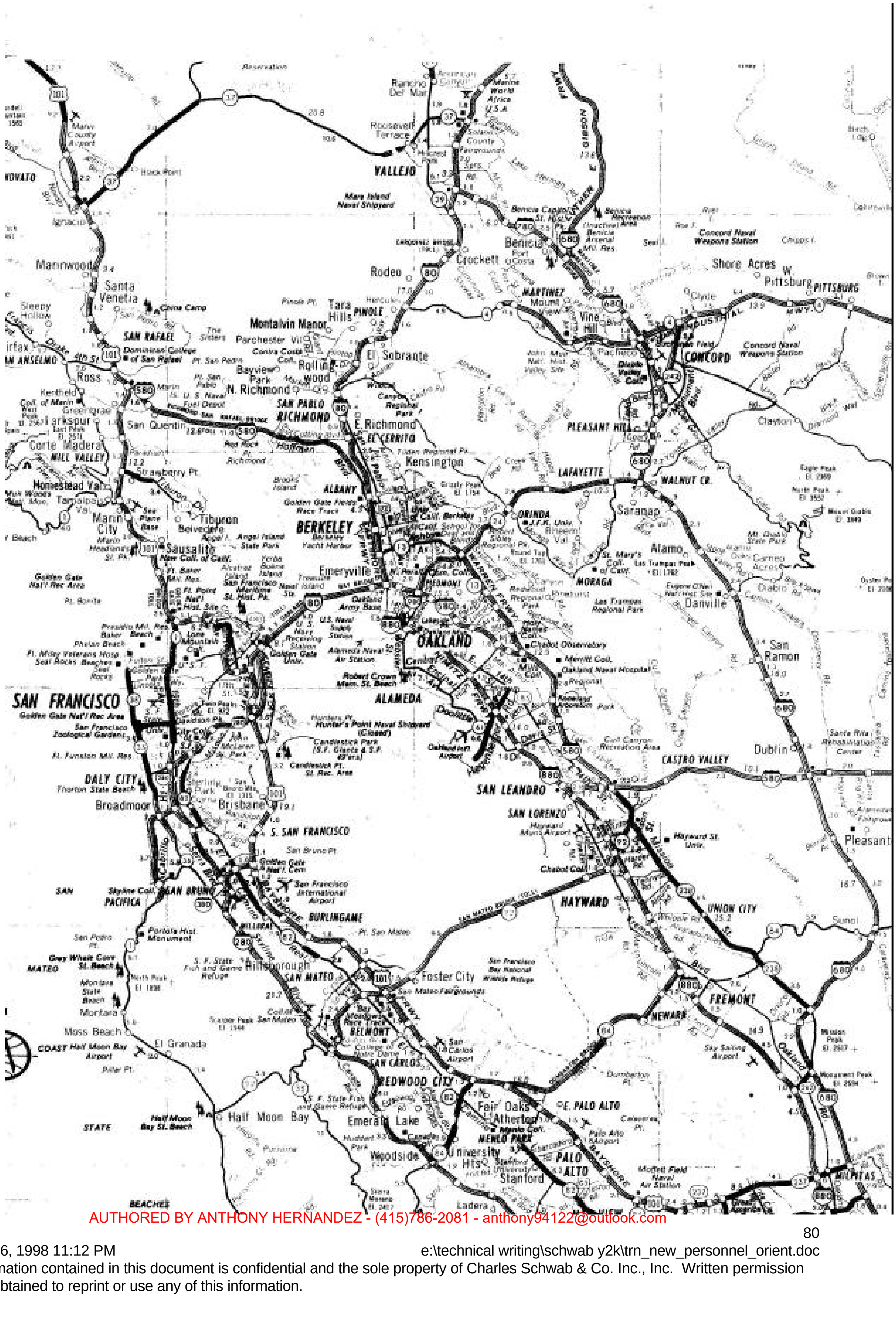

NOVATO
VALLEJO
Benicia
Crockett
Rodeo
Shore Acres
PITTSBURG
Santa Venetia
SAN RAFAEL
Montalvin Manor
El Sobrante
MARTINEZ
CONCORD
Ross
N. Richmond
RICHMOND
E. Richmond
EL CERRITO
PLEASANT HILL
Larkspur
San Quentin
Corte Madera
MILL VALLEY
Kensington
LAFAYETTE
WALNUT CR.
Clayton
Homestead Val.
Tiburon
Belvedere
ALBANY
BERKELEY
ORINDA
Saranap
Alamo
Sausalito
Emeryville
MORAGA
Danville
OAKLAND
San Ramon
SAN FRANCISCO
ALAMEDA
Dublin
DALY CITY
Brisbane
SAN LEANDRO
CASTRO VALLEY
Broadmoor
S. SAN FRANCISCO
SAN LORENZO
Pleasanton
PACIFICA
SAN BRUNO
HAYWARD
UNION CITY
BURLINGAME
Sunol
Hillsborough
SAN MATEO
Foster City
FREMONT
NEWARK
Montara
Moss Beach
El Granada
BELMONT
SAN CARLOS
REDWOOD CITY
Fair Oaks
Atherton
E. PALO ALTO
Half Moon Bay
Emerald Lake
MENLO PARK
PALO ALTO
Woodside
Stanford
MILPITAS

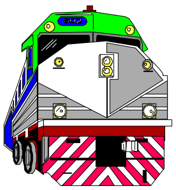
Public Transportation

Depending on where you live, public transportation may save you time, energy, and money versus driving your personal vehicle. Use of public transportation when feasible is a valuable contribution to reducing pollution and congestion, the benefits of which are obvious to everyone. Here are some of the many options available to you when considering public transportation:

BART (Bay Area Rapid Transit)

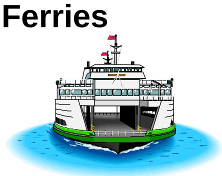
This train/subway service brings you to downtown San Francisco from such far-flung locations as Richmond, Pittsburgh, Livermore, Fremont, and Colma. Parking is available at the suburban stations and trains run to downtown San Francisco as often as every 90 seconds during peak commute hours. For further information including fares and schedules, please call BART at (415) 992-2278.

