

Design and implementation of EPPMS using Integrated Spring and Hibernate Framework

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ABSTRACT: From past few decades there is a great implementations over web applications, these applications are urbanized because of their simplicity, precision, and efficiency but now a day's web applications are becoming intricate. The easily accessible application like frameworks Spring and hibernate based on J2EE, which afford incorporated framework and make use of layered structure in web applications. The ePPMS development has just about to do paper less submission, Certification, Review of proposal by experts, estimation, Technical, financial approval and transparency. The main incorporated Layers implemented in the system development are: JSP (Java server pages) is embedded with HTML5 and CSS3.JSP, are technology applied to active web pages and develop and platform independent. The open standard markup language for content executions is HTML (Hypertext e language).CSS (Cascading style sheet) is implemented to explain presentation semantics. Together this web system the digital signature is implemented for copyright to avoid the forgery . The integration of spring and hibernate in the system make data manipulation easier and system will be Maintainability, Reusability, Reliability.

KEYWORDS: J2EE, HTML5, CSS3.JSP, Hibernate, spring, CSS, Framework, Transparency, Reliability, Digital Signature.

I. INTRODUCTION

Over the years, in the submissions of Paper , Estimations and project proposals from Scientist, different organizations, Research institutes the manual scoring method implemented, but there was lot of drawbacks and limitations was found, due to those scoring process was not specific, because of low judging efficiency, deliberate deception and so on. To come out of all these drawbacks electronic based project proposal management is urgently However, as the convolution of the system is required, the rush in the development of cycle tool is not easy and to get a powerful and to get good consistency web system using the traditional development methods in a short time is difficult. Systems based on SH(Spring + Hibernate) architecture took less time in coupling, high compatibility and expansibility, high maintainability and so on. So SH architecture will is a good solution to this system.

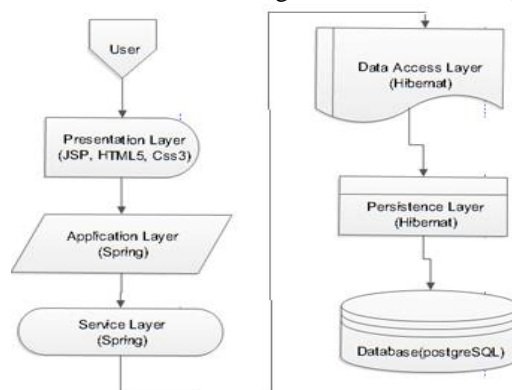


Fig.1 Layered Approach

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A. Integration of hibernate and spring

Hibernate.cfg.xml is The most important configuration file of Hibernate. The classes and related global properties need to be persistent defined in this file When these both frameworks are embedded, Hibernate will be controlled by Spring. Contents of the previous hibernate.cfg.xml file are also managed by Spring. Spring implements the encapsulation and interface conversion of Hibernate by using the class Local Session Factory Bean. These fused way is very helpful to deal with hibernate and spring. In Hibernate application, the Spring class Hibernate Template can fulfill the work as catching exceptions, managing transactions and so on without any unnecessary codes.

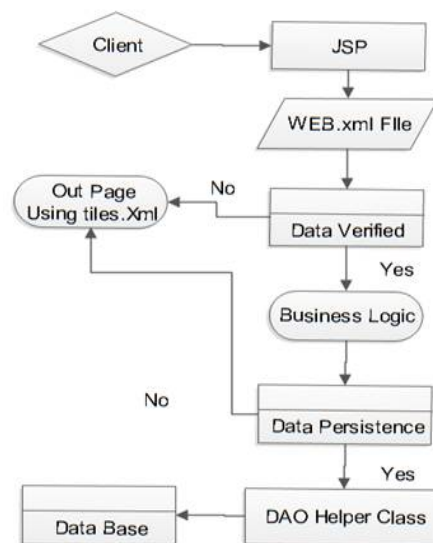


Fig.2 Integrated System Work Flow

II. STATEMENT PROBLEM

A. Existing System Manual Research proposal Submission

Proposals submission by manually may be time consuming and burden for researchers also to coordinating with reviewers personally for obtaining the project status of proposal, scrutiny, sending to other Reviewers, obtaining feedback and progress of reports and certificates, etc. The activities of proposal system can be speed up by automating the system.

B. Drawbacks

- Time consumption is more
- Submitting a proposals with paper documents.
- Reviewing a proposal manually by experts.
- report Editings after each review
- status updates and communication problem.
- Sending for certifications.
- No flexibility nor extendability
- Unproven Security Model

III. PROPOSED SYSTEM AND THEIR ADVANTAGES

Paperless project/research submission system using electronic project proposal management system (ePPMS) web Controller design pattern is based on Spring Framework which provide comprehensible structure of codes and

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re- use of codes . The entity of relational mapping using Hibernate framework which provide quality access to data in the database.

