

Crime and Criminal Tracking Networks & Systems Using Agile Methodology

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Abstract- Paper represents the implementation on the project: Crime and criminal tracking network and system (CCTNS), using the advance and current methodology such as agile methodology which is important and beneficial for both customer and the organization also. Various factors like on time delivery, customer satisfaction, minimum cost, customer involvement, minimal documentation, more face to face communication, better understanding, high performance, better quality product are necessary factors for a project to be successful and this is where current methodology comes as compared to earlier traditional approaches where planning is fixed, strict rules are to be followed, requirements are initialized before start of the project, more documentation, less customer involvement, whole product to be given to the customer at the end which is not appropriate for the current scenarios.

Index-Terms: CCTNS, CAS, Agile methodology.

1.0 INTRODUCTION

Crime and criminal tracking network and system, project automates functioning at all the police stations so as to provide security and safe living for the common people. Hence the police department is turning towards IT to increase efficiency by enabling better utilization of resources. The goal of the paper is to generate a core application software(CAS) for CCTNS which not only benefits police department, but also creates mechanisms and facilities to provide public services, i.e. for citizens like registration of online complaints, verification of persons, for knowing the status of their registered complaints, for any registration of foreigner. The project provides enhanced tools for crime investigation, crime prevention, etc. Only voice connectivity between the police stations is there, but there is no system where one police station can directly contact with other one. The whole system believes only on paper work. So the goal of the project is to facilitate retrieval, collection, analysis, transfer, storage and sharing of data [1].

This project makes police to detect criminals and crime faster as there will be centralized database, make functioning citizen friendly, assist police in better management of all services and functions, keep track of all the cases, reduce much paper work application, which is because of a power cut problem which means during a large part of the day power is not there so this problem is to be managed. Hence offline forms are provided. The offline forms are provided for citizens. The question comes why there is a requirement of some offline forms of this.

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Synchronization must be there between the project office and the agile management office [2] because any new methodology takes time to get absorbed in the organization. The current methodology is an incremental and iterative approach of software development which welcomes the changing requirements of customers as and when required, where priority is given to the tasks and features to be implemented, shorter milestones are considered. There are no fixed rules and guidelines to be followed in current methodology, but of course some principles are there [17]. Different requirement tools are also used to support a secure web application and increased the process maturity level [11] [19]. Due to the flexible nature of the current methodology, the level of customer satisfaction increases [14].

2.0 LITERATURE SURVEY

Some of the work done in the Common Integrated Police Application (CIPA) [4], in which data is collected and managing the records, applying the statistical analysis and office automation on crime and criminal data. Crime and Criminals Information System (CCIS) was launched in 1990 and it is a National Crime Records Bureau driven program. It has been put into operation in 35 states and union territories.

Wireless Criminal Tracking System using Mobile Computing aims to apply mobile information system in the police department. The system introduces the development of central data to be accessed on mobile phones by police and others which is maintained by administrator at each police station [5] [13]. This system is useful tool to keep track of criminals and their activities. There are problems in identifying criminals due to lack of instant data about them. These problems were solved by making the required data available on mobile. This reduced policemen's labor and precious time. The benefits of this system are fast and effective communication between common people and police, user do not require any technical knowledge to use it, the system can be maintained easily, less implementation cost and software easily available.

The process of agile software development was described with the comparison between traditional and agile approaches [6].

3.0 AGILE METHODOLOGY

Agile methodology is an incremental and iterative approach of software development which works on following principles [6] and agile manifesto [7] :

- Individual and interaction over process and tools.
- Working software over comprehensive documentation.
- Customer collaboration over contract negotiation.
- Responding to change over following a plan.

The characteristics of agile software development processes are time bound, adaptive, modular, iterative, incremental, people oriented, and collaborative [8]. As the customer requirement became change or need to make modifications continuously, in that case it becomes difficult to estimate the project which shows the unpredictability; to overcome from this chaos agile methodology is used [9]. There is more customer involvement in the project. Customers who are involved in the development process are known as active stakeholders and provide their requirements directly to the developers and set the precedence according to the need. It was also suggested the conditions that are needed in traditional and current methodologies and improvements of agile methodology so that this methodology can be implemented in the organization effectively [10].

The methodology does not follow any rules for implementation of the project, but yes, there are some ethics and principles upon which it works. Documentation is less which in comparison to earlier approaches where everything depends on documentation [12]. It delivers the project in short milestones to the customer so that customer can know and track the progress. Face to face communication is there which increases more understanding of the problems, requirements, etc. [3]. The development team prioritizes the task and features with a focus on higher priority task first. A new development life cycle was defined, Swift Tack, under Agile methodology [18]. In this methodology requirement are described by the product owner and all the details regarding what to do is included in the product backlog list. Then some features are given priority to select the product from the product backlog list to scrum backlog list. There are various methods of this methodology which are feature driven development, dynamic software development methods, lean software development, crystal methodologies, scrum and XP [16]. There are different automated testing tools and models are used to support the agile methodology [15].

