Tab 1

CIM Initiatives in a Volatile Environment

Belkis Leong-Hong
Director, Corporate Information Management, Office of the Deputy Comptroller for IRM, Department of Defense

Belkis Leong-Hong
Director, Corporate Information Management
Deputy Comptroller (Information Resources Management)
Office of the DoD Comptroller

PROFILE

Mrs. Belkis Leong-Hong was selected as the Director for Corporate Information Management (CIM) to lead this new DoD-wide effort, following the establishment of the CIM initiative by Deputy Secretary of Defense Donald Atwood in October 1989. Mrs. Leong-Hong is responsible for implementing and directing Functional Information Management under the DoD CIM initiative. This initiative has as a major purpose to improve the standardization, quality, and consistency of data throughout the Department.

She served as Director for Policies and Standards in the Office of Secretary of Defense, Deputy Comptroller's Office for Information Resources Management, from September 1988 to October 1989. In that position, Mrs. Leong-Hong was responsible for developing and implementing the full spectrum of DoD-wide policies, procedures, and standards for information resources management (IRM), including automated information systems life cycle management, management of general-purpose information technology, and information processing standards.

Mrs. Leong-Hong joined the Office of Assistant Secretary of Defense (Comptroller) in 1981 as a data base administrator. From 1970 to 1981 she held various research and development positions as a computer scientist with the Institute of Computer Sciences and Technology at the National Bureau of Standards. Her professional areas of focus include data base management technology, data administration, data dictionary systems, data modelling, software tools and methodologies, and information systems standards. Mrs. Leong-Hong has published more than 30 technical articles and reports—including the book *Data Dictionary/Directory Systems: Administration, Implementation, and Usage*, published by John Wiley & Sons, NY, in 1982—and contributions to *Government Computer News* from 1982 to 1985. She was a "Distinguished IEEE Visitor" from 1981 to 1984 and a founding member and leader of the ANSI accredited standards development committee X3H4, responsible for developing a standard Information Resources Dictionary System. She has served as a principal voting member in several standards management organizations including X3, Standards Management

Committee, and Information Standards Systems Board.

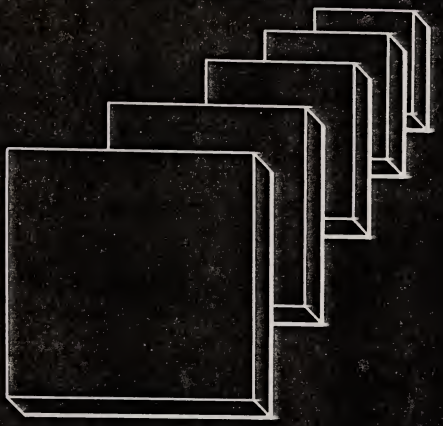
Mrs. Leong-Hong holds a B.A. in Mathematics from Hunter College and an M.A. in Public Administration from American University. She has completed graduate work in Computer Science, as well as executive management programs at the Federal Executive Institute and the George Washington University.

She and her husband Kenneth have one daughter, Denise.

OMB Views the IRM Budget

Robert N. Veeder
Acting Branch Chief,
Information Policy Branch,
Office of Information and
Regulatory Affairs, Office of
Management and Budget

A FIVE-YEAR PLAN FOR MEETING THE AUTOMATIC DATA PROCESSING AND TELECOMMUNICATIONS NEEDS OF THE FEDERAL GOVERNMENT



November 1990

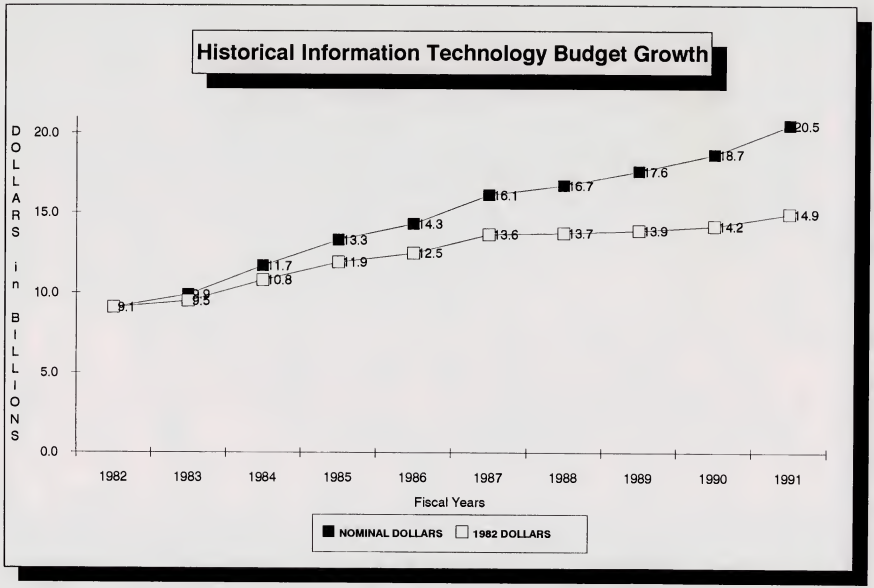
Office of Management and Budget

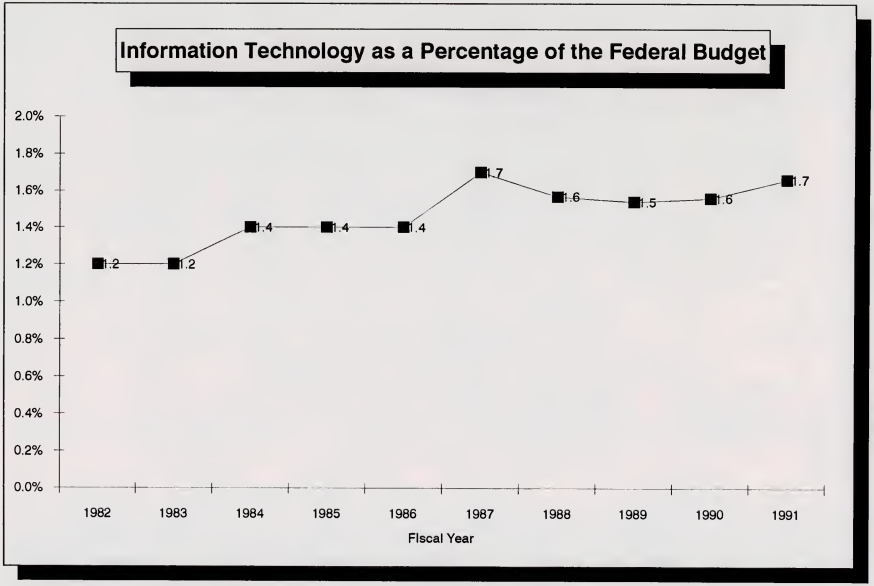
U.S. General Services Administration

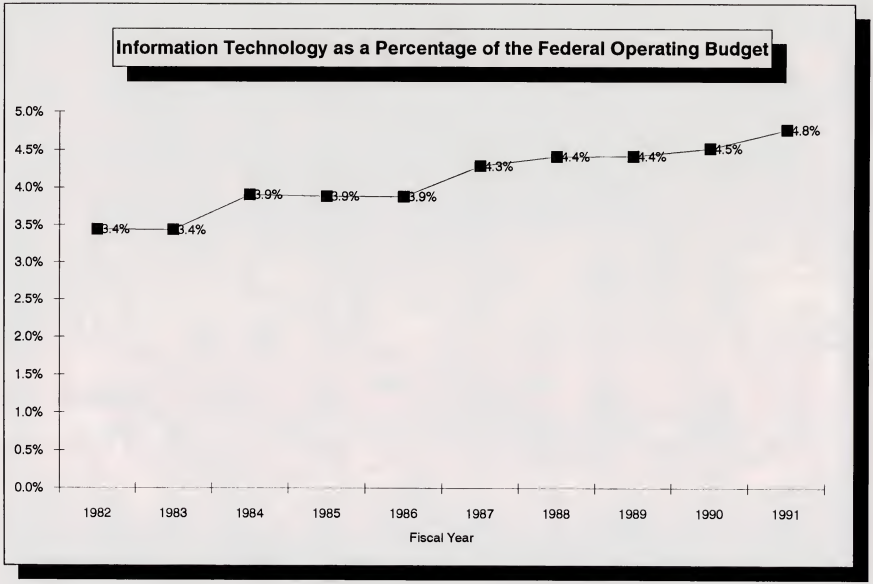
U.S. Department of Commerce

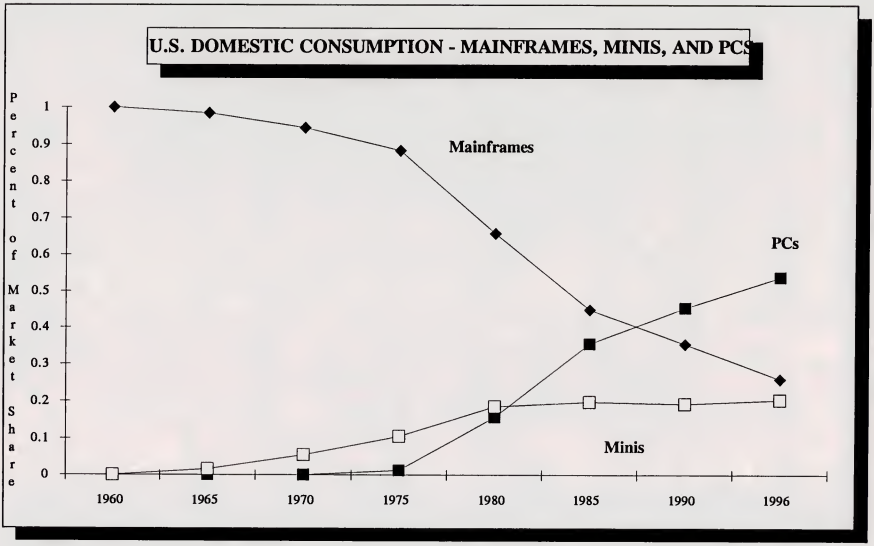
The Five Year Plan

- Encourage Agencies to Plan
- Support Oversight
- Forecasting
- Inform the Public
- Help Industry Identify Opportunities


