Learner Record Web Site

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The JISC-funded SHELL Project (Southwest Hosts Enhancing Lifelong Learning) requires a web site to present data in the learner record database to users in accordance with the following design specification. Developers are invited to provide a quotation for development of this web site.

The web site is to form part of the ioNode system (currently at version 1.2) in addition to being used by the SHELL project. For further information on ioNode please see www.ionode.org and for general background on the project please see www.shellproject.net

1 Overall requirements

Whilst no specific development platform is preferred, developers are asked to consider the pros and cons of using uPortal.

The development should comply with web accessibility initiatives where possible.

Data to be displayed via the web site and used within the identification / registration and authentication processes is to be drawn from the Learner Record database. At the present time LR data is held in a Xindice database in IMS form, but Xindice is in the process of being moved to PostgreSQL, again with the LR data being held in IMS form. See Appendix A for more details of the database structure.

2 The user interface functionality

A series of 'proof of concept' demonstration pages are available via the "Progress" tab on www.shellproject.net

Requirements for the user interface are:

Initial page
- facility for learners to be able to register for access
- facility for learners to login if already registered
- facility for resetting forgotten passwords

Subsequent pages
- facility to view personal details
- facility to view qualifications
- facility to view associated modules

Initial Page

Users are requested to either **register** for access or **login** if they have already registered.

Registration is initially by way of obtaining user response to the following prompts:

- Surname
- First name(s)
- Date of Birth using format DD.MM.YYYY

If this identifies a single learner by matching against the LR database then the final response of the sequence will be requested:

- answer to the security question drawn for the LR database (comparison of the answer with the answer stored on the LR database)

If the first 3 questions identify more than one learner, the learner will be asked to identify which of several registrations may apply:

- Which of the following registrations relate to you? (college, qual start date)

Then, having identified the appropriate registration, request a final response:

- answer to the security question drawn for the LR database (comparison of the answer with the answer stored on the LR database)

If an error occurs in the first 3 fields, respond “Record not found. Please try again or click the ‘Help’ button”.

Following **successful registration** the learner should be asked to select a username. If the choice has already been used, the learner should be given the response “username already in use, please select an alternative”.

Having successfully identified a username, the learner should be asked for a password with a minimum size of 6 and a mixture of letters and numbers required.

The chosen username and password should then be stored in the LR database with an error count beside it.

Login for registered users is by way of providing username and password. After 6 failed attempts, logins should be disabled and the learner advised to contact the school/college/university where last registered. Disabled accounts will be reset through an administrative web site by contacting the college.

Forgotten passwords (ie if the learner clicks on this specifically as opposed to just getting the password wrong) – forgotten passwords should be handled by keeping the username already provided (display this on the screen so that any error can be spotted) and taking the learner through the security sequence:

- surname
- first name(s)
- data of birth
- security question/answer

All these questions are to be asked first before checking against the LR database. If any one of the answers is wrong, the learner will not be allowed to login. The error message should not indicate which field(s) is/are in error and the error count for the username should be incremented.

Details of any failed access attempt should be written to a log file held on the LR database server to aid analysis and identify security issues.

Subsequent pages

Following successful login / registration, the following function buttons (channels in uPortal) should appear:

- Personal registration details
- Qualification records
- Help
- Change security information

Personal registration details should display:

- Name
- Address
- Postcode
- Date of Birth
- Identifiers associated with the learner (see LR database structure in Appendix A)

Qualification records should display:

- Start Date
- Place of study
- Qualification Title
- Qualification Result
- Date of Award
- Awarding Body

A Windows-type expansion icon should appear at the left hand side of each qualification line. This icon, when activated by clicking, should open a new window – displaying the following module data for this qualification using a table:

- Start Date
- Qualification Code
- Module Code
- Module/Qualification Title
- Awarding Body
- CR (Credit)
- LVL (Level)
- Grade
- Result
- Date of Award
- Delivery Institution

All of these headers should be set using the 'title' tag (or java popup or similar) to provide 'pop-up' explanations of the abbreviations. (The explanations are shown in brackets above.)

