

# EDUOUTREACH:

## A suite of business processes for online teaching

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**Abstract—** In this paper, teaching a course is modeled as a collection of business processes. Eduoutreach comprises of four such business processes, viz., (1) *Distribute courseware* – This application enables a faculty to distribute courseware pertaining to a specific course to all students taking that course, (2) *Student Help Desk* – A help desk enabling a student to get help from faculty to resolve a specified problem pertaining to a specific course, (3) *Conduct test* – This application enables a faculty to conduct a test / examination on a specified course, (4) *Rate the course* – A faculty can launch this application to get a course taught by himself / herself rated by the students taking that course. Eduoutreach has been implemented in the cloud as a SaaS (Software as a Service) application.

**Keywords** - online teaching; business process; Software as a Service

### I. BUSINESS PROCESS MODELLING

There are many different ways of modeling business processes, with the transformational approach, adopted in BPMN, UML Activity Diagrams, Petri Nets, etc., being the most popular [1-5]. In this paper, we adopt an original state transition model for a business process; see Figure 1 below.

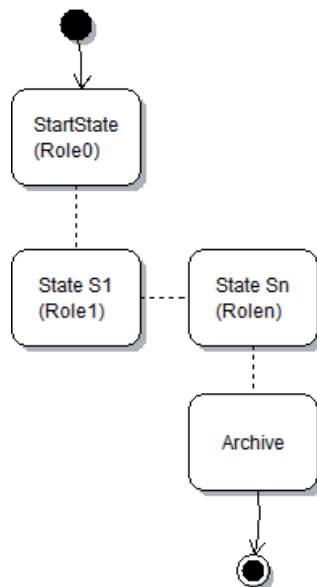


Figure 1. State transition model of a business process

According to this model, every business process starts in a state called *StartState*, then flows, not necessarily sequentially, through zero or more intermediate states, and ends in a degenerate state, called *Archive*. In each state, other than *Archive*, an associated *Role* performs one or more activities.

### II. EDUOUTREACH PROCESSES

Eduoutreach currently comprises of 4 business processes, viz., (i) *Distribute Courseware*, (ii) *Student Helpdesk*, (iii) *Conduct Test*, and (iv) *Rate The Course*.

#### A. Distribute Courseware

In Figure 2, the state transition model of the process, *Distribute Courseware*, is shown. In *StartState*, a faculty member selects one of the courses taught by himself / herself. The process then flows to the *FacultyActions* state. In this state, the faculty member can attach courseware pertaining to the selected course. The process then flows to the *StudentActions* state, indeed to all the students taking the selected course. At any time in the *FacultyActions* state, the faculty member can decide to archive the process.

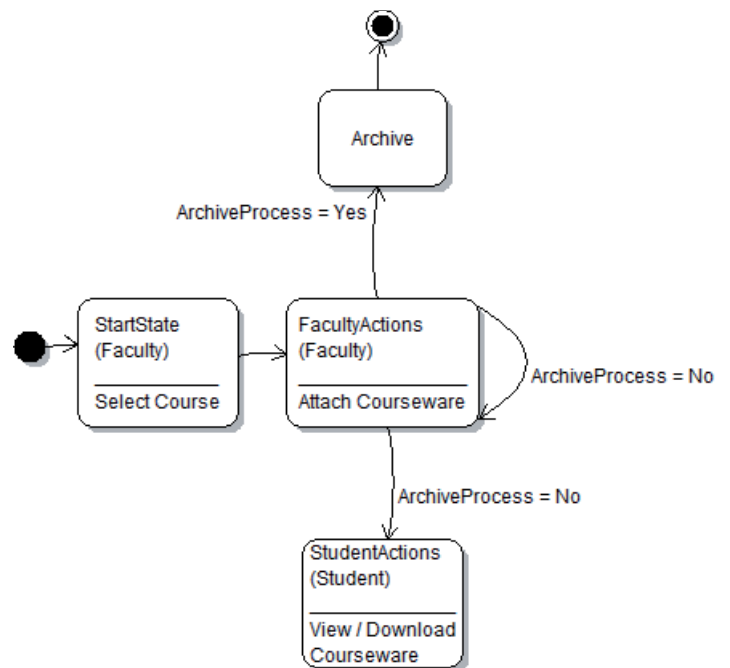


Figure 2. State transition model of *Distribute Courseware*

### B. Student Helpdesk

In Figure 3, the state transition model of *Student Helpdesk* is shown. In StartState, a student selects one of the courses taken by himself / herself. The process then flows to the StudentActions state. In StudentActions state, the student states the problem faced by himself / herself. The process then flows to the FacultyActions state, indeed to a faculty member teaching the selected course. The faculty member proposes a solution to the problem, whereupon the process flows back to the originating student, in the StudentReview state. The student now reviews the proposed solution, whereupon the process flows back to the faculty member in the FacultyActions state. Note that at any time in the FacultyActions state, the faculty member can decide to archive the process; typically, this would be when the student confirms that his / her problem has been resolved.