CalTrain



Diesel locomotives move large comfortable passenger cars to numerous destinations between 3rd and Townsend Streets in San Francisco to downtown San Jose, and beyond to Morgan Hill and Gilroy. You may reach CalTrain by calling (800) 660-4287.

Ferries



Traveling on San Francisco Bay can be both a relaxing and exhilarating experience. There are numerous ferry services, including:

- Golden Gate Ferry between San Francisco and Marin. (415) 455-2000
- Red and White service to Vallejo and other destinations. (415) 546-2628
- Blue and Gold service to Vallejo and the Contra Costa area. (415) 705-5444

Bus Services

The Bay Area is fortunate to be served by several world-class bus transit systems. They include:

- San Francisco Municipal Railway (MUNI) offers bus, trolley, streetcar, and metro service covering San Francisco so thoroughly that 95% of all addresses in San Francisco are within two blocks of a MUNI stop. They may be contacted by calling (415) 673-6864.
- Golden Gate Transit provides its passengers with comfortable seating and rapid service between San Francisco and the counties of Marin and Sonoma (North Bay). Please contact them at (415) 455-2000.

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- Alameda/Contra Costa Transit (AC Transit) covers the East Bay with many bus routes into downtown San Francisco. Their telephone number is (800) 559-4636.

- SamTrans offers comprehensive service within San Mateo County (Peninsula) and may be reached at (800) 660-4287.

Carpools/Vanpools

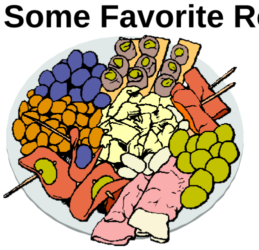
Sharing rides with friends, co-workers or neighbors can offer both the flexibility and convenience of private transport while also contributing significantly to reducing pollution and congestion. If you are interested in learning more about this option, please contact (800) 755-7665.

Parking

There is no on-site parking available at any of the Schwab offices. There are numerous garages in the area with fees ranging from $10 to $20 per day. The largest garage is the Stockton/Sutter Garage, with entrances at both Stockton and Bush Streets. Rates are hourly for autos with a daily maximum of $15, $3 per day for motorcycles, and 25 cents per day for bicycles. Another of the many local garages is located on the south-west corner of Bush and Montgomery Streets. The all-day rate at this facility is $25. Cheaper parking is available at one of the many lots south of Market Street. One such lot is at 3rd and Mission Streets behind the Anna hotel. All day parking there is $9.

You may obtain information concerning routes, schedules, fares, etc. by visiting the Bay Area Transit Information Web page located at <http://www.transitinfo.org>. This site is free and is maintained by the University of California at Berkeley.

Some Favorite Restaurants



Since a good breakfast and lunch go a long way to making your work day a pleasant one, the Year 2000 Project Team has compiled a list of some of its favorite eating establishments, all within easy walking distance of 101 Montgomery Street and 333 Bush Street.

- Specialties on Kearny between Pine and Bush serves up a great assortment of soups, sandwiches, and freshly baked goods.
- Lee's on Market and Sutter (next to the Chevron building), makes a variety of sandwiches, etc. at reasonable prices.

- Saint Angelo's Cafe on Market and Kearny cooks fantastic Southern Cajun cuisine.

- Kowloon and Lotus Garden, both on Grant Street, have an assortment of Chinese dishes and are noted for their vegetarian cuisine.

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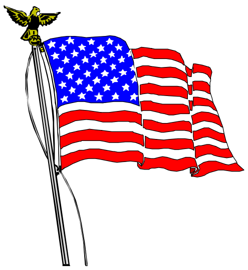
- Kelly's Cafe, in Trinity Alley, offers soup, salad, or a salad and a half sandwich for $3 every day, as well as other prepared foods.

General Work Environment

Dress Code

Business attire is required, however Charles Schwab has instituted a Casual Dress Policy. Clothing such as torn or dirty jeans are unacceptable. Sneakers may be worn. Please refer to the book entitled *A Guide To Casual Business Wear*, found in the communal mail areas (Interoffice Mail) of each floor.

Schedule/Holidays



Core working hours are from 8:00AM to 5:00PM with flexible lunch. Corporate holidays are New Year's Day, President's Day, Memorial Day, Independence Day, Labor Day, Thanksgiving, and Christmas Day.

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Appendix A - Glossary

The following is a list of terms and acronyms used by the Year 2000 Project and elsewhere within Charles Schwab. Should you find any term or acronym that is not included but should be, please contact one of the Document Coordinators.

Acronym	Term	Definition
1 Mont		120 Kearny Street, Pacific Telesis Towers (not 1 Montgomery).
101		101 Montgomery Street.
ACD	Automated Call Distribution	A common, reused module used to perform a basic function.
ACL	Access Control List	Used in conjunction with the DCE Security Service, the ACL contains entries for principals (users), or groups of principals, that have permission to access specified applications or services.
ACPT	Acceptance Region	CICS region for user acceptance testing of developed applications.
AFS	Andrew File System	AFS is deployed throughout Schwab on Sun/UNIX systems, allowing UNIX client access to remote systems.
AIM	Advantage Integrated Marketing	Applications suite by Quotron.
AIP	Automatic Investment Program	Processes customers mutual fund transactions (standing orders) on certain days of the month.
AMEX (ASE)	American Stock Exchange	
AOR	Application Owning Region	CICS region running bulk of user apps (CICSD, CICSA, CICSP1A1 through CIC1A5).
API	Application Programmable Interface	
APT	Application Parent Ticket	INFO packet ticket for a PDX implementation.

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ATM	Asynchronous Transfer Mode	High speed, state of the art, network protocol.
AWS	Alternate Work Schedule	Employees on 9/80 work schedule, which is 80 hours worked over 9 days with the 10th day off.
Bachman		A CASE tool that supports the business analysis of data and processes with entity relationship diagrams, data flow diagrams, and functional decomposition programs. This product supports physical data definition by providing tools for DB2 database design and Data Definition Language (DDL) generation. It can create data and process models that show how data is used.
BASE	Branch Services Extension	
BDEP	Branch Deposit Application	Transaction used to deposit funds into Schwab accounts.
BETA	Old name for Legacy brokerage system	A brokerage software system purchased by Schwab.
BL command	on-line for command	
BONY	Bank of New York	One of our Electronic Data Interfaces (EDI's).
BSE	Boston Stock Exchange	
CAOS	Common Architecture and On-line Systems or Host Offload	Responsible for Operating Systems, Communications, and transaction processing software for the mainframe. Look for opportunities to offload processing from the mainframe to other platforms such as OS/2 or UNIX.