4.0 IMPLEMENTATION OF PROJECT USING AGILE METHODOLOGY:

In this section now, how the project CCTNS is implemented using current approach is discussed. Firstly Crime and Criminal Tracking System automates all the functioning at police stations. It not only provides crime investigations, reports, FIR etc., but also provide citizen services in which one part is E-forms which are offline forms, can be downloaded as xml to upload data which saves time and prevents internet connection problem due to power constraint problems in rural areas. This increases performance and speed too as compared to another part CAS where these citizen forms are also available but not in offline mode. Due to heavy data in the forms and session time out problem E-forms are made. Firstly the citizen logs on the system with his login id and password, secondly, he clicks on the link download and submit e-form, then the respective form can be saved and then all the data is filled, after this the xml can be generated and saved on local disk. Finally the xml is uploaded in the respective form and then the form is submitted. The flow of e-forms is depicted as in following Fig. 1

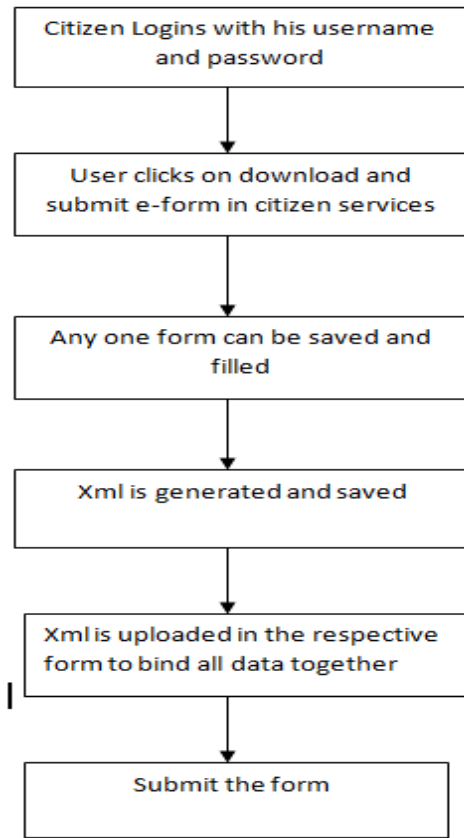


Figure1. Flow chart for E-forms

During the project development there are certain factors due to which team adopted agile methodology. In the project development, customer has a continuous interaction with the project development and customer updates the team with new requirements. The customer has continuous involvement during the software development and direct interaction with the whole team. The team is divided into different members such as managers, developers, testers, project lead, scrum masters and stakeholders.

The team has 2 DBA's, 9 developers and 4 testers and each team member have the face to face communication between each other to avoid any type of miscommunications and misconceptions. Developers and testing team worked together and implement and test the parallel code. Testing team reduced the bugs and generated the bug report helps in reducing the discrepancies. All team members were responsible for the whole project and their activities. At the initial stage project was divided into different tasks and prioritize them. User stories were created and each task is divided into different sprints.

Meetings were conducted every week for 15min. In each and every meeting different issues were discussed related to the project team. Different issues such as their current work status, achieved target status and the issues faced by the team members were discussed. All of these issues were discussed in

the presence of customers and team leads. Weekly project performance, quality was tracked by customers and new modifications were done according to their need. After the completion of each sprint cycle final product was delivered to the customer and tested on client site. Fig.2. shows the theme of CCTNS using the current methodology; where current methodology is agile methodology.

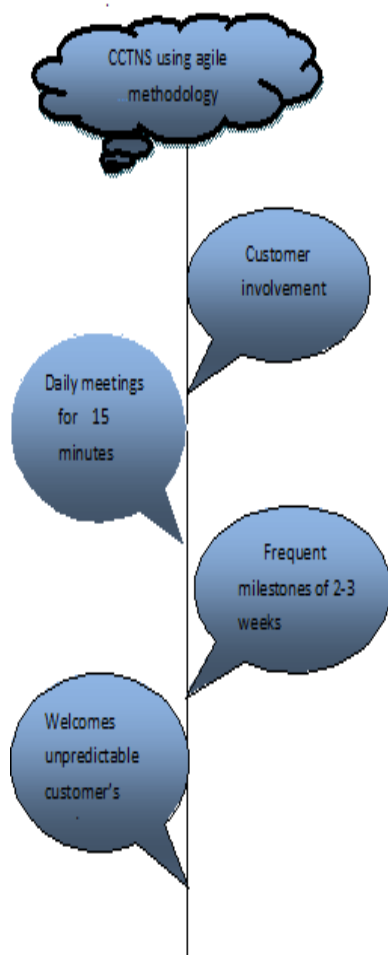


Figure2. Theme of CCTNS using the current methodology

5.0 CONCLUSION

Research Paper is based on the case study, having the implementation of the project, Crime and Criminal Tracking Network and System. The focus of the project was to provide services to citizens related to criminal complaints, FIR etc. E-forms were generated which can be filled offline by users to save the time. This increases performance and speed too as compared to another part CAS where these citizen forms are also available but not in offline mode. The project was implemented using agile methodology produces a higher quality product, resolve the unpredictable needs of customer, development of the project become more flexible as the business climate growing at an exponential rate of change.

Using the agile approach project development, its final results were transparent to the whole team.

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