Historical Information Technology Budget Growth
DOLLARS in BILLIONS
20.0
15.0
10.0
5.0
0.0
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
Fiscal Years
NOMINAL DOLLARS
1982 DOLLARS
9.1
9.9
9.5
11.7
10.8
13.3
11.9
14.3
12.5
16.1
13.6
16.7
13.7
17.6
13.9
18.7
14.2
20.5
14.9

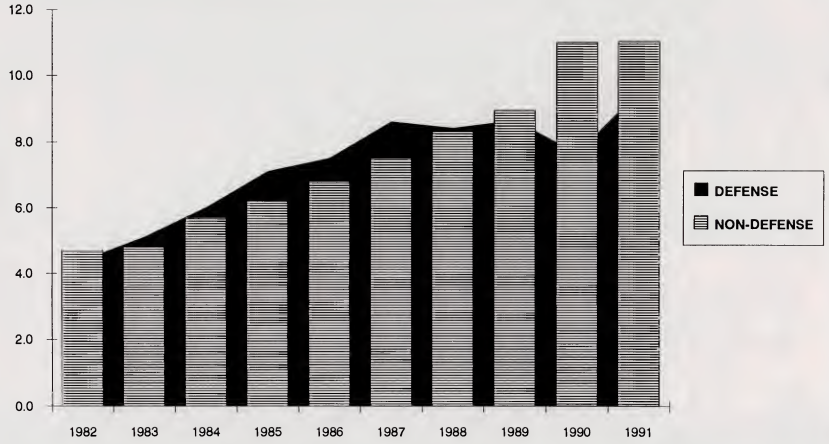

Information Technology as a Percentage of the Federal Budget
2.0%
1.8%
1.6%
1.4%
1.2%
1.0%
0.8%
0.6%
0.4%
0.2%
0.0%
1.2
1.2
1.4
1.4
1.4
1.7
1.6
1.5
1.6
1.7
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
Fiscal Year


Information Technology as a Percentage of the Federal Operating Budget
5.0%
4.5%
4.0%
3.5%
3.0%
2.5%
2.0%
1.5%
1.0%
0.5%
0.0%
3.4%
3.4%
3.9%
3.9%
3.9%
4.3%
4.4%
4.4%
4.5%
4.8%
1982
1983
1984
1985
1986
1987
1988
1989
1990
1991
Fiscal Year



Source: Computer and Business Equipment Manufacturers Assoc.

Defense Versus Non-Defense Information Technology Spending



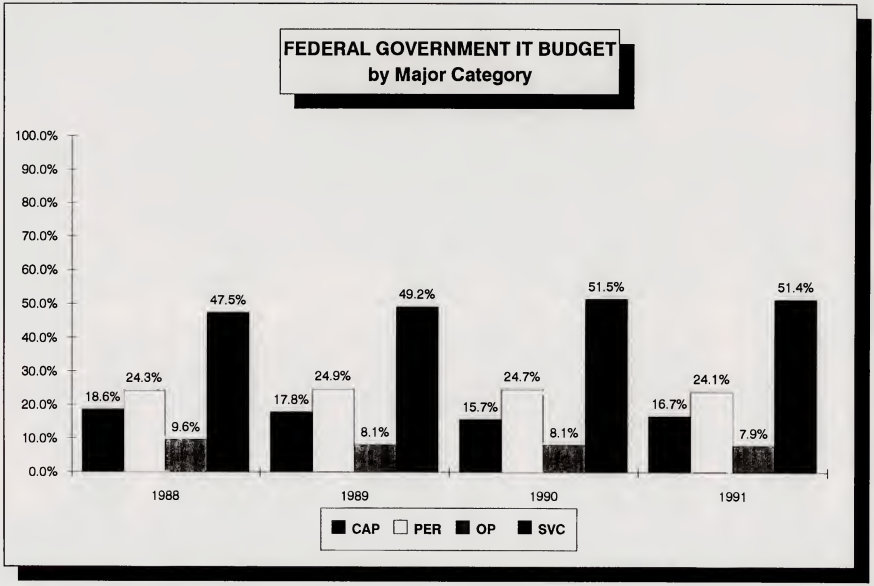

FEDERAL GOVERNMENT IT BUDGET
by Major Category
100.0%
90.0%
80.0%
70.0%
60.0%
50.0%
40.0%
30.0%
20.0%
10.0%
0.0%
18.6%
24.3%
9.6%
47.5%
17.8%
24.9%
8.1%
49.2%
15.7%
24.7%
8.1%
51.5%
16.7%
24.1%
7.9%
51.4%
1988
1989
1990
1991
CAP
PER
OP
SVC

TABLE 1. Original and Revised Deficit Targets
(amounts in billions of dollars)

Fiscal year	1985 Law	1987 Law	House Bill	Senate Amendment	Conference Agreement
1986	171.9				
1987	144				
1988	108	144			
1989	72	136			
1990	36	100			
1991	0	64	302.3	242	327
1992		28	276.8	219	317
1993		0	189.7	165	236
1994			58.1	86	102
1995			18.7	62	83

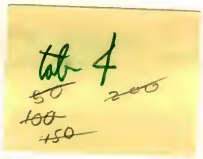
TABLE 2. Discretionary Spending Limits: Fiscal Years 1991-1995
(amounts in billions of dollars)

	FY1991	FY1992	FY1993	FY1994	FY1995
Defense					
Budget Authority	288.918	291.643	291.785	———	———
Outlays	297.660	295.744	292.686	———	———
International					
Budget Authority	20.100	20.500	21.400	———	———
Outlays	18.600	19.100	19.600	———	———
Domestic					
Budget Authority	182.700	191.300	198.300	———	———
Outlays	198.100	210.100	221.700	———	———
All Categories					
Budget Authority	———	———	———	510.800	517.700
Outlays	———	———	———	534.800	540.800

Robert N. Veeder
Acting Chief of the Information Policy Branch
OMB's Office of Information and Regulatory Affairs

PROFILE

Robert N. Veeder is the Acting Chief of the Information Policy Branch of OMB's Office of Information and Regulatory Affairs. His primary focus has been on information dissemination, access, and data protection issues, especially relating to the Freedom of Information Act (FOIA) and the Privacy Act of 1974. He is the author of OMB's government-wide guidelines on the 1987 FOIA fee amendments as well as guidance which implements the provisions of the Computer Matching and Privacy Protection Act of 1988. In addition, he has managed the development and issuance of a number of editions of OMB's Five Year Plan for Meeting the Automatic Data Processing and Telecommunications Needs of the Federal Government. He serves as a co-chair of the Federal Information Resources Management Policy Council and is an associate member of the Systems Committee of the President's Council on Management Improvement. He is a graduate of Yale University and holds an MPA degree from The American University.



Quality Assurance at the IRS

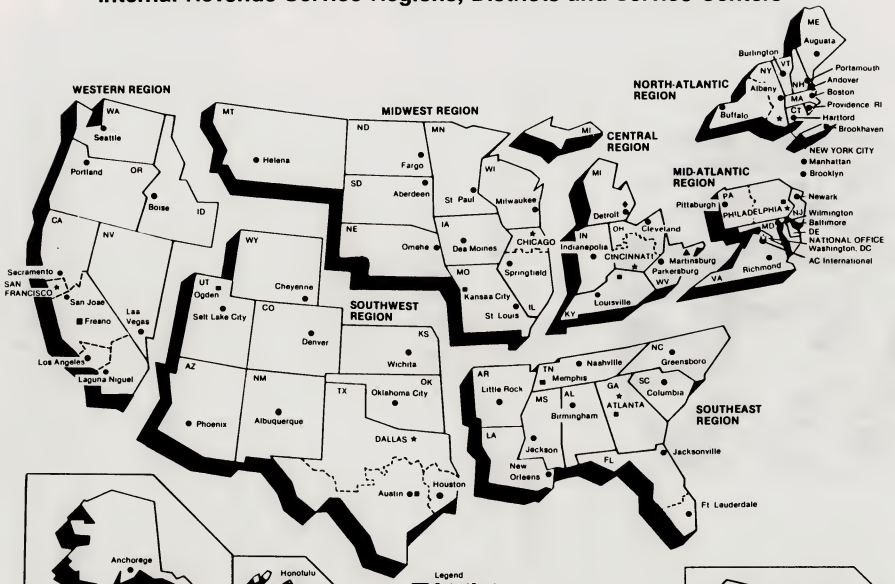
Margaret O'Rourke
Assistant Director, Quality Assurance Division,
Internal Revenue Service

INPUT FEDERAL INFORMATION SYSTEMS AND SERVICES CONFERENCE

NOVEMBER 28, 1990

MARGARET M. O'ROURKE
ASSISTANT DIRECTOR, QUALITY ASSURANCE DIV.
INTERNAL REVENUE SERVICE

Internal Revenue Service Regions, Districts and Service Centers



Document 5261-A (Rev. 4-87)

Mission

The purpose of the IRS is to collect the proper amount of tax revenues at the least cost to the public, and in a manner that warrants the highest degree of public confidence in our integrity, efficiency and fairness. To achieve that purpose, we will:

- Encourage and achieve the highest possible degree of voluntary compliance in accordance with the tax law and regulations;
- Advise the public of their rights and responsibilities;
- Determine the extent of compliance and the causes of noncompliance;
- Do all things needed for the proper administration and enforcement of the tax laws;
- Continually search for and implement new, more efficient and effective ways of accomplishing our Mission.