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CASE	Computer Aided Systems Engineering	Provides automated techniques to assist in application systems development. CASE consists of a set of workstation-based software tools and methodologies designed to support application developers and business analysts: data dictionaries to store and validate definitions of items used in programs and record how they are used, diagnostic tools to check for business inconsistencies and redundancy, as well as diagrammatic representations of system designs. Some CASE tools generate program code directly from design specifications.
CASIM	Computer Automated Systems Implementation and Management	Change Management tool used to implement HPS changes.
CAT5	Category 5	Cabling for network transmission rates up to 100Mbs.
CBOE	Chicago Board of Options Exchange	Options based trading executed on CBOE.
CDD	Client Design and Development	Resides in BSD Organization. CDD assists Project Teams in the design and development of usable computer/human client interfaces (front ends) to our business systems.
CDS	Control Data Systems	Vendor that supports the mail-hubs that support our enterprise-wide e-mail system.
CERT	Certified Mail Implementation Services	This group ensures efficient software distribution techniques exist. They certify, plan, and assist Service Location system administrators with new SAMS software releases.
CERT	Certification Environment	Testing environment. Last stage for distributed software before implementing change into production.

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CHOPS	CASIM Migration	CASIM Migration/HPS Change Management's primary objective is to ensure the stability and safety of the HPS Production Repository and its applications. This is done by performing planned migrations into the region and by ensuring that consistent change management practices are observed at all times.
CIAS	Client Integration and Architecture Support	This group configures and installs enhancements to our SAMS-related Desktop Software to support other products and application implementation.
CICS	Customer Information Control System	An IBM teleprocessing monitor that provides transaction processing in batch-oriented VM and MVS operating systems. CICS provides device independence - programmers develop screen displays without having to program the specifics of the display terminal. It also provides password security, transaction logging for backup and recovery, and a journal of activity that can be used for analyzing session performance.
CIO	Chief Information Officer	Dawn Lepore
CISC	Complex Instruction Set Computing	The chipset used to support mainframe computing.
CLED	Customer ledger processing	Second generation transaction used to view customer account transactions. Done via nightly batch processing.
CLIST	Command List	A grouping of TSO commands executed when the CLIST is involved.
CMD	Create/Maintain Dealer application	Part of Third Party. Application enables Schwab to create and maintain relationship info for other broker/dealers we transact with.
CMSV	Production Change Management	CMSV minimizes the risk of introducing changes to our host environments by adhering to and enforcing controlled procedures to install such change.

Conversion Unit		Group of program modules converted as a single unit.
CPCP	Capacity Planning	Capacity planning for our mainframe systems based on utilization. This group tracks MIPS usage through MICS reporting and makes recommendations for mainframe upgrades and enhancements.
CPR	Critical Path Reduction	Critical Path is the longest job in the nightly Schwab batch processing. CPR is the process to reduce the run time of Critical Path.
CS01, etc.	CPU system IDs	The 'CS' portion of the number stands for "Charles Schwab".
CSDG	Client/Server Development	Provides business solutions to customer enterprises such as Schwab Institutional, Active Trader, Finance, Marketing, Compliance, Audit, Office of the Corporate Counsel, and other users of LANs. CSDG provides technical solutions through a variety of tools, focusing within SAMS using UNIX servers, RDBMS, and client front-ends. Decision Support and Data Warehousing for all Schwab customer and support enterprises is provided via FOCUS and other DSS tools.
CSE	Chicago Stock Exchange	
CSHO	Market Data Services	CSHO supports the PCQuotes and Telekurs platforms, and provides integration support for the projects that develop new SAMS-aligned quote services at Quotron and ADP.
CSI	Cash Standing Instructions	Code inserted into each customer account containing the customer's instructions on how to handle trades and funds in the cash account. Every Schwab customer has a CSI. If the customer has a margin account, the customer also has an MSI (Margin Standing Instructions).

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CSRS	Common Systems Services	This group is responsible for developing the system software of the third (middle) layer of the SAMS 5-layer model. This layer of software provides APIs, cover functions, and technology services to the layer above it. CSS is designed to protect business services from technology changes and software maintenance, and to insulate business applications from some Operating System, DCE, etc. complexities.
CUSIP	Unique ID for a security	The CUSIP is an industry-provided ID.
CUSV	Customer Services	This is the old APPS group - first level help desk for all Technical Support for Schwab employees. This help-line (602-431-3000) caters to all telephone, PC, terminal, printer, and on-line problems.
CWG	Cooperative Work Group	Used for SITE groups cooperating on enterprise-wide projects spanning more than one business division (e.g. CWG on High Volume Print / Statements).
DASD	Disk Access Storage Device	Mainframe hard disk drives.
DB2	DataBase2	An IBM relational database management that runs on mainframes that use the MVS operating system. It uses the SQL language interface and is a full-featured and powerful database system.
DBTS/DBTX		Transaction for viewing/updating Datacom tables.
DECE	Development Center	Old acronym for LAN support.
DEVO	Development	CICS environment in which initial program development takes place.
DIRT	Directory	Schwab's on-line telephone directory
Distributed		All hardware and software environments not based on a mainframe

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DIVS		Dividend application consisting of on-line and batch processing.
DNCL	Denver Service Location. Service locations were formerly termed Cells.	Each cell consists of a Cell Manager, Systems Administrators, and Telecom Analysts supporting all Clients with a SAMS workstation. Cells are now referred to as Service Locations, providing Distributed Support Services.
DRI	Dividend Reinvestment	A service provided by Schwab and other brokerage firms.
DSSV	Distributed Support Services	New term for Cells.
DTC	Depository Trust Company	Owned by banks and brokerage firms. Key figure in transferring/settling trades. Maintains record of held securities.
ECP	Emergency Contingency Planning	The group responsible for maintaining and testing Schwab's disaster recovery services for mission-critical mainframe applications.
EFT	Electronic Funds Transfer application	Computer-based method of substituting an electronic transaction for an exchange on paper.
ELIN	Electronic Interfaces	Develops and maintains Schwab's electronic delivery channel, including the Telebroker, Equalizer, and StreetSmart products, and all of their back-office support functions.
ENET	Ethernet	Ethernet. Method of connecting PCs within a network
ESD	Electronic Service Delivery/Division	Old name for Electronic Brokerage (EB)
ESL	Enterprise Solutions Limited	Vendor that supports our enterprise-wide user agent e-mail system.
ETS	Enterprise Technology Solution	Term coined to reflect the nee Enterprise business model. Please refer to the section "What is an ETS?" in this document for further discussion.
FATE		Transaction for correcting trade errors.

