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TECHNICAL MEETING ON DATA BASE DESIGN FOR THE PILOT PROJECT

VIENNA, AUSTRIA
MAY 26-30, 2003

**EXTRABUDGETARY PROGRAMME ON THE
SAFETY OF NUCLEAR INSTALLATIONS IN THE SOUTH EAST ASIA,
PACIFIC AND FAR EAST COUNTRIES**

INTERNATIONAL ATOMIC ENERGY AGENCY

TABLE OF CONTENTS

1. BACKGROUND	5
2. DATABASE ISSUES DISCUSSED	5
2.1. EXACT DEFINITION OF KEYS	5
2.2. NEW FIELD "ContactPerson" ADDED TO GROUP TABLE	5
2.3. SORTING OF RECORDS IN A NUMBER OF TABLES (see ref doc)	6
2.4. EXACT DEFINITION OF TEXT FIELDS.....	6
2.5. PROCEDURES AND REQUIREMENTS FOR EXCHANGING INFORMATION ON NEW USERS (to be determined).....	6
2.6. DOCUMENTS ARE NOT REQUIRED TO BELONG TO A GROUP.....	6
2.7. FIELDS BEING REQUIRED OR OPTIONAL.....	6
2.8. FIXED VALUES FOR TAXONOMY AND LOOK-UP TABLES.....	7
2.9. TIME STAMP	7
3. REFERENCE DOCUMENT	7
4. OTHER ISSUES DISCUSSED.....	7
4.1. IMPACT OF DELETION OF RECORDS ON DATABASE SYNCHRONIZATION AND CONSISTENCY.....	7
4.2. DESCRIPTION OF TAXONOMY CATEGORIES	7
4.3. AVOIDING THE REUSE OF RECORD IDENTIFIERS.....	8
4.4. ANSN CONTACT PERSON	8
5. FUTURE ACTIVITIES	8
5.1. SYSTEM UPDATES.....	8
5.2. USERNAME & PASSWORD EXCHANGE.....	8
5.3. DATA EXCHANGE	8
5.4. SINGLE SIGN-ON.....	9

1. BACKGROUND

A technical meeting was held at the IAEA in Vienna from May 26-30, 2003 to discuss the remaining ambiguities in the ANSN Database design and to coordinate the current development work that is being performed at ANL, the IAEA, and at NUPEC. The implementation of a few necessary improvements and capabilities has been discussed as well, resulting in a database design reference document that will be the foundation of the ANSN pilot project implementation.

While it is understood that the hubs are largely free in their individual implementation of the databases related to the ANSN hubs, it is necessary to standardize a minimum set of invariable components of the system to ensure interoperability and future compatibility. Therefore, all hubs will need to present their data during synchronization in the format described in the database design reference document. This approach allows for enough flexibility in individual implementations to allow for local experimental features, other node-specific extensions, and flexibility for further expansion (e.g. alternate taxonomies, additional fields for local use).

Sample data will be needed in the near future to test the prototype software developed so far. Some of the materials received from partners have not been ideally suited for quick implementation, and these problems will be resolved in the next few weeks.

2. DATABASE ISSUES DISCUSSED

The following subjects have been discussed in detail:

2.1. EXACT DEFINITION OF KEYS

The exact definition and composition of keys for all tables have been clearly documented in the new database design reference document. The only change is in the two tables linking Groups and Documents as well as Documents and Items. To allow for the possible use of documents owned by another node in a group that is being established locally, the NodeId of both the Groups and the Documents (or respectively the Document and the Item) must be part of the link tables(see ref doc for details).

2.2. NEW FIELD "ContactPerson" ADDED TO GROUP TABLE

At the request of test users, it became obvious that a field for a contact person may be useful for each document group. The purpose of this field is to be able to identify a person within the hub who is responsible for a particular Group (e.g. Training Course). As a result, an additional field in LevelGroup for ContactPerson has been added to the LevelGroup table (see ref doc for details). This field is optional.

2.3. SORTING OF RECORDS IN A NUMBER OF TABLES (see ref doc)

Sorting in a user-defined order is an obvious attribute of documents in a group. Since the documents can be used in more than one group, the attribute is a function of Document and Group, and has been therefore added to the GroupDocument table. The sorting field has also been added to the taxonomy and format tables.

2.4. EXACT DEFINITION OF TEXT FIELDS

All text fields have been revisited to define the exact specifications, for example the length and data type. For details, please see the reference document.

Format of date fields (see ref doc and future XML ref doc)

Date fields should be formatted according to XML standards to ensure unambiguous interpretation of the values.

