Appendix A

The QUIPU Pilot DIT

Table A.1 show the number of registered QUIPU DSAs at the top two levels in the DIT as of 5^{th} February 1991. The number of entries is an estimation of the number of entries held by the DSAs in those countires. As not all DSAs were contactable when the figures were calculated, this is almost certainly an underestimate. As the table shows, the QUIPU pilot is now active in 13 countries, with 177 DSAs, holding data for about 370 organisations. Bearing in mind these figures only take account of DSAs at the top two levels of the DIT, and several DSAs are known to be represented lower down in the tree, we can estimate that there are about 200 DSAs in all holding close to 400, 000 entries.

Table A.1: Countries Involved in QUIPU Pilot

Country	DSAs	Organisations	Entries
Australia	14	15	16536
Canada	10	10	21300
Denmark	1	1	16
Finland	10	13	10316
Germany	9	85	9026
Iceland	1	1	185
Netherland	2	69	2132
Norway	3	40	3714
Spain	2	3	141
Switzerland	5	9	4554
Sweden	6	17	3035
United Kingdom	38	33	67345
United States	66	74	167577
Total	177	370	296440

As an example of the typical spread of data, Table A.2 shows the organisations participating in the United Kingdom pilot. The size figure is only an estimate, and based on the information held by the relative DSAs.

Table A.2: The c=GB Node of the QUIPU Pilot

Organisation	DSAs	Size
l=Nottingham X-Tel Services Ltd	3	3714
Aston University	1	935
Bell-Northern Research Northern Telecom	2	453
Bradford University	1	169
Brunel University	1	6900
Cambridge University	3	10647
Concurrent Computer Corporation	1	2660
Data General	1	24
Edinburgh University	2	3063
GID Ltd STC	1	19330
Glasgow University	1	2
Heriot-Watt University	1	20
Hewlett-Packard	1	7
Imperial College	1	2218
Joint Network Team	1	131
Manchester Computing Centre	1	73
Nottingham University	2	3647
Oxford University	1	89
Rutherford Appleton Laboratory	1	1710
Salford University Business Services Ltd	1	4
Salford University	1	4
Sussex University	1	1054
The University of Birmingham	1	1573
University College London	2	5101
University of Bath	1	1565
University of Exeter	1	26
University of London Computer Centre	1	148
University of Stirling	1	275
University of Strathclyde	1	1718
University of Warwick	1	85

Appendix B

BNF used by QUIPU

This appendix gives the BNF definitions used by QUIPU.

Figure B.1 shows the BNF used for the oidtables described in Section 14.11.

Figure B.2 shows the BNF used to define Attributes and hence Distinguished Names; this is discussed in Section 3.2.3. The syntaxes used to represent attribute values are discussed fully in Chapter 10, and so are not repeated here.

Figure B.3 shows the BNF definition of the EDB files discussed in Section 14.1.1.

-- *This specification is in BNF*
-- *Comments start with two dashes*

<a> ::= any of the 52 upper and lower case IA5 letters
<d> ::= any IA5 digit 0–9
<k> ::= any of th 52 upper and lower case IA5 letters, IA5 digits,
and "-" (hyphen)
<p> ::= any IA5 character in ASN.1 PrintableSting
<CRLF> ::= IA5 Newline
<letterstring> ::= <a> | <a> <letterstring>
<numericstring> ::= <d> | <d> <numericstring>
<keystring> ::= <k> | <k> <keystring>
<printablestring> ::= <p> | <p> <printablestring>
-- *The first notation is to specify Object Identifiers.*
-- *These have the basic (BNF):*

<numericoid> ::= <numericstring> | <numericstring> "." <numericoid>

-- *We define a table which gives a mapping of generic OIDs to strings:*
-- *and a possible abbreviated form of the name*

<oidkeytable> ::= <oidkeyentry> | <oidkeyentry> <CRLF> <oidkeytable>
<oidkeyentry> ::= <abbrstring> ":" <oidnumber>
<abbrstring> ::= <keystring> | <keystring> "," <keystring>
<oidnumber> ::= <numericoid> | <numericoid> "," <aliasoid>
<aliasoid> ::= <numericoid>

