Web Based an Automated Information System Using Suitable Paradigm

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Abstract: Success of most organizations depends upon clear examination of the project or activities for the achievement of an objective within stipulated time and cost. Management is then required to determine detailed activities and their relationships, to estimate resources required and time needed to complete these activities as per schedule, and to monitor and control the time and cost of the project. Therefore, I am using such type of approaches and methods those are very successful to reduce the present and future cost and time; such as PERT (Program or Project Evaluation and Review Technique), Gantt chart (that illustrates a project schedule) which clearly define the overall task view in the form of week/month. This work is helpful to reduce all over efforts by applying waterfall model paradigm and above methodology. System Requirement Analysis (SRA) is also very helpful for collecting overall information related to requirements. In this project module-oriented approach (MOA) and module-driven approach (MDA) has been used to ensure the quality with minimal set of deliverables. Here I am discussing that, what is the problem with existing system. There are three level of security which provides no internal access privileges (APs) to other except the system admin. He has the authority to provide APs and also block the user. This system is to develop an automated information system (AIS) for the processing of any grain mill products sector.

Keywords- PERT; Gantt; SRA; MOA; MDA; IAPs; AIS; APs

I. INTRODUCTION

A set of activities that performs to the production of any software product is known as software process. Although most of the software builds, the software engineering market is being gradually shifted towards component based. Here proposed a project will operate in the flour or any other grain mill products sector. This software engaged for the milling and food processing business. The primary activities of the software will be to automate milling of wheat and other cereals, sale of flour, purchase of wheat and other processing. The requirements which are gathered through as follows:-

- External interface of a system: - they identify the information which is to flow 'from and to the system'.
- Functional and Non-Functional: - functional requirement of the system.
- Design constraints: - designing constraints of the system.
- Detail communication with the customer.

The Module-Oriented Approach (MOA) lays out the importance of particular activities to be carried out to ensure the quality of the automated system and also provides the rudimentary schedule of activities with minimal set of deliverables. The overall performance of this web software is based on the performance of computing system [1]. As requirement of fast accessing all transaction over suitable network where avoiding any delay like reports, invoices, and other details etc. so decided to implement a fast wireless network [2]. Due to wireless network and model driven approach (MOA) [3] here succeeded to reduce in cost. For cost minimization, chose to implement wireless N/W at this medium in intra organization which is less costly as compared to wired N/W and it is very typical task to implement wired N/W in different-2 departments that consume much more efforts and much more time. Cost comparison between wired and wireless N/W shown through the Fig. 1.
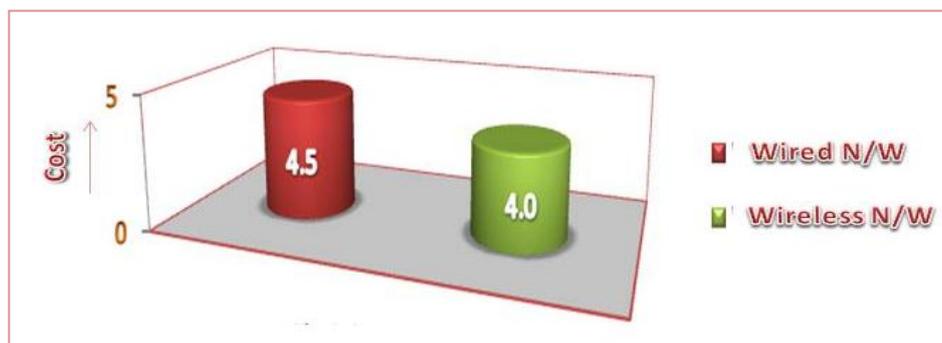

Fig. 1 Comparison between wired and wireless N/W to little reduction in cost

A.   PROBLEM STATEMENT

Here are some problems in traditional (old) system occurred as follows: -

- Without using computer capabilities to collect and store information about mills products is time consuming and it is not easy for each one.
- Security of records of Employee's details is also challenging task.
- Updation of employee's profile needs verification [4].
- Redundancy of data.
- Registration of different departments is necessary on the web application.
- A fair amount of errors may encounter during computation and maintaining details about employee [4].

