D/OIT

27 May 1987

MEMORANDUM FOR: Information Systems Board

STAT   FROM:

Special Assistant to the Executive Director

SUBJECT: ISB Meeting Minutes – 8 May 1987

STAT   ☐ of OIT's Architecture and Technology Planning Staff described his

office's architecture for information systems. This architecture was developed to enable

greater use of commercial products within the Agency, and to provide a framework for

information systems planning by OIT customers. Standards that have been completed

and those under development were described. The objectives and methodology of the

standards process were also discussed. Copies of the presentation slides, approved OIT

standards, and the new OIT Directions newsletter are attached.

/signed/

STAT

Attachments – as stated

STAT   DCI/EXDIR

Distribution:
        1 – each ISB member
        1 – ISB File

OIT's
Information Systems Architecture

Briefing to the
Information Systems Board

May 8, 1987

Information Systems Architecture

Definitions Vary

"a set of interface standards and a set of products"

...Dale Kutnick, Vice President, Gartner Group

"a set of design principles that define the relationships of and interactions between various parts of a system or network of systems"

...IBM Office System Architecture Primer

"a conceptual framework that enables users to grow and evolve their operations without the disruption of a major system changeover"

...Gartner Group Management Quarterly, Winter 1987

Objectives

Improve our ability to interconnect Agency information processing systems

Reduce the difficulty of adopting new technologies by entering and staying in the industry mainstream

Provide information about OIT's directions so that customers can plan their own use of information processing technology

Leverage our resources by increasing the use of standard commercial products

Protect our investment in installed hardware and software.

Existing Investment

IBM Mainframes——we will continue to evolve within
a framework of using IBM mainframes

Message Distribution Systems——our information systems
must integrate with message distribution systems

COMTEN communications processors——protect large investment

Intecom PBX——a major new opportunity to provide connectivity

Wang Alliance systems——protect large investment

Major Applications——investment in SAFE, DESIST, TADS,
CAMS, FOURC, others must not be lost

Industry Trends

Workstations are replacing terminals

IBM establishes many industry standards for interfaces

Departmental computers are seeing increasing use, although
integration with mainframe machines is incomplete

De facto and de jure standards are growing in importance

Local area networks are seeing increasing use, although this
is still an emerging technology

Method

Identify strategic interfaces

With customer participation, select standards
for these interfaces that are within the
mainstream of industry activity

Inform OIT, our customers, vendors and
contractors about our architecture
and standards

Establish a mechanism, with customer
participation and with an appropriate
waiver mechanism, to obtain compliance
with standards

