

# Experience Management using Innovative Experience Approach

Gurpreet Kaur  
Deptt. of computer science and  
engg.  
Lovely Professional University  
Jalandhar

Harshpreet Singh  
Deptt. of computer science and  
engg.  
Lovely Professional University  
Jalandhar

Sumeet Kaur  
Deptt. of computer science and engg  
Lovely Professional University  
Jalandhar

## ABSTRACT

Software has become a part and parcel of our daily life. Software is neither manufactured nor produced, it is developed by manpower. As more than two persons are concerned so there is something to learn from them like the mistakes they made, lessons learned and many more. For this purpose, capturing of experiences is mandatory so that everyone can derive benefit from that. The feasible solution to develop higher quality products at low cost is provided by proper reuse of products, processes and experience of experts. Here, in this paper an approach is discussed which provide all sorts of experience online and also overcome the loopholes of previous approaches.

## Keywords

Experience, Experience Management, Innovative Experience Approach, Experience Repository, Experience Factory.

## 1. INTRODUCTION

The current era of computers has revolutionized the whole system of information gathering and also has taken a huge step in the field of grabbing the benefits from this revolution. The whole system starting from the development of system, to maintenance and rework leads to exposure to the coming generation from this whole work. Earlier the information gathered was only used by the gatherer and the organization but now the need has aroused for the use of this information by the outside world also. Even though this information is of the supreme importance for the owner, but there are also new admirers who need to learn a lot from their experience.

Almost any business today involves the development or use of software. It is either the main aspect of the business, the value added to the product, or on the critical path to project success. It permeates every aspect of life. If an organization is not investing heavily in the basic aspects of the software business then it will not be competitive and may not be in the business in the future.[1]

Moreover, to improve the quality of software in software engineering organizations many techniques have been developed so far which includes case based reasoning, knowledge discovery approach, experience factory and many more. These techniques evolve through continuous learning which relies on feedback.

Most of the organizations are dependant upon their employees as they think they have enough experience but the hindrance is that the experience is not governed by the organization it is governed and maintained by the employees of the organization. Thus, it is mandatory to capture the experience of employees for others as well as for organizations to derive benefits from it.

The experience holder shares his/her experience for the freshers, and the freshers learn a lot from that experience. This particular technique is known as “*Experience Factory Management*”,[1] which was implemented at the organization level and there was no access of any information to the outside world and this approach was useful only at the organization level. The Experience Factory is a logical and/or physical organization that supports project developments by analyzing and synthesizing all kinds of experience, acting as a repository for such experience, and supplying that experience to various projects on demand[1] Moreover, managing experience is mandatory in software engineering. For developing projects software development organizations need a lot of time and concentration. The developers learn from the mistakes. Similarly in the field of software engineering if anyone get exposure to other’s experience, it provides them a better way to start the projects as they will not have to start their work from scratch So taking this point into consideration a new technique has been designed namely *Innovative Experience Approach*.

## 2. EXPERIENCE MANAGEMENT

The need of the era is to manage experience of others in order to get exposure and to record own experience also in order to give exposure to others. There is a difference between knowledge and experience. Knowledge accumulation is mandatory for an expert in certain area and experience is mandatory for an expert to solve complex problems. Knowledge management can be defined as[2] “The management of organizational knowledge for creating business value and generating a competitive advantage.”

The query that hits our minds is how we can define experience and experience management. Experience can be of two types: explicit and tacit[3]. Tacit experience is the experience which is retained by the individuals and cannot be recorded as it is gained by wisdom while explicit experience is recordable and can be representational. As data is a collection of raw facts and figures and information is processed form of data. So, the conversion of data to information and information to knowledge can define explicit experience well. Thus, experience may be defined as “Experience is knowledge that can let us act in a practiced and automatic manner, or that helps us to assess, select, and apply an appropriate problem solving strategy, method, technique, or tool[4]. It has been gained by acting/doing and may either result from unprocessed and unreflected events in specific situations or from conscious reflection and interpretation about ongoing issues. Experience management can be defined as managing the experiences so that they can be available for future use for others” In terms of [5] experience management may be defined as “Experience management defines and develops methods for structuring and dealing with experience of experts in a particular subject, and it

is becoming an increasingly important domain of knowledge management .”