Internal
Revenue
Service

Mission

The purpose of the Internal Revenue Service is to collect the proper amount of tax revenue at the least cost; serve the public by continually improving the quality of our products and services; and perform in a manner warranting the highest degree of public confidence in our integrity, efficiency and fairness.

Document 6987 (Rev. 4-90) Catalog No. 62293V

Principles of Quality

Establish a quality climate where quality is first among equals with schedule and cost;

Emphasize product and service quality by eliminating systemic flaws during the planning, implementation and operational processes;

Improve responsiveness to the public and other service components;

Install a quality improvement process in every field and National Office organization; and

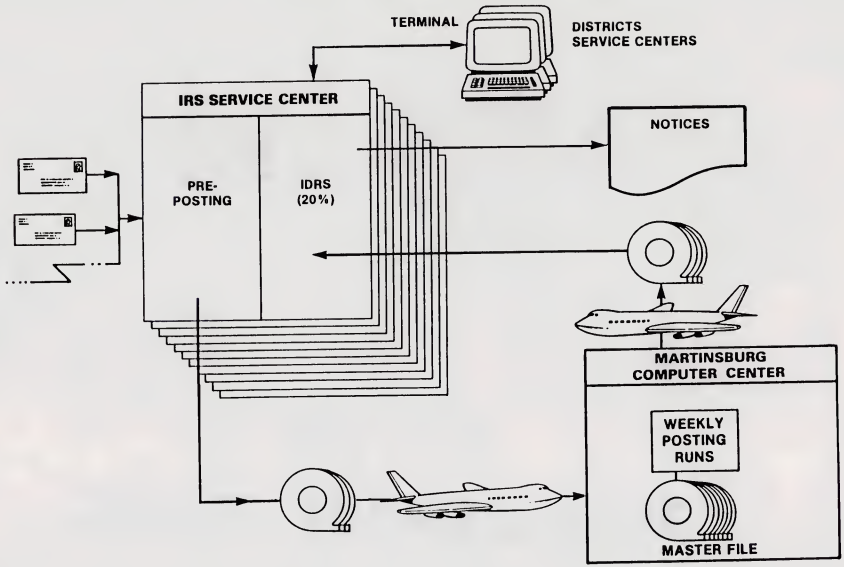
Develop evaluating systems consistent with and reflective of the quality principles.

Document 7163 (4-87)

PRESIDENT'S QUALITY AWARD CRITERIA

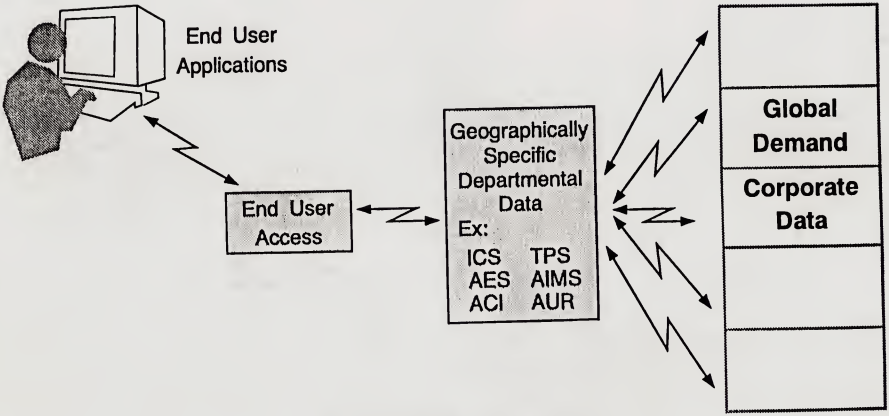
- TOP MANAGEMENT LEADERSHIP AND SUPPORT
- STRATEGIC PLANNING AND IMPLEMENTATION GEARED TO LONG-RANGE SUCCESS
- FOCUS ON THE CUSTOMER
- CONTINUAL EMPLOYEE TRAINING AND RECOGNITION
- EMPLOYEE EMPOWERMENT AND TEAMWORK
- RELIANCE ON MEASUREMENT AND ANALYSIS OF PROCESSES AND OUTPUT
- QUALITY ASSURANCE

CURRENT SYSTEM



TIERED ARCHITECTURE

User Focus



QUALITY ASSURANCE IS

DOING IT RIGHT THE FIRST TIME

Quality Pyramid

The QA Process

QA Monitors the Progress of a Project Throughout the Software Development Life Cycle (SDLC):

- Initiation Development
  - Analysis
  - Design
  - Programming
  - Testing
- Operation
  - Implementation
  - Maintenance

ISSUES FOR PRIVATE SECTOR PARTICIPANTS

- NEW WAY OF DOING BUSINESS
- EMPHASIS ON MEASUREMENT AT ALL STAGES
- ADDITIOINAL "REVIEWS" AND "ANALYSIS" OF PRODUCTS AND PROCESS
- INCREASE IN PROTOTYPING
- INTEREST IN (REQUIREMENT FOR) "QUALITY" INITIATIVES IN YOUR ORGANIZATIONS

Margaret O'Rourke
Assistant Director of the Quality Assurance Division
Internal Revenue Service

PROFILE

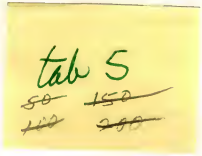
Mrs. Margaret O'Rourke is the Assistant Director of the Quality Assurance Division in the Internal Revenue Service, a position she has held since July 1990.

In this position, she is responsible for assuring the quality of the products of the Information Systems organizations in the Service, including final acceptance testing of all major systems prior to implementation. In addition, and more importantly, the Quality Assurance Division is responsible for applying the concepts of the Service's Total Quality Management initiative to the technical field of Information Resources Management.

Prior to assuming this position, Mrs. O'Rourke was the Director, Office of Corporate Systems, responsible for the redesign of IRS's corporate data bases and tax processing systems.

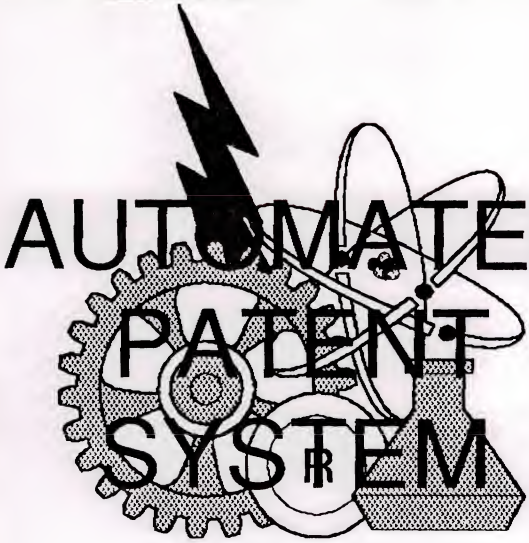
Before joining the IRS, Mrs. O'Rourke served 20 years with the U.S. Customs Service. During this time, she held several positions in which she was responsible for designing and implementing nationwide automated trade policy administration systems.

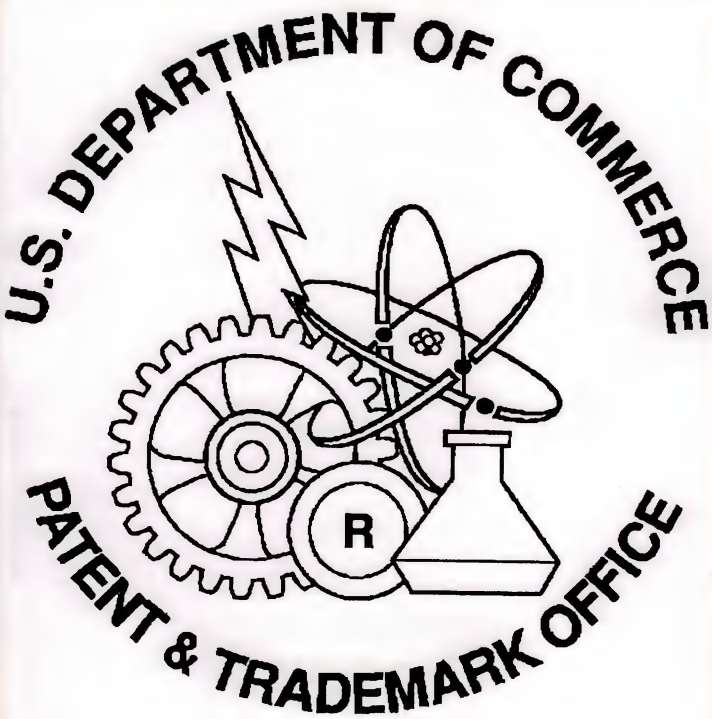
Mrs. O'Rourke holds a B.A. from Marygrove College (Detroit, Michigan), a Masters in Public Administration from George Washington University (Washington, DC), and is a graduate of the National War College at Ft. McNair in Washington, DC.



