ISO/IEC JTC 1/SGFS
Title: ISO/IEC JTC 1 Special Group on Functional
       Standardization

Secretariat: NNI (Netherlands)

Title   : Presentation on Open Systems Environment Profiles Made
            by Dr. L. Bertuzzi at the TC 184/SC 5 Meeting in
            Comogli, Italy (N242)

Source   : ISO TC 184/SC 5

Status   :

Note   :

SECRETARIAT

ANSI/NEMA

National Electrical Manufacturers Association

Reference No: ISO TC 184/SC 5

Date: June 10, 1991

N 242

ISO TC 184/SC 5

Architecture and
Communications

Secretariat: ANSI/NEMA (USA)

Title: Presentation on Open System Environment Profiles Made
by Dr. L. Bertuzzi at the TC 184/SC 5 Meeting in
Comogli, Italy

EWOS CONTRIBUTION TO ISO/IEC JTC1 SGFS

Date: April 1991

Subject: Extension of TR 10000 for the Open System Environment

1.   Introduction

This is a proposal from EWOS to extend the scope of TR 10000-1 and TR 10000-2 to permit the definition of ISPs in a new class, to be known as Open System Environment (OSE) Profiles.

A draft of a Technical Guide, currently under development by EWOS, is attached, in order to give more detailed information on the nature of the proposal.

2.   Background

EWOS has been studying the application of Profiling concepts to the domain of OSE for over a year, starting from consideration by the European Standards body CEN of a proposal to create European functional standards for the Common Application Environment (CAE). EWOS was tasked with applying the successful methodology developed for OSI Profiles to the CAE domain, so that the use of the corresponding base standards could also be specified in a similar way for use in procurement.

Similar work on applying the available standards is being undertaken in the context of the IEEE POSIX projects, with consideration of this approach also in JTC1 SC22 WG15. In both these contexts, the use of TR 10000 and the ISP methodology is being investigated. In the USA, an Application Portability Profile for Government procurement is being developed.

The scope of standardization for application portability is also being actively investigated in the work of TSG-1 and JTC1 SC21 WG7 (ODP), and there has been detailed sharing of ideas between members of these groups and EWOS. One result of this interchange of ideas has been to replace the term 'CAE Profiles' by 'OSE Profiles' in alignment with consensus usage.

3.   Scope of OSE Profiles

The proposals in the attached draft EWOS Technical Guide cover the use of standards in the following broad domains:

-     User access techniques
-     Portable Operating System Interfaces (ISO 9945, POSIX)
-     Application Programming Interfaces to System and Information services
-     Data formats for storage and interchange
-     OSI Protocol Profiles
-     Application development tools, languages and bindings
-     Security
-     Internationalization

Not all these domains are adequately covered by existing or projected international standards; one purpose of proposing development of such a taxonomy for the OSE domain is to identify such omissions, and to seek a solution for meeting the needs of users of systems who need support for harmonized procurement specifications in such areas.

4.   Proposal

EWOS requests SGFS to undertake the following actions:

4.1 Study the attached draft EWOS Technical Guide, which describes a concept, process and taxonomy for Profiles for the Open System Environment, and to distribute it to its national bodies and liaison organizations for comment.

4.2 Call for contributions on this subject for consideration at an interim meeting of SGFS in the fourth quarter of 1991, which will undertake the preparation of a Committee Draft to amend or extend TR 10000-1 and TR 10000-2 to cover this topic.

4.3 Strengthen the expertise available to SGFS in the domain of OSE by:

-    requesting specific involvement from SC22 WG15 and SC21 WG7 within JTC1;

-    requesting existing liaison organizations to identify whether they will contribute directly, or whether other bodies in their regions are more appropriate.

4.4 Prepare amendments to SGFS N201 to cover the extension of SGFS procedures to cover the topics and organizations involved in this work.

4.5 Inform the Special Working Group on JTC1 Organization of the extension to Functional Standardization proposed to be undertaken in SGFS in order to relate it to the consideration of the TSG-1 report under JTC1 Advisory Group resolution #11 of February 1991.

4.6 Prepare a contribution to the JTC1 Plenary meeting in October which takes into account the requirements derived from consideration of these proposals.

PROFILES

(i.e.: Functional Standardisation)

"PROFILE" Definition

A set of one or more base standards, and, where applicable, the identification of chosen classes, subsets, options and parameters of those base standards, necessary for accomplishing a particular function.

