SYSTEM DEVELOPMENT METHODS

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Q no. 1)

a) Ans

Requirement gathering is the process of assembling essential data (technical, functional) from clients or stakeholders, that can enlarge project vision and evade reckless mistakes in later stages of the development process. Requirement gathering can be understood as a collection of components, that can fabricate a strong foundation for a clear picture of project development process.

Considering the scenario of Jasmine theatre project, requirement elicitation is something significant for the consecution of successful system. A theatre is a place visited by hundreds of people in daily basis. This high number of audiences create crowd, which can create difficulties to staffs to manage ticket reports and other relevant information manually. So, to create a system that can perform tasks such as generating reports and storing information, the project team must be clear of required ideas. Once the gathering procedure is concluded, system analyst from the project group create documentation highlighting the requirements. This documentation is called Software Requirement Specification (SRS) Therefore, specific requirements needs to be gathered so that final product can meet end user's expectations.

Apart from this, there are several other motives to conduct a requirement gathering process. Requirement elicitation helps clear doubts between stakeholders and project managers. This makes project development become transparent and productive. There will be less number of errors in between the development and project goal is expected to meet without any complications, when requirements gathered before project commencement. In case of Jasmine theatre, interview can be useful while gathering requirements with the owners. There are plenty of talks including financial and other technical topics, that needs to be discussed during software development. For this, an interview with stakeholders is expected to be fruitful to extract some decisive information. Similarly, survey can be beneficial while gathering system requirements with end users as well as some customers. With survey, we can expect genuine answers without being involved in complicated questions. These candid answers can let us know about existing problems and provide assistance in troubleshooting them.

Q no 1)

b) Ans

Any three system analysis techniques that can be used for Jasmine theatre are :

i) Risk Analysis (Project)

The project risk analysis can be described as a detailed study or identification of probable risks in the project. The risk analysis is done in order to estimate threats, impact and to visualize possible measures that can lessen risks to some extent. This is an analysis suitable for businesses like Jasmine theatre which is considered to be a large one. This process helps to identify possible risks, their references, elements and consequences that might be seen in Jasmine theatre. The risk analysis has got multiple techniques (from advanced softwares to time and price approximations) to calculate risks.

An example of risk analysis in Jasmine theatre can be failure in system infrastructure. Since Jasmine theatre is a place which hosts hundreds or thousands of people, a lot of information needs to be stored and reports need be saved. This might cause some unusual haphazards and leads project to certain risk.

ii) SWOT Analysis (Business Intelligence)

The SWOT analysis is a classic framework that breaks down organization's intramural strengths (S), weaknesses (W) as well as external opportunities (O) and threats (T). SWOT analysis can be used in context of Jasmine theatre to resolve assets, competence, benefits and several other aspects. The example of SWOT analysis for Jasmine theatre might include :

Strengths :

- The system is simplified, convenient and cost efficacious
- The software system is user-friendly and scalable

Weaknesses :

- Immediate report generation requires internet connection
- The system might display error messages due to lack of physical control

Opportunities :

- Business attraction and enhancement due to systematic data arrangements
- Promotes digitalization, sponsors and online promotions

Threats :

- Security threats from crackers associated with data security
- Chances of mislaying data while migrating the system from one OS platform to other

This example SWOT analysis demonstrated both internal and external factors related to theatre system fortitudes and frailties.

iii) Predictive Analysis (Data Mining)

Predictive analysis is a break down process of computing or predicting future bearings and occurrences using distinctive analytical approaches. A deep analysis is done by researching available data to determine upcoming trends and correlations. In case of Jasmine theatre project, techniques like Data profiling and Time series tracking can be used. This can help analyst predict future occurrences and take necessary steps accordingly. One way can be defining few project objectives and conducting some testings to inspect whether they meet business requirements. For example, studying the use and purpose of theatre project system might give ideas about how much of assistance can system provide in theatre. Analyzing genre of show which allures more audiences and the strength of system on the other hand can be calculated as well.