A New Approach to Systems Integration

Thomas P. Giammo
Assistant Commissioner
for Information Systems,
Patent and Trademark Office


AUTOMATED
PATENT
SYSTEM


U.S. DEPARTMENT OF COMMERCE
PATENT & TRADEMARK OFFICE
R

The Planning Crisis

- Few, If Any, Successes In Large Scale Information Systems Development Efforts
- Cost/Schedule Overruns
- Unacceptable Functionality
- Obsolete Technology
- Most Prevalent In Large, Complex, "Life Blood" Systems
- GAO/IG Reports Criticize Inadequate Planning, Requirements Analysis, Etc.

The Planning Crisis (Con't)
Causes/Solution

- Traditional "Good Practices" In Information Systems Development Implicitly Assumes A High Degree Of Certainty/Stability During Execution
- Many Information Systems Development Programs Have A High Degree Of "Intrinsic" Uncertainty
- Therefore, Traditional "Good Practices" Often Must Be Extended To Address These Uncertainties

A High Degree of Certainty is Assumed

- "Traditional" Planning Methodology Assumes That Major Uncertainties Can Be Eliminated Up Front By "Good Practices", Such As:
  - Comprehensive Requirements Analysis
  - Detailed Proposal/Design
  - Fixed Pricing
- Federal Management Regulations And Practices "Require" Certainty In Estimation Of Costs And Schedules Over Project Duration

Intrinsic Uncertainties

- May Not Be Possible To Develop Comprehensive And Detailed Requirements Up Front
  - Large Scale
  - High Level Of Integration
  - "Transforming" Application
- Solutions May Depend On Technology That Will Likely Change During Implementation
- "Economics" May Be Rapidly Shifting

Extensions to "Good Practices"

- Focus On Managing Uncertainty
- Identify Principal Sources/Major Impacts
- Establish Activities Needed To Gather Information Needed To Reduce Uncertainties In A Timely Manner

Good Starting Point

Defense Science Board Recommendations

- Abandon "Waterfall" Development Model
- Iterative Setting Of Specifications
- Rapid Prototyping Of Specified Systems
- Incremental Development
- Risk Management Techniques

PTO Automated Patent System

- Automated Search Support Systems
  - Text
  - Full Image
- Patent Application Processing
- Post-Issuance Processing
- Classification/Patent Copy Sales/Etc.

Automated Search Support Systems

- (Substantially) "Transforming"
  - Work Patterns
  - Specific Functions
- Large Scale/Long Development Cycle
- Medium Level Of Integration
- Rapidly Changing Technology
- Unstable Economics
- Small Scale Prototype Not Feasible
  - Unrealistic
  - Minimum Data Base Is Large
  - Full Functionality
  - Productivity Must Be Maintained

Patent Application Processing

- "Transforming"
  - New Work Flows
  - New Responsibilities
  - New Interfaces
- High Level Of Integration
- Rapidly Changing Technology
- Small Scale Prototype Not Feasible
  - Efficiency In Handling Large Volumes
  - Full Functionality
  - "Test" Data Base Operations Difficult To Construct

Systems Integrator

- Commits To Solving Customer's Total Business Problem
- Assumes Sole Responsibility For Functionality Of Final System
- Manages All Elements Of Project Life Cycle
- Provides Any Level Of Customization, Using Other Vendor's Packages When Necessary

"Defining The Requirements For Success In Federal Systems Integration" McKinsey & CO.

Systems Integration Contracts

- Fixed Price Contract Generally Assumes Fixed Requirements, Stable Technology, And Firm Schedules
  - Unacceptable Contractor Risk
  - Runaway "Change Orders"
  - Unacceptable Functionality
  - Obsolete Technology
- Cost Plus Contract Implies The Need For High Degree Of Visibility Into And Control Over Contractor's Discretionary Decisions
  - Perceived Lack Of Progress
  - High Overhead
  - GAO/IG Concerns

Use Of System Integrator

- Cost Plus Contract
- Award Fee
- "Task Order" Basis Tied To Iteration Cycle And Decision Points
- Philosophy: Contractor Has Overall Integrator Responsibility, But Must Respond To Reassessments Of Requirements, Technology, Economics, Etc.
- Individual Tasks Are Run By The Book!!

Reference

Report of the Defense Science Board
Task Force on Military Software

September, 1987

Office of the Understudy of Defense
for Acquisitions
Washington D.C. 20301

Risk Analysis

- Analyze Each Activity For Risks/Uncertainty
  - What Assumptions Does The Activity (Schedule, Costs, Etc.) Depend Upon?
  - How Certain Are These Assumptions?
  - What Information Is Needed To Acquire Sufficient Information To Resolve Uncertainties
- Distinguish Between Major/Minor Risk
  - Major: Significant Likelihood That Major Changes At The Top Level Activities Will Occur;
  - Minor: Likely Changes Generally Restricted To "Within" The Major Boxes;

Target Requirements

- Set Target Requirements/Operational Date
  - Functionally Useful
  - Capable Of Being Operationally Deployed
  - Firm Enough To Serve As Basis For Determining Major Elements Of Architecture, Rough Schedules, Ball Park Costs, Etc.
  - Not Necessarily At Detailed Level
- Must Be Convincing That
  - The "Essence" Of The Problem Is Addressed
  - It's In The "Right Direction"
  - Implementation Will Provide Significant Capability

Initial Baseline Plan

- Base on "Most Likely" Assumptions Regarding
  - Funding
  - Evolution Of Technology
  - Development Of Requirements
  - Changes In Economics
- Establish Baseline Architecture
- Develop "PERT" Activities, Schedules, Etc.
- Warning: If This Can Not Be Meaningfully Done, Consider Possibility That Target Requirements Are Too Vague

Extended Baselines

- Add Decision Points/Activities To Plan
- Criteria: All Major Uncertainties Resolved Prior To Commitment Of Significant Resources
- Develop Alternative Baselines For Major Risk Elements
- Criteria: Spans The Range Of "Reasonably Likely" Contingencies
- Warning: If This Can't Be Accomplished, Scope Of Target Requirements May Be Too Ambitious

Three Tiered Planning

- Long Range
  - Sufficiently Detailed To Support Acquisition
  - 3/5 Year Span
  - May Have Multiple Alternatives
- Short Range
  - Covers "Locked In" Tasks
  - Very Detailed
  - 6/18 Months Span
  - One Version Only!
- Intermediate Range (??)

Planning Philosophy

- Abandon The "Waterfall"
- Consider The Program As A Decision Process That Has To Address/Resolve Uncertainties That Arise From
  - Significant Changes In The "Way Business Is Done"
  - Evolving Refinement In Understanding Of Requirements
  - Rapidly Evolving Technology
  - Changing Economics
- More Of An Art, Than A Science - More Judgement Required

"Transforming" Application

- Assume "Information" Is/Has Been Critical To Mission
- Then, It Is Likely That:
  - Methods, Procedures, Organizations, Etc. Have Evolved To Optimize Information Capabilities
  - They "Reflect" The Limitations Of Prior Information Technology
- If, In Addition, The Application Addresses Highly Integrated Functions (i.e. Cross Existing Organizational Lines)

"Transforming" Application
(Continued)

- Then, It Is Likely That:
  - Project Should Address Appropriate Changes In Methods, Procedures, And Organization - As Well As Application Of New Technology
  - Existing Users, Embedded In Current Structure, Will Not Be Able To Lead Effort
  - Broad Consensus On Management Issues Necessary
  - "Culture" Changes Important

Thomas P. Giammo
Assistant Commissioner for Information Systems
U.S. Department of Commerce

PROFILE

Mr. Giammo entered the field of computing in 1958, programming IBM 650s for Equitable Life and Rensselaer Polytechnic Institute. He held positions early in his career with TRW and Scientific Data Systems as an operations research analyst and programmer. He later directed software development projects in support of a range of DoD systems for TRW and GULTON industries and managed the Washington Computer Center of TRW.

While working in the government, he managed large-scale software development and computer operations activities for the Office of the Secretary, DHEW, and the Social Security Administration. He was Technical Director of FEDSIM in the USAF Communications Command and worked as an Associate Director of GAO, responsible for government-wide technical and policy issues in computers and telecommunications. Currently, Mr Giammo is Assistant Commissioner for Information Systems at the Patent and Trademark Office of the Department of Commerce.

He served as a member of the 1978 President's Reorganizations Project on the ADP Operational Management task force.

He is a charter member of the Senior Executive Service and has written many technical and management papers and presentations related to computer performance, systems reliability, and the development of large-scale software systems.

He has testified several times before Congressional Committees on computer security, systems development, and related issues.