B.   PROBLEMS WITH THE CURRENT SYSTEM AND SOLUTION

   1)   Existing System

The existing system was developed in HTML and ASP for clients and which working in a connected environment and always need to get connected to the database as it follows the ADO concept and does not fulfil the concept of pure object orientation. So there was more workload on the system resulting to slow speed of accessing data. It doesn't provide the efficient solution to the enterprise. There was not much security due the lack of object orientation. And most of the Administration works are done manually and Telephonic.

   2)   Proposed System

The proposed system is Web based system for rising the accessing of data. The proposed system is developed with ASP.NET [5] as front end and SQL Server as backend. It will work in disconnected environment and will provide the fast accessing. It has many advance features than the existing one. Here the administrator has the rights to govern the whole system and also to authenticate the other users of the system .The only valid users can work on the system. In this system Client purchase/order details will be maintained and on the basis of Client order Production will be done and finally the product will be delivered to the Client. There are different interfaces to maintain all these records. This system is secured at three levels according to their requirement as given below in TABLE I as:

TABLE I: Three levels of security – the internal access privileges (IAPs) are given by System Administrator

User level security	Interface level security	Group level security
• User name	• Read Permission	• Read Permission
• Encrypted Password	• Write Permission	• Write Permission
• Read Permission	• Print Permission	• Print Permission
• Write Permission	• Delete Permission	
• Delete Permission	• View Permission	
• Print Permission		

II.   PROJECT PLANNING AND SCHEDULING

Network analysis is a technique concerned with minimizing the overall project costs. PERT is a popular type of network analysis used in modern management. PERT is a technique which is useful in system planning, the planning of any project involves the listing of various jobs that have to be performed to complete the project. Requirements of men power, material and equipment are drawn up along with the estimates of costs and durations for the various jobs, in the process of planning. The most important requirement for using PERT is the breaking up of the project into jobs or activities and determining the order of precedence for these jobs that decides which jobs are to be completed before another can be started. The concept of PERT was developed by an operation research team staffed with representatives from the operation research department [6]. PERT was developed for simplify the planning and scheduling of complex projects to support the U.S. Navy's Polaris nuclear submarine project [7]. Since time is a major factor rather than cost so it is applied to very large scale, one-time, non-routine infrastructure and research and development projects. An example of this was for 1968 Winter Olympics [8]. Gantt chart now regarded as a common charting technique, Gantt charts were considered extremely revolutionary when first introduced [9]. Adamiecki published his chart in 1931 and is named after Henry Gantt (1861-1919), who designed his chart around the years 1910-1915 [10]. First major applications of this charts was by the United States during World War I, at the investigation of General William Crozier [11].

A.   PERT (Program or Project Evaluation Review Technique) CHART

A PERT chart is a graph-based chart. It can be used to determine the activities that form the "critical path", which if delayed will cause the overall project to delay. The PERT chart for the project is shown in Fig. 2:
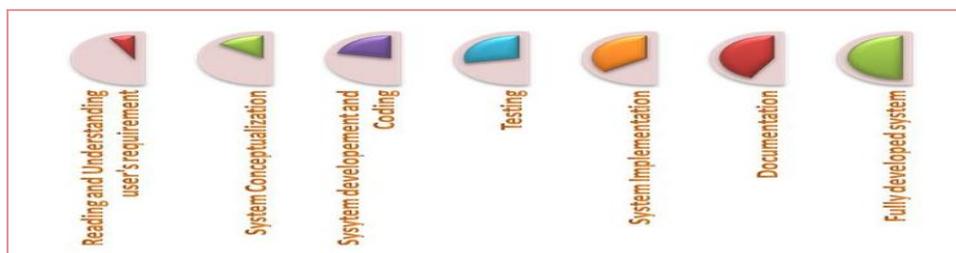

Fig. 2 Development process through PERT (Program or Project Evaluation Review Technique) Chart

B. GANTT CHART (Project Schedule)

Gantt chart is also known as Time Line Charts. A Gantt chart can be developed for the entire project or a separate chart can be developed for each function. A tabular form is maintained where rows indicate the tasks with milestones and columns indicate duration (weeks/months). The horizontal bars that spans across columns indicate duration of the task. The project schedule shown in the Fig. 3 as:

Task	January	February	March	April	May
Requirement specification and Analysis	▮				
Design		▮			
Test Cases		▮			
Coding with unit testing			▮		
Testing			▮		
Documentation				▮	

Fig. 3 Development process through Gantt chart (Project Scheduling)

III. SYSTEM REQUIREMENT ANALYSIS (SRA)

In system analysis we analyse all requirement and all specifications. We did our work in two phases:

A. Requirements Gathering and Analysis
- Document to collect all possible information.
- Measure all input data and then output requirement.
- Notice all functions required by user.
- Study the entire existing system.

B. Analysis on Gathered Requirements
- Identifies the problem, properly?
- What are the possible solutions of the problem?
- What are the data input and output?
- What complexity we may face during development?

IV. SOFTWARE ENGINEERING PARADIGM APPLIED

A. The Waterfall Model

The waterfall model derives its name due to the cascading effect from one phase to the other as is illustrated in Fig. 4. In this model each phase well defined starting and ending point, with identifiable deliveries to the next phase [12].

 Note: That this model is sometimes referred to as **the linear sequential model or the software life cycle.**
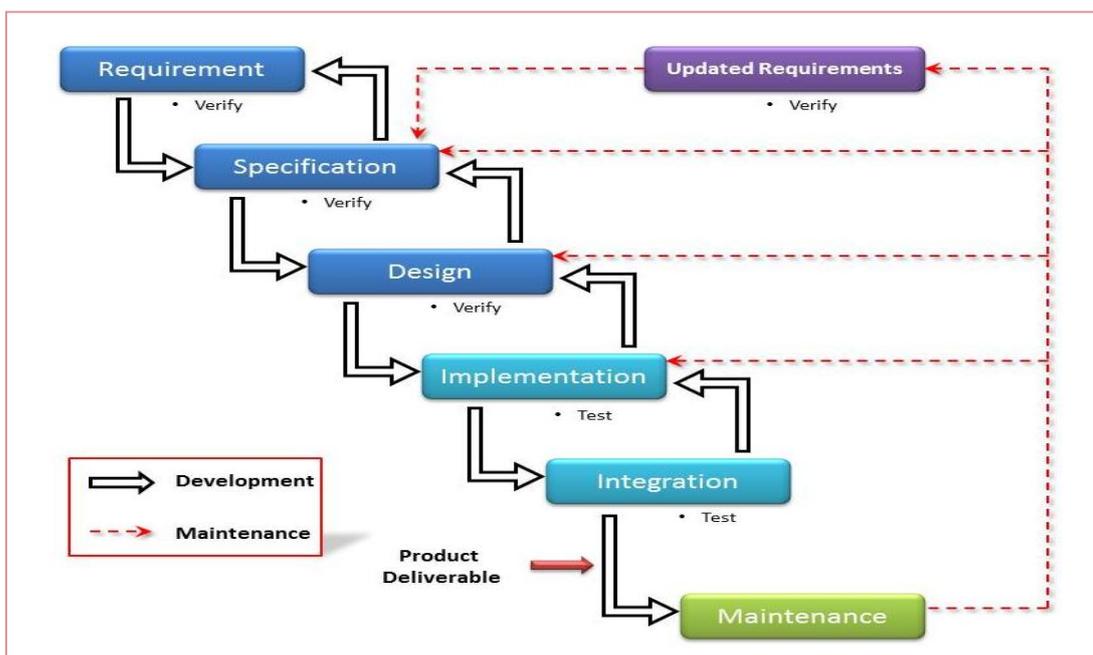
Fig. 4 Development life cycle process through waterfall model

The model consists of six distinct stages, namely as:

- In the requirements analysis phase
  - The problem is specified along with the desired service objectives (goals)
  - The constraints are identified
- In the specification phase the system specification is produced from the detailed definitions of.
  - *Note that in some text, the requirements analysis and specifications phases are combined and represented as a single phase.*
- In the system and software design phase, the system specifications are translated into a software representation. The software engineer at this stage is concerned with:
  - Data structure
  - Software architecture
  - Algorithmic detail and
  - Interface representations