[OSI Profile Concept and Taxonomy in TR 10000-1/2 and M-IT-01/02]

PROFILES

(i.e.: Functional Standardisation)

OPEN SYSTEM ENVIRONMENT

(i.e.: Application Portability and Interoperability)

EWOS and CEN/CENELEC/ETSI

(i.e.: European Norms)

JTC 1, "The User" and "The User Paradox"

(i.e: Regional Harmonisation and/or the Open Systems Framework)

OPEN SYSTEM ENVIRONMENT

(i.e.: Application Portability and Interoperability)

"OSE" Definition

The comprehensive set of interfaces, services and supporting formats

for interoperability or for portability of applications, data or people,

as specified by information technology standards and profiles.

[ISO/IEC JTC 1/Technical Study Group on Interfaces for Application Portability (TSG-1)]

EWOS and CEN/CENELEC/ETSI

(i.e.: European Norms)

prENV 40 002 (CAE: based on X/OPEN XPG3): REJECTED
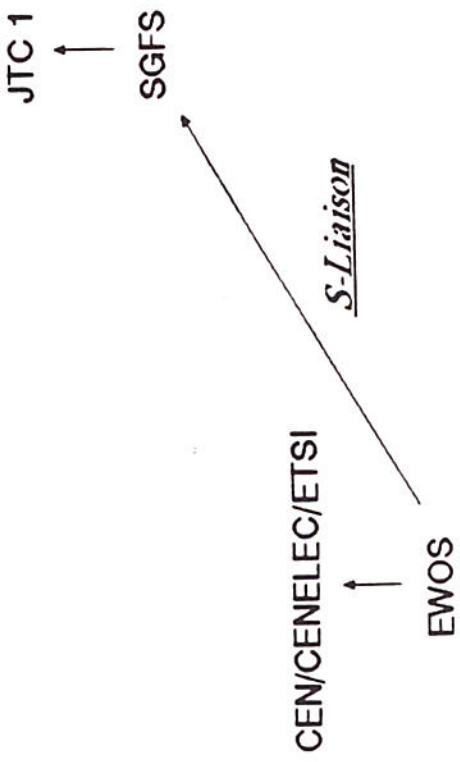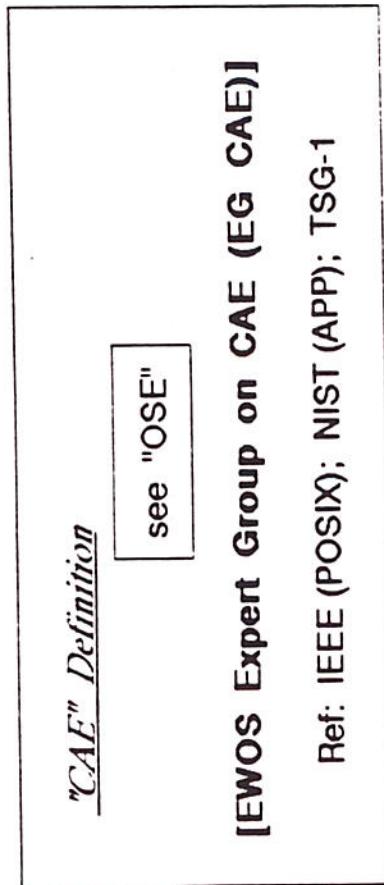
"CAE" Definition

| see "OSE" |

[EWOS Expert Group on CAE (EG CAE)]

Ref: IEEE (POSIX); NIST (APP); TSG-1

JTC 1

SGFS

S-Liaison

CEN/CENELEC/ETSI

EWOS

JTC 1, "The User" and "The User Paradox"

(i.e: Regional Harmonisation and/or the Open Systems Framework)

Regional Harmonisation: the machinery which produces OSI ISPs (and it works)

Do we want to extend it to cater for OSE Profiles as well?