Mr. Giammo holds a B.S. in Mathematics from Rensselaer Polytechnic Institute and an M.A. in Mathematics (operations research) from UCLA.

tab 6

Air Force Initiatives in a Constrained Budget Climate

Lloyd Mosemann
Deputy Assistant Secretary for Communications, Computers, and Logistics, U.S. Air Force

Air Force Initiatives in a Constrained Budget Climate

Lloyd K. Mosemann, II
SAF/AQK
Washington, DC 20330-1000
November 28, 1990

Overview

- Software: The IRM Force Multiplier
- Air Force Software Initiatives
- Expected Effects
- Challenges

Air Force Software Initiatives

- Software Engineering
- Ada
- Reuse
- Tools
- Paperless Acquisition

Expected Effects

- New Cost Drivers
- Focus on Process

Challenges

- **Education/Training Shortfall**
- **Organizational Inertia**
- **Old Mindsets**

Lloyd K. Mosemann, II
Deputy Assistant Secretary
Office of the Assistant Secretary of the Air Force

PROFILE

Mr. Lloyd K. Mosemann, II, is the Deputy Assistant Secretary (Communications, Computers and Logistics), Office of the Assistant Secretary of the Air Force, (Acquisition). He is responsible for air force logistics planning, acquisition logistics, supply and maintenance management, international logistics, transportation, civil aviation, and search and rescue. With respect to communications and computers, he is responsible for acquisition of command, control, communications, and computer systems for policy pertaining to engineering, management, and technology of Air Force software, and for operations policy pertaining to communications and information systems.

Mr. Mosemann was born in Lancaster, PA. He holds a B.A. in Social Sciences and an M.A. in International Relations from the University of Chicago.

He began his government career at the Navy Electronics Supply Office, Great Lakes, IL, in 1958. In 1962, he participated in the planning for and establishment of the Defense Electronics Supply Center, and had specific responsibility for the design of inventory management and requisition processing systems for Department of Defense management of electronic repair parts.

From 1963 to 1968, he was with the Department of the Navy's Bureau of Supplies and Accounts and its successor organization, the Naval Supply Systems Command Headquarters, in Washington, DC. During most of this period, he was Head of the Integrated/Retail Supply Support Branch and was instrumental in establishing Navy distribution and requirements policies and procedures.

From 1969 to 1970, Mr. Mosemann served as Deputy Chief of the DoD Logistics Support Analysis Staff. His responsibilities included conducting Department of Defense analyses of functional logistics areas in all four Military Services, as directed by the Assistant Secretary of Defense (Installations and Logistics).

In January 1972, Mr. Mosemann was appointed Deputy for Supply and Maintenance in the Office of the Assistant Secretary of the Air Force

(Research, Development, and Logistics). In 1974, he was appointed Deputy Assistant Secretary for Logistics and Communications. Since that time, Mr. Mosemann has fostered innovative management concepts across the spectra of logistics and communications management functions.

Mr. Mosemann identified the need for professional management of Air Force civilian career logisticians. Accordingly, he implemented an Air Force-wide program known as the Logistics Civilian Career Enhancement Program (LCCEP). From its inception, Mr. Mosemann has chaired the LCCEP Policy Council.

During 1984, Mr. Mosemann chaired the multinational Ad Hoc Review of the NATO Maintenance and Supply Organization. At various times he has worked closely with the F-16 Multinational Fighter Program Logistics Subcommittee, the NATO AWACS Program, and the COSPAS/SARSAT (Canada, France, USA, USSR) Search and Rescue Satellite program.

Mr. Mosemann has been a principal advocate of software acquisition and management reform. In 1988, he established a high-level course, known as BOLDSTROKE, for making Air Force general officers and senior civilian executives aware of the software crisis and the need to place more management attention and resources on this vital aspect of Air Force technology. In 1989, he initiated a Broad Area Review of Software.

Mr. Mosemann currently acts as Senior Air Force Policy Official for OMB Circular A-76; Senior Air Force ADP Policy Official, Air Force Ada Executive; DoD Member of the Interagency Committee on Search and Rescue; and DoD Member COSPAS/SARSAT Satellite-Aided Search and Rescue Steering Committee.

He is a member of the Board of Advisors of the Society of Logistics Engineers (SOLE), and of the National Institute for Urban Search and Rescue. He has been active in the National Association on Search and Rescue (NASAR), and is a past director of the American Defense Preparedness Association (ADPA). Within the Air Force, he is a member of the Executive Resources Board and the Board for the Correction of Military Records.

Recognitions accorded Mr. Mosemann include two Presidential Meritorious Rank and Stipend Awards (1982, 1987); four Air Force Exceptional Civilian Service Medals (1979, 1981, 1982, 1987); the Defense Meritorious Civilian Service Medal (1985); Society of Logistics Engineers Founders medal (1983); and various other performance awards.

Mr. Mosemann was appointed to his present position in May, 1990.

Mr. Mosemann and his wife and children reside in Oakton, VA.

Air Force Initiatives in a Constrained Budget Climate

Lloyd K. Mosemann, II
SAF/AQK
Washington, DC 20330-1000
November 28, 1990

Overview

- Software: The IRM Force Multiplier
- Air Force Software Initiatives
- Expected Effects
- Challenges

Air Force Software Initiatives

- Software Engineering
- Ada
- Reuse
- Tools
- Paperless Acquisition

Expected Effects

- New Cost Drivers
- Focus on Process

Challenges

- **Education/Training Shortfall**
- **Organizational Inertia**
- **Old Mindsets**

tab 7
200 DONE

Future Trends in FTS 2000

Michael Corrigan
Assistant Commissioner, Office of
Telecommunications Services

Michael L. Corrigan
Assistant Commissioner for
Telecommunications Services
Information Resources Management Service
General Services Administration

PROFILE

Michael L. Corrigan serves as the Assistant Commissioner for Telecommunications Services in the Information Resources Management Services at the General Services Administration (GSA). His broad-based responsibilities encompass the design, planning, and direction of multiple GSA telecommunications systems and programs. These programs include the Federal Telecommunications System and FTS2000, the Washington Interagency Telecommunications System (WITS), the National Emergency Preparedness Program, and the nationwide Federal Information Center Program.

Prior to holding his current position, Mr. Corrigan served as the Special Assistant for Integrated Digital Architecture, Office of the Assistant Secretary of Defense (C31), where he was a principal author of the Government Open Systems Interconnection Profile (GOSIP). He was the lead design engineer for the Defense Data Network (DDN) and served as technical manager of the DDN program management office. Mr. Corrigan's 18 years in the field of information systems also include technical management and planning positions in the areas of system programming, analysis, and testing.

Mr. Corrigan holds a B.A. and an M.A. in Mathematics from Fordham College and University of Michigan, respectively. Corrigan is a veteran of the United States Army.

A Congressional View of Federal IRM

David Kilian
Staff Assistant, House
Appropriations Committee

DOD IRM

BUDGET

CUTS

SUMMARY

	($000)
* Army	-588,452
* Navy	-384,516
* Air Force	-503,527
* Other DoD	-162,713
* CIM	+1,022,963
	-616,245

ARMY

	($000) O&M	Procurement	Total
CIM Reduction	-542,070		-532,070
Computer Maintenance	-20,000		-20.000
Army Guard	+4,241		+4.241
Army Reserve	-4,241		-4.241
WWMCCS		-5,000	-5,000
AMC Information Processing Equipment		-5,468	-5,468
Financial Management Automation		-9,104	-9,104
EUCOM/PACCOM ADP		-4,000	-4,000
CALS Information Processing Equipment		-2,810	-2,180
	-562,070	-26,382	-588,452

NAVY

	O&M	($000) Procurement	Total
CIM Reduction	-287,373		-287,373
Computer Maintenance	-25,000		-25,000
MIS for Air Engineering Center		-6,409	-6,409
Military Sealift Command ADP		-1,033	-1.033
EDMICS		-16,453	-16,453
Supervisor's Desk		-4,330	-4,330
Stock Point ADP Replacement		-11,623	-11,623
ICP Resolicitation		-14,549	-14,549
Navy Standard Technical Information System		-2,734	-2,734
Central Processing and Distribution		-1,112	-1,112
Navy Occupational Health Information Management System		-1,443	-1,443
Triservice Micropharmacy and Food Service System		-505	-505
CAD/CAM		-2,500	-2,500
Station Information Management System		-5,322	-5,322
Central Processing Unit II		-2,400	-2,400
WWMCCS		-1,730	-1,730
	-312,373	-72,143	-384,516

AIR FORCE

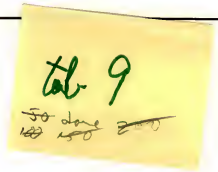
	O&M	($000) Procurement	Total
CIM Reduction	-427,182		-427,182
CALS	+20,000		+20,000
Personal Concepts III		-29,106	-29,106
Requirements Data Bank		-2,946	-2,946
Clinical and Diagnostic Systems		-1,084	-1,084
WWMCCS		-8,357	-8,357
MAC Command and Control System		-7,000	-7,000
Base Level Data Automation		-10,852	-10,852
Asset Capitalization Program DMMIS		-37,000	-37,000
	-407,182	-96,345	-503,527

