### WORKPLAN

<table>
<thead>
<tr>
<th>Stage</th>
<th>Work</th>
<th>Duration In months</th>
<th>Starting Date</th>
<th>Completion date</th>
</tr>
</thead>
<tbody>
<tr>
<td>01</td>
<td>Defining research problem</td>
<td>1</td>
<td>1st Jan 2010 To 30.01.2010</td>
<td></td>
</tr>
<tr>
<td>02</td>
<td>Review of Literature</td>
<td>3</td>
<td>1st Feb 2010 To 30.04.2010</td>
<td></td>
</tr>
<tr>
<td>03</td>
<td>Formulate Hypothesis and design research (Including sample design)</td>
<td>2</td>
<td>1st May 2010 To 30.06.2010</td>
<td></td>
</tr>
<tr>
<td>04</td>
<td>Pilot study (sample)</td>
<td>1</td>
<td>1st July 2010 To 31.07.2010</td>
<td></td>
</tr>
<tr>
<td>05</td>
<td>Collection of data (full)</td>
<td>4/9</td>
<td>1st Aug 2010 To 31.03.2011</td>
<td></td>
</tr>
<tr>
<td>06</td>
<td>Data analysis (Simultaneous)</td>
<td>2</td>
<td>1st April 2010 To 31.5.2011</td>
<td></td>
</tr>
<tr>
<td>07</td>
<td>Testing of hypothesis</td>
<td>2/3</td>
<td>1st June 2011 To 31.08.2011</td>
<td></td>
</tr>
<tr>
<td>08</td>
<td>Final report preparation</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>Rough print / Correction</td>
<td>2</td>
<td>1st Sept 2011 To 31.10.2011</td>
<td></td>
</tr>
<tr>
<td>09</td>
<td>Final Print &amp; binding</td>
<td>1</td>
<td>1st Nov 2011 To 31.12.2011</td>
<td></td>
</tr>
<tr>
<td></td>
<td>18 / 24 Months</td>
<td></td>
<td>1st Jan 2010 To 1st Jan 2012</td>
<td></td>
</tr>
</tbody>
</table>
4.1 The Proposed Architecture:

We have attempted to design a scheme for implementing the complete examination process. Examination process involves the following stages:

- Preparation of question papers by gathering inputs from various paper setters who may work at their respective remote locations.
- Dispatch of question papers to the examination centers and distribution to the enrolled students.
- Collection of answer papers and their dispatch to the evaluation center.
- Evaluation of answer papers by the designated evaluators, and compilation and publication of the results.

Mobile agent techniques involve distributed control if communication is required among different types of agents, especially when mobile agents can migrate from station to station. This technique can be implemented in a Distance Evaluation environment, which allows students or instructors to login from anywhere to a central server in an education center while still retaining the look-and-feel of personal setups. We propose a study and performance evaluation of mobile agent framework along with its communication messages to facilitate mobile agents.

We propose an agent communication framework as well as agent evolution states of mobile agents. The system is implemented on the Windows platform to support nomadic accessibility of remote distance learning users. Personal data also migrate with the mobile agents, allowing users to maintain accessibility to some extent even when the Internet connection is temperately disconnected.

In case of client-server, the response times can remain more or less constant whereas in the case of Mobile Agent, the initial response may takes longer while the remaining requests may take negligible time as compared to client-server responses.

Mobile Agent system can be used effectively for structuring such large-scale distributed applications. The gains would be in terms of: scalability, flexibility, dynamic extendibility and independence from the network variations.
We could achieve required ease of installation and remote management with the chosen framework.

Many proposed Mobile Agent applications, such as the areas of Distance Evaluation, e-commerce, information retrieval etc. regard Mobile Agent mainly as a program that performs computations on behalf of the user. We believe that Mobile Agent approach need not be restricted to this view and that Mobile Agent s can be extremely useful as an application structuring mechanism. We feel that Mobile Agents may be particularly suitable for structuring large-scale distributed applications.

We define scale in terms of

(i)  The number of participating nodes,
(ii)  The geographical spread of nodes, and
(iii)  The number of application components.

We list below some structuring advantages gained by a Mobile Agent based design. Mobile Agent can be used to upgrade an application dynamically

**Independence from Network Disconnections**

A Mobile Agent based design can be used to provide support for disconnected operations. Thus dependence on continuous connectivity is reduced. Applications requiring processes to work autonomously for large intervals of time are good candidates for Mobile Agent solution. In mobile agent based system for distance evaluation, despite complex workflow, continuous connectivity is not required. Message exchanges are required mostly during agent transfers and rarely otherwise. In fact, student terminals can be disconnected from the network for the examination duration.

**Application Scalability**

A Mobile Agent based design partitions the application functionality into a number of distributed autonomous units. As a result the addition of more units does not unduly affect the performance of the system. In mobile agent based system for distance evaluation, the scalability of the application is required against increase in the number of students, paper-setters, evaluators and examination centers. Addition of these new nodes mainly requires only updating the itineraries of various agents.

We attempt to automate most of the above process, simplify the infrastructure requirements at different ends, and provide for the security and reliability of the entire system. We will Survey
and study various mobile agent framework and evaluate their performance to implement our design.

**METHODOLOGY**

5.1 Introduction
This chapter highlights the details of the relevant and appropriate research method adopted for this study. Explanations are provided as to how and where the research was carried out. Descriptive details of the location of study, the sampling procedures, the data collection methods and techniques of data analysis are all discussed in this chapter.

5.2 Background of the study
This section discusses the location of the study, examination system and new technology used for conducting the examination.

