Capstone Project Prep 1 Part 1: Online Agriculture Product Store

**Roles:**

**Mr. Henry Company: SOONY**

Mr. Pandu -Financial Head

Mr. Dooku – Project Coordinator

Mr. Kevin – Committee Members

Mr. Peter – Committee Members

Mr. Ben – Committee Members

**Mr. Henry gave the project to APT IT Solutions**

Mr. Karthik- Delivery Head

Mr. Vandanam – Project Manager

Ms. Juhi – Senior Java Developer

 Mr. Tyson – Java Developer

 Ms. Lucie – Java Developer

 Mr. Tucker – Java Developer

 Mr. Bravo – Java Developer

Mr. Mike – Network admin

Mr. John – Database Admin

Mr. Jason – Tester

Ms. Alekya – tester

Me – Business Analyst

**Q1: Prepare Business Process Model**

Def: Business Process Model (BPM) aims to understand, document, and optimize business operations by visualizing their purposes.

**Goal:** To facilitate farmers in remote areas to buy agricultural products (seeds, fertilizers, and pesticides) online.

**Input:**

1. Required Products information: To know what types of products and the quantity required to purchase.
2. Farmers' information: Information required to create an account and an address to deliver the purchased goods,
3. Manufacturer and availability: To get the details from the companies for the products they offer and the availability of the products in the online store.
4. Marketing Campaigns: To provide farmers’ the information about the product's specifications, prices, etc. before purchasing.

**Resources:**

1. Office space: A platform where the team comes together to discuss the plans, requirements, etc.
2. Team members: BA, Developers, Testers, Database and Network admins who are involved in requirements gathering, developing the application, testing the application for quality assurance, and back-end support, respectively.
3. Revenue: Budget given for the project or application development.
4. Application software: The application platform where the customers can browse, select, and order.
5. Internet facility: Required to connect to the application software.
6. Delivery logistics: Deliver the products to farmers at their respective locations and provide support in case of any queries.

**Outputs:** Timely delivery of products, increased the market value for manufacturers and suppliers involved, and farmers readily receiving the products.

**Activities:**

1. Requirements Gathering
2. Developing the application software
3. Testing the application
4. Providing info to the farmers
5. Browsing through products
6. Select and order the products
7. Making payment
8. Delivering the products
9. Customer feedback

**Value:**

1. User-friendly and time-saving.
2. Easy accessibility to new products
3. Increase in the efficiency of farming
4. Direct involvement with the manufacturer and Cost-efficient

**Q2: SWOT Analysis**

Def: It is a process to assess the project's strengths, weaknesses, opportunities, and threats, helping to identify areas of improvement.

**Strength**:

1. Easy to operate
2. Effective process
3. Skilled team members
4. Price benefit and timely operations

**Weakness:**

1. New to the domain
2. user's lack of knowledge on digital platforms.
3. Connectivity issues
4. Delivery delay due to remote areas.

**Opportunities:**

1. Business exposure globally
2. New business opportunities
3. Educating users on the technology
4. Company growth, hiring and training the new workers

**Threats:**

1. Quality issues
2. Economic loss
3. Competition with already existing platforms
4. Any climatic condition

**Q3: Feasibility Study**

Def: It focuses on helping answer the essential question of whether we should proceed with the proposed idea.

* **Technology**: Java-based on the database servers, Security and payment gateways
* **Hardware**: Laptop/computers, Backup systems for data storage
* **Software**: Payment gateway software, Application development software, Navigating through the cart software
* **Resources**: Java Developers, Technical team, Database team, testers, Business Analyst
* **Budget**: 2 Crores, which includes various costs like hardware and tools installation, salaries of the workers, development, and management
* **Timeframe**: 18 months

**Q4: Gap Analysis**

Def: it is a process that analyzes the company’s current performance with its desired or expected performance to identify the areas of improvement or changes needed to achieve the goals.

**Current State (As Is):**

1. Third-party involvement leads to a rise in prices and a lack of quality of products.
2. Visiting the market is time-consuming, and travel cost is also included.
3. Purchase what is available in the market

**Desired or Expected state (To Be):**

1. Direct dealing with the manufacturers with the desired price and good quality.
2. Can order products easily and hassle-free
3. Can come across many new products

**Q5: Risk Analysis**

Def: Risk Analysis is the process to identify business, financial, technology, and operational risks that could negatively affect the project.

**Internal Risk:**

1. Technical issues at the server end and any system downtime.
2. Depending on the external vendor for the product management

**External risk:**

1. Competition from similar online stores
2. E-commerce platform rules

**BA Risk:**

1. Lack of knowledge of the agricultural industry and the technology
2. Incomplete gathering of requirements
3. Miscommunication with stakeholders
4. Improper planning
5. Applying the incorrect elicitation technique
6. Lack of resources and budget

**Project-based risk:**

1. Farmers/users' lack of adaptation to the digital platform
2. Security risk during the payments
3. Technical risk, which may lead to downtime or system crashes
4. Lack of a technical team required for development

**Q6: Stakeholder Analysis (RACI Matrix)**

Def: Stakeholder analysis helps you to identify everyone who needs to be involved and assess how much time and resources to give to maintaining their involvement and commitment.