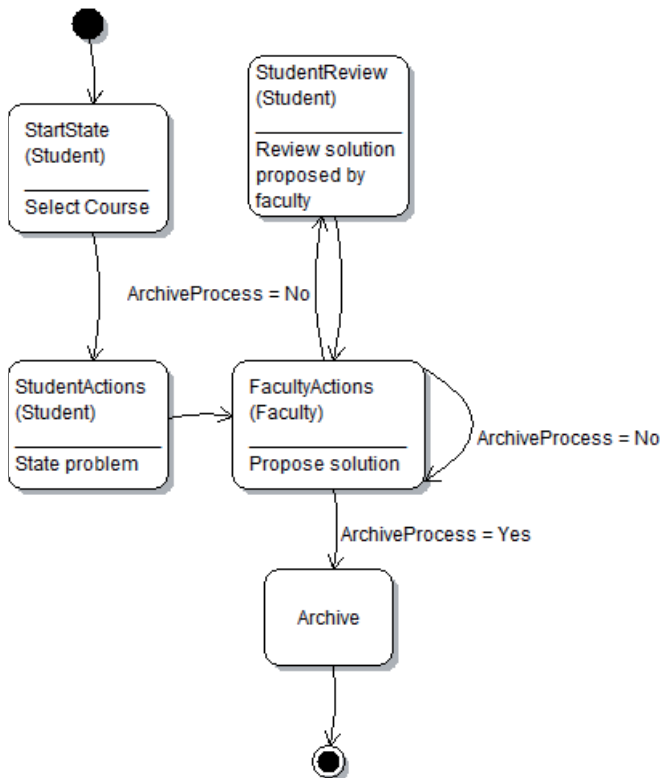


Figure 3. State transition model of *Student Helpdesk*

### C. Conduct Test

In Figure 4, the state transition model of *Conduct Test* is shown. In StartState, a faculty member selects one of the courses taught by himself / herself. The process then flows to the FacultyActions state. In this state, the faculty member can attach a question paper on the selected course. The process then flows to (i) WaitForAnswerPapers state, as well as to (ii) StudentActions state, in fact, to all the students taking the selected course. A student can now view / download the question paper, prepare his / her answers, and attach his / her answer paper to the process, whereupon the process flows to

the originating faculty member in the WaitForAnswerPapers state. In the WaitForAnswerPapers state, the faculty member can evaluate each received answer paper, then communicate the marks / grades awarded to the respective student. At any time in the WaitForAnswerPapers state, the faculty member can decide to archive the process; this would typically depend on the amount of time the faculty member would like to give the students to answer the question paper.

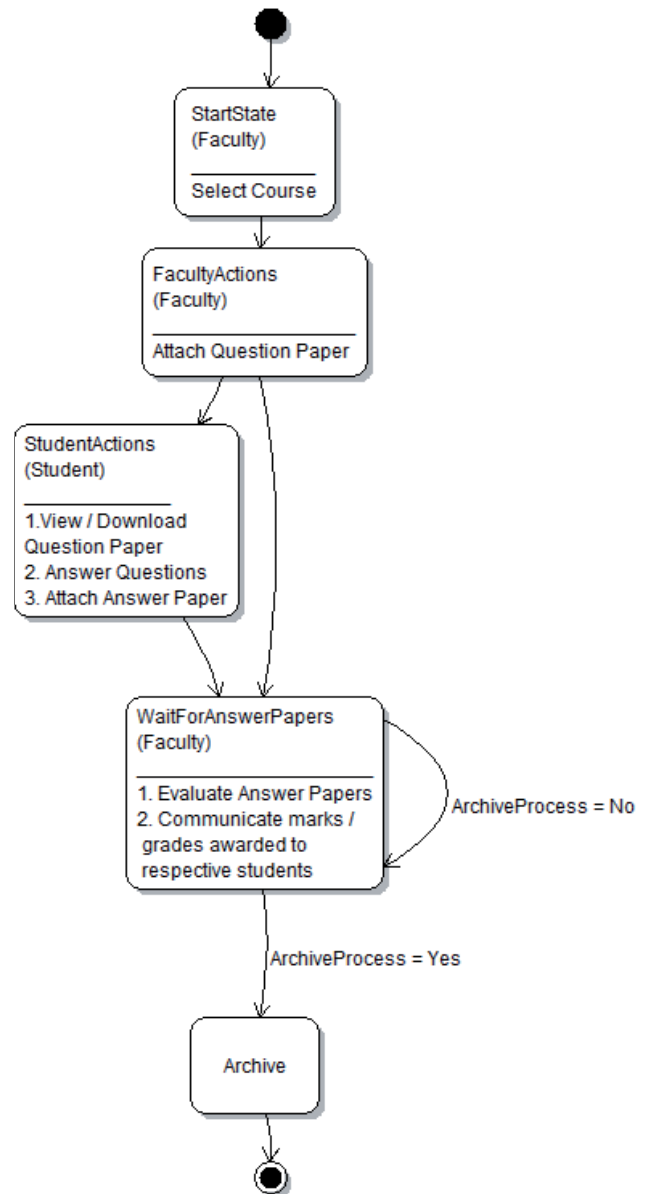


Figure 4. State transition model of *Conduct Test*

### D. Rate The Course

The flow of the process, *Rate The Course*, is very similar to that of *Conduct Test*; its state transition model is shown in Figure 5.