Multi-tier architecture which provides reusability reachable, maintainability, and low coupling.To optimize the time consumption for research proposal submission, reviewing, obtaining required reports, and certificates, Flexibility in submission of proposal, easy, fast evaluation process, transparency proposal processing ssaves the physical space , email facility helps to know the status of the proposal anytime and a ny where. Maintain data integrity and security provides role based access, responsive web design. By integrating the spring with hibernate the system of high flexibility and maintainability can be design.

A. Advantages of using Eppms

Using ePPMS has some advantages. Few of them are as below.

- This is one go dash board to review the projects from initial stage to final stage
- It permits to reduced process time of the proposal
- Project information can be easily dissemination by using this
- Statistical analysis of submitted project proposal can be perform by one
- By implementing this secured logical property rights can be achieved.

IV. ARCHITECTURE AND SYSTEM DESIGN

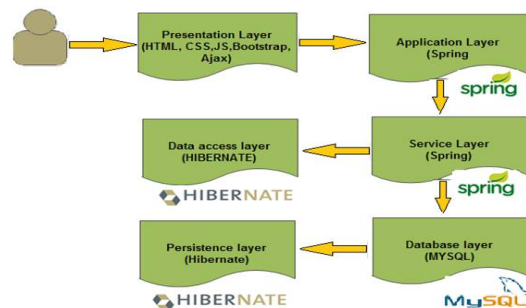


Fig.3 Architecture of System

The Architecture diagram involves mainly six layers in this project. They are explained as fallows.

In the above architecture the visual layer is the primary of the project. As layer six of the OSI model, the presentation layer is main accountable for controlling two networking characters: protocol and architecture. Whereas, protocol defines a standard set of guidelines under which the network works, the network's architecture determines what protocol applies.

As the translator, the presentation layer translate the data send by the application layer of the transmitting node into an acceptable and compatible data format based on the applicable network protocol and architecture. Upon arrival at the receiving computer, the presentation layer converts the data into an suitable format usable by the application layer. In other words, the appearance layer take mind of any kind of issues occurring when transmitted data must be viewed in a format different from the original format.

In this stage users or end users enter the data through the web browsers like chrome, opera mini and make decoration by using Html, CSS, JS, Bootstrap, Ajax.

The JSP was used in presentation layer and the spring tags to create interactive pages. The system was designed using HTML5 and CSS3.HTML5 is latest evaluation of Hypertext markup language with some new attributes and elements.CSS3 is the latest version of cascading style sheet. It is a style language that describes how HTML is styled or presented.CSS3 provides various design techniques. Ex. Class "data-hide" declared in Cascading style sheet can be used for responsive table.

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Case Diagram

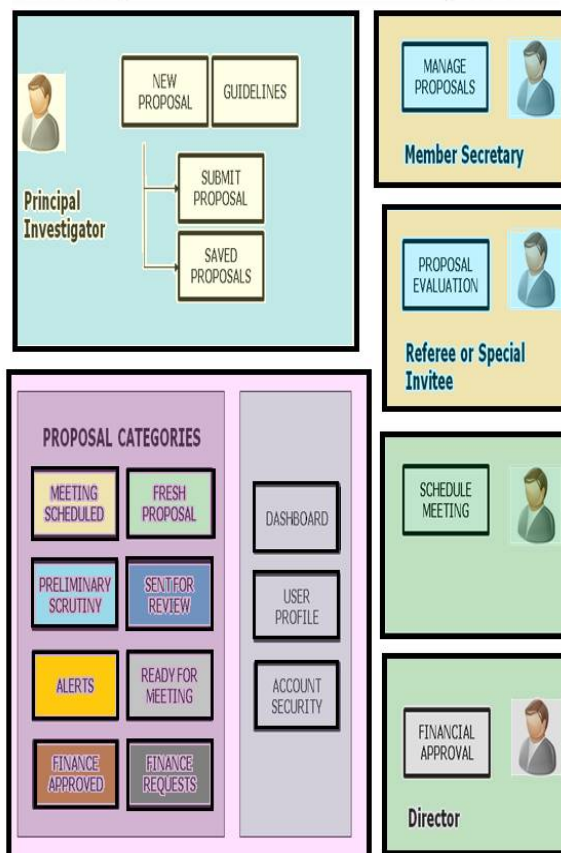
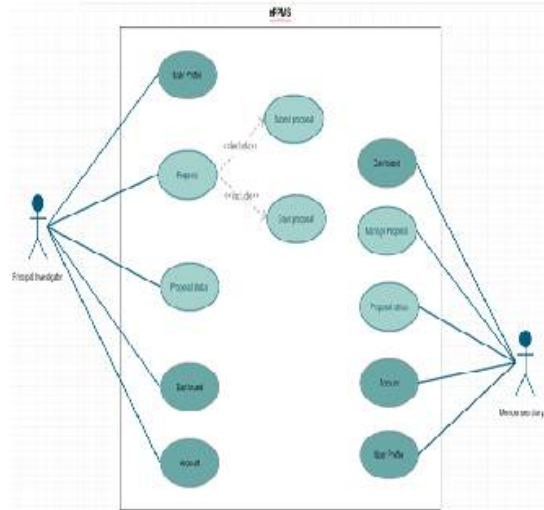


