

THE e-FACULTY INITIATIVE

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ABSTRACT

This paper proposes a conceptual framework of the e-Faculty initiative and describes the experiences as well as reflection of the initial implementation (first cycle) of the e-faculty project. The paper focuses on reengineering the processes at the Faculty of Computer Science and Information Technology (FCSIT) in order to increase the faculty's efficiency, effectiveness and excellence so as to fulfill its mission and objectives.

Keywords: e-Faculty; Electronic Faculty; e-University; Business Process Reengineering.

e-FACULTY INFOSTRUCTURE

University Faculties are currently handling a number of information processes ranging from student centered registration, administration, teaching, and learning to faculty centered researching, meetings and communicating. The traditional methods of doing things are seen to be cumbersome, slow and inefficient. It is in this context that the Faculty of Computer Science and Information Technology (FCSIT) embark on a drive to enhance and reengineer its business processes. The Faculty intends to lead the other faculties within the University of Malaya towards increased effectiveness and efficiency in handling mundane tasks and manage information.

The Internet and the World Wide Web are revolutionizing the way people locate information, purchase goods, access services and communicate with one another. Every day more "dot.com" organizations mushroom to cater for the needs of the community hungry for information. Cyberspace has been transformed into a complex web promising anything and everything with a single purpose or trying to connect people, resources, and organizations in new ways (McQuesten, 2000). With the support of available information communication technologies (ICT) and through reengineering processes, a conceptual model of the e-University was proposed that would drive Malaysian tertiary education towards an automated, paperless environment with a vision to simplify processes,

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increase efficiency and to improve communication between educators, administrators as well as students as the main customers (Kamsah, et al, 2000).

The bottom-up implementation of the proposed e-University will be accomplished through three stages: the micro, the meso and the macro level. The first stage begins at the faculty and upon its successful implementation, will proceed to the university level. The integration of all reengineered public universities in Malaysia through a network will be the final stage. This paper focuses on the micro level or the first stage, which encompasses the e-Faculty project, which had its beginnings in the year 2000.

The faculty holds and deals with many types of information primarily pertaining to three major entities:

- a) Major stakeholders, which comprises staffs (academician and support staff), students, university administrator, vendors, and alumni.
- b) Activities, which includes teaching, assessment, research, consultation and administration.
- c) Facilities, which encompasses rooms (classrooms, computer laboratories, meeting,) and equipments.

These information are captured and stored in various formats and are scattered at several locations or with different people. Difficulties in locating the information needed, in retrieving up-to-date information, data duplication and redundancy are the kind of problems faced by the Faculty. Scattered information denotes lost knowledge, lost time, repeated work and usually results in unproductive work. Information can be used effectively when everyone in the faculty knows that it exists, knows where it is, has access to it and knows how to use it (Moody, 1999).

The access to up-to-date, relevant, reliable information is important to the Faculty in order to perform, plan, control, make decision, analyze and use for faculty's advantage. The e-Faculty materialize as an effort to architect and engineer existing infostructure system to a state-of-the-art level which will be in the mode of pure-web, integrated, online, real-time and consequently move to be the click and brick faculty. The objective of the infostructure is to provide a transparent network computing environment, in which a multitude of computers interoperate to jointly support the various computing and information systems to meet the requirements of the faculty, staffs and students.

THE CONCEPTUAL FRAMEWORK

The e-Faculty is a sub-set (microcosm) of e-University. The e-Faculty promotes a change in work culture through maximizing the use of electronic approaches towards existing information processes. The use of information technology in relevant areas

pertaining to the faculty can thus be expedited and the successful implementation of such practices will ensure an increase in productivity making existing processes more effective and efficient. Conceptually, it is about transforming key academic and administrative processes with Internet technologies (Bernbrock, 2000). Through the e-Faculty initiative, three channels of communication are to be established; namely intra/inter-faculty, faculty-to-student, faculty-to-business. The e-Faculty will have the following features:

- a) High usage of Information Communication Technologies (ICT);
- b) Integrated and accessible information systems;
- c) Streamlined work practices;
- d) A critical mass of technology users (faculty, students, and staff);
- e) Improved products (teaching and learning materials) and services to internal and external clients; and
- f) Improved collaboration with other institutions.

Table 1 explains the mission and objectives of the e-Faculty initiative.