Q no. 2)

a) Ans

Agile can be narrated as a software development or a program organizing method, that uses iterative approach to facilitate clients with lower costs, mutual cooperations and consumable services. As the word itself symbolizes, Agile centralizes on mindsets and efficiency rather than on frameworks or documentations.

Any two processes associated with Agile are given below :

iv. Inception

Inception, also known as start-up in agile methodology, is a process that signals project commencement. With inception, the project work begins by classifying fundamental requisites such as man force, appliances and working locations. Similarly, consequential necessities such as organizing project objectives and requirement elicitations are also settled during this process. The financial approximations are deliberated with all other factors to determine whether the project is actually feasible, credible and worth the development.

v. Iteration

Iteration or construction is considered to be one of the salient process in Agile. In this process, selected team members work on their respective project tasks swiftly, with alliance and transparency. The main objective of this process is to enhance or upgrade the project considering clients feedbacks, regular testings and other techniques. From refining, making modifications to revising, the iteration is considered crucial to produce a satisfactory end result.

Q no. 2)

b) Ans

A total of 4 values and 12 principles are embraced in Agile Manifesto with the foremost intention of acquiring project agility. All these 12 principles might barely fit in all the projects being developed. Here, any five principles that can be implemented in **BigTransport** project are given below :

i. Customer contentedness through prolific conveyance of product (P-1)

The project team spends months of time in order to release an application for general users. Still, the handwork done by the group makes it worthy when clients are satisfied with the end product. This principle, as based on Agile manifesto prioritizes iterations, user feedbacks and refinements during development process. In similar way, users who chooses BigTransport for their vehicle bookings and rentals rentals should be able to get worthy experience from application. Regular deliveries of system and engaging development is something this principle is about. End user's satisfaction about the software assures whether the application is successfully developed and operated.

ii. Acceptance of alterations throughout the development process (P-2)

When changes are welcomed, it allows development process to make some real upgrade. Permitting stakeholders and end users to make unexpected modifications in between the developmental process might break progress flow. But in greater extent, this will make user receive the software which they asked for. Additionally, the project team might learn about new creations when someone introduce their ideologies. For example, stakeholders of BigTransport company asked to append a feature that allows users to book the transportation by comparing prices. This is a fresh idea that provides users with multiple options and allows them to select the appropriate one. This will ultimately attract new users while the company can stay competitive in the meantime.

iii. Project construction around influential and enthusiastic individuals (P-5)

When a project is built under motivated group of individuals, it creates a healthy working environment. This makes insiders enthusiastic and ever ready to face upcoming new challenges. Therefore, a group of motivated individuals assists in enhancing the developmental tasks and surrounds everyone with positive energy. With project team members working with BigTransport being cooperative, united and always try to step ahead of a curve, the end products are bound to be fruitful and meet most of demanded criteria.

iv. Face-to-face communication being effectual and successful means of exchanging messages (P-6)

In agile methodology, end users and stakeholders are considered to be an important part of development process. The project team needs to be in touch with the for their feedbacks or any sort modifications during the project. This can be done via different ways : telephone, email or even with video communication. However, it has been experienced that none of these ways are precise or clear enough to make changes in project. Therefore, a face-to-face meeting must be conducted to clear all the doubts between both parties. For example, if stakeholders wants to add authentication features in their app, they can't just let project team know via a phone call. This might create some sort of misunderstanding, which can delay or pause development progress.

v. Showing progression with deliverable of functional software (P-7)

This principle depicts that, a development process is only finalized when end users are provided with a functional software. Approval signs from stakeholders and clients will only calculate all the hardships and productivity invested in project development. This basically covers everything from planning to deploying the software. For example, if BigTransportation project is handed to the company stakeholders but he/she is not satisfied with the product, that

isn't considered to be project succession. Conversely, if clients are happy and believe that the product can be advantageous for them, it is a progress or a success for both sides eventually.

Q no 3)

a) Ans

Scrum in agile methodology is a transparent framework that lets project teams and people to work together for a productive delivery of final product. Despite having several other options, reasons to recommend SCRUM for BigTransport project can be the project prioritized in incremental process. Scrum is an appropriate selection as it practices incremental and iterative approach. This will let clients receive BigTransport application much sprightly than using must of other methods. Alleviation of risk is also another consequential reason to select scrum.