The hardware requirements are also determined at this stage along with a picture of the overall system architecture. By the end of this stage the software engineer should be able to identify the relationship between the hardware, software and the associated interfaces. Any faults in the specification should ideally not be passed 'downstream'

- In the implementation and testing phase stage the designs are translated into the software domain
  - Detailed documentation from the design phase can significantly reduce the coding effort.
  - Testing at this stage focuses on making sure that any errors are identified and that the software meets its required specification.
- In the integration and system testing phase all the program units are integrated and tested to ensure that the complete system meets the software requirements. After this stage the software is delivered to the customer *[Deliverable – The software product is delivered to the client for acceptance testing.]*
- The maintenance phase the usually the longest stage of the software. In this phase the software is updated to:
  - Able to meet the flexible needs of the customers
  - Adapted to accommodate changes in the external environment
  - Correct errors and oversights previously undetected in the testing phases
  - Enhancing the efficiency of the software [13].

V. CONCLUSION

This project has been successfully developed using the standard software development strategies that is followed in the Industry. This system would help the organization to full fill their requirements and satisfy their customers and staff personals.

This project has so many useful features, unlike the existing system which is very much restricted in its operation. Of course even some limitations also exist. According to the specified functionality, it will work in a proper manner. This project cost is reduced by apply model driven approach (MDA) on some areas.

As the saying goes nothing is ideal on this earth but one can always improve if he is willing. We have tried our best to make this project well suitable in all respects, but still there are many areas, where it can be further strengthen. Some of the future enhancements:

- This is the second version of the system. Depending upon suggestion of the users this system may get updated.
- Numbers of MIS reports will be increased depending on user demand.
- Facility will be provided for customizing reports.
- Data backup wizard will be provided in future.

The scope of the project is to develop an automated information system for the Flour Mills.

REFERENCES
[1] Torsten W, Axel A, H. Shoukourian (2013). "The 4 Pillar Framework for energy efficient HPC data centers". Comput Sci Res Dev DOI 10.1007/s00450-013-0244-6
[2] Gavali S.B, Gavali A.B., Patil D.S., D.Y. Patil (2014). "Review on a packet hiding: a new paradigm for avoiding jamming attack over wireless network". IJES. ISSN (e):2319-1813. ISSN (p): 2319-1805
[3] José Luis Herrero Agustin, Pablo Carmona del Barco (2013). "A model-driven approach to develop high performance web components". http://dx.doi.org/10.1016/j.jss.2013.07.028
[4] Thomas A Henzinger (2013). "Quantitative reacting modelling and verification". Comput Sci Res Dev DOI 10.1007/s00450-013-0251-7
[5] http://msdn.microsoft.com/en-us/library/118w0kzy(v=vs.100).aspx
[6] Fazar, W., "Program Evaluation and Review Technique", The American Statistician, Vol. 13, No. 2, (April 1959), p.10.
[7] Maicolm, D. G., J. H. Roseboom, C. E. Clark, W. Fazar Application of a Technique for Research and Development Program Evaluation OPERATION RESEARCH Vol. 7, No. 5, Sep-Oct 1959, pp. 646-669
[8] 1968 Winter Olympics official report. P. 49. Accessed 1 Nov 2010. (English) & (French)
[9] Wilson, James M. (1 Sep 2003). "Gantt chart: A centenary appreciation" (pdf). European Journal of Operational Research 149 (2). doi:10.1016/S0377-2217(02)00769-5 . Retrieved 2013-07-28.

[10] Peter W. G. Morris, The Management of Projects, Thomas Telford, 1994, ISBN 07277-2593-9, Google Print, p.18

[11] Wallace Clark and Henry Gantt (1922) The Gantt chart, a working tool of management. New York, Ronald Press.

[12] Sk. Safikul A, Sourabh C (2014) "Agile Software Development: Novel Approaches For Software Engineering" IJES || ISSN (e): 2319-1813. ISSN (p): 2319-1805.

[13] Abran, Alain; Moore, James W.; Bourque, Pierre; Dopuis, Robert; Tripp, Leonard L. (2004). "Guide to the Software Engineering Body of Knowledge" IEEE. ISBN 0-7695-2330-7.