Table 1: The Mission and Objectives of e-Faculty

Mission	Objectives
Enhance cooperation between the staff, businesses, and students for the benefit of the faculty.	Increase the work and information quality and productivity through improved communication and well coordinated internal processes.
Reengineer processes within the faculty using ICT/multimedia/network thereby increasing productivity and the quality of education and services.	Facilitate/ promotes the flow of quality information.
Services rendered to students become more efficient and effective therefore enabling the faculty to respond better to students needs.	Increase the involvement of students in the faculty.
Reorganize the way faculty operates with new responsibilities for staff, student and other customers	Develop electronic communication with/ between all relevant parties.
Change of mind set & organizational culture by encouraging new skills in IT/multimedia/networking.	Encourage web based (internet) technology on all aspects pertaining to faculty affairs.
Support the University mission and vision aspiring to be the premier University of excellence.	Act as a catalyst to the development of e-university

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e-Faculty also known as digital faculty or network faculty is more than a new wave of administrative modernization; it is a move towards electronic transformation to make the faculty more efficient, effective and excellent with practical and proficient system that fulfill the faculty's specific needs, increase faculty's productivity and accomplish the faculty's goal. This can be accomplished through Business Process Reengineering (BPR) with the aid of information technology and information system. BPR provides a way to enhance an efficient as well as effective approach that can bring about radical improvement in administration processes. There are five primary concepts that make up reengineering: (Davenport, 1994).

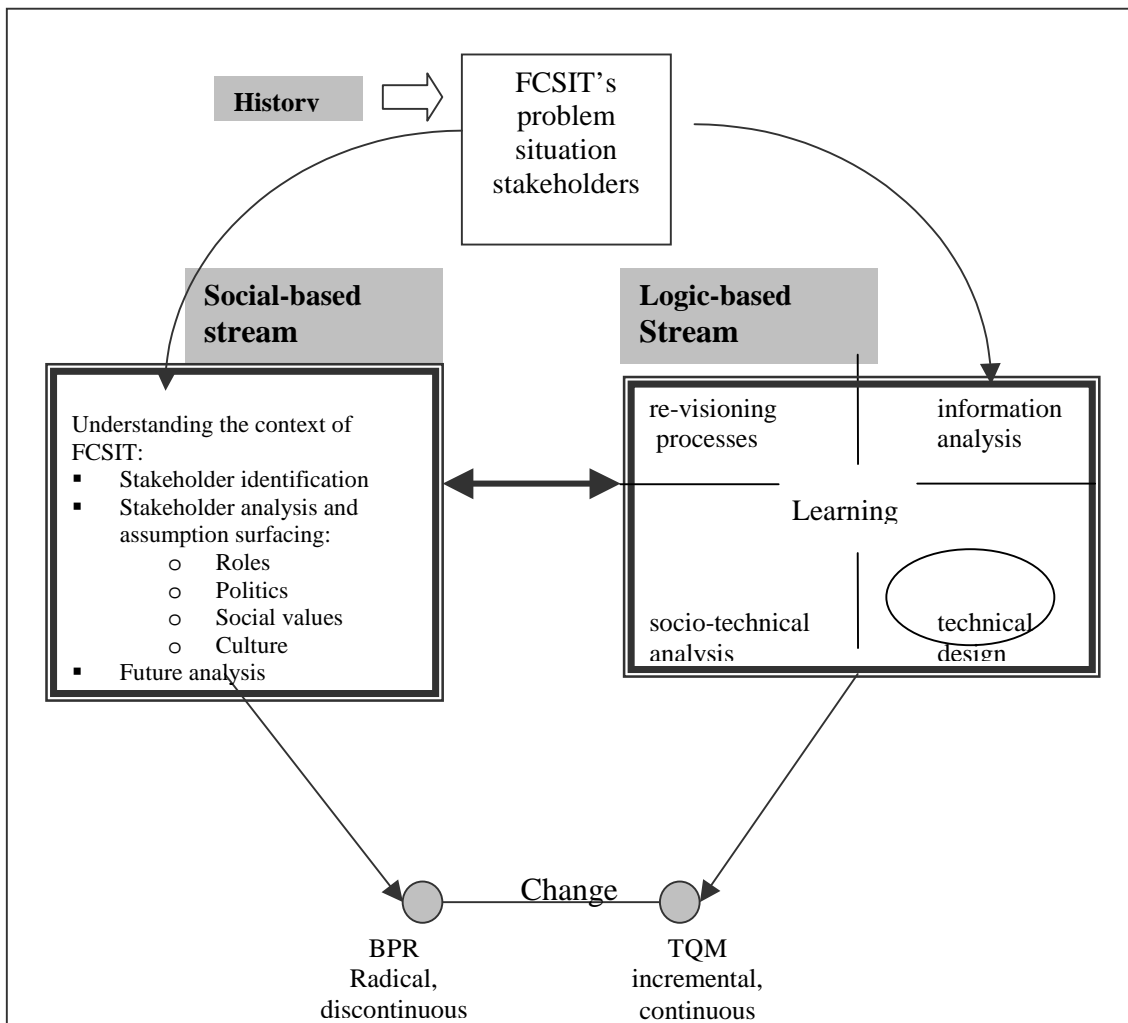
- a) A clean slate approach to organizational design and change.
- b) An orientation to broad cross-functional faculty administration processes.
- c) The need for, and possibility of, radical change in process performance.
- d) Information technology as an enabler of change in how work is done.
- e) Changes in organizational and human arrangements that accompany change in technology.