OTHER DOD

	($000) O&M	Procurement	Total
CIM Reduction	-118,336		-118,336
DLA Computer Maintenance	-4,000		-4,000
Mechanized Material Handling System		-4,000	-4,000
WWMCCS		-2,602	-2,602
SAMMS Immediate Improvement Initiative		-14,000	-14,000
Cataloging Tools On-Line		-6,500	-6,500
EDMICS		-13,275	-13,275
	-122,336	-40,377	-162,713

CIM INCREASE

	O&M	($000) Procurement	Total
CIM, General Provision	1,000,000		1,000,000
CIM, Defense AGencies		22,963	22,963
	1,000,000	22,963	1,022,963
Net Reduction	-403,961	-212,284	-616,245



Changing Role of Standards in Federal IRM

Allen Hankinson
Chief, Systems and Software Technology Division, National Institute for Standards and Technology

THE CHANGING ROLE OF STANDARDS IN FEDERAL IRM

Allen L. Hankinson
National Computer System Laboratory
National Institute Of Standards And Technology

Open Systems Standards-The New Paradigm

Transition To The New Paradigm

- *Many Of The Rules Which Defined Roles And Relationships Among Users And Vendors Are No Longer Applicable*

- *A New Set Of Rules Is Being Established*

- *We Are Now In A Period Of Transition Between The Old Rules And The New Rules*

- *Successful Strategies During The Transition Place A Premium On*

  - *KEEPING UP Via Stepwise Evolution*

  Rather Than

  - *CATCHING UP Via Quantum Leaps*

Basis For Old Rules

Applications Software Had Little, If Any, High Level Visibility Within An Organization

New Reality

- *Applications Software Has Become A Strategic Resource In Most Organizations*
- *The Users' Investment In Applications Software And Supporting Services Now Rivals The Investment Of Information Technology Vendors*

Basis For Old Rules

Cooperation And Coordination Among Users Within An Organization Was Nice, But Not Really Necessary

New Reality

- *Today Computing Is Enterprise Wide*
- *Users Are No Longer Able To Operate Independently Of Others Within The Organization*
- *New Constraints Are More Than Offset By An Expanded Range Of Choices*

Basis For Old Rules

Loyalty To A Single Vendor Was Necessary To Minimize Risks

New Reality

- *No Single Vendor Can Supply All Needs*
- *Lock-In To A Single Vendor Is No Longer An Acceptable Strategy For Users*
- *Open Systems Are Necessary For Vendor Independence*
- *Standards Are The Basis For Open Systems*

Basis For Old Rules

Standards Were Of Primary Interest To Vendors And ***Standards Professionals*** *Who Were Not In The Mainstream Of Activities Within Their Organizations*

New Reality

- *Open System Standards Are Necessary To Protect Users' Investment In Applications Software And To Minimize Training And Staffing Costs*
- *These Standards Are Viewed By The User As Practical Tools Rather Than Unnecessary Constraints*

Basis For Old Rules

The Voluntary Standards Process Was The Pacing Function For The Adoption Of Industry Standards

New Reality

- *The Voluntary Standards Apparatus Does Not Move Fast Enough To Satisfy Users' Needs For Open System Standards*
- *Users Can Not Wait For Standards Organizations To Develop Needed Open System Standards*
- *User Groups And Vendor Consortia Are Emerging To* ***Complement*** *The Voluntary Standards Process In Meeting Users Needs For Open System Standards*

Basis For Old Rules

Conversions And Other Service Disruptions Were Necessary To Incorporate New Technology

New Reality

- *Service Interruptions Are Unacceptable*
- *Users Have Begun To Adopt Migration Strategies That Allow Evolutionary Changes In*
  - *Standards,*
  - *Technologies,*
  - *Vendor Products, And*
  - *Applications*

The Standards Process: A Users View

Problems

- *Too Slow, Too Late*
- *No Guarantee Of Product*
  - *Availability*
  - *Interoperability*
- *No Apparent Agenda*
  - *What*
  - *When*
- *No Advice To Users Regarding*
  - *Why/How To Use*
  - *Migration And Co-existence*
  - *Living In A Multi-Standards World*

Forces Driving Change

User Requirements

- *Preserve Investments*
- *Integrate New Technologies*
- *Promote Portability Of Data, Skills, Programs*
- *Protect Information*

Technology Changes

- *Networking and Telecommunications*
- *Storage*
- *Multi-Media*
- *User Interfaces*

User Problems Cannot Be Solved By

- *One Technology*
- *One Standard*
- *One Vendor*

And Standards Alone Are Not Enough !

- *Definition Of Interacting Processes And Systems*
- *Implementation Of Standards In Interoperating Systems*
- *Acquisition Of Commercially Available Systems*

What's Needed

Framework For Integration

- *User Requirements*
- *Standard Specifications*

Commercially Available Solutions Based On

- *Voluntary Industry Standards Where They Exist*
- *Non-proprietary Specifications Where There Are No Formal Standards*
- *Consensus - Based Process For Change*

New Approaches Underway

Governments

- *U.S.*
- *C.E.C.*
- *International Public Sector*

User/Vendor Organizations

- *Open Software Foundation*
- *Unix Intl.*
- *X/Open*
- *Corporation for Open Systems*

Critical Issues

- *Fragmentation Of Efforts*
- *Conformance Testing*
- *Maintenance Of Standards And Tests*
- *What To Do When Needed Standards Are Not Available*

OPEN SYSTEM ENVIRONMENTS (OSE)

Concept

Extensibility

- **Based Upon An Architectural Framework Which Allows An Extensible Collection Of Interfaces, Services, Protocols, And Supporting Formats To Be Defined**

Non-proprietary

- **Interfaces, Services, Protocols, And Supporting Formats Are Defined In Terms Of Non - Proprietary Specifications That Are Available To Any Vendor For Use In Developing Commercial Products**

Consensus Based

- **Evolution Is Controlled By A Consensus - Based Process For Decisions Regarding Definition And Specification Of Interfaces, Services, Protocols, Supporting Formats, And Other Issues Related To The Computing Environment**

Dimensions

Portability

The Ability To Use Application Software and Data On Heterogeneous Hardware/Software Platforms

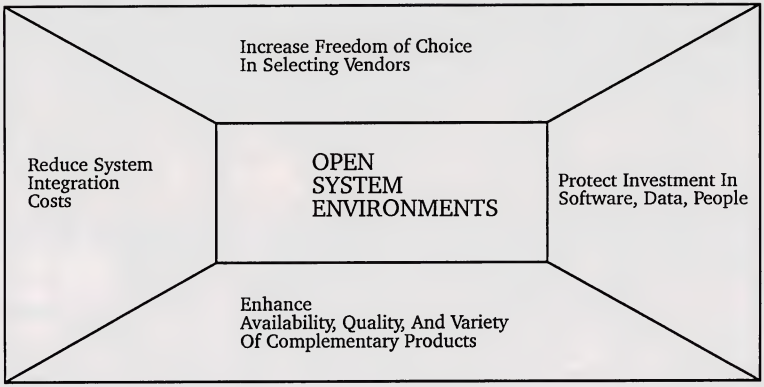
Interoperability

The Ability To Have Application Software Operating On Heterogeneous Hardware/software Platforms Cooperate In Performing Some User Function

Scalability

The Ability To Use The Same Application Software On Many Different Classes Of Hardware/Software Platforms, From Personal Computers To Supercomputers

Benefits


Increase Freedom of Choice
In Selecting Vendors
Reduce System
Integration
Costs
OPEN
SYSTEM
ENVIRONMENTS
Protect Investment In
Software, Data, People
Enhance
Availability, Quality, And Variety
Of Complementary Products

POSIX

PORTABLE
OPERATING
SYSTEM
INTERFACE
X Denotes its UNIX origin

Defines An INTERFACE

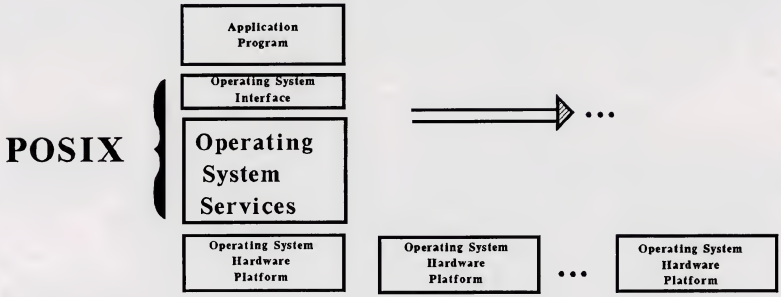
NOT

An IMPLEMENTATION

POSIX And OSE

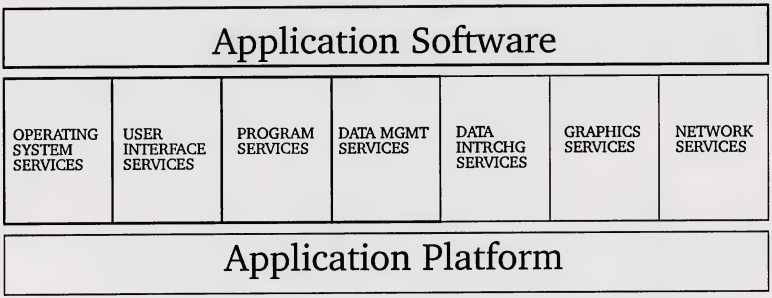
POSIX Is An Essential Element Of An OSE

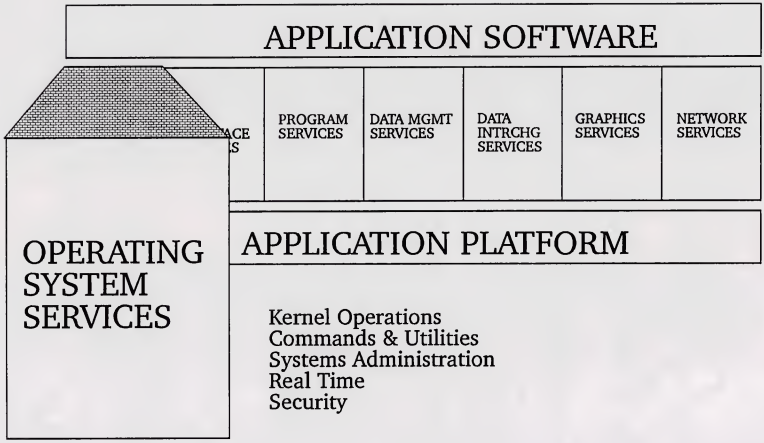
BUT



Does Not Provide The Functionality To Meet The Needs Of A Broad Range Of Applications