FEDS	Field Services	PC trouble-shooting team.
FTP	File Transfer Protocol	Distributed systems product which allows a server or workstation with an IP address to exchange files with other IP addresses. Mainly associated with UNIX.
GSCC	Government Securities Clearing Corporation	
HFB	Host Fallback	Schwab term. Subset of brokerage system for daytime emergency and overnight window use. Runs on CS05.
HOST	Operations and Systems Recovery -	Day shift HOST operations. Responsible for running the Schwab mainframe hardware and software during the prime time market hours. Monitor on-line response time and fix batch abends as they occur. Crisis management in Host Fallback situations.
HOST	Operations and Systems Recovery - Swing Shift	Swing shift HOST Operations. Proactively monitor system resources and are responsible for transition from on-line to batch environment. They are also responsible for batch jobs and third party transmissions during their shift.
HOST	Operations and Systems Recovery - Grave Shift	Grave shift HOST Operations. Responsible for batch jobs and third party transmissions during their shift.
HPS	High Productivity System	Developed and licensed to Schwab by Seer technologies. HPS is a CASE tool that is used for developing SAMS applications. HPS generates code from business rules for the different processing platforms (SUN OS, DOS, OS2) and maintains the repository for the development environment.
HTML	Hyper Text Markup Language	used for designing WWW home pages
INCL	Indianapolis Service Location	

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INFO	On-line Information Management	Allows listing and tracking system/application changes/problems/etc. You get in through ISO/ISPF.
IR	Improved/In-house Recovery	A Schwab authored, automated subsystem which transmits mission-critical mainframe date from the production site to a Schwab backup site. This is the primary tool for ECP.
ISD	Information Systems Division	Old name for SITE.
ISEP	Emergency Contingency Planning	ISEP is SITE's in-house system recovery team, responsible for restoration of our batch and on-line systems in the event of a loss of our mainframe processing in Phoenix. They conduct recovery tests of the system and also support the Business Relocation Plan for SF HQ employees. They are working with SAMS to develop recovery methodology for distributed platforms.
ISPF	Interactive Structured Program Facility	Menu driven access to MVS.
ITSA	SITE Technical Training	Coordinates SITE's Technical training classes and seminars.
IWIN	I Want Information Now	A Windows NT platform application that integrates Legacy, Business Calculator, and Electronic Library into an on-line library for Schwab Customer Service Representatives.
JCL	Job Control Language	Mainframe language allowing users to submit processes for execution on the mainframe host.
JES	Job Entry Sub-system	Mainframe subsystem validating JCL syntax and scheduling user jobs for execution.

LAN	Local Area Network	A facility, usually a combination of wiring, transducers, adapter boards, and software protocols, which interconnects workstations and other computers located within a department, building, or neighborhood. A LAN provides the physical connection between the computers, terminals, and other equipment in a "local" area. LANs utilize different protocols, such as Ethernet or Token Ring to enable communications between devices.
Legacy		See BETA
LEGS	Legacy Projects	Responsible for the maintenance and enhancement of the Legacy Systems (except Electronic Products and Mutual Funds). Also responsible for ongoing Legacy support, including regulatory tax reporting. YES, OLRS, and monthly statement processing.
LORD	List Order	Transaction with many sub-functions which can execute, delete, cancel, boat trades, and more.
MAMS	Margin Accounts Monitoring System	This application allows Schwab to monitor customer's margin accounts.
MESS/MSG	Message	On-line system for messages
MFOE	Mutual Fund Order Entry application	Legacy order entry transaction for mutual funds.
MFTOA	Mutual Fund Transfer of Account application	
MIS	MIS Department	Responsible for communications, planning and data distribution in the SAMS environment.
MQ	Message Queue	IBM product - Manages message queuing and delivery between systems (e/g CICS to CICS) and platforms (e.g. mainframe CICS to RS/6000 CICS). Primarily used to bridge data between Legacy (CS01) and SAMS (CS06)

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MRO	Multi Region Operation	IBM term. Link between two mainframe CICS regions (must be on the same system, e.g. CICSP1A1 Legacy AOR on CS01 on CICSP1P1 Legacy POR on CS01).
MUSE	Model for Understanding Schwab Economics	A 3-dimensional activity-based costing model used by Finance. This application translates general ledger account-based costing into an activity-based costing model, used to compare revenues and expenses across combinations of Schwab products, distributing channels, and Schwab customer segments over time.
MVS/ESA	Multiple Virtual Storage/Enterprise Systems Architecture	The mainframe operating system
NAVG	Navigator	for BETA screens. Looks up transactions based on search key-word.
NCOM	Network Management and Control	The Network Control Group in Phoenix has merged into the Operations Department creating HOST OPERATIONS.
NDM	Network Data Mover	Way to transmit data.
NSCC	National Securities Clearing Corporation	Most broker/dealer trades clear through NSCC. Also offers transaction comparison services for the brokerage community.
NSFT	Network Software	Primarily responsible for mainframe based products used in our SNA network (VTAM, NCP, Netview). Also responsible for file transfer and batch transmission products, NDM and Supertracsm CI/Supersession, and TCP/IP on the mainframe, and involved in SNA and IP integration issues and SNA capacity planning.
NUMB	NUMB	Transaction for entering trades.
NYCL	New York Service Location	
NYSE	New York Stock Exchange	