### 2.1 Need for Experience Management

The experience is stored not to evaluate people but to help them grab information from others and share information with others. Following examples clear why capturing experience is essential[6]:

- To avoid the loss of information from the company, it should not rely on its employees as it affects the performance of company when the employees leave their company.
- Sometimes the employees don't like to share their valuable experiences with their employees as they think it is as a wastage of time but it is necessary to store their experiences as others can get benefit from them.
- The packaged experience can be beneficial for freshers as they gain knowledge and can fasten their productivity.
- Sometimes, it is difficult to locate the knowledge of solving a particular problem. The knowledge is within the organization but lot of time is wasted for exploring.
- A consultant gave a customer a promise, but is now busy with other work. No one else knows about his promise so it doesn't happen.[6]
- An employee learned a lot during a project, but has no time for packaging and dissemination so the knowledge cannot be leveraged.[6]
- A new employee is hired, but is for a long time considered a burden instead of help because he needs detailed support from his coworkers, who do not have sufficient time to help them.[6]
- An employee's application for taking a course is rejected, because with that knowledge he would be too "valuable on the market".[6]

### 2.2 Techniques of Experience Management

There are different techniques for managing experiences like case based reasoning, knowledge discovery and experience factory. Here, in this paper the approach namely experience factory is taken and its limitations are taken out and a new approach is devised namely innovative experience approach. The features of experience factory are also discussed.

## 3. FEATURES OF EXPERIENCE FACTORY:

The various features of Experience Factory are as listed below:

- Experience factory helps in the reusability of products as they will not to have commence from beginning.
- Data loss can be minimized due to sharing of experiences among employees and organisations.
- Experiences are stored in an experience base which consists of packages to provide data efficiently for future use.
- Experience factory approach nourishes with time so more benefits can be derived from it.
- The employees are motivated to experiment with new technologies and can sharpen their skills.
- Experience factory use the knowledge of different experienced personalities which can be merged to formulate the super beneficial experience[7].

### 3.1 Limitations of Experience Management

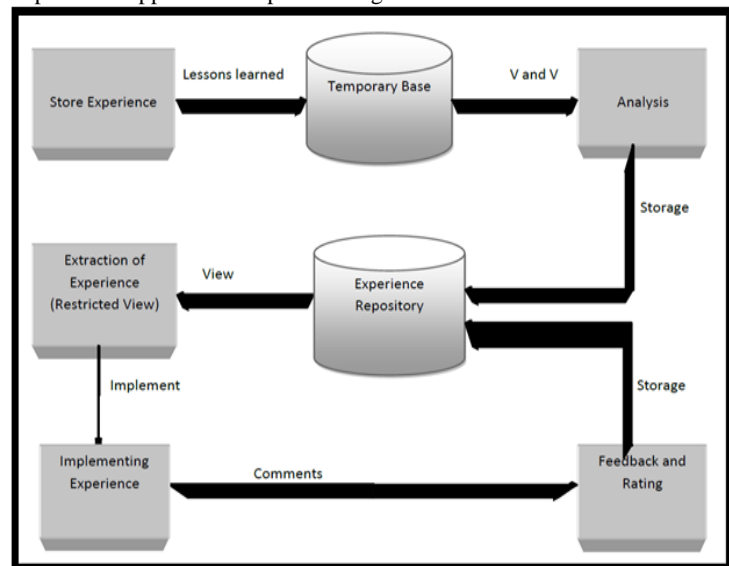
This approach has a number of shortcomings[8]:

- It does not encourage or enforce the sharing of best practice across the projects.
- It only checks deployment of a sample of processes against a sample of staff.
- It does not measure the excellence of the approach to satisfying the requirements of the standard.

Moreover, the experience factory approach[1] provides monitoring only at the organisational level. This approach is intranet based only while the proposed approach namely "Innovative Experience approach" will provide the experience online to the users and its improvement will be based upon the feedback provided by the users. The users will also provide rating to the experience.

## 4. INNOVATIVE EXPERIENCE APPROACH

Innovative Experience Approach is designed to capture the experience in all fields irrespective of discipline. The success of an organization depends upon the employees and from the experience they hold. Some employees are experts which have lot of experience while others are freshers, so in order to produce productive employees sooner the organization needs to be less dependent on its employees by unloading the experts. For example experts possess extensive knowledge but sometimes they don't have time to share with others. In this case the organization is required to store experience and make it available to employees when required so that the freshers can speed up and adapt themselves to the environment of the organization without bugging the experts. All document deliverables are listed as links so that a new employee easily can find and bring up a document in order to understand what was delivered to a customer.[9] The architecture of Innovative Experience Approach is depicted in fig1:



**Fig1: Architecture of Innovative Experience Approach**

The main characteristic of innovative experience approach is that experience is collected and stored not to degrade or evaluate people but to help them remember and share the information made available by them. The people are encouraged to spread and share experience and gather information that can help others. The people are also rewarded on the basis of experience they share with others.