Fuller (1998) describes the experience of the University of Kent in using the World-Wide Web and electronic communication system for academic administration. Reengineering the faculty can be divided into two main sections, that is : (Nasseh, 1996)

- a) reengineering the administrative and support operations, and
- b) reengineering in academic operations.

The reengineering approach for the Faculty is called Multiple-perspective Process Reengineering (adapted from Vidgen et. al, 1994). The approach is subdivided into two main streams as depicted in Figure 1. The first stream is called social-based stream that focuses on the context of the faculty by identifying and interviewing its main stakeholders. The stakeholders' current assumptions, values and culture will provide invaluable insights into the context, whilst history of the faculty will provide a comprehensive background to the study. Some analyses also need to be undertaken in order to understand the stakeholders' future roles in the reengineered faculty. The second stream refers to a logic-based stream that deals with the re-visioning and reengineering of all identified critical processes in the faculty. Re-visioning will also help to further understand the information needs of the faculty and the appropriate information systems to support the critical processes. It is important to note here that the human and technical requirements need to be examined in parallel to provide a harmonious support for the reengineered faculty.

Figure 1: Multiple-perspective Approach to FCSIT Reengineering

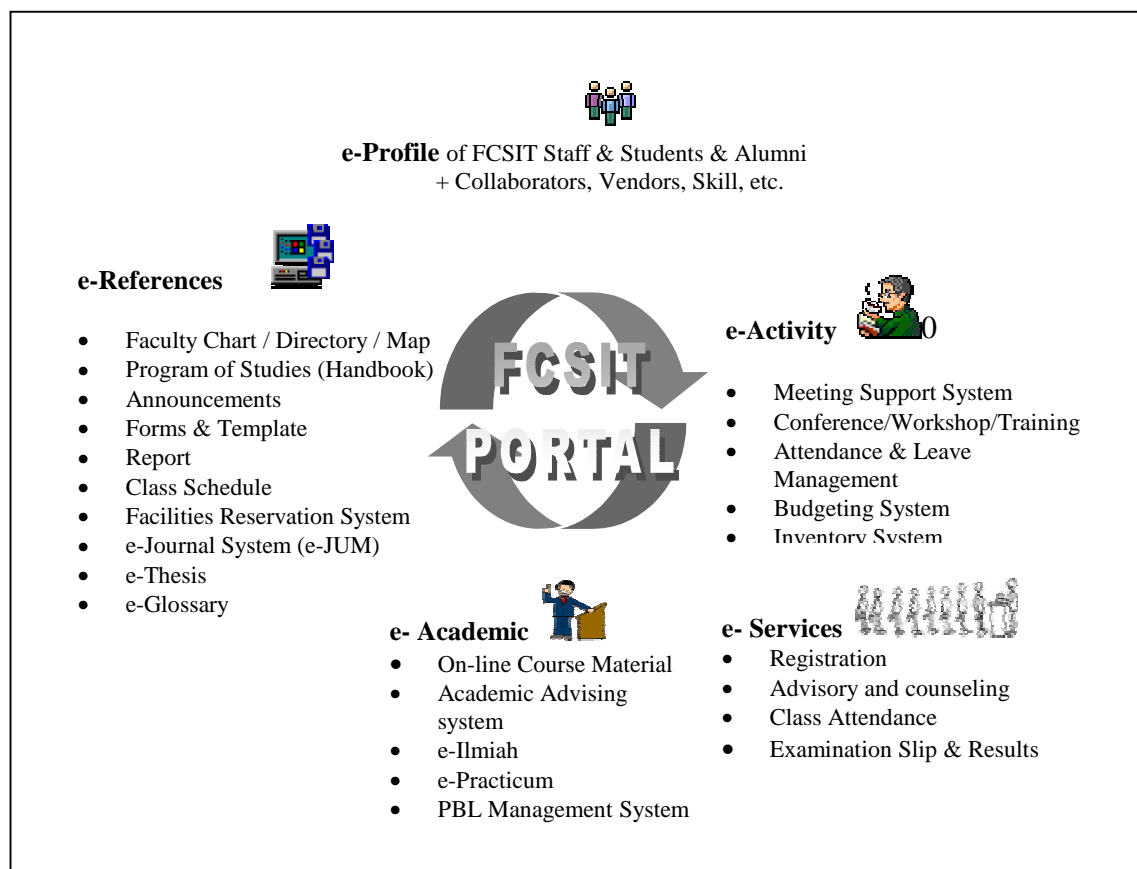


Initial emphasis on the use of e-faculty follows the model of system evolution comprising six distinct levels/phases as stipulated by Edwards et al. (1995). The first three levels emphasize on incremental operational efficiency/ internal where routine tasks are automated. This will then be followed by effectively implementing specific internal functions (management information systems) and finally by integrating all internal processes involving the sharing of data or systems. Beyond these levels, the emphasis are more strategic in nature. Information and application systems partly have been developed

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for the convenience of students, lecturers and staffs. These integrated systems are accessible through the faculty portal. The operational model (Figure 2) below portrays the integrated systems.

Figure 2 : e-Faculty's Operational Model



THE INITIATIVE'S ACTION PLAN

e-Faculty initiative in FCSIT is part of the e-University project involving University of Malaya. The initiative began in year 2000 and was lead by four lecturers and financed by the university grant. This project involves the collaboration between lecturers and final year undergraduate students (undertaking their academic project) at all levels beginning from gap analysis to system development (see Appendix 1). The lecturers play the