Resetting security information

Learners should be allowed to reset their password and their security question and answer.

'Download', 'Print' and 'Send to' functions

Both 'Download' and 'Print' functionality should be available for the personal details and qualifications screens, whether broken down by modules or not. 'Download' should create a copy on the learner's local PC; 'Print' should provide a printout of the learner record as displayed.

Learners will want to allow third parties, for example potential employers, to have access their learner record. One option would be to introduce a facility for a print-image to be sent via email by the learner. However, with the inherent insecurity of email, this may not provide a prospective employer with any confidence that a Learner Record via email accurately reflects the contents of the LR database. A means of the learner providing direct access to the LR for a third may be preferable.

3 Design elements

- The web site lacks specific, acceptable **name** which represents its function/purpose to all learners. The names "SHELL" and "Learner Record" are considered to be temporary, as the SHELL project will cease in February 2005, and the hope is that the work will become embedded practice in schools, FE, HE and training providers covering LLL. Additionally, the term "Learner Record" is too narrow, as eventually this will cover forward planning of learning, PDP/ILP activities and career links etc. The project expects to select an appropriate name shortly, perhaps involving "e-Portfolio".
- The web site also requires an **icon** that can become associated with the Learner Record on the web site and in any links established from other learner sites. The SHELL icon, which is superimposed on an outline map of the SW, will become inappropriate when a) the SHELL project terminates, and b) if the principles are extended beyond SW England.

4 Quotations for Development and Testing

In addition to providing a fixed-price quotation for the work, developers must indicate reliable timescales by which the development will be carried out and fully tested.

Developers should indicate all relevant technical aspects of the proposed web site, including the approach to password security.

Project staff will make themselves available with relatively short notice for design discussions and testing.

Servers, currently sited at the University, can be used as a source of test data and as the location of a test web site.

Developers will be given access to ioNode source under terms agreed with the IPR holders..

IPR for the developed web site will be assigned to the current IPR holders for ioNode software.

Source for the completed system must be capable of being offered as an open source component of ioNode.

The completed source must be sufficiently well documented to give unfamiliar developers with an appropriate understanding of the web site.

Developers should describe their track record on:

- carrying out similar developments
- completing developments on time.

Speed of development is important and a fully tested system should be available not later than the end of October.