Like every other methodologies, Scrum also have its own resiliences and frailties. The are :

Strengths

i) An important strength of Scrum is that it promotes organizational synergy and mutual cooperation with stakeholders. BigTransport is an application which is being developed for open use. Since the application will be accessed and operated by a lot of people, there should be no margin for any fallacies.Scrum, being transparent supports collaboration so that clients get the product they desire and stay competitive in market.

ii) Another strength of scrum is the increment of Return of Investment (ROI). Scrum declines the rate of failure as scrum detects system blunders in earlier phases. With iteration, the BigTransport application can be delivered ahead of its completion which increases revenues in a whole.

Weaknesses

i) BigTransport is a big application that requires a big team for development. So, there is a possibility when Scrum framework might turn out to be challenging to adopt due to big team. This can be considered as one of the weakness of scrum.

ii) Another general weakness is high number of meetings and collaborations. Stakeholders and other members might have a hectic schedule and it might get frustrating when they are called for meetings time and again.

Q no 3)

b) Ans

The scrum methodology comprise of several ceremonies, with each of them having their own functionalities and duration. This assures project quality, transparency, declines complexity and clarifies ultimate goals. Sprint acting as a container to hold all other events, any four events taking place are :

i) Sprint Planning

With Sprint planning, project plans are made ready and the sprint officially commences. The project manager and stakeholders discuss project goals and make sure the project team is ready to engage in development process. The sprint planning ceremony acts as a substructure which incorporates crucial topics to decides project succession. The time-boxed event depends on the project size (ranging from 4 hrs, up to 4 weeks) and some of the topics discussed in Sprint Planning are :

- Merits and principles of sprint
- Discussion about Product Backlog Items (PBI) to include in sprint
- Working schemes to accomplish assigned goals in sprint increment

Once managers and developers comes to an agreement about spring goals and PBI within a sprint, the development process reaches next level. This event benefits the project by clarifying working modules, uplifting participants morale and grasping focus towards the development.

ii) Daily Scrum

The next ceremony is Daily Scrum which is a 15-minute event, usually conducted within developers accompanied by project members. The main aim of this process is to evaluate the project progress and analyze accurate path towards the project goal. Members participating in daily scrum express their contributions to the project in last 24 hours and in nearest future (upcoming 24 hours usually). The daily scrum event also permits remodeling product backlog prepared during sprint planning, if it is creating any complications in project goal path. The benefit of daily scrum is it helps to improve mutual understanding, recognize barriers and keep project team updated to their task on BigTransport project. Moreover, this phase also plays fundamental role in spotting swift decisions to make necessary modifications.

iii) Sprint Review

A sprint review is a time-boxed event conducted at the end of every sprints. The main objective of sprint review is to examine, criticize and reconsider project process. When the expected goal is accomplished by the end of sprints, the outcome is presented by scrum team. This is further inspected by stakeholders and necessary steps are taken to decide upcoming tasks. This phase also permits necessary adaptations to be made with Product Backlog Items (PBI). PBIs that have been finalized are explained by product owner while scrum team do inquires on financial plan, project timeline, marketplace and potential. The benefit of this ceremony is that it assists in making BigTransport a complete application, and a top level product as mentioned in Agile Manifesto as well.

iv) Sprint Retrospective

Once the sprint review is completed, the sprint retrospective event is reached where previous sprints are studied and necessary plans are discussed for probable improvements in project development. Everyone from the scrum team including Scrum master, product owner and developers take part in sprint retrospective to confer about items and make necessary alterations. This ceremony is about pinpointing backlog items and predispose effectiveness and quality. The team reviews obligatory improvements that might be fruitful to use during upcoming sprints along with its procedures.

This will help BigTransport project to troubleshoot errors detected in previous sprints so that clients receive what they actually expected as the end product. Additionally, a sprint retrospective gathers fallacies and enlightens refinement techniques within procedures, mechanism with high quality software.