Open discussion

EXPLORE SUITABILITY OF GENERAL ASPECTS
OF
STANDARDISATION RELATED TO A CAE

→

DEFINE REQUIREMENTS

→

EG CAE Proposed Objective (Terms of Reference)

INTEGRATED SET OF FUNCTIONAL STANDARDS
TO ACHIEVE
PORTABILITY AND INTEROPERABILITY
OF APPLICATION SOFTWARE

SOGITS MANDATE

BC - IT 011 SI

EWOS EG CAE

JTC 1 Special Group on Organization

<u>TSG-1 Report & Recommendations to JTC 1</u>
(The July 91 deadline for National Bodies)
(The October deadline for JTC 1)

<u>Profiles vs Base Standards</u> (workplanning)

<u>TR 10000</u> (ISP Concept and Taxonomy)

<u>Role of SGFS</u>

Enterprise mission/objectives

Barriers

Global & pragmatic actions

"Today,

the business patron expects a building

to satisfy technical requirements,

not

to express the architet's vision."

THE EUROPEAN (March 29-31), from:
"Architecture of tyranny"
(pg 2 of éLAN)

CAE vs OSE (EG CAE Conclusions & Action Items,
following Interim Report EWOS/TA/91/08)

Application Portability Profile
used by NIST for procurement

POSIX Platform Profile
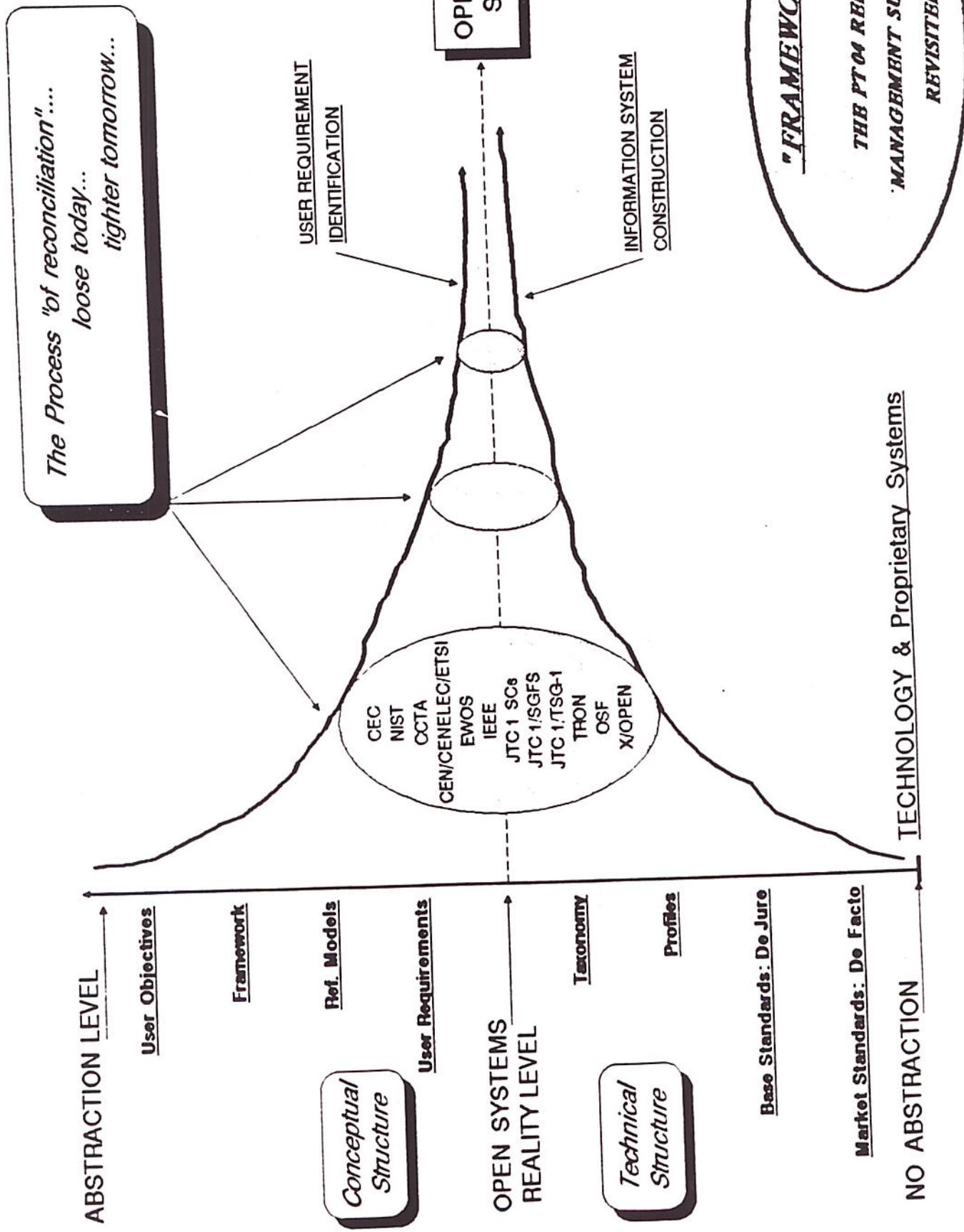*drafted by IEEE in TR 10000 format*

