System Requirements and Context

The system requirements below describe the functionality of the software to be developed by a project

that will replace the existing Course Registration System (CRS) with an on-line system (“C-Reg”) that

allows students and professors access through PC clients.

The current CRS system has been in use since a number of years and lacks the capacity to handle the

student and course load projected for the future. In addition, the current system uses outdated

mainframe technology, which only supports access through the clerks in the Registration Office. C-Reg

will enable all professors and students to access the system, in addition to the clerks in the Registration

Office, through PCs connected to the Wylie College computer network and through any personal

computer connected through the Internet.

C-Reg will continue to interact with the Course Catalog System which maintains the list of courses and

details of the courses that will be offered for the upcoming semester (known as ‘Course Offerings’). CReg will continue to interact with the student Billing System and the E-mail system – see Figure 1. How

the data is loaded and stored in the Course Catalog system is outside the scope of this case study.

All human users of C-Reg (i.e. Registrars, Professors and Students) access its functionality via a ‘Main

Form’ menu (see Figure 2a). How the system controls security of access and the functionality available

to each type of user is beyond the scope of these requirements.

[Note: in all of the following requirements, where ‘he’ is written, this can mean ‘he’ or ‘she’. Similarly,

‘his’ can mean ‘his’ or ‘her’.]

2 REGISTRARS AND PROFESSORS

2.1 Requirements for Registrars and for Professors

This section has two groups of requirements.

2.1.1 Maintain Professor data (by Registrars)

2.1.2 Maintain Course Offering commitments (by any Professor)

2.1.1 Maintain Professor Data

2.1.1.1 Brief Description

This group of requirements allows Registrars to maintain data about any Professor in C-Reg.

Each Professor is identified by a unique identification (or ‘ID’) in the form [surname, serial number],

Example: ‘Smith3’. [For simplicity in the requirements, we assume that when making any

enquiries, a Registrar knows the ID of all Professors, and that each Professor knows his own

unique ID.]

C-Reg must enable a Registrar to perform any of the tasks ‘Add Professor, ‘Modify Professor’, ‘Delete

Professor’ or ‘Enquire on Professor’.

[We assume C-Reg will be implemented with a menu system, as illustrated in Figure 2. Hence for this

group of requirements, a Registrar must first select ‘Maintain Professor’ from the Main Form as in 2a)

and then choose the appropriate sub-option as in 2b).]

2.1.1.2 Add a Professor‘s details

a) When a Registrar wishes to enter data about a new Professor, he selects the sub-option "Add

Professor."

b) C-Reg displays a blank formatted screen for entry of Professor data.

c) The Registrar enters the following details for the Professor: ID, name and address, social security

number, Department, qualifications and contact details and presses ‘Save’. (See Figure 3a) for an

example screen showing the entered data.)

d) C-Reg validates the data to ensure the proper formats and checks whether a Professor of that ID

already exists. If the entered data are valid, C-Reg creates a record for the new Professor and .

e) Alternatively, if data entered is not valid, C-Reg displays one or more error messages, for example:

‘Professor ID unknown’, Professor name already exists’, "Professor Data Invalid". The Registrar

can then change or correct the data, or cancel the operation.

Steps a) to e) may be repeated for each Professor that the Registrar wishes to add to C-Reg.

2.1.1.3 Enquire on a Professor’s details

a) When a Registrar wishes to enquire on the details of a Professor, he must first select the sub-option

‘Enquire on a Professor’ as in 2.1.1.2 and enter the Professor ID

b) C-Reg searches for a Professor with the specified ID and displays the Professor’s name and address

and other details, as in Figure 3(b)

c) Alternatively, if a Professor with the specified ID is not found, C-Reg displays an error message,

"Professor Not Found". The Registrar can then type in a different ID or cancel the operation.

2.1.1.4 Modify a Professor’s details

a) If a Registrar wishes to modify the details of a Professor, he must first retrieve the Professor details

as in 2.1.1.3 ‘Enquire on a Professor’

b) The Registrar presses ‘Modify’.

c) The Registrar may then change one or more of the displayed Professor data items (except the

Professor ID). When changes are complete, the Registrar presses "Save" and C-Reg updates the

professor data.

d) Alternatively, if data entered is not valid, C-Reg displays an error message, "Professor Data Invalid".

The Registrar can then correct the data or cancel the operation.

2.1.1.5 Delete a Professor’s details

a) If a Registrar wishes to remove a Professor from C-Reg, he must first retrieve the Professor data as

in 2.1.1.3 ‘Enquire on a Professor’

b) The Registrar presses ‘Delete’.

c) C-Reg enquires on the Course Catalog whether the Professor has any Course Offerings that he has

committed to teach. The Course Catalog replies to C-Reg with a ‘yes/no’ indication.

d) If the Professor has no Course Offering teaching commitments, C-Reg displays a message asking

the Registrar to confirm the deletion.

e) If the Registrar selects ‘yes’, the Professor data is deleted from C-Reg.

f) Alternatively, if the Registrar selects ‘no’, the operation is cancelled.

g) If the Professor is committed to teach any Course Offerings, deletion is not allowed, C-Reg displays

an error message and the Registrar must abandon the operation. [Note: how the Registrar deals

with this conflict is outside the scope of this case study.]

2.1.2 Maintain a Professor’s Course Offering commitments

2.1.2.1 Brief Description

The Course Catalog holds the dates, times and locations of all Courses that Wylie College offers to

students in the upcoming semester (known as ‘Course Offerings’).