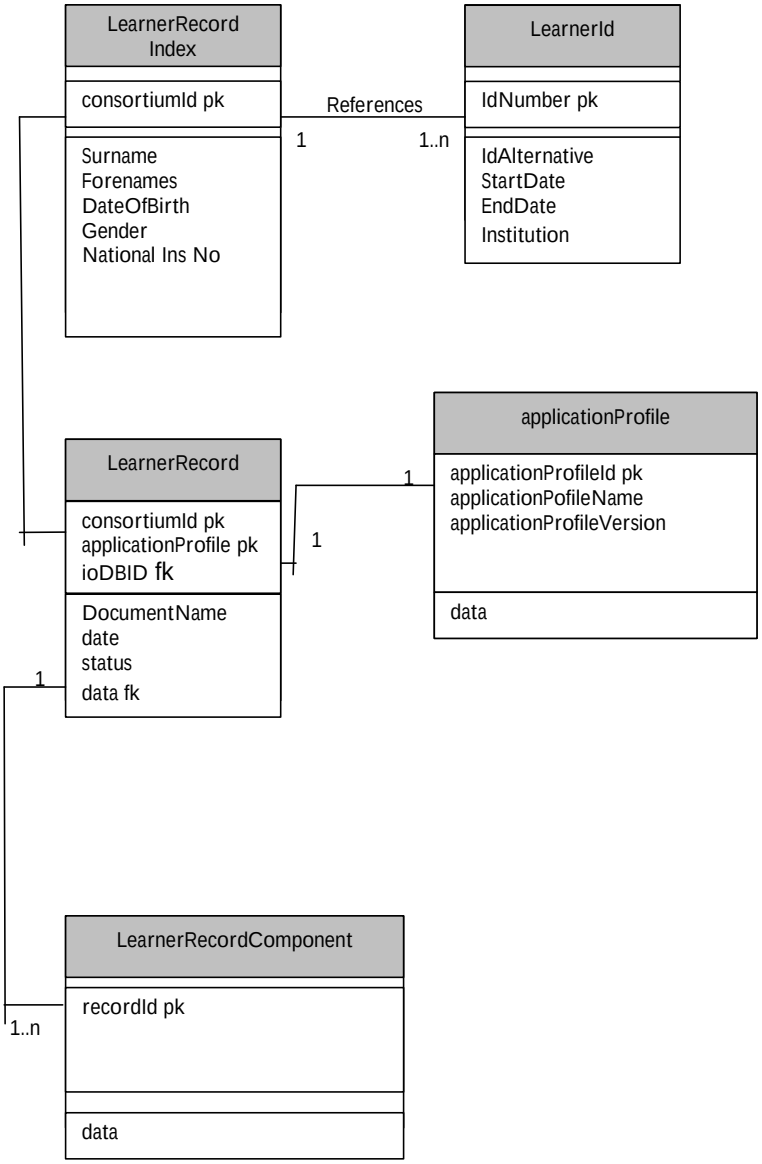
Quotations for carrying out the work must arrive at the University no later than 12-0 on Wednesday 11 August.

Any questions concerning this invitation to quote should be directed to Terry Rourke (terry.rourke@plymouth.ac.uk) and/or Jon Yorke (jon.yorke@plymouth.ac.uk).

Appendix A

Database Structure

The following is a summary of the ioDB data model. The principle of the database is that it holds IMS LIP according to an agreed profile. The profile is recorded for the data. A full learner record can be composed of 1 or more XML data blocks.



(1) **LearnerRecordIndex**
Holds all indexing information for a student record, with certain personal data abstracted from xml and held explicitly.

(2) **LearnerId**
A table of additional learner identifiers, with the time period and institution of source recorded.

The LearnerRecordIndex and LearnerId tables allow the data lookup according to the business process rules and support for the use cases required for secure data access.

(3) **LearnerRecord, LearnerRecordComponent and applicationProfile**
A LearnerRecord row holds references to a group of LearnerRecordComponents and a applicationProfile. Each (unique) pair of consortiumId and applicationProfile references a full student record.

The LearnerRecordComponents table is used to hold XML data.

Overall the data is typed by applicationProfile which defines the usage pattern of the schema.

applicationProfile is a type describing the normalisation pattern of the data, by which is meant the agreed normalisation of the XML.
The simplest example of a normalisation patterns would be to store data as full LIP so that it is not broken down at all but all stored together. A second example would be where the LIP data is broken up into the 11 main schema given in the LIP Information Model categories of:

identification
goal
qcl
activity
interest
competency
accessibility
transcript
affiliation
securitykey
relationship

The applicationProfile defines a group of schema profiles that defines the way in which a complete student data record has been stored and how it is to be processed.

The purpose of structuring the data storage and typing in this way is to allow a client application to retrieve data using an API that is initialised using the available applicationProfiles.