Framework for Open
Systems (EWOS/TA/90/182)

Framework & Reference Models
(OSI; ODP; DM; EDI; CIM; SEC; TSG-1; IEEE P1003.0)

X/OPEN User Council
EurOpen
User Alliance for Open Systems

<u>USER INVOLVEMENT</u>

THE CONTEXT

OF THE EG CAE STUDY

AS OF TODAY

ABSTRACTION LEVEL

User Objectives

Framework

Ref. Models

User Requirements

Conceptual Structure

OPEN SYSTEMS REALITY LEVEL

Technical Structure

Taxonomy

Profiles

Base Standards: De Jure

Market Standards: De Facto

NO ABSTRACTION

TECHNOLOGY & Proprietary Systems

OPEN SYSTEMS STANDARDS

USER REQUIREMENT IDENTIFICATION

INFORMATION SYSTEM CONSTRUCTION

The Process "of reconciliation"....
loose today...
tighter tomorrow...

CEC
NIST
CCTA
CEN/CENELEC/ETSI
EWOS
IEEE
JTC 1 SCs
JTC 1/SGFS
JTC 1/TSG-1
TRON
OSF
X/OPEN

"FRAMEWORK"

THE PT 04 REPORT

MANAGEMENT SUMMARY

REVISITED

EG CAE

CURRENT CONCLUSIONS

_&_

ACTION ITEMS

FOCUS ON TECHNICAL ISSUES

PROPOSALS IN THE AREAS OF TAXONOMY AND PROFILES

ALIGNMENT WITH WORK OF OTHER GROUPS

IMPORTANCE OF ORGANISATIONAL ASPECTS

POSTPONEMENT OF CONFORMANCE ASPECTS

INTERPRET QUANTITY & QUALITY OF COMMENTS
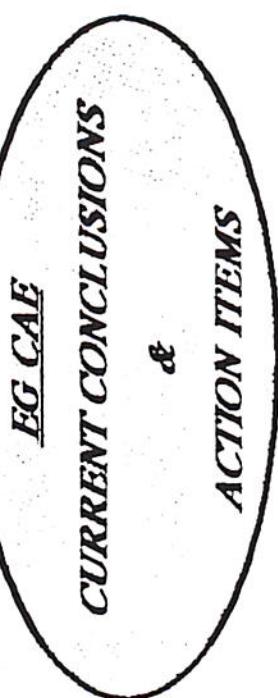TO INTERIM REPORT (EWOS/TA/91/08)

COMPLETE PROPOSAL AND ETG FOR SUBMISSION
TO JUNE MEETING OF JTC 1/SGFS

COMPLETE REPORT TO EWOS TA 13 (MAY 14/15) ON
WORK AHEAD

REFINE PRESENTATION OF METHODOLOGY FOR
TAXONOMY AND PROFILE DEFINITION

KEEP CONTACT WITH ONGOING EXTERNAL ACTIVITIES

ADDRESS PROBLEM OF INFORMATION DOWNLOAD
TO NATIONAL BODIES AND NATIONAL GROUPS

The process whereby a taxonomy of profiles, such as those studied by the EG CAE, becomes a workprogramme and is suitable for agreed - upon progression to wider consensus, must be documented and must keep track of the technical detail of identified user requirements. Therefore the EG CAE proposes that EWOS TA 13 approves the following revised version of its fact sheet and the ETG (EWOS/TA/91/.......) delivered by Work Item CAE001.

The EG CAE held its 4th meeting on EWOS week 13, after 2 interim meetings (Feb. 11-13; Mar. 19-20).

Activities:

1. Ad-hoc meeting of April 8, as per invitation EWOS/TA/91/44
2. Review of comments received on Interim Report EWOS/TA/91/08
3. Contribution to Ad hoc Group on Open Systems Framework of April 10
4. Revision of Interim Report to form basis of ETG (EWOS/TA/91/.......)
5. Contribution to SGFS and ITAEGS (EWOS/TA/91/...... and ....)