As the industry mainstream changes direction,
evolve with it

Accomplishments

Standards

   Initial standards complete, adopted, published

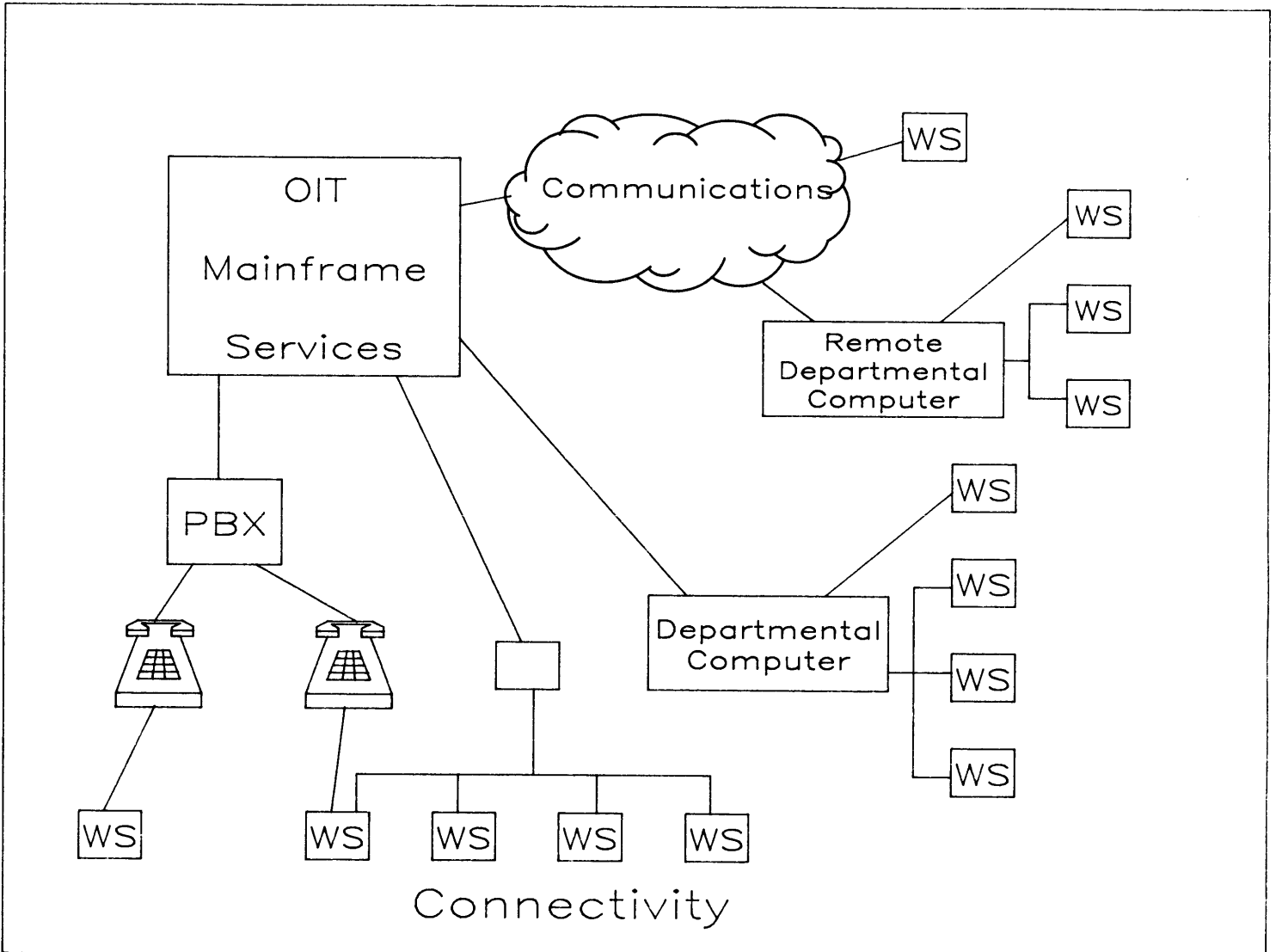   Additional standards in process

Information

   OIT Directions published

   Many briefings given to OIT customers

   Active vendor liaison effort conducted

Compliance

   Working with O/L

Connectivity

Levels
of Information Systems Architecture

Service: the capabilities to be provided

Standards: rules that guide our implementation
    of information systems

Product: hardware and software that conforms
    to standards, selected for use in implemen—
    ting information systems

Status

Service: Levels of Service Standard——in customer coordination
by Customer/Standards Committee

Standards: OIT Information Processing Standards

Computer Network Architecture——adopted
Electronic Mail Interfaces——adopted
Document Interchange Format——adopted
Terminal and Workstation Connection——adopted
Database Management System Interface——adopted
Local Area Networks——in development
Graphics Data Interchange Format——in development
Message Delivery Services——to be developed
Publishing Interfaces——to be developed

Product: OIT—supported product suites

Workstations——selected, being installed
PC Software Products——offered in PC Software Center
Mainframe Computer Facilities——in operation
PBX——cutover in progress

Completed Standards

Computer Network Architecture

Electronic Mail Interchange

Document Interchange Format

Terminal and Workstation Connection

Database Management System Interface

Computer Network Architecture

What

System Network Architecture (SNA) is IBM's umbrella for network products

SNA consists of communictions and network management software

Why

Agency enters commercial mainstream

Replace homegrown software with supported products

Vastly improves network management capabilities

Benefits

Ease of interconnecting non—IBM systems

Simplified access to multiple applications

Eases future transition to Open System Interconnect (OSI) standards

Implementation

STAT

SNA has been installed and run in _____ test

Gradual transition to SNA is beginning

Electronic Mail Interchange

What

Document Interchange Architecture (DIA) between workstation and computer

SNA Delivery Services (SNADS) between computers—— a store and forward delivery protocol