2.5. PROCEDURES AND REQUIREMENTS FOR EXCHANGING INFORMATION ON NEW USERS (to be determined)

A number of details need to be collected by each node on the applicants and registered users. This information needs to be propagated to other nodes to allow for the necessary transparency of the trust relationship. A document will be developed to propose the minimum attributes that have to be known for users of the system.

2.6. DOCUMENTS ARE NOT REQUIRED TO BELONG TO A GROUP

The impact of documents that don't belong to any group has been discussed. The existence of a link is not essential for the data consistency of the databases, but creates some complications for the design of user interfaces and the search engine. While a document may well exist without a corresponding group, items not belonging to a document should be avoided (although this does not need to be strictly enforced). Such orphaned items will probably not be findable within the scope of normal searching.

2.7. FIELDS BEING REQUIRED OR OPTIONAL

All fields in all tables are required, but can have the values of 0 or be empty strings. The obvious exception are IssueDate fields, because not every date may be applicable. Therefore, a value of NULL is allowed in those IssueDate fields.

2.8. FIXED VALUES FOR TAXONOMY AND LOOK-UP TABLES

In order to ensure consistency for all hubs, it is essential that all hubs follow the same numbering of taxonomy and lookup table. The values for the different tables, can be found in the reference document.

2.9. TIME STAMP

In order to ensure correct data exchange and synchronization, it is essential that the timestamp is reflecting the correct time, i.e. the time the group or document was made available to the Hub. That means, the timestamp is automatically generated as the current system time at time of insertion or modification of this record in the current database. This is distinctly different from a data entry date. While the data entry date describes the time of entering the data manually into the system, the timestamp allows the synchronization software to determine since when the record exists in the current database.

3. REFERENCE DOCUMENT

To ensure the compatibility and interoperability of the database at each node, it was decided to create a precise reference document that declares all requirements in detail. Use of taxonomy subtasks in form of help files or documentation.

4. OTHER ISSUES DISCUSSED

4.1. IMPACT OF DELETION OF RECORDS ON DATABASE SYNCHRONIZATION AND CONSISTENCY

When deleting records, some potential problems have been recognized with maintaining perfect synchronization between databases. Since this is a synchronization problem, the problem is out of scope of the table definitions. But it has been decided upon that the user interfaces or databases should not keep actively track of deletions. The determination whether records still exist in remote database has to be implemented in the synchronization protocol (XML protocol).

4.2. DESCRIPTION OF TAXONOMY CATEGORIES

The maintenance user needs to be aware of the details related to the different taxonomy categories, which may assist data entry staff when choosing Taxonomy. Corresponding help files or documentation will be made available to data processors. Details can be found in the minutes from the ANSN Technical Meeting Feb. 3 – 5, 2003 in Vienna.

4.3. AVOIDING THE REUSE OF RECORD IDENTIFIERS

To ensure synchronization, no record identifiers may be reused. This means that the record Ids of deleted records should never be assigned again to new information. This requirement simplifies the establishment of a reliable synchronization protocol.

4.4. ANSN CONTACT PERSON

In some situations, it is useful to identify a single contact person for each hub as the coordinator for all necessary communication. The main developers in each country should take on this role, even for non-technical questions as a first point of contact. It is optional to add contact person to the database.

5. FUTURE ACTIVITIES

5.1. SYSTEM UPDATES

Following the discussions a number of changes to the databases, Data Entry Applications and Web Sites will be required. These changes should be implemented before moving to the next phase of the project.

5.2. USERNAME & PASSWORD EXCHANGE

In order to provide access to all Hubs, it is necessary to establish a mechanism to allow for this. Initially, each hub should inform the other hubs about new users added to the ANSN network by sending this information in XML format (pls. See section 2.5). Procedures, data exchange protocols and XML definitions needs to be defined. (Nupec & ANL in cooperation with IAEA).

5.3. DATA EXCHANGE

Whenever a hub wants to make materials available to the ANSN network, the relevant information (meta data) will have to be sent to the Master Index Database in Vienna (and other hubs that may have this information). The initial activity in the development is to clearly define and describe the different XML formats, procedures and data exchange protocols and flow to ensure a correct and timely data exchange. (Nupec & ANL in co-operation with IAEA).

5.4. SINGLE SIGN-ON

A mechanism to allow for mutual authentication (Single Sign-On) and providing access to all hubs and related materials without having to be re-authenticated, needs to be developed. (IAEA in cooperation with Nupec & ANL)