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OBMS	Open by Master/Sub-account Application	OBMS This project allows users to input a template of trades and apply them to one or many sub-accounts of a master account with the click of a button. This is a SAMS application.
OCC	Options Clearing Corporation	
OLRS	On-line Record System	A CICS transaction providing access to historic or archived customer documents.
ONCALL LIST	See “TSO ONCALL”	Provides several members' telephone numbers of those on call for a particular system or application.
OPSR	Day Shift	Responsible for running the SFDC mainframe hardware and software during prime time market hours. On-line backup trading system (Host Fallback).
OPSR	Swing Shift	Swing shift operations for the SFDC. They monitor system resources and are responsible for the batch environment of all systems in San Francisco.
OPSR	Tape Library	Mounting, storing, and coordination of back-up and third party vendor tapes in SF.
ORCL	Orlando Service Location	
OSS	On-line Systems Support	Mainframe CICS group with control up upgrading and supporting BETA AOR, POR TOSS (CICSP0), Host Fallback regions, etc.
OTC	Over The Counter	Comprises those trades which consist of unlisted securities/issues.
PADS	Performance and Database Systems	Maintain the performance and capacity of the mainframe's databases, including IDMS and DB2.
PDS	Partitioned Data Set	File that holds separate storage areas, or members. Also known as a library.
PHLX	Philadelphia Stock Exchange	

POR	Printer Owning Region	IBM term. Legacy CICS region to which all printers and exchange lines are defined (CICSD1P1, CICSA1P1, and CICSP1P1).
PRDS	Production and Decision Support	Recently reorganized to the C/S Development Department.
PROD	Production	The environment where tested and certified applications run and perform actual business functions. CS01 is the mainframe production environment.
PROD	Production Region	CICS environment where production applications reside.
PROS	Production Support	Resolve applications related production problems. Responsible for providing on-call support to application software failures in the firms' production environment. They provide solutions that restore the systems to an available status and ensure long term production stability.
PRTG	Printing Technology and Automated System	Printing Technology - responsible for support of mainframe printers, SAR/XD conversion projects, etc.
PSE	Pacific Stock Exchange	
PXCL	Phoenix SAMS Service Location	
PXDC	Phoenix Data Center	PXDC is the main processing facility for the company containing two mainframe CPUs running Legacy (our primary trading system) and SAMS.
QA	Quality Assurance	Project-wide procedures used during product development to ensure a Quality Product.
QC	Quality Control	Post-development testing of developed products to ensure they are Quality Products.
QMF	DB2 Query Management Facility	
Quality Process		Process and Procedures for ensuring a Quality Product. The Quality Process encompasses both QA and QC.

Quality Product		A Quality Product is something that is complete, consistent with other project components, conforms to pre-established project methodologies, standards, procedures and guidelines, meets the task objective, satisfies user requirements, and is clear in that it is unambiguous and comprehensive
RAD	Retail Applications Development	Designs, builds, and installs system solutions for the Retail Customer Enterprise.
RATS	Repository Administration and Tool Support	RATS is an internal BSD organization that primarily supports the Development Environment and the tools used by developers to deliver applications. This mainly consists of Bachman and HPS. RATS is second and third level support when there is a production problem that is tracked back to the HPS tool. Also supports and manages the new releases of Bachman and HPS software.
RDO	Resource Definition On-line	IBM term. Mechanism for defining CICS resources (such as programs, transactions, and files, on-line) that are interactively used in the CICS region where they should reside.
RELM	Release Management	Responsible for planning, packaging, and scheduling releases in the distributed environment. Also responsible for the release process and for performing integration.
RFTB	RFI Table	Legacy transaction used to store and reference static generic information
RSD	Retail Service Delivery/Division	Old department responsible for branch management.
S1	Schwab One	Customer account segment eligible for special services e.g. checks, OR the department supporting these customers.
SA	Systems Administrator	

SAMS	Schwab Architecture Migration Strategy	SITE Implementation and Customer Support.
SAR	Sysout Archival and Retrieval	A product allowing storage and retrieval of MVS job sysouts (listings).
SARXD	Sysout Archival and Retrieval Express Delivery	Same as SAR but with added features (such as report grouping).
SASS	Systems Applications Software Support	Support TSO/ISPF applications, in-house Recovery software, PDX, Paradigm, and Info-Management.
SCIT	Installation Testing	Second to last testing stage for distributed software. From here, programs go to CERT for final certification prior to implementing the change.
SDD	Service Design and Development	Oversee the design and development of SAMS Business Services.
SDSECPOS	Settle Date Security Position Files	Includes all Security positions owned by Schwab customers which have settled. Created in critical batch job PRDSDSP.
SDSF	System Display and Search Facility	Allows mainframe users to monitor the status of their executing jobs.
SEC #		Schwab provided unique ID number assigned to a security
SECA	Security Administration	Creates new TSS, TOSS, BETA IDs, permits transactions, dsns, HLQs, SECLEVELs, etc. to customers. Ensures compatibility between TSS and new versions/releases of CICS, IDMS. Establishes and maintains positive access to mainframes from dial-up PCs/terminals via Leemah system. Monitors SITE compliance to corporate security policies, and makes changes as needed per internal/external audit. Provides HPS security for all SAMS applications resources in production; becoming more involved in UNIX and distributed security.
SFCL	San Francisco Service Location	

SFCS	Network Management	Manages Telebroker support and handles backup network responsibilities.
SFDC	San Francisco Data Center	Responsibility for managing the facility, floor plan, hardware installs, and logistics. SFDC houses the Hitachi mainframe running in partitioned-mode, CS (development), CS05 (Host Fallback), and CS07 (ECP).
SIA	Securities Industry Association	
SIAC	Securities Industry Automation Corporation	Does data processing for DTC, NSCC, NYEX, AMEX, and PCC
SINT	Systems Integration	Responsible for the testing and integration of the new products and applications in the UNIX environment.
SITE	Systems Integration and Testing Environment	Schwab's IT Department.
SMT	Schwab Management Team	Directs reports to the CIO.
SNA	Systems Network Architecture	IBM's network architecture for IBM and IBM-compatible mainframe computers. Schwab's Legacy network is based on this architecture.
SNAP	SAMS Network Administration	Based in Phoenix, SNAP is chartered with third level support for the TCP/IP network and Q/A responsibilities for all network implementations. They administer and vendor manage the following equipment: NewBridge, T3Plus, CISCO, Cabletron, and OCS Gateways. They also do project work with the equipment, along with network management platform customization.
SPARC	Sun Microsystems RISC computer.	A Sun based server architecture supporting Sun's UNIX (Solaris and Sun OS).
SPR	Special Processing Request	Request to run jobs in production.
SPUFI		DB2 Quick Access for all DB2 functions.