5.2.1 Location of the study
This study focuses on the examination system of University’s and Institution of India. The province chosen for this particular study because in India Many Universities, college, institutions have started their online courses along with their regular in house courses. Examinations are a crucial part of both the academic teaching and learning process and of university’s administration procedures as well. IT support of administrative sections of the examination process chain is common today among universities.

**Suitability of study location:** Recently, some higher education institutions have started off to switch paper-based examinations into a computer-based environment due to increasing numbers of exams. On-screen exams are supposed to reduce costs, and improve quality and speed of the correction process. However, integrating computer-based tests and assessments in the examination process chain brings about a lot of problems and challenges for both faculty and administrators. Against the background of the IT-supported examination workflow, this contribution focuses on the organizational and technological challenges that have to be met and presents some lessons learnt from recent developments in examination system.

The other reason for the choice of this location is that area offered the opportunity to investigate; University and other examination conducting system adopt the latest trends and technology for conducting the examination system.
The location is geographically close and easily accessible. The measure of convenience afforded by this is considerable, given the ever-present issues of tight constraints in time, money and other resources.

5.3 Examination System
We consider the entire examination process:
(i) Paper Setting: Where the examiners spread over the Internet collaborate to produce a question paper,
(ii) Examination Conduction: Where the question papers are distributed and the answer papers are collected, and
(iii) Answer-Paper Evaluation: Result compilation and publishing.
In this research we detail our design, implementation and experimentations.

5.4 Research methods and experiment
This study employed a quantitative approach. Quantitative methods were used to establish, confirm and validate relationships. Survey research by way of questionnaires was used to collect data that was helpful in establishing the existing relationships among the variables and explaining the possible reasons or causes behind those relationships. This avoided generalizations, established better results and understanding of the subject at hand, and helped to develop new concepts about the phenomenon. In order to collect relevant data and obtain insights about the degree of Mobile Agent Technology use, a survey research was used. The survey research enabled the collection of data from the Internet and other user of Mobile Agent technology. The data that was collected was on variables identified by the underpinning theory, in this case the information innovation adoption model. After data analysis the significant factors were used to extend the existing model, where necessary. Survey research is defined as acquiring information about the application, benefits, security, attitudes, experiences and beliefs of one or more groups of people through questionnaires administered by mail, handouts, telephone interviews and the Internet.

5.5 The population
The population was composed from University’s, Paper Setter, Paper Evaluator and student who use examination. They may be involved in examination process for paper setting, paper distribution, paper evaluation, result compilation & result distribution. For successful Mobile Agent Technology use in examination system, both the University and examination conducting
system, College / institution, students and Paper Setter, Paper Evaluator must be willing and able to use Computer Based System in their Examination Process. This study helped to determine if the correct technology is used for conducting examination process. Also, it helped to assess if the University, College / Institution, student i.e. examinee are getting the benefits of the proposed Technology they use in examination process.

5.6 Sample size

Convenient sampling was used to select various numbers of respondents who were interviewed for the purpose of the study. Due to the busy schedules at the time of the interview, those who were readily available were interviewed for the purpose of the study. The sample consisted of various Universities like Distance & Regular, College, and Paper Setter& evaluator, students.

5.6.1 Participants in the survey

Three main groups of participants were included in the survey. These were the University, College, and Student.

(1) University

This group was divided into two major groups,

(i) Examination Conducting System. (ii) Employee.

(i) Examination Conducting System: These systems used to conduct the examination process, appoint the paper setter and paper evaluator and compiled and distribute the result within a specified time period.

(ii) Employee: These are the non-teaching staff for helping the conducting examination process, are also responsible for compiling and distributing the result.

(2) College

Under this group are those employees who work on conducting the examination process. They work either in the proving the resources for examination, in administrative work for examination. Also included in this group are for paper setting i.e. to preparing question bank for examination, as a subject expert, they are responsible to assess and evaluate the Answer paper of examinee. These groups also provide non-teaching staff for conducting and administrating examination process.

(3) Student
Under this group are those student are studies in the college are allow to participate in the examination. They play very important role for examination. That is part for those examination processes are conducted.

5.7 Sampling procedures

The study was in two phases: phase one focused on the University & College s and phase two focused on Students. In phase one, stratified random sampling was used to select the College. Two strata have been identified. The first stratum included College who have student. The second stratum was Students, who participate in examination as a examinee. Proportional random sampling will be applied to select the respondents when these two strata are not equal in size.

5.8 Data collection

Data was collected from various sources in order to get more information about the subject at hand. Both primary and secondary sources of information were used.

5.8.1 Primary data

The first hand information to be used in this study was gathered from a survey instrument. Two separate questionnaires were developed and administered on Three samples: (i) University, (ii) College and (ii) Students. The questionnaires had both open and close-ended questions. The questionnaire for employees probed types of Web Based Examination and Evaluation (Computer Based) used, factors influencing Web Based Examination and Evaluation, Web access, Internet literacy and training, perceptions and attitudes towards Web Education & Examination System. The questionnaire for University’s addressed issues of web based examination & evaluation, asset and input procurement, communication, Web Based Examination types used, challenges of Web Based use and role of Web Based in Examination Process, new technology used for Web Based etc.

The data collection methods were aimed at investigating how Web Based Examination are being used in Remote Examination by Using Client Server and Mobile Agent technology in order to establish the flow of information within the Web Examination System.

5.8.2 Secondary data

Data on Mobile Agent Technology use in Distance Evaluation was obtained from relevant sources of information, such as publications, journals, relevant websites and books. A number of these sources have been consulted in the reviewing of literature. Different case studies and
projects sources were consulted for information. These included handbooks, policy statements, published statistics, national government sources, planning documents, reports, historical and other official documents.

5.9 Data analysis techniques

A number of data analysis methods that were used for this type of study like descriptive statistics, chi-square tests and correlation analysis were used in this study.