**Extra Credit Homework-Part1**

Course: SEIS610-02-Software Engineering

Submitted By: Shivali Dalmia

Date: May 7th, 2021

**What is post-delivery maintenance?**

A software of any scale once deployed into production needs maintenance to keep it running as per client expectations. The maintenance efforts may include correcting faults reported by users, adapting to new operating environment, or adding more functionality to the product. These efforts can be categorized as below:

Corrective maintenance: Correcting faults or errors reported by end users of the software.

Adaptive maintenance: Modifying the software to adapt to new production environment like if there is an upgrade in operating system.

Perfective maintenance: Optimizing the performance metrics of the software such as, throughput, execution time etc.

Enhancements: Adding new functionalities to the software in case requested by the client or end user.

**How post-delivery maintenance has changed overtime in modern software development?**

The cost of software maintenance largely depends on the methodologies followed during the initial phases of software building i.e., from inception phase to transition phase. Most importantly it depends on the software development life cycle followed for bringing the software to life. For example, earlier the waterfall model was the predominant model used to develop a software. Since, the software resulted by following this model was available to client at the end of the implementation cycle, hence during the entire life cycle development team remains in dilemma of whether the software will meet client expectations or not. Additionally, the effort of implementing any enhancements requested by the client post implementation phase adds a substantial cost to the overall cost of the software.

In modern software industry the techniques of Dev-ops and Agile methodology is used widely because it is an iterative and interactive approach towards software development. The development team and end user work interactively towards achieving the goal of making a software, thereby meeting all the expectations. The entire software is broken down into small modules which are handled by different teams. The development and testing of these modules is done in a parallel fashion. Once each module is independently tested by both developers and unit testers, the integration testing is performed by quality assurance teams and finally it is deployed into production environment. This way the client sees a step-by-step progress in building of the software. Additionally, it is much easier for the development team to accommodate any enhancements requests made by the client during initial phases itself.

This culture in the organizations reduces the cost of post-delivery maintenance up to a great extent. The working relationship between client, users, developers, and other operation teams improves which help in solving the production and other maintenance issues quickly within deadlines.

**What percent of time and or money is dedicated to post-delivery maintenance?**

Though a fixed figure of duration and cost estimate dedicated to post-delivery maintenance cannot be determined, but, as studies suggest it cost around 70-75% of the total cost of ownership of the software. It depends on methodologies followed during building phases of the software, as discussed above. From the surveys conducted over last few years it is suggested that the organizations who have adopted the modern software development methods such as Agile, DevOps, and continuous integration and delivery etc. have delivered more successful products in comparison to other organizations.

**Sources:**

Textbook – Object-Oriented and Classical Software Engineering (Eight Edition) by Stephen R. Schach.

Web source: <https://medium.com/coinmonks/post-delivery-maintenance-in-modern-software-development-b97d568252e1>