SR	System Request	Request for application systems changes.
SSPP	SAMS Service Platform Project	Responsible for the SAMS workstation roll-out, including project planning, financial tracking, vendor negotiations, and relationships.
STOR	Storage Systems	Technical support (second level) for DASD, TAPE, and optical storage related issues.
TCP/IP	Transmission Control Protocol Over Internet Protocol	A suite of transport and application protocols. Schwab's enterprise-wide area network uses these protocols.
TDDB	Database Administration	Database administration and support for applications requiring database accesses.
TDSECPOS	Trade Data Security Position File	Created in critical batch job PRDTDSP. Contains Schwab trades that have executed but not settled. These are all the positions held by Schwab customers. The file is used to load the critical RCK database.
TIPS	Technological Implementation and Production Support	Responsible for the support to changes to our SNA network components, planning and coordination of weekend change activity in the Phoenix Data Center. Also, the implementation and production support for applications processing in the HOST environments.
TLMS	Tape Library Management System	A mainframe subsystem which manages the tape inventory, schedules tape shipments, and prevents tape data from being prematurely overwritten or deleted.
TNET	Telecommunications Network Engineering and Implementation	TNET provides engineering and implementation services on all utility network projects and initiatives. This includes WAN, LAN, and third party feeds. TNET establishes network standards and provides input and expertise to network related issues.

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TOA	Transfer Of Accounts	Application used to move Schwab customer accounts to other institutions.
TOPS	Technical Operations	Part of the San Francisco Service Location. First level support for workstation and network problems. SRV.
TOSS	Total Office Support System	Schwab's CICS-based e-mail system. Vendor is NBS (National Business Systems).
TPRS	Regional Systems	TPRS provides project management for network projects, Base expansion/move projects, Telebroker expansion/move projects, and Telecom Cost Recovery system.
TR	Token Ring	Type of wiring connection between PCs and servers.
TSO	Time Sharing Option	An on-line platform for application development that allows MVS users to navigate MVS interactively.
TSO ONCALL		Provides several members with those on-call for a particular system or application.
URT	User Requirements Table	DATACOM.
USS	UNIX Systems Support	Development, deployment, and third level support of UNIX system software. The major areas covered are: OS, File Systems and Databases, Systems Management, Communications, DCE, the Desktop, and associated software systems.
Validation		
VCP	Volume Contingency Plan	A plan that is invoked during heavy market activity when additional resources are needed to respond to customers.
VSAM	Virtual Storage Access Method	File storage mechanism.
VTAM	Virtual Telecommunications	Mechanism to access mainframe data structure. Access Method.

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WAN	Wide Area Network	A data network that connects LANs that are located in separate geographic areas.
WWW	World Wide Web	Internet information.
X.400		Standard mail and messaging protocol that defines the electronic equivalent of envelopes for voice mail, telex, fax, and e-mail messages.
X.500		Standard mail and messaging protocol that includes the capability of maintaining directories of users.
XMIT	means "Transmit"	
Year 2000 certification		Compliance for the Year 2000 Project at Charles Schwab is defined as the correct processing of years in dates before, on, or after December 31, 1999. Specifically, this means that:: • A consistent methodology towards reaching compliance will be used across all applications. • Year 2000 must be recognized as a leap-year. • All date based functionality must continue to adhere to existing business rules established by the business owner. • Modifications for compliance will not impact performance beyond acceptable tolerance levels established by the business owner and SITE. • In all internal interfaces and data storage, the century in any date must be specified either explicitly or by windowing rules handled within the application or by bridging interfacing programs. • In external interfaces, the century in any date will be specified explicitly whenever possible. When not possible, bridging interfacing programs will be implemented.

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Year 2000 Compliant	In order for a program to be Year 2000 compliant, it must appropriately handle dates before, on, and after January 1, 2000. Programs must be able to process the year 2000 as a leap year and process 2/29/2000, 3/1/2000, and 366 days in the year 2000 and subsequent leap years correct. New dates must contain the full four-digit year (CCYY). Existing dates used in calculations must be windowed appropriately.

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Appendix B - Frequently Asked Questions

This section is divided into two parts: Questions asked by Schwab Developers and Questions asked by Schwab Customers/Investors. Full details about the Year 2000 Project and the Year 2000 Project Team can be found on the shared network drive at <\\n0009sfo\public\Year 2000 Project> and on the Schwab Intranet at <http://n2000sch/y2k>. Further information sources are listed in the "Finding What You Need” section of “Your Work Station” in this document.

Frequently Asked Questions By Schwab Developers

Q. I’ve completed my changes and the Date Standard Audit Result says my migration is COMPLIANT. Does this mean that the programs I changed no longer have any year 2000 functionality problems?

A. Not necessarily! It means that you did not introduce anything NEW into the programs that would cause year 2000 functionality problems. Existing year 2000 functionality problems will continue to live in the programs until the Year 2000 Project Team has completed their analysis and corrective work on them.

Q. If a program is part of my migration so it can be re-compiled just to pick up a new copybook, do I have to convert CALENDAR or CICCALDR calls to UTCLCCA2?

A. Yes. If a program is re-compiled as part of a migration for any reason, the Date Standard requires that all usage of the CALENDAR or CICCALDR subprograms be converted to the UTCLCCA2 subprogram.

Q. If my migration involves JCL and/or PROC changes and no program changes, do I have to change the rundate CTLLIB members to compliant versions?

A. No, you do not. Changing these control cards would mean you would have to change the programs to use UTCLCCA2. This is not required by the Date Standard in this circumstance.

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Q. Where can information on the compliant rundate cards be found?

A. This information can be found in the Year 2000 Date Standard. This information is also repeated below:

Old Rundate Card Name	Compliant Version of Card
RUNDATE	CCYYMMDD
LATEDATE	LATEDAT8
NEWDATE	NEWDAT8

If you come across an old (six digit) rundate card that is not listed above, please contact the Y2K Audit Team and we will make arrangements to have a compliant version of the card created.