Fig.4 Cascading style sheet

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V. MODULES WITH RESPECT TO DESIGNING FRAMEWORK

The modules related to eppms design in explained briefly by plotting block diagrams step by step

A. Registration of various roles

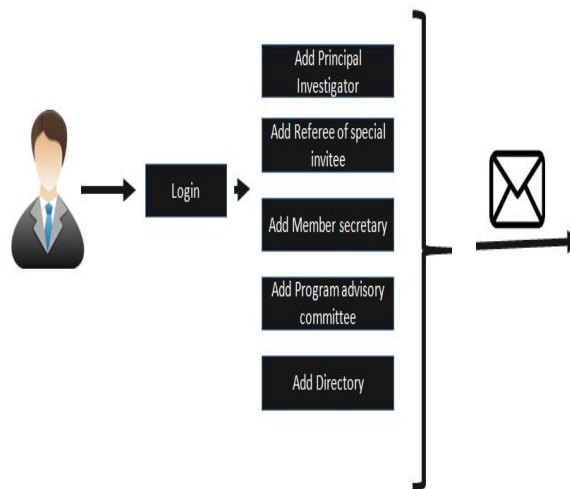


Fig.5 Steps in Registration of roles

In electronic project proposal system the project proposal is first submitted to the registrar, who allot the process to carry for approval of proposal. Once he uploaded the proposal it will carry the next step for approval will carry out automatically.

B. Save/ Submission of Research Proposal

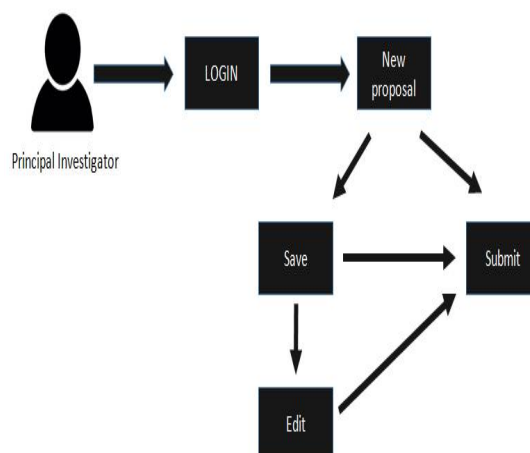


Fig.6 Steps in Submission of proposal

In this module the investigator who is appointed to investigate about research proposal which is submitted by login to web can go through the proposal and can edit or he can submit his new proposal.

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C. Evaluation of Submitted Proposal

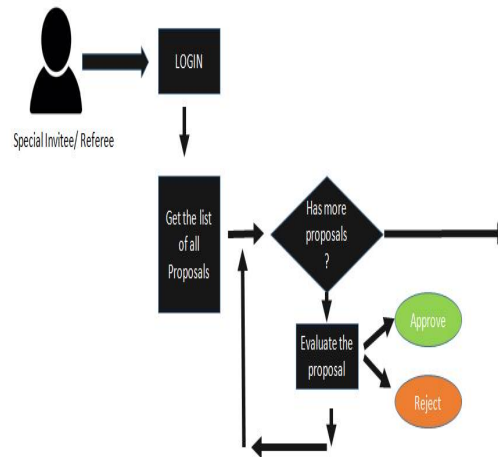


Fig.7 Steps in Submission of proposal

After the brief investigation about research proposal from investigator, the proposal will transfer to related topic reviewer. Where he goes through about the project completely and evaluate it. If it is rejected, Status will be abdated in web.