-- *For example:*
-- *UCL :0.3.2342.19200149*
-- *country,c :2.5.4.6*

-- *Tables of this form will be read in by every QUIPU DSA, to give it a set*
-- *of OID strings forms, and abbreviations*

-- *A general BNF of oid is now given:*

<oid> ::= <keystring> "." <numericoid> | <keystring> | <numericoid>

-- *For example, "UCL.5" gives OID 5 as allocated by UCL, "C" gives the standard country oid.*

– We define a table for attribute values:

```
<attrTable> ::= <attrEntry> | <attrEntry> <CRLF> <attrTable>
<attrEntry> ::= <oidkeyentry> ":" <attrEncoding>
<attrEncoding> ::=  "ObjectClass" | "DN" | "CaseIgnoreString" |
              "CaseExactString" | "PrintableString" | "CountryString" |
              "Guide" | "PostalAddress" | "TelephoneNumber" |
              "telexNumber" | "TelexTerminalIdentifier" |
              "FacsimileTelephoneNumber" | "NumbericString" |
              "DestinationString" | "PresentationAddress" |
              "OID" | "OctetString" | "IA5String" | "Photo" |
              "Mailbox" | "UTCTime" | "DeliveryMethod"
              "Integer" | "Boolean" | "Password"
              "ACL" | "Schema" | "Update" |
              "Audio" | "CaseIgnoreList" | "VisibleString" |
              "Certificate" | "CerfiticatePair" | "CertificateList" |
              "ProtectedPassword" | "AccessPoint" | "Edbinfo" |
              "InheritedAttribute" | "NRSInformation" |
              <attrASN>

<attrASN> ::= <keystring>
     -- defined, but unknown syntax – treated as "ASN"

-- For example:
-- description: attributetype.13: CASEIGNORESTRING

-- Finally we define an object class table:

<ocTable> ::= <ocEntry> | <ocEntry> <CRLF> <ocTable>
<ocEntry> ::= <ocData> | <ocMacro>
<ocData>  ::= <oidkeyentry> ":" <strList> ":" <strList> ":" <strList>
--                          :(hierarchy):(must contain):(may contain)
<ocMacro>    :: = <keystring> "=" <strList>

<strList> ::= <keystring> | <keystring> "," <strList> |
```

```
-- Note the final "|" to permit the null string

-- For example;                                                    80
-- localeAttributeSet = facsimileNumber,isdnAddress,telephoneNumber, ...
-- country: objectclass.2 : top: countryname: description,searchguide
-- organisationalPerson: person: : localeAttributeSet,OU,title,...
```

Figure B.1: BNF Used for oidtables

```
<attribute-value> ::= <NumericValue>
                    | <ASNValue>
                          -- For unknown syntaxes & photos
                    | <DNValue>
                    | <OIDValue>
                          -- OID & ObjectClass
                    | <PSAPvalue>
                    | <StringValue>
                          -- Used for:
                          --     CaseIgnoreString, CaseExactString,
                          --     PrintableString, CountryString,
                          --     OctetString, IA5String, Password
                          --     TelephoneNumber
                    | <GuideValue>
                    | <TelexNumberValue>
                    | <TeletexTerminalIdentifierValue>
                    | <FacsimileTelephoneNumberValue>
                    | <PostalAddressValue>
                    | <MailboxValue>
                    | <UTCTimeValue>
                    | <DeliveryValue>
                    | <IntegerValue>
                    | <BooleanValue>
                    | <ACLValue>
                    | <SchemaValue>
                    | <EdbInfoValue>
                    | <otherValues>

<otherValues>   ::= ANY -- can be user defined.

<namevalue>     ::= <namelist> ["#"]
<namelist>      ::= <name> | <namelist> "$" <name>

<attribute>     ::= <oid> "=" <avlist>
<avlist>        ::= <attribute-value> | <avlist> "&" <attribute-value>
<rdn>           ::= <attribute> | <attribute> "%" <rdn>
<name>          ::= <rdn> | <rdn> "@" <name>
                          -- most significant first
```

-- An example name might be:
-- "c=GB @ o=UCL % locality=London @ ou=CS"
-- Finally, this can be assembled together to give a format for a textual
-- representation of an Entry Data Block.

Figure B.2: BNF Used in Names