Q. Can I insert a REDEFINE of an existing six digit date field into a program?

A. Yes. The Date Standard does say that all new date fields must be defined compliantly, however a REDEFINE does not really create a new date field; it merely adds different addressability to an existing field. Therefore this REDEFINE is allowed by the Date Standard.

Q. Is a "floating" window different from a "sliding" window?

A. No. Both "floating" and "sliding" refer to windows which determine the breakpoint year at execution time.

A "fixed century" window uses a hard-coded breakpoint year, determined at the time the program is coded.

Q. Do vendor files entering Schwab systems have to be Year 2000 compliant?

A. The Year 2000 Date Standard does not distinguish between vendor files and any other files, therefore, any new vendor files must be defined in compliant fashion. If the vendor is unable to support a compliant format in their file, then you will need to submit a Waiver Request and get the appropriate approvals before you will be able to install any programs or copybooks relative to the vendor file.

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Q. I am in the process of converting a CALENDAR/CICCALDR call to UTCLCCA2. Does the CALENDAR copybook also have to be removed from the program?

A. No, the copybook does not have to be removed from the program. If the program you are changing uses the CALENDAR copybook fields extensively throughout the program, removing the copybook would mean changing all procedural statements that reference those fields. This could entail significant risk and additional testing. In this circumstance, you should leave the CALENDAR copybook in place and populate its fields with data returned by UTCLCCA2 in the UTCICCA2 copybook. On the other hand, if these fields are not used extensively and removal of the copybook will cause minimal changes elsewhere in the program, this strategy could cause confusion to later maintenance work. Under these circumstances, it is suggested that you remove the CALENDAR copybook and use the UTCICCA2 field names in procedural statements.

Q. I work on programs in a non-mainframe environment. Do I need to comply with the Year 2000 Date Standard?

A. Yes, you do. Although source code control has not been implemented for environments other than PDX and HPS, you should use the same Date Standard concepts in determining how to develop new applications and make changes to existing programs. Non-mainframe language, product, and database specific sections of the Year 2000 Date Standard are being developed. When completed, these should help answer specific questions. In the interim, refer to the introduction to the Date Standard for the general concepts, or call David Hargreaves (415-636-7815) with specific questions.

Q. I was unable to attend this Year 2000 Date Standard Brownbag, but my co-worker shared the handouts with me. Are there going to be more brownbags?

A. Yes! We will continue to hold brownbags on a regular basis until we reach everyone who needs to know about the Year 2000 Date Standard. Invitations to future brownbags will be made via Exchange e-mail.

Q. I have frequently asked questions that I don’t see listed in this document. What’s up?

A. If you have a specific question that has not been addressed in this document, please send your question to the "Y2K Audit Team" e-mailbox. We will reply to your question and include it in this document for future Date Standard Brownbags. Thanks for your input!

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Frequently Asked Questions By Schwab Customers

Q: What is the Year 2000 problem?

A: When computer programming was in its early stages in the 60's and 70's, programmers economized by using two digits instead of four to designate the year. For example, the year 1960 was keyed as 60. This practice saved approximately 25% disk storage space, which was very costly in the early years of programming, and allowed for new applications to be pioneered. When the programs containing the two digit dates perform mathematical calculations, a problem occurs. The computer will assume that 01-01-00 is the first day of 1900, rather than 2000. If left unattended, this could have serious impacts in every computer, in every industry, where dates are compared or calculated for bond interest payments, stock trade settlements, insurance planning, utility bill calculations, shelf life calculations for food supplies, retirement benefits, and many other financial transactions.

Q: Who is affected by the Year 2000 problem?

A: Every person and business that owns and operates a personal computer or mainframe application is potentially impacted by the Year 2000 challenge. The use of two digits versus four digits to represent the year is so common in applications that most businesses will face problems when the calendar turns to 2000.

Q: What is Schwab doing to bring its computer systems into compliance?

A: Charles Schwab & Co. Inc., has a dedicated Year 2000 Project Team in place. This team of professional managers, programmers and consultants are working to bring the computer systems into compliance. As of October of 1997, an inventory of the technology systems has been completed and remediation is in process.

Q: How long has the team been working on the project?

A: The project team commenced work on the Year 2000 Project in October of 1996. We have a dedicated staff of managers, programmers, and consultants that comprise the team. The number of team members fluctuates as we implement each phase of the project.

Q: When will Schwab's systems be Year 2000 compliant?

A: Our goal is to have our mainframe applications that are critical to trading converted by the end of 1998. All other systems are scheduled for conversion in 1998 and early 1999. Testing will be conducted for one full year in 1999.

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Q: Is Schwab required to participate in any industry tests?

A: The agency that regulates trading, the Securities and Exchange Commission (SEC) has mandated that all trading companies be ready for a test that they have tentatively planned for January 1999. We will be participating in the Securities and Exchange Commissions "Streetside" testing and we will also be participating in industry-wide testing beginning in the fourth quarter of 1997 and scheduled throughout 1998.

Q: What is being done to protect Schwab's systems from being corrupted by outside sources?

A: We are in the process of identifying and contacting the vendors with whom we interact to confirm that the information we receive or exchange with them will be Year 2000 compliant. We will be testing the data that we receive on a separate testing system to verify that the data is Year 2000 compliant. We will not allow **non-compliant data to mix with our systems.**

Q: Will Schwab's software packages be Year 2000 compliant?

A: Yes. We are committed to bringing all of our software that we provide to our clients into compliance.

Q: When will Schwab notify customers that the computer systems are Year 2000 compliant?

A: Charles Schwab & Co. Inc., will be updating customers on-line through our web site. We have a communications team that responds to letters and telephone inquiries.

Q: Since this is a software and a hardware problem, will my Charles Schwab branch be Year 2000 compliant and able to continue to serve me?

A: We are committed to correcting the software and hardware challenges that the year 2000 poses for our branches. Our branches will continue to provide excellent service that is Schwab's hallmark well into the next millennium.

Q: How can I find out more about the status of the Year 2000 Project at Charles Schwab?