advisory role, mentor and a friend throughout the period of project implementation. A total of 30 students have been involved in this project since its inception. Since this project involves a study of actions, it trails the following cycle.

Planning

At the beginning of year 2000, a series of discussion were held between team members and a concept paper was formulated (Mokhtar and Ahmad, 2000). This paper was tabled at a faculty briefing and invited faculty members gave constructive feedback. The contents of the this proposal among others includes the concept of e-Faculty, it's mission, objectives, critical success factors, BPR, plans and methodology for implementing the project as well as the impact on the faculty. The framework and operation model for the implementation is given in Appendix 1 and Appendix 2.

Action

The project was first offered to the third year students undertaking their final year projects (9 credit hours) in semester 1 of the academic year 2000/2002. A pioneer group of 18 students registered for the e-Faculty project and they were closely supervised by the team members. This was followed by a second group comprising 12 students in the subsequent semester. Students were required to attend weekly briefings to steer the students towards the objectives required and to ensure they are guided by the proposed principles. The students are also trained and provided with the necessary skills required to conduct research, carry out literature review, methodology of system development and other matters needed to equip the students for the purpose intended. Students were encouraged to make suggestions, give feedback, discuss associated problems, exchange ideas with their supervisors and fellow students. A laboratory with the necessary equipment and reference books was specifically allocated to cater for the needs of the team undertaking this project. Financial cost incurred was secured from the University Vote F grant allocation as well as the Faculty operating expenditure.

The second phase of the project was the system's development phase, where students were required to meet their respective supervisors once every fortnight for consultation. At the end of the project the students gave a presentation on the systems development to their supervisors and moderators (academic staff appointed by faculty as examiners) together with a project report. Students are graded on a scale of A to F for their projects based on the quality, level of difficulty in conducting the research and development of the system and usefulness to the customers. Grade A projects are system that can be accepted for use, while grade B projects are that requires system modification or upgrading and grade C projects are those which does not conform to the requirements and are not accepted. Some of the systems being utilized at the Faculty, which meets the

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requirements of e-Faculty are the Attendance & Leave Management System, e-Thesis, e-Journal, e-Istilah (glossary for computing terms), and e-Ilmiah (students' final year project management system).