OSE Services




APPLICATION SOFTWARE
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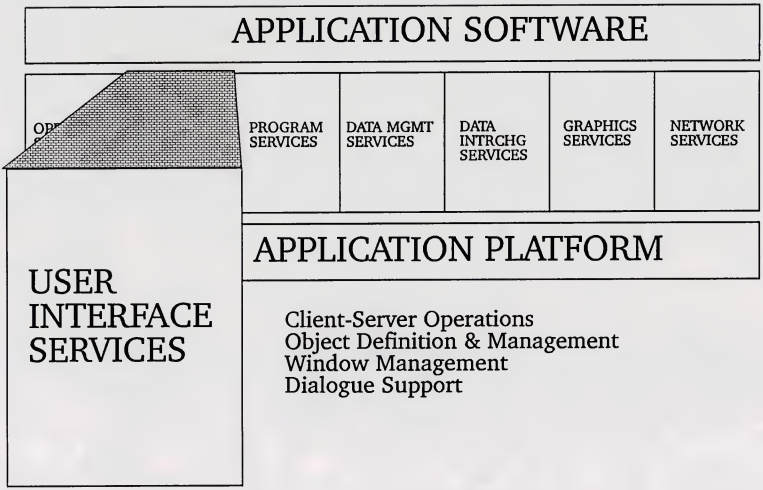
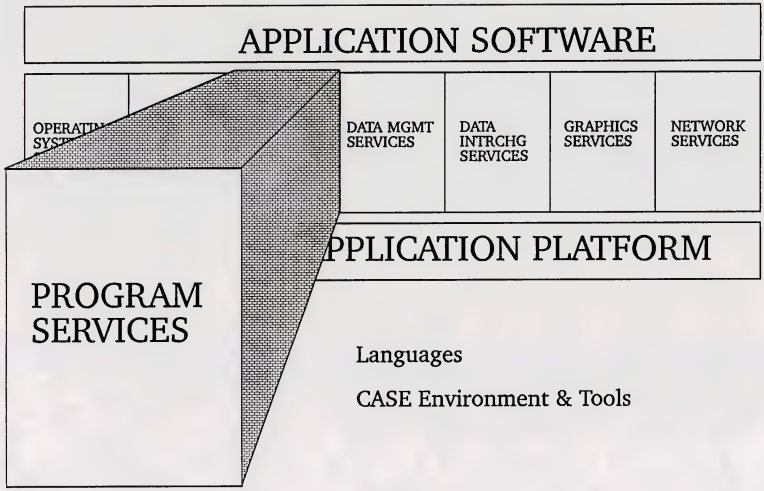
PROGRAM SERVICES
DATA MGMT SERVICES
DATA INTRCHG SERVICES
GRAPHICS SERVICES
NETWORK SERVICES
APPLICATION PLATFORM
OPERATING SYSTEM SERVICES
Kernel Operations
Commands & Utilities
Systems Administration
Real Time
Security


APPLICATION SOFTWARE
OP
PROGRAM SERVICES
DATA MGMT SERVICES
DATA INTRCHG SERVICES
GRAPHICS SERVICES
NETWORK SERVICES
APPLICATION PLATFORM
USER INTERFACE SERVICES
Client-Server Operations
Object Definition & Management
Window Management
Dialogue Support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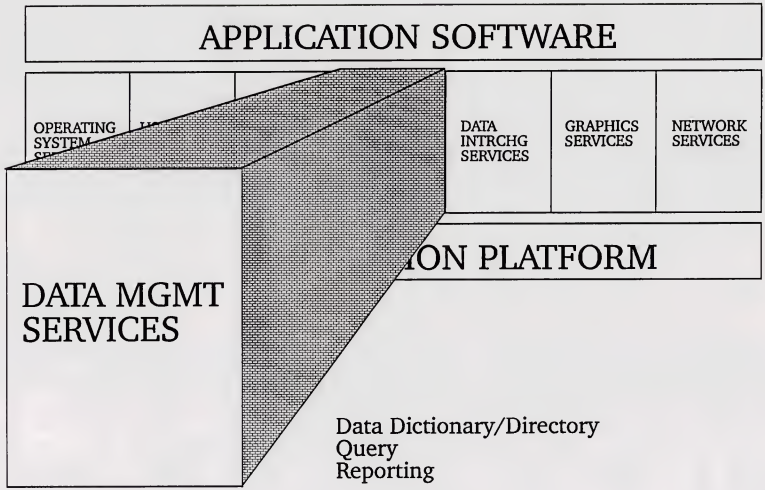
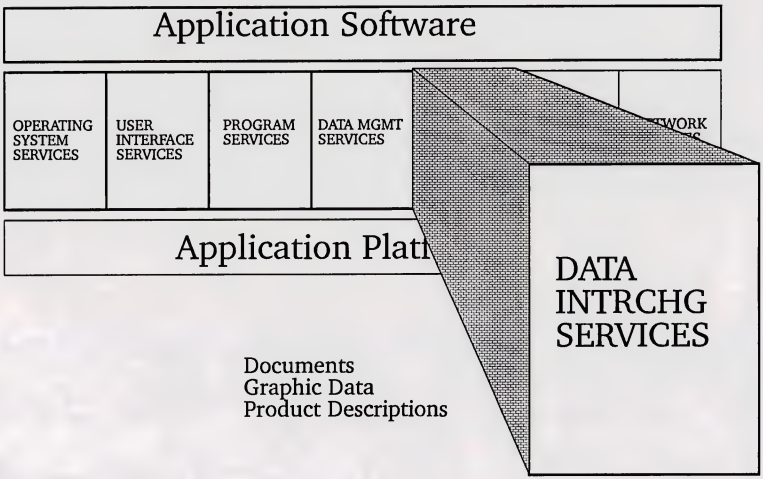
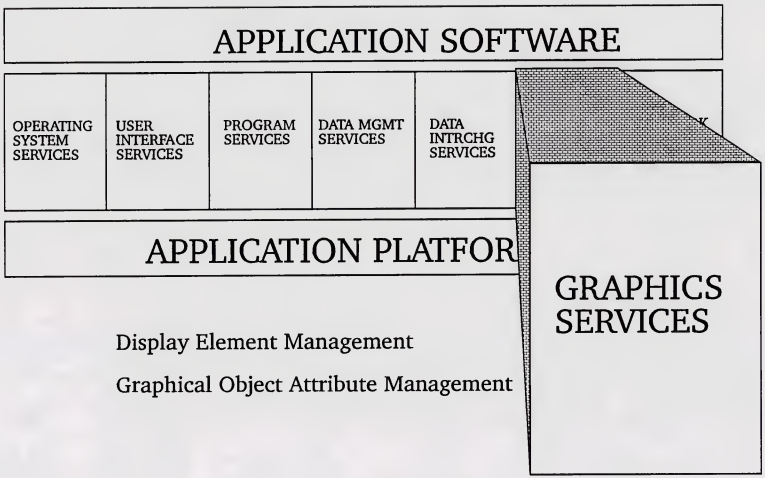
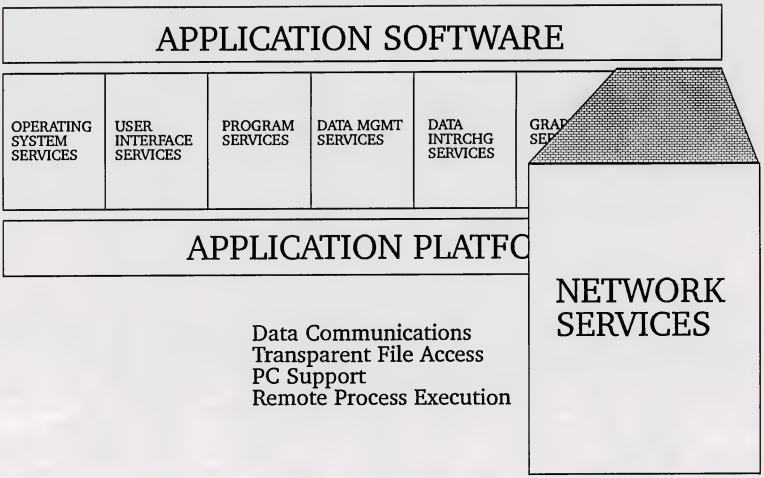
DATA MGMT SERVICES
DATA INTRCHG SERVICES
GRAPHICS SERVICES
NETWORK SERVICES
PPLICATION PLATFORM
PROGRAM SERVICES
Languages
CASE Environment & Tools