EG CAE Work Items - Status

Item	Description of Item	Type of Deliv	Target Date	Date of change	Reason for Target Date (TD) change (Notes)	Prev TD
CAE001	Guide to profiles for CAE	ETG	91/05			
CAE002	CAE Taxonomy	Tax	91/11	91/05	Waiting for SGFS and ITAEGS feedback	91/05
CAE003	CAE Conformance Testing Methodology	Report	Cancel	91/05	Cancelled: see CAE005	tbd
CAE004	CAE Profiles	ED	Cancel	91/05	Cancelled: see CAE006	tbd
CAE005	Progress Report and Recommendations	Report	91/09			
CAE006	CAE Profiles	ETG	91/11			

REF. #	TITLE	SOURCE
01	Draft Guide to POSIX Open Systems Environments P1003.0/D10	IEEE
02	APPLICATION PORTABILITY PROFILE - The U.S. Government's Open System Environment Profile - Special Report	NIST
03	Draft Standard for Information Technology Standardized Profile US1-P001 POSIX Platform: Not [yet] an ISO work item	IEEE
04	Draft version of TSG-1 Final Report on Interfaces for Application Portability (due for delivery to National Bodies by May 15)	JTC1/TSG-1
05	Resolutions of the ISO/IEC JTC1 Advisory Group Meeting (JTC1 N 1262 B) Washington 19.21 February 1991	JTC1/AG
06	Calling Notice for Meeting of JTC1 SWG on JTC1 Organization (JTC1 N 1275)	JTC1/AG
07	OVERCOMING BARRIERS TO OPEN SYSTEMS INFORMATION TECHNOLOGY First Official Report	User Alliance for Open Systems
08	Italian TAG contribution to ISO TC184 AG, with comments to EG CAE Interim Report	UNIPREA

THE TAXONOMY FOR OSE

* TAXONOMY PRINCIPLES

* OPEN SYSTEMS ENVIRONMENT PROFILES

* OPEN SYSTEMS COMPONENT PROFILES

* ATTRIBUTES

* INHERITANCE SCHEME

TAXONOMY PRINCIPLES

* Meet needs of Open Systems Procurement

* Define relationship to available standards and profiles

* Indicate scope for further standards or use of intercepts

* Build on OSI Profile concepts of TR 10000 and M-IT-01/02

BASIC TAXONOMY

* Define new TR 10000/M-IT-02 Class of Profile:

Pxxnn

("P" for "Portability" as in "POSIX")

* Define two subclasses:

POEnn - Open System Environment Profiles

POCnn - Open System Component Profiles

* **POE-profiles** correspond naturally to the TR 10000 concept of a complete, implementable, testable functionality.

* **POC-profiles** correspond more naturally to ISP-parts, in that they define blocks of functionality which are common to several POE-profiles. However, because of the range and complexity of functions within the scope of OSE Profiles, there is merit in adopting a structured approach to the definition and naming of these components.

OPEN SYSTEMS ENVIRONMENT PROFILES

Basis of top level of classification:

*   Users' procurement requirements for significant functional groupings for Open Systems.

POE0 Base Environment

POE1 Work Station Environments

POE2 Utility Server Environments

POE3 Information Server Environments

POE4 Transaction Processing Environments

POE5 Real Time Environments

POE6 Super-Computing Environments

Note: POE0 is effectively a common component of the other functionally specific environments; but it is classified as an environment rather than a component, because that's what it is!

OPEN SYSTEMS ENVIRONMENT PROFILES

Examples of secondary level of classification:

> **POE1** Work Station Environments
>> **POE10** Terminal Environment
>> **POE11** Personal Workstation Environment
>> **POE12** Professional Workstation Environment
>
> **POE2** Utility Server Environments
>> **POE20** Electronic Message Serving Environment
>> **POE21** Directory Serving Environment
>> **POE22** Access Control Serving Environment
>
> **POE3** Information Server Environments
>> **POE30** DBMS Serving Environment
>> **POE31** Document Serving Environment
>
> **POE4** Transaction Processing Environments
>> **POE40** Simple TP Environment
>> **POE41** Enhanced TP Environment
>
> **POE5** Real Time Environments
>> **POE50** Real Time Environment, seconds
>> **POE51** Real Time Environment, milli-seconds

Note: These are examples only, and will require further user and supplier consultation before they can be regarded as correct and usable.