This group of requirements for the C-Reg system enables a Professor to enquire on Course Offerings

that he may wish to teach, and to commit (i.e. add his ID) to teach a Course Offering, or to modify or to

delete existing teaching commitments. The Course Catalog holds data on the qualifications needed to

teach each Course.

The Course Catalog also holds the ‘availability indicator’ for each Course Offering. This indicator may

have values:

● ‘unavailable’ (meaning so far no Professor has committed to teach the Course Offering),

● ‘available’ (meaning a Professor has committed to teach the Course Offering and Students may

enrol)

● ‘full’ (meaning that a Course Offering is ‘available’ but Students may not enrol as the Course Offering

is fully subscribed),

● ‘cancelled’ (for a Course Offering that was ‘available’ but has now been cancelled),

● ‘closed’ (meaning that Professors may no longer change their commitment to, and Students may no

longer enrol in this Course Offering (see section 4.1.2 ‘Close Registration’)

2.1.2.2 Enquire on Course Offerings

a) When a Professor wishes to enquire on the courses he may teach, he must first select ‘Maintain

Course Offerings’ from the Main Form and then ’Enquire on Course Offerings (Professor)’ from the

Sub-Menu.

b) The Professor enters his ID.

c) C-Reg obtains the Professor’s qualifications and Department, and sends these to the Course

Catalog.

d) C-Reg obtains from the Course Catalog and displays (as shown in Figure 4) the list of Course

Offerings for the Professor’s Department that he is qualified to teach and that are ‘unavailable’, i.e.

no other Professor has committed to teach the Offering in the upcoming semester. The scheduled

month and room for each Course Offering are also shown so that a Professor can select

commitments that will not clash on date or location.

e) Alternatively, if there are no Course Offerings that the Professor may commit to teach in the

upcoming semester. C-Reg will display an error message. The Professor acknowledges the

message and abandons the operation.

2.1.2.3 Create Course Offering commitments

a) When a Professor wishes to enter his first set of teaching commitments, he must first enquire on and

display the Course Offerings as in 2.1.2.2, and then select a sub-option "Create Course Offering".

b) The Professor selects the Course Offerings from those displayed in step a) that he will commit to

teach for the upcoming semester by adding his ID to the selections.

c) C-Reg returns each selected Course Offering the Professor has committed to teach to the Course

Catalog.

d) The Course Catalog checks if the selected Course Offerings conflict on date or location (in case the

Professor made a mistake) and returns a message to C-Reg containing:

● the count of conflicting Course Offerings,

● a pair of ID’s for each conflict, if any.

● (If there are no conflicts, the Course Catalog can then change the status of selected Course

Offerings from ‘unavailable’ to ‘available’ so that Students may now enroll). ). [The reason the

count of conflicting Course Offerings must be returned is in case the count is zero. C-Reg

interprets this as a confirmation that the committed Course Offerings have been accepted by the

Course Catalog.]

e) If any Course Offerings do conflict on date or location, C-Reg indicates the ID’s of the conflicting

pairs on the display of Course Offerings, with an error message. The Professor may then resolve

the conflict by de-selecting one or more Course Offerings and selecting new ones, or cancelling the

operation, in which case any selections will be lost.

f) C-Reg sends the details of any changed Course Offerings back to the Course Catalog as per step

c).

Steps c) to f) may be repeated until the Professor is satisfied with the selection or cancels.

2.1.2.4 Modify Course Offering commitments

a) If a Professor wishes to modify any of his teaching commitments, he must first enquire on and display

the available Course Offerings for his Department that he may teach and any which he has already

committed to teach as in 2.1.2.2 and then select a sub-option “Modify Course to Teach”.

b) The Professor then modifies the Course Offerings from those displayed in step a) that he commits

to teach for the upcoming semester by adding or removing his ID from the Course Offerings, as

necessary.

c) C-Reg returns each modified Course Offering to the Course Catalog. Steps d), e) and f) from 2.1.2.3

are repeated until the Professor is satisfied with this selection by pressing ‘Save’, or cancels. (The

Course Catalog can change the status of selected Course Offerings from ‘unavailable’ to ‘available’,

or vice versa, according to the Professor’s decisions.)

d) C-Reg sends data for each modified Course Offering to all Students via a broadcast e-mail. (Note:

how the e-mail system broadcasts this information is outside the scope of the case study. Students

must take action if a Course Offering that was ‘available’ and that they had enrolled for has now

become ‘unavailable’ – see 3.1.2 below.]

2.1.2.5 Delete Course Offering commitments

a) If a Professor wishes to delete all of his teaching commitments, he must first enquire on and display

the Course Offerings that he has already committed to teach as in 2.1.2.2, and then select a suboption "Delete Course Offerings".

b) The Professor re-enters his ID.

c) C-Reg displays a message asking the Professor to confirm that he wants to delete all his

commitments.

d) If the Professor selects ‘yes’, C-Reg sends the Course Offering data to the Course Catalog, which

changes their status to ‘unavailable’ (for Students to enroll).

e) Alternatively if the Professor selects ‘no’, the operation is cancelled.

f) C-Reg sends the ID of each deleted Course Offering to all Students via a broadcast e-mail (as in

2.1.2.4 d)).

2.1.2.6 Alternative Flow

Course Catalog System Unavailable

If C-Reg is unable to communicate with the Course Catalog after three tries, C-Reg will display an error

message to the Professor. The Professor acknowledges the error message and the Professor must

abandon the operation

The system shall have a MDI form that allows for the viewing of the graph and the data table.

The system shall display Events in a vertical table by time.

The system shall display the Events in a graph by time.