However, sometimes in organisations right knowledge for solving a particular task is within the premises of organisation but the hindrance is to take out the time to explore it and then to learn from it. As experience is represented by experts so sometimes it is very complicated to assess the experts to solve a particular problem. Moreover, sometimes in an organisation the main task is to improve the process and reuse of a product by avoiding past mistakes. For these reasons experience has to be systematically stored. Various implications were left by the various approaches of experience management which can be overcome by using the presented approach of experience management like feedback, validation/verification, experience is shared among the organisation of similar discipline using internet not only within an organisation. Also an organisation can learn and improve only if the feedback to a particular information or gathered knowledge is available. So in order to assure learning and improvement feedback is provided in the approach. The step by step description of this approach is as follows:

**Store Experience:** The person either software engineer, project manager, mechanical engineer or surgeon can add their valuable experience in the form of data and lessons learned. Lessons learned can be a problem-solution statement, a guideline, an improvement suggestion or a result/success report. Reuse of experience in the form of process, product or other form of knowledge is mandatory for improvement i.e reuse of knowledge is the basis for improvement. Experience is stored in different ways eg equations, histograms, algorithms etc as a mechanism for packaging experience. The experience packages consists of process package, product package, management packages, tool packages, data package and relationship packages. The accumulation of data will provide baselines for planning and monitoring the users requirements. Users requirements will come from the comments or feedback they provide .

**Temporary Base:** The experience appended by the person is not available directly to the users, it is stored as a temporary database where the experience is verified and validated. Verification means checking whether the data is verified or not and also to check whether it is in proper format or not and validation means whether the data meets the user's requirements or not. Experience is only a parameter by which the users can test and enhance their understanding about their concerned area. In order to derive benefit as much as possible by providing an experience, the environment should support the experience in various ways eg having the right theme, stimulating the right senses, and leaving the users with the right feeling. Defining experience is a difficult task since it can be interpreted in so many ways. It can be viewed from many different perspectives and presumably results in different definitions. This is the main reason for capturing the experience in temporary base.

**Analysis:** In this phase of experience approach the experience is analysed by the experts. Analysis is done on the basis of quality improvement paradigm as given in [10]. This phase is responsible for researching the options for the definition of best practise, assessment methodology and the repository of sharing information. It carry out proof of concept and gain commitment from the organisation. This field also consists of three main things- goal, definition and key tasks. Goal defines the objectives that required to be fulfilled by the process in order to achieve best practice. The objectives need to be considered for the experience appended by the authenticated person and the focus of an assessment is to judge whether the experience has been verified and validated or not. A definition describes the experience and its scope that will satisfy the defined goal. Key tasks describe the standard practices that apply to any

implementation of the experience. The key tasks are defined to judge whether the goals of the experience are satisfied within the context of the business objective of the gainer or not. After analysis the experience is stored in experience repository. The analysis is also based upon structural and content management. In, structural management the administrator is responsible for managing the structure and maintaining the experience repository. He is also responsible for growing the repository as per user needs. Needs arrive from the users requests or discovered from the feedback of users. In content management, content is divided into topic areas where each topic area is assigned to a particular topic manager who manages the content of that area. The topic manager is responsible for updating, inserting or deleting the content of its assigned particular area.

**Experience Repository:** Experience repository is the central element of innovative experience approach or we can say that it is the heart of this approach. Here, it constitutes the captured and consolidated experience of either an employee or an organisation. The experiences are captured in the experience repository and is retrieved by the gainers from the experience repository. The maintenance is mandatory of experience repository. The maintenance is in terms of appending latest experiences, updating experiences, improvement in experiences by extracting feedback from the users.

**Extraction of experience:** Here the restricted view of the experience is provided to the users on demand. The user can access the experience from the experience repository and can implement to its area of interest. If the user thinks the experience is relevant for its own area of interest then the user can get that experience by paying. Epitomising, the experience is provided in restricted view and full view. Firstly, restricted view is provided and if the user thinks the experience is relevant for him then he will have to pay for accessing the experience.

**Implementing Experience:** The user is granted to access the experience from the experience base and will apply to its domain and derive benefit from it. After accessing the experience, the user is encouraged to provide feedback or comments about the experience which can prove beneficial for further improvement and development of experience repository.

**Feedback and Rating:** The users will utilize the experience in their respective field and provide the feedback, which is stored in feedback and rating where it is again verified and validated by the experts of that particular domain. Here, the experience is also rated by the gainers. After the verification and validation of feedback, it is again stored in the experience repository.

## 5. IMPLEMENTATION

The experience management can be done using the innovative experience approach. It shows the screenshot of homepage of the prescribed approach. As the main loophole of Experience Factory is that online access to the experiences is not available. So, it can be made online using the above mentioned approach. When the experience provider provides experience it is first verified and validated by the experience manager based on structure as well as content management. The afterwords it is made available to the desired users. The links for frequently add questions and feedback is also provided. The feedback provided by the user is fed into the desired content manager.



Fig 2: Snapshot of implementation of approach.

## 6. CONCLUSION AND FUTURE WORK

The innovative experience approach discussed so far will help to eliminate the loopholes of experience factory and provide the users with experience so that they can explore new experience by taking the old one in account. It also helps to fasten the work as it is not required to start the work from scratch. The experience appended by the experts is stored in the experience repository from where it is accessed by others and their feedback helps to improve the overall development of the approach.

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