Why

Widely supported by commercial products (IBM, DEC, Wang, Unisys, Data General)

Benefits

Allows interconnection of mail systems, transparently to users (i.e., Wang user sends mail to AIM user as though to another Wang user)

Implementation

Software to bridge mail systems has been selected

Implementation of Wang–IBM and DEC–IBM interfaces is under way

Document Interchange Format

What

Document Content Architecture (DCA)

Format for text document files to be transferred
between dissimilar computer systems

Why

Widely supported by computer systems and word processing
products (IBM, DEC, Wang, Unisys, Data General, Microsoft
Word, MultiMate, Samna, etc.)

Benefits

Create a document on one system and revise it on another

Implementation

Software to transform between Script and DCA is
being written

OIT—supported word processing program supports DCA

Terminal and Workstation Connection

What
3270 Distributed Function Protocol (DFT)

Protocol for connecting terminals and workstations
to mainframe computer systems

Why
Overwhelming choice of industry for access to IBM systems
from terminals and workstations (IBM, DEC, Wang, Data
General, many PC vendors, etc.)

Benefits
Wider variety of commercial equipment can be employed

Implementation
Software to use legacy applications over 3270 protocol
is complete and being installed

First cutovers to PBX are taking place

Database Management System Interface

What
Structured Query Language (SQL)

Language to express query, insert, update, delete,
database definition and control

Why
An ANSI standard, rapidly being adopted throughout
industry (IBM, DEC, Unisys, Data General, many
independent software vendors)

Benefits
Portability of customer and programmer skills

Ultimately, the ability to integrate data stored on
different, dissimilar computer systems

Implementation
Database systems implementing SQL have been installed
on VM and MVS

VM system (SQL/DS) is in production use; MVS system
(DB2) has just been installed, is in test

Standards in Process

Levels of Service

Local Area Networks

Graphics Data Interchange Format

Levels of Service

What
Specification of all services provided by OIT and
their levels of performance and availability

Why
Customers need quantifiable information about OIT
services to plan their use of those services

OIT needs to have measurable goals in order to allocate
its own resources properly among services

Benefits
Mutual understanding between OIT and its customers
regarding services to be provided and the quality
of those services

A meaningful format for OIT to report on its performance
in delivery of services

Implementation
Standard has been written and coordinated within OIT and
delivered to Customer/Standards Committee for comment

New performance measurement tool is being developed in
order to meet measurement and reporting requirements of
the standard

Local Area Networks

What

Industry—standard Token Passing Ring or Ethernet
protocols; cable and connectors specified; AUI
type connectors, LatticeNet interfaces for Ethernet

Why

Proliferation of types of LAN must be avoided because
of support and potential security problems

Cable type and connector type must be specified so that
wiring is multi—use; wiring has longer lifetime than
electronics.

Benefits

Two alternative protocols enable any popular workstation
or terminal to be connected

Single cable type for both protocols will enable reuse of
wiring, reduce cost of moves

Implementation

Standard is being prepared by the Architecture Working Group

Graphics Data Interchange

What
Computer Graphics Metafile (CGM)--industry-standard
method to interchange a graphic between dissimilar
computer systems

Why
CGM is obtaining increasingly broad support from
standards bodies and commercial products

Benefits
Prepare a computer-generated graphic on one workstation
or computer, change it, display it and print it on another

Implementation
Standard is being prepared by the Architecture Working Group

Standards to be Developed

Message Delivery Services

Publishing

Summary

Our Information Systems Architecture is driven by:

present investment——major areas of Agency
   investment must be given early attention

modernization——efforts to modernize Agency
   facilities offer opportunity for near—term
   benefits from standards

commercial marketplace——availability of viable
   commercial products to implement our
   architecture is a major factor in selection
   of standards

standards bodies——industry standards activities
   must be considered, with or without
   implementing products