D. Schedule Meeting for Proposal Discussion

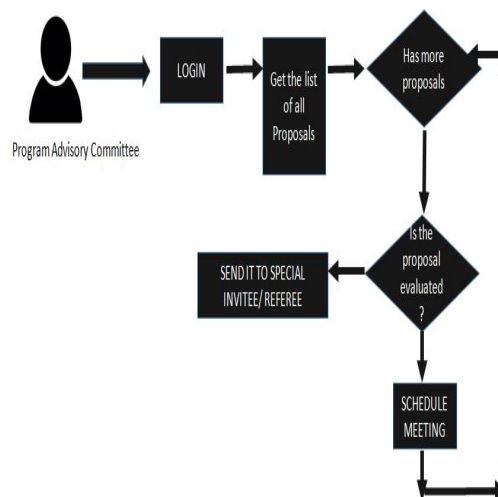


Fig.8 Steps in Proposal Discussion

The feedback from special invitee/referee, the program advisor will collect the details of proposal by web and if there any extra is to be added for submitted proposal it will send back to referee, if everything find to be acceptable, then he will plan the meeting with respective director for approval.

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E. Financial Approval

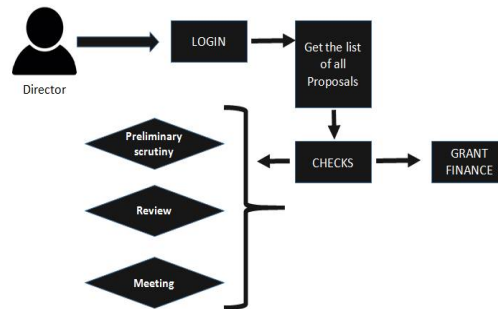


Fig.9 Steps in Financial Approval

After passing above steps, programm Advisor shedules one meeting with director and with other related persons to finalize the project proposal by granting suitable for that submitted project.

VI. DIGITAL SIGNATURE AND ENCRYPTION

A digital signature is like a hand writing signature which will do on electronic screen. It is a Binary code that's like a handwritten signature, authenticates and executes a document and identifies the signatory. These kinds of signatures are impossible to forge and cannot be sent by itself but only as a part of an electronic document or message.

To sign the documents digitally, person should hold with digital ID. This unique ID will be provided from certain certification authorities in the Web, like VeriSign and Echo Sign. Once the person is holding digital id , he is eligible to add and register that with programs which support digital signatures, like Adobe Acrobat and Microsoft Outlook. Then he is liable to adapt the program's "Sign" feature to integrate his digital signature to the documents.

The digital signature is attached to the documents because it is simply a tiny block of data you sign. This is generated from his digital ID, which includes both a private and public key. to apply the signature to the document The private key is used, while with the file public key is sent. The public key is integrated with encrypted code, and also called as "hash," that usually verifies person's identity.

Terminologies used in implementation of digital signature are

- Signature Generation Algorithm
- Signature Verification Algorithm

A. Generation of signature

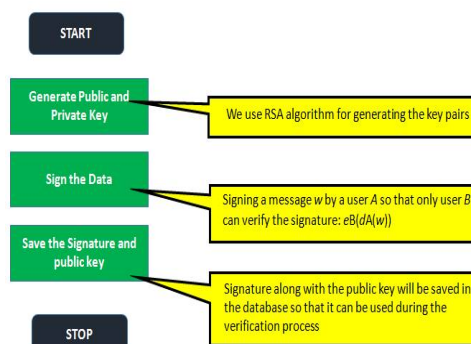


Fig.10 Gensig program Flow diagram

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B. Signature Verification Algorithm

The verification of digital signature is explained by block diagram which shown below

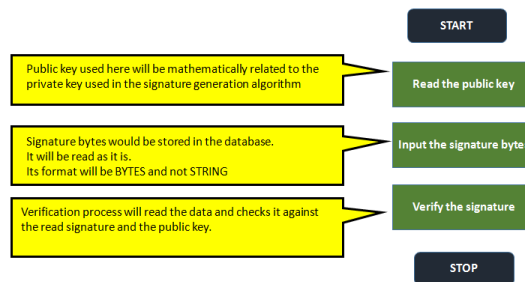


Fig.10 sig program Flow diagram

VII.CONCLUSION

Electronic Project Proposal Management system is designed for project and research proposal through web. In this work digital signature is implemented to providing its service online and to avoid forgeries .The system designed using SH is effectively reliable and precision. Algorithm is prepared to execute the modules steps by step accurately. The designed framework can be implemented to any institutes and by any organizations to process the proposals. Finally From a suitable analysis and constraints on the component, Surely it can be concluded that the designed product good GUI based component.

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