OPEN SYSTEMS COMPONENT PROFILES

The POC taxonomy is structured in two dimensions:

The first dimension gives four aspects of openness:

L	Portability of people	(Look & Feel)
A	Portability of programs	(APIs)
F	Portability of data	(Formats)
P	Interoperability	(Protocols)

The second dimension gives five domains of services:

M	Management Services
U	User Services
S	System Services
I	Information Services
C	Communication Services

There are thus 20 sub-classes of component to be defined. This approach to taxonomy is based on Open System Framework studies, and gives opportunity to identify topics for which standardization is not yet started or complete. The resulting Component Profile Identifiers are thus:

POCnnxx

where nn are two letters representing the two dimensions.

OPEN SYSTEMS COMPONENT PROFILES

This is illustrated by using the POCAx class:

POCAM APIs for Management Services (e.g. APIs
to access and manipulate managed objects)
POCAU APIs for End-User Services (e.g. FIMS API)
POCAS APIs for System Services (e.g. IS 9945-2)
POCAI APIs for Information Services (e.g. ANSI
X3H2 SQL1 level 2)
POCAC APIs for Comms Services (e.g. X.400 API)

Each of these in turn is subdivided using a numeric
scheme. for example:

POCAC1   X/Open X.400 API
POCAC2   X/Open X.500 API
POCAC3   POSIX P1003.8 TFA API
POCAC4   X/Open NFS API

with scope for further subdivision using a second digit, e.g.:

POCAC8   Low level RPC routines (API)
  POCAC81   API to OSF/DCE routines
  POCAC82   API to Sun/RPC routines

*Note: This illustrates the mixture of standardised and de-
facto components which can be included in the component
scheme. What happens in terms of formal functional
standardization in the latter case is for further discussion.*

ATTRIBUTES

Open System Framework studies have identified some aspects of functionality which are "orthogonal" to all other elements of the taxonomy. Since they can affect taxonomy entries at any level they are noted as qualifiers in brackets after the profile name e.g. **POE11 (Xnn).**

The initial entries in the attributes category are:

(Sxx)   Security Profiles
(Nxx)   National Environments (definition of Local Profiles)
(Lxx)   Language Bindings
(Dxx)   Degree of Network Transparency

Security attributes will specify security characteristics, such as ITSEC Evaluation Levels E1 to E6.

National Environment attributes specify national and cultural dependencies such as language and national conventions.

Language Bindings define specifications and bindings needed for the implementation of systems which conform to the OS Environment and Component Profile definitions.

Degree of Network Transparency is specified by an attribute because it is expected that it will have little or no impact on functionality in the future.

INHERITANCE SCHEME

This is a methodology for defining the content of a profile. It is done by linking profiles to specific IS's, ISPs and components. The higher-order profile "inherits" the standards usage of the lower-order profile.

Step 1: differentiate the types of usage. This provides a rationale for inclusion (and omission) of specific standards into the profile.

Step 2: define for each type of usage the aspects of openness required using the two dimensions of the component profile scheme (L/A/F/P and M/U/S/I/C).

The first and second step of the inheritance scheme leads to a matrix into which individual IS's, ISPs and components can be entered. During the entry of items into the matrix the impact of the profile attributes specified are taken into account.

INHERITANCE SCHEME

Example:

POE11 Personal Workstation Environment

might have the following usages:

1   Text Processing
2   Spreadsheet
3   2-D Graphics
4   Personal File Storage and Access

These would give rise to components (in addition to those provided as part of the Base Environment POE0) as follows (all XXnn entries are references to POCXXnn component profiles).

By the use of Attributes, this Profile could be differentiated for Standalone, Communicating and Distributed modes of operation.

An example of such a profile definition for POE11, follows:

INHERITANCE SCHEME

POE11 Personal Workstation Environment

Usage#		POCLx	POCAx	POCFx	POCPx
1	(m)	--	AMnn	FMnn	--
	(u)			FUnn	
	(s)		ASnn	FSnn	
	(i)				
	(c)				
2		--	AMnn	FMnn	--
				FUnn	
			ASnn	FSnn	
3		--	AMnn	FMnn	--
		LUnn	AUnn	FUnn	
			ASnn	FSnn	
4		(No additional components)			

Different sets of components would be applicable to each usage, but would all be combined into the total OSE profile definition POE11.

Note: This is a standalone workstation. If it were extended for use in a communicating or distributed environment, then additional "P" and "C" components would be required.