Reflection

The e-Faculty initiative have been hampered by a number of situations such as the disbandment of team members and financial constraints. The e-Faculty had potential to succeed and the following strategies are proposed based on:

- a) Integrated Planning - a process involving the drawing together of university-wide and faculty-specific planning efforts, which permits strategic decision-making and provides a synoptic view of resources and commitments. This process allows interaction, conflict resolution, bottle-neck identification and knowledge exchange among stakeholders.
- b) Thorough re-identification of faculty work processes which are mutually dependent and provide a complete road map for existing operational model. This road map should include among others the strategy, plan, framework, activities that leads to the project's outcome. This is important to avoid building duplicate systems with overlapping functions, too many systems being built that are not used.
- c) A complete system requirements (both functional and technical requirements) is needed to be determined and provided by the faculty to avert them developing systems that do not meets the faculty's needs.
- d) The main focus should be on providing value-added services to the students and streamlining internal work processes.
- e) A steering committee should be formed to oversee all the activities and make decisions. This committee to be chaired by the Dean and will include the Assistant Registrar, a representative from the support staffs, and a few lecturers (supervisors to students projects). Student representative will be invited from time to time. A few technical staffs need to be given responsibility to understand the developed "to be used" systems and in order to maintain and sustain the systems in the future.
- f) Security and data privacy issues should be considered as well.

CONCLUSION

The Department of Information Science at the faculty has spearheaded this initiative and plan to fund the project through the Intensification of Research in Priority Areas (IRPA) grant or Demonstrator Application Grant Scheme (DAGS). The department will soon commence the second cycle and thus will replan – react – reflect based on input from the first cycle. The success of this project will act as the Faculty Resource Planning System, essentially an integrated system solution used to manage the faculty's resources.

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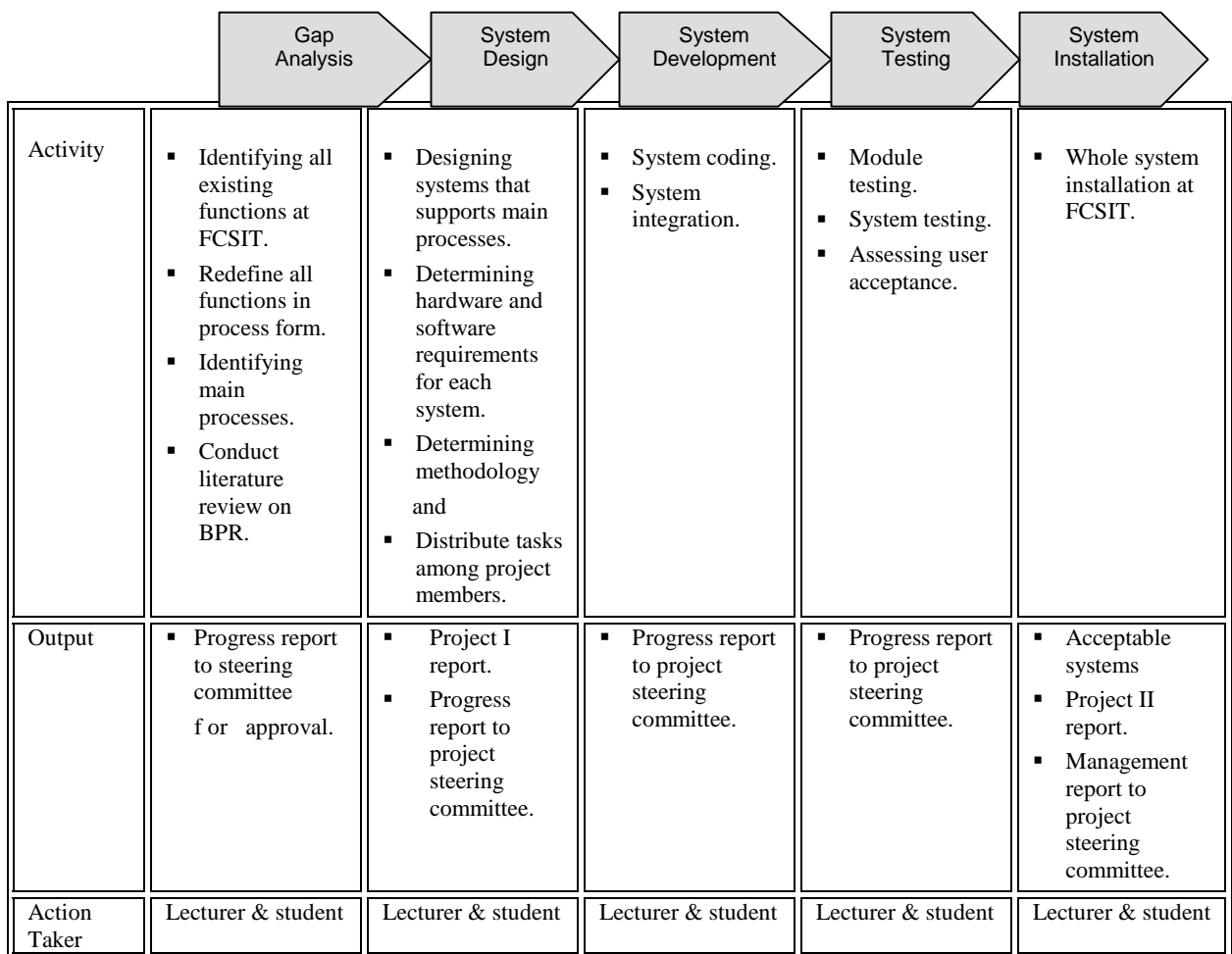
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APPENDIX 1