A: We will post updates periodically on SchwabNOW, beginning December 1997. In the meantime, if you have any questions, please contact our Year 2000 Communications Coordinator at (415) 636-8854. All inquiries will be responded to within 24 hours.

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Q: How will Investment Managers be notified that the products are Year 2000 compliant?

A: Schwab will send the Investment Managers written notification. Updated service agreements will be forwarded where needed. Copies of compliant versions (when applicable) will be forwarded to clients free of charge.

Q: When will SchwabLink be compliant?

A: In 1998, a Year 2000 compliant version of SchwabLink is scheduled to be released pending completion of our development and testing process.

Q: When will CenterPiece be compliant?

A: Our design for version 5.0 will be compliant when it is released. We plan to roll out Version 5.0 of CenterPiece in December, pending completion of our development and testing process.

Q: When will SchwabNOW be compliant?

A: In 1998, a Year 2000 compliant version of SchwabNOW is scheduled to be released pending completion of our development and testing process.

Q: Will I have to pay for upgrades or will it be provided at Schwab's expense?

A: Year 2000 upgrades will be provided free of charge.

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Appendix C - Electronic Communications Usage Security

The following is an excerpt from the Charles Schwab corporate intranet located at <http://schweb.schwab.com/home/>. Please refer to the site for a complete transcript of this policy.

Schwab's electronic communications resources, including the Internet, the corporate intranet, e-mail, and other communication and resource-gathering tools, are corporate—not personal—resources. Access to these systems is provided by Schwab for the purpose of supporting the firm's business needs and is intended for legitimate business use. Users are expected to comply with all standards governing appropriate and inappropriate uses of these systems as set forth in this policy document. Schwab's “Employees Privacy, Information Security and Access” policy, contained in the “Conditions of Employment” section of the Employees Guide to Human Resources Policies and Procedures, and all discrimination, harassment and misconduct policies, as they may be amended from time to time, also apply to the use of electronic communications systems. In addition, these standards may be supplemented by more rigorous requirements as stipulated in Compliance Bulletins and other communications from the Compliance, Human Resources and Information Security Services departments, as necessary.

This policy is subject to revision without notice. You should always consult the latest version of the policy posted on Information Security Services' intranet web site, located at <http://schweb.schwab.com/home/>. If you do not have access to Schwab's corporate intranet, you may request the most recent version by contacting the Information Security Services department at (415) 636-7002 and requesting a paper copy.

Schwab's electronic communications systems provide access to a wide variety of services and resource-gathering tools, including the Internet, Schwab's corporate intranet (an internal version of the Internet), the World Wide Web, electronic mail, electronic fax, bulletin boards, file transfers, and other resources. Connectivity between Schwab, its affiliates and subsidiaries, and external networks poses significant security, legal, and regulatory risks for the firm. Through some of these electronic connections, Schwab computers may be exposed to such threats as viruses, Trojan horses or other malicious code, and to attempted penetration or economic espionage attacks by unauthorized persons. The firm, its customers, employees, and business partners may be negatively impacted by inappropriate or unauthorized use of any of Schwab's electronic communications systems.

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This policy applies to usage of all Schwab electronic communications resources, including the Internet and corporate intranet, and to all Schwab departments, their employees (temporary, part-time, or full-time), consultants, and contractors. Individual Schwab subsidiaries, affiliates, departments, or business units may have additional, more rigorous guidelines for electronic communications, as they deem necessary

Appendix D - New Team Member Checklist

This appendix describes the guidelines for ensuring that all new Team members are provided with the basic items they require for rapid integration into the Team. .

Administrator Notification By Project Manager

Year 2000 Project Managers should provide the Administrative Assistant with the following information no less than ten business days prior to the new Team member's first working day with the Team:

- The new member's name and Social Security number
- The agency the new member is contracting through. Include a contact person and telephone number.
- Contract terms
  - ◊ Billing Rate
  - ◊ Special conditions
  - ◊ Start / End / Renewal Date
- New members's position (this shall conform to the Year 2000 Project Roles and Responsibilities document)

This is the basic information required to set up all new Team members whether employee or contractor.

Administrator Duties

Upon receipt of notification that a new member is joining the Team, the Administrative Assistant will fill out the appropriate paperwork required for the new member to obtain her or his:

- Cubicle assignment
- Computer (with all necessary applications set up and working)
- Telephone and extension number
- Badge, with number and expiration date
- Fingerprinting appointment
- SSR requesting addition of new team member to Exchange list

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- P drive write access (to the Year 2000 Project folder)
- NT user ID & password
- TSO user ID and password
- BETA user ID and password
- Assembly of a Year 2000 New Member Package, which shall include the following:
    - ◊ Completed Year 2000 Project Member Checklist form
    - ◊ Year 2000 Project Orientation manual
    - ◊ Badge
    - ◊ Blank Emergency Information Sheet
    - ◊ Business Size Envelope
    - ◊ Confidentiality Agreement
    - ◊ Pen
- Assignment to the next scheduled Orientation class.

Completed Year 2000 New Member Packages shall be maintained in a secure location until issued to the new member. A sample Year 2000 Project Member Checklist form appears on the following page.

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Year 2000 Project Member Checklist

Date:_______/_______/_________

Dear________________________________:
Welcome to the Year 2000 Project Team at Charles Schwab! This checklist confirms that you were issued everything you need to get up and running quickly and smoothly.

_____ Cubicle assigned. Location:___________________________
_____ Computer issued with all necessary applications
_____ P drive access granted (to Year 2000 Project folder)

_____ Phone installed. Extension:_______________
_____ PhoneMail installed. Access #:_________________________
_____ PhoneMail password:____________________

_____ Badge assigned. Number:______________ Expires:_______
_____ Fingerprinting appointment set. Date/Time:_______________

_____ NT user ID set. ID:____________________
_____ NT password set. Password:__________________________

_____ TSO user ID set. ID:____________________
_____ TSO password set. Password:_________________________

_____ BETA ID set. ID:_______________________
_____ BETA password set. Password:________________________

_____ Confidentiality Agreement on file
All required items not completed as of above date are listed below with expected completion dates:
____
____
____

If the above items are not corrected by the listed due dates, please contact the Help Desk at 63100.