Q no 4)

Ans

With technology advancing and users being allured to latest tech facilities, system changeover has been one of the indispensable part in technological department. Every company wants to provide satisfactory services to their staffs and clients, so that they can stay ahead of their competitors in today's occupied market. The process requires rhythmic shifting of system to adapt a new one without perturbing the business. Any four major system changing strategies are :

i) Direct Cutover

'Direct Cutover', also known as 'Cold Turkey Cutover' is a system changeover method, where the old/current system is completely substituted with the new system. This is not the safest approach to change as chances of data loss are high. It is appropriate for scenarios where data loss is not a big concern or two system are not able to run new system side by side. An example of direct change over is switching of computers from electricity to inverters during power cutoff.

Direct Changeover

Fig : Direct Cutover

Advantages :

i) The direct cutover method requires less resources as it uses only one system for operation

ii) This approach is economical, easy to carry out and does not require coupling interfaces

Disadvantages :

i) This methodology is irreversible and has prominent uncertainty of data mislaying

ii) Possibility of jeopardies like system failure cannot be ruled out

iii) Parallel Operation

The parallel operation is a changeover methodology that entails concurrent operation of both old and new system. This is considered to be a safer choice as both systems function side by side unless there is a assurance that the new system performs successfully. The entire old system is then transformed into the new one when administration team along with end users are pleased with new system.

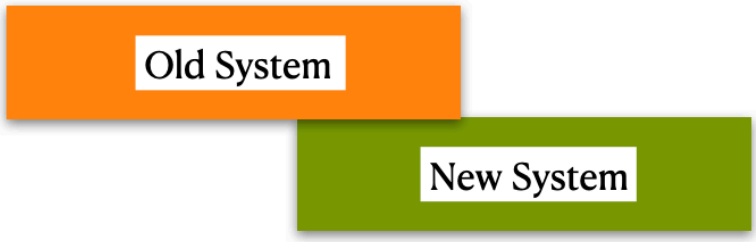

Fig : Parallel Operation

Advantages :

i) The parallel operation is a low risk approach as two systems work simultaneously and the old being used as a backup incase of any uncertainties.

ii) This is a reversible process and allows operators to change decisions in certain cases like system failures.

Disadvantages :

i) The process is comparatively expensive and uses more resources (twice) during operations

ii) This changeover method enlarges working time period as it forces users to work in both systems.

iii) Pilot Operation

This is a changeover methodology where a certain location is selected and the new system is put into action at that particular location. Popular among large-scale companies the system is tested in a specific location, which is known as pilot site. While the old system keeps functioning alongside pilot site, the new system will be tested in the meantime, until it meets the requirement.

Fig : Pilot Operation

Advantages :

i) The changeover plan can be accustomed as the system is separately tested in distinct location

ii) System execution complications like interferences and failures won't affect whole system.

Disadvantages :

i) The changeover duration is of considerable length

ii) This process requires connecting interfaces between two (old and new) systems

iii) Phased Operation

In phased operation, the new system is implemented step by step moderately. This is basically a amalgamation of parallel and direct changeover. The process continues step by step with every subsystem being implemented successfully to create a new working system. This method is known to be cautious because interruption during process only affects that specific phase which is being implemented.

Phased Changeover

Fig : Phased Operation

Advantages :

i) The phased operation allows users to be system friendly and also to recuperate fallacies in minimal time period.

ii) There is no big uncertainties about complete data loss as the process flows step by step.

Disadvantages :

i) The process completion takes long period of time

ii) The area of implementation is limited while using this process

The recommended system change-over strategy for Le Camion project would be '**Pilot Operation**'. This is because pilot operation approach allows old system to run without any disruption. Since testings will be done in pilot site, there won't be much of a risk as well as workload like in parallel method. This method also assure high security of all the data stored by La Camion in their old system. Once the test is completed, the accepted system is brought to use which does not hamper business timelines and workflow. Considering all these factors, the Pilot method would be the most suitable method for Le Camion project.