e-Faculty Implementation Framework



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APPENDIX 2

Proposed Implementation Model for e-Faculty

The implementation model is developed based on best practices. The model describes the following activities:

Activity	Description
1. Set up Steering Committee	The steering team which is not going to be fully trained in all aspects of the project, will consist of Dean of FSKTM, Deputy Deans and several senior lecturers, and will exclude anyone in the Core Team except the project director.
2. Set up Core Team	The reengineering team will adopt a fully cross-functional team approach. It calls for a core team of people from across FSKTM to represent the leadership of the project. As the model is designed, there will be implementation teams comprising lecturers and students for each of the different Faculty's processes. The model calls for every member of the core team to attend meetings of and work with every one of the other implementation teams. This would provide an entire perspective for each of the processes. The cross-functional concept is designed to produce a better-rounded results. See endnotes for criteria for choosing the team members ¹ .
3. Set up Testing Teams	The testing teams will be formed from the implementation teams. The teams will be responsible for testing the decisions made by implementation teams.
4. Set up User Teams	These teams will consist of the end users of the developed systems, who will be trained to use them.
5. Choosing the right tools	A variety of communication tool is necessary to inform the faculty community about the project. The tools include the following: Approach document - to provide a history of the faculty's MIS

¹ The selection is based on a combination of functional position and individual personality. When assessing possible members, we refer to Rogers' Diffusion of Innovations (Rogers, 1985). Rogers offers the concept of 'time of adoption of innovations' which categorises the population, identifying only 2.5 percent of the population as innovators, 13.5 as early adopters, 34 percent as early majority, 34 percent late majority, and 16 percent laggards. Applying this to the team members, we will assume that 16 percent of the FCSIT population fall within the categories of innovators and early adopters while 50 percent fall into the late majority or laggards. Keeping in mind the philosophies of business process reengineering, it was necessary to include as many innovators and early majority members in the implementation team as possible. Essential people to have on the team are those knowledgeable from the areas of recruitment/admissions, registration, academic records, and curriculum.

	<p>implementation, the importance to the Faculty of accessible and accurate data, the project's goals, the roles and responsibilities of all organizational layers, the project obstacles, and the project budget. This writing activity is an important first step for the project because it provides a common foundation for the team members. This document will be published and distributed faculty wide and resides on the project's website. The website also will include the names of team leaders and members.</p> <p>Two of the student laboratories will be allocated for the project. This is where students and lecturers will have their discussions and brainstorming sessions as well as the place for systems development and testing.</p> <p>For the team members' communication with one another, a project shared folder will be created in the faculty's email system. In this folder we will keep meeting minutes and documentation and posted questions. Since this is a shared folder for all implementation members, anyone could read another's minutes and stay informed about the entire project.</p> <p>Another tool, Microsoft Project, will be used to schedule and track the project's activities.</p> <p>The steering team will play an important role by developing a "critical issues" list. This list is the culmination of the many expectations for the project.</p>
<p>6. Project Phases</p>	<p>(a) Getting ready Includes purchasing new hardware/software, completing the selection of the sub-team members, beginning process identification and mapping, writing the approach document, and BPR training.</p> <p>(b) Getting strated Analyze process maps, develop test scenarios, build code tables, and complete the first system design. The teams are trained to identify processes and complete process maps. Forms are developed for each team to identify their processes.</p> <p>(c) Getting Crazy Learn the software, make decisions, build codes, and identify processes in a systematic and integrated fashion. Because it is easy for individual teams to become focused on their module, the system testing will bring individual teams together to replicate the reality of an integrated e-Faculty system.</p> <p>(d) Getting Live This is the final preparation to go live. Calls for running the integrated system, writing procedural manuals, and training staff.</p>

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