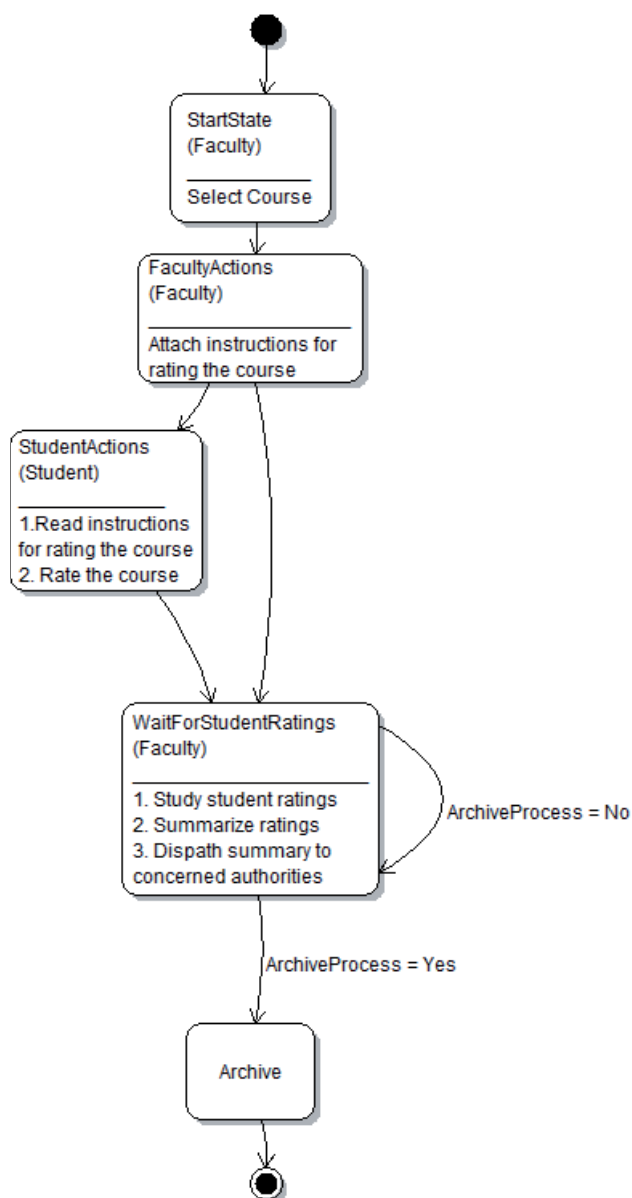


Figure 5. State transition model of *Rate The Course*

### III. IMPLEMENTATION

Eduoutreach has been implemented as a suite of 6 Java web applications, and offered in the SaaS (Software as a Service) mode of delivery. It has been built on top of IBM DB2 PureXML database.

The first application is the Administrator module. Its function is to maintain the following database:-

- List of courses
- List of faculty members and their email ids
- List of students and their email ids
- For each faculty member, the list of courses taught by him / her
- For each student, the list of courses taken by him / her

The second application is the Password Management module. Its function is to retrieve lost passwords via email, and to change passwords.

The remaining 4 applications correspond to the 4 Eduoutreach business processes. A faculty member / student logs into each of these applications, using his / her email id and password.

A unique feature of Eduoutreach is that when any one of the processes flows to one or more faculty members / students, the latter receive email alerts; this then serves as a prompt to login to the corresponding process application.

### IV. CONCLUSION

In this paper, teaching a course, i.e., all the way from disseminating courseware to getting feedback from students in the form of course ratings, is modeled as a collection of business processes. Eduoutreach is a suite of 4 such business processes. Eduoutreach is being offered in SaaS (Software as a Service) mode of delivery.

It is expected that faculty productivity will get significantly enhanced by the use of Eduoutreach, since it does not require face-to-face meeting of faculty and students in key teaching processes. As such, it could become a very valuable tool in case of distance education programs.

In future, based on actual user feedback, it is planned to refine the 4 business processes, as well as to add new business processes.

### V. ACKNOWLEDGMENT

The author is grateful to Ajeya Prabhakar for his valuable contributions during the conduct of this research, and the preparation of this paper.

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