IMS Data Field

An example of the IMS data held within the database appears below:

A learner is registered on an FE course at a Partner Institution. The qualification is one which is broken down to modular level. At registration the learner selects three modules – Computer Art, Computer Aided Design and Spreadsheets.

```
<learnerinformation>
  <comment>A basic example of creating a LIP record.</comment>
  <contentype>
    <referential>
      <sourcedid>
        <source>SHELL</source>
        <id>cornwall.ac.uk</id>
      </sourcedid>
```

```
    </referential>
  </contentype>

  <identification>
    <contentype>
      <referential>
        <indexid>cornwall.ac.uk.211653</indexid>
        <!-- could be built from the URI for this source and the
local 'studentID' IE cornwall.ac.uk.211653-->
      </referential>
    </contentype>
    <name>
      <typename>
        <tysource sourcetype="imsdefault"/>
        <tyvalue>Preferred</tyvalue>
      </typename>
      <contentype>
        <referential>
          <indexid>unknown</indexid>
        </referential>
      </contentype>
      <partname>
        <typename>
          <tysource sourcetype="imsdefault"/>
          <tyvalue>First</tyvalue>
        </typename>
        <text>Ian</text>
      </partname>
      <partname>
        <typename>
          <tysource sourcetype="imsdefault"/>
          <tyvalue>Last</tyvalue>
        </typename>
        <text>Jones</text>
      </partname>
    </name>
    <address>
      <typename>
        <tysource sourcetype="imsdefault"/>
        <tyvalue>Private</tyvalue>
      </typename>
      <contentype>
        <referential>
          <indexid>cornwall.ac.uk.211653</indexid>
        </referential>
      </contentype>
      <street>
        <nonfieldedstreetaddress>6 Smith Place, Truro, TR16 6HB
        </nonfieldedstreetaddress>
        <streetnumber>6</streetnumber>
        <streetname>Smith</streetname>
        <streetype>Place</streetype>
      </street>
      <city>Truro</city>
      <country>UK</country>
      <postcode>TR16 6HB</postcode>
      <timezone>GMT</timezone>
    </address>
  </identification>
  <activity>
    <typename>
      <tysource sourcetype="imsdefault"/>
```

```
      <tyvalue>Education</tyvalue>
    </typename>
    <contentype>
      <referential>
      <indexid>TACNNCL1</indexid>
      </referential>
    </contentype>
    <definition>
      <typename>
        <tysource sourcetype="imsdefault"/>
        <tyvalue>Course</tyvalue>
      </typename>
      <contentype>
        <referential>
          <indexid>Computer</indexid>
        </referential>
      </contentype>
      <definition>
        <typename>
          <tysource sourcetype="imsdefault"/>
          <tyvalue>Curriculum</tyvalue>
        </typename>
        <contentype>
          <referential>
            <indexid>Year1</indexid>
          </referential>
        </contentype>
        <definition>
          <typename>
            <tysource sourcetype="imsdefault"/>
            <tyvalue>Module</tyvalue>
          </typename>
          <contentype>
            <referential>
              <indexid>CL1CA1</indexid>
            </referential>
          </contentype>
          <definitionfield>
            <fieldlabel>
              <typename>
                <tyvalue>Module</tyvalue>
              </typename>
            </fieldlabel>
            <fielddata>Computer Art</fielddata>
          </definitionfield>
        </definition>
        <definition>
          <typename>
            <tysource sourcetype="imsdefault"/>
            <tyvalue>Module</tyvalue>
          </typename>
          <contentype>
            <referential>
              <indexid>CL1CA8</indexid>
            </referential>
          </contentype>
          <definitionfield>
            <fieldlabel>
              <typename>
              <tyvalue>Module</tyvalue>
              </typename>
            </fieldlabel>
```

```
            <fielddata>Computer Aided Design</fielddata>
          </definitionfield>
        </definition>
        <definition>
          <typename>
            <tysource sourcetype="imsdefault"/>
            <tyvalue>Module</tyvalue>
          </typename>
          <contentype>
            <referential>
              <indexid>CL1CA7</indexid>
            </referential>
          </contentype>
          <definitionfield>
            <fieldlabel>
              <typename>
              <tyvalue>Module</tyvalue>
              </typename>
            </fieldlabel>
            <fielddata>Spreadsheets</fielddata>
          </definitionfield>
        </definition>
      </definition>
    </definition>
  </activity>
</learnerinformation>
```

Further information on IMS can be obtained from www.imsglobal.com