APPLICATION SOFTWARE
OPERATING SYSTEM
DATA INTRCHG SERVICES
GRAPHICS SERVICES
NETWORK SERVICES
ION PLATFORM
DATA MGMT SERVICES
Data Dictionary/Directory
Query
Reporting


Application Software
OPERATING SYSTEM SERVICES
USER INTERFACE SERVICES
PROGRAM SERVICES
DATA MGMT SERVICES
Application Plati
DATA INTRCHG SERVICES
Documents
Graphic Data
Product Descriptions


APPLICATION SOFTWARE
OPERATING SYSTEM SERVICES
USER INTERFACE SERVICES
PROGRAM SERVICES
DATA MGMT SERVICES
DATA INTRCHG SERVICES
APPLICATION PLATFOR
GRAPHICS SERVICES
Display Element Management
Graphical Object Attribute Management


APPLICATION SOFTWARE
OPERATING SYSTEM SERVICES
USER INTERFACE SERVICES
PROGRAM SERVICES
DATA MGMT SERVICES
DATA INTRCHG SERVICES
GRAP
SE
APPLICATION PLATFO
NETWORK SERVICES
Data Communications
Transparent File Access
PC Support
Remote Process Execution

NIST Open System Efforts

Goal

Worldwide Acceptance Of And Commitment To

Open System Environments Which Facilitate Portability, Interoperability, And Scalability Of Applications Software

- *A Set Of Non-Proprietary Specifications To Be Used To Competitively Procure Such Environments*
- *A Set Of Tests To Be Used To Measure Conformance To Those Specifications*

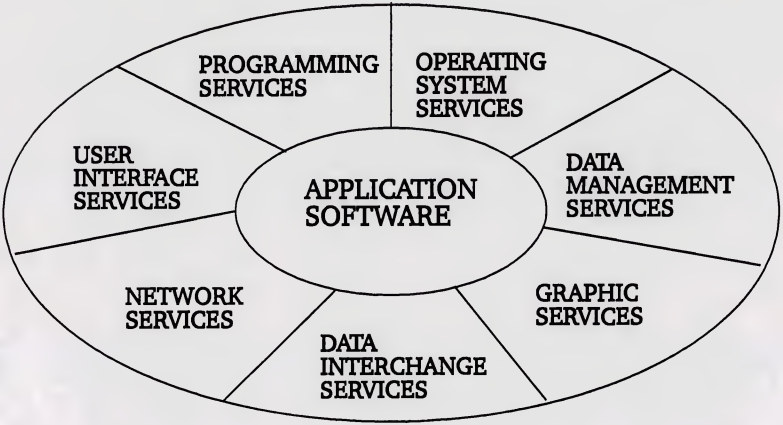
Profile

A Suite Of Specifications Describing The Functionality Required To Accommodate A Specific Class Of Applications

Developing A Profile Involves

- *Identifying Required Services And Interfaces*
- *Choosing Among Alternative Specifications*
- *Tailoring The Specifications*
- *Augmenting The Specifications*

The Applications Portability Profile



The U.S. Federal OSE Profile

APP

- *An OSE Profile Developed To Meet The Application Needs Of The U.S. Federal Government*
- *The Interfaces, Services, Protocols, And Supporting Formats Specified Reflect A Broad Spectrum Of Applications*
- *The Specifications Have Been Tailored To Enhance Portability And Interoperability Of U.S. Federal*
  - *Software*
  - *Systems*
  - *Personnel*
  - *Data*

The APP Effort Currently Is Focused On

- *Adding Additional Services To The Operating System Component Of The APP*
- *Defining The Network Services Component Of The APP*
- *Defining The User Interface Component Of The APP*

The APP Effort Is Guided By

- *A Concern For Timeliness*
- *A Commitment To Voluntary Standards*
- *A Need For An Architectural Framework*

The APP Effort Will Produce

- *Planning Guidelines To Help Agencies Develop Strategies To Realize The Benefits And Minimize The Risks Of Open System Environments*
- *Usage Guidelines To Help Agencies Deal With Issues Involved With The Implementation, And Migration Of Applications Based On Open System Environments*
- *Technical Specifications That Provide Guidance To Buyers Of Open System Products And Services*

NIST APP Workshops

Provide A Forum For Communicating Information And Obtaining Feedback On The Evolving APP

- *User Workshops Address Issues Of Special Concern For Those Interested In Using APP Specifications In Procurements*
- *Implementors Workshops Address Issues Of Special Concern To Those Interested In Building Products To The Evolving APP Specifications*

Current APP Specifications

- *Many Of The Specifications Have Not Yet Evolved Into National Or International Standards*
- *A Significant Number Of The Specifications Have Already Been Adopted As FIPS*
- *Some Of The Specifications Reflect Standards Work In Progress*

APP Specifications

Operating System Services

* *Kernel Operations - (POSIX) FIPS 151-1*

* *Commands & Utilities - P1003.2-* ***Proposed FIPS***

* *Systems Administration - P1003.7*

* *Security - P1003.6*

Programming Services

* *Languages*
  - *C - X3J11/88-002*
  - *COBOL - FIPS 021-2*
  - *FORTRAN - FIPS 069-1*
  - *ADA - FIPS 119*
  - *PASCAL - FIPS 109*
* *CASE Environments & Tools*

Data Management Services

* *Data Dictionary/Directory (IRDS) FIPS 156*

* *Query (SQL) FIPS 127*

* *Reporting*

Data Interchange Services

* *Documents*
  - *SGML - FIPS 152- **Proposed FIPS***
  - *ODA/ODIF - ISO/IS 8613*
* *Graphic Data - (CGM) FIPS 128*

* *Product Descriptions - (IGES) NBSIR 88-3813*

Graphic Services

* *Display Element Management - (GKS) FIPS 120*

* *Graphical Object Attribute Management - (PHIGS) - FIPS 153*

User Interface Services

* *Client-Server Operations (XWindow System) - FIPS 158*
* *Object Definition & Management (XWindow System) - FIPS 158*
* *Window Management - P1201*
* *Dialogue Support - P1201*

Network Services

* *Data Communications - (GOSIP) - FIPS 146*
* *Transparent File Access - P1003.8*
* *Remote Process Execution - P1003.8*

Basic Strategy

Evolve The APP As An Open Process

- *Use The Products Of Voluntary Standards And Other Consensus-based Activities As The Basis For APP Specifications*
- *Initiate New Standards Developments Where Needed*
- *Maintain An International Perspective*
- *Promote Stability Via Stepwise Evolution*

Build Consensus On Open Systems

- *Actively Support And Participate In Voluntary Standards And Other Consensus-Based Activities*
- *Obtain Vendor Commitment To Use Specifications In Building Products*
- *Obtain User Commitment To Use Specifications In Procurements*
- *Harmonize Approaches To Conformance Testing*

Develop Collaborative Partnerships

By Working Cooperatively With:

- *U.S. Federal Agencies*
- *Private Sector Users*
- *Vendors*
- *Standards Committees*
- *Open Systems Consortia (e.g., OSF, UNIX Intl., X/OPEN)*
- *Other National And Regional Governments (e.g. CEC, UK, Canada)*

APP Users Guide

Goal

To Help U.S. Federal Agencies Make Informed Decisions On The Selection And Use Of The APP Specifications In Procurements.
Special Emphasis Is Placed On Providing Guidance In Those Areas Where Formal Standards Do No Exist.

Specification Evaluation Criteria

- *Level of Consensus*
- *Product Availability*
- *Completeness*
- *Maturity*
- *Stability*
- *Risks Of Not Specifying*
- *Problems/Limitations*
- *Conformance Tests*
- *Alternative Specifications*

Questions

When Will The Guide Be Ready For Distribution?

- *Draft Currently Out For Public Review.*

How Can I Get A Copy?

- *Write To:*

NIST
ATTN: APP Users Guide
Technology Building, Room B266
Gaithersburg, MD 20899

How And When Will It Be Updated?

- *Every Six Months.*

Who Determines What Goes Into It?

- *NIST In Consultation With Our Collaborative Partners.*

Allen L. Hankinson
Chief—Systems and Software Technology Division
National Institute of Standards and Technology
National Computer Systems Laboratory

PROFILE

Mr. Hankinson is responsible for the development of standards and guidelines in the areas of office systems engineering and software engineering. Program activities include advisory services to federal agencies and research in the areas cited above.

Mr. Hankinson was previously a member of the staff of the Director of the Institute. In that capacity, he was responsible for studies and analyses to identify alternative technical areas that should be considered in planning the Institute's future programs. Prior to joining the Institute, Mr. Hankinson served as Director of the computer facility at the Executive Office of the President and as Chief of the systems development branch within the Office of Management and Budget.

Mr. Hankinson received a B.S. in Mathematics from Florida A&M University and a Masters of Computer Science from the University of Virginia. He is active professionally as Chairman of the UNIFORM Technical Steering Committee.