|  |  |  |  |
| --- | --- | --- | --- |
| **R- Responsible** | Mr. Karthik | Deliver Head, APT IT Solutions | Responsible for the complete operations and the delivery of the project |
| Mr. Vandanam | Project Manager | Responsible for the project planning and allocation of tasks |
| Ms Vidya Tadepalli | Business Analyst | Responsible for requirements gathering, business documentation, and communicating with different stakeholders for timely performance |
| Mr. Pandu | Financial head | Responsible for the amounts released for different tools (software and hardware), wages |
| **A-Accountable** | Mr. Henry | Project Sponsor | Initiator of the project and approves the final output of the project |
| Mr. Dooku | Project Coordinator | Accountable for communicating with other stakeholders and providing guidance to the project team |
| **C-Consulted** | Ms. Juhi | Senior Java Developer | Leads and helps the development team responsible for the project |
| Mr. Tyson | Java Developer | Develops and implements the application software |
| Mr. Tucker | Java Developer | Develops and implements the application software |
| Mr. Bravo | Java Developer | Develops and implements the application software |
| Ms. Lucie | Java Developer | Develops and implements the application software |
| Mr. Mike | Network Admin | Consulted to set up the network infrastructure |
| Mr. John | Database Admin | Consulted to create a data and manage the database required for the project |
| **I - Informed** | Mr. Jason | Tester | Informed to conduct the testing for quality assurance |
| Ms. Alekya | Tester | Informed to conduct the testing for quality assurance |
| Mr Ben | End user | Asked to check the functionality of the application |
| Mr. Kevin | End user | Asked to check the functionality of the application |
| Mr. Peter | End user | Asked to check the functionality of the application |

**Q7: Business Case Document**

Def: A business case is a package of information, analysis, and recommendations. It also helps to identify key stakeholders who are affected by the problem.

1. **Why is the project initiated?**

This project is initiated to develop an online agricultural platform to solve challenges faced by farmers in remote areas who struggle to purchase required products like seeds, pesticides, and fertilizers.

1. **What are the current problems?**

The current problem is timely product availability to farmers. Increase in prices due to third-party involvement.

1. **With the help of this project, how many problems could be solved?**

Easy access to farmers with timely delivery. Purchasing the products at the best price. The Quality of the products is ensured.

1. **What are the resources required?**

Laptop, Technical team, Development team, Database and Network Admins, Stakeholders, Revenue.

1. **How much organizational change is required to adapt this technology?**

Need to know about the agricultural industry. To conduct campaigns to educate farmers on the digital platforms. The organization needs to register to market the products globally.

1. **Time frame to recover ROI?**

The time frame to recover the Return on Investment (ROI) is evaluated within1-3 years. In case of expansion of business, the time frame is evaluated as long-term for more than 3 years.

1. **How to identify stakeholders?**

Stakeholders can be identified through various techniques like Brainstorming, Stakeholder analysis, etc. We have Primary Stakeholders, Secondary Stakeholders, and 3rd party Stakeholders.

**Q8: Four SDLC Methodologies**

Def: Software Development Life Cycle (SDLC) is a process used by a software development team to plan, design, build, test, and deploy software. The methodologies include Sequential, Iterative, Evolutionary, and Agile.

1. **Sequential Methodology (Waterfall):**

It is a traditional model and the most commonly used process. It is a step-by-step approach where each phase must be completed before moving to the next phase. Easy to manage due to its linear nature. It works for the projects where the requirements are easily understood. But the changes cannot be made during the development process.

1. **Iterative (RUP):**

Rational Unified Process (RUP) is an iterative process where the project is developed into small multiple iterations or cycles. It can track the defects in early stages, which allows the downward flow of the defects. Change requests is welcome in each cycle. It leads to the requirement of more resources and budget if not managed properly.

1. **Evolutionary (Spiral) Methodologies:**

The spiral model is a risk-driven process. It has 4 phases: Planning, Risk Analysis, Engineering, and Evolution. Risk is assessed starting in the planning phase only where the requirements gathered are unclear. It is expensive and time-consuming.

1. **Agile (Scrum):**

It is the most common approach where software is developed in small cycles called Sprints. Focus more on working software compared to comprehensive documentation. Change requests are accepted at any phase. It follows 12 Principles.

**Q9: Waterfall RUP, Spiral, and Scrum Models**

Each model has its benefits and disadvantages. Waterfall model is easy to manage and has a structured workflow, but it cannot accommodate changes once the development is started. In the RUP model, risks are identified in the early stages but may lead to scope creep. The spiral model can accommodate changes at each phase, but it is expensive and time-consuming. Scrum delivers software functionality frequently and easily adapts to change requests, but requires more team involvement.

V- model is an extension of the waterfall model where testing is involved at each development stage. It allows the detection and correction of errors in early stages. It will help us in reducing the repetition of the work and lead to improved quality and better outcomes. So, looking at the pros and cons V-model, it would be better for the project.

**Q10: Waterfall vs V-model**

|  |  |
| --- | --- |
| **Waterfall Model** | **V- Model** |
| It is a linear and sequential model where each phase must be completed to begin the next phase | An extension of the waterfall model where testing is done in parallel with development |
| Identifies risks after development | Identifies risks during the development |
| The cost of fixing bugs is high as they are identified at the end | The cost of fixing bugs is less when identified in early stages |
| Suitable for small to medium-sized projects. Ex. Web applications | Suitable for Medium to large-scale projects, Ex. Safety systems |
| No parallel testing | Testing is done in parallel with development |
| Low-cost | High-cost |
| Involvement of customers is low | Involvement of customers is high |
|  |  |

**Q11. Justify your Model.**

As a Business Analyst for this project, I recommend the V-model. The main goal is to achieve success with low risks and within the budget and time. In the V-model, the testing is done in parallel with the development. It helps us to identify the risk involved in early stages and can be avoided. The project will be completed within the given time and budget, as the bugs were identified earlier and fixed at a low cost.

**Q12. Gantt Chart**

|  |  |
| --- | --- |
| **Phases** | **Duration** |
| Requirement Gathering (RG) | 4 weeks |
| Requirement Analysis (RA) | 5 weeks |
| Design | 10 weeks |
| Development (D1) | 8 weeks |
| Testing (T1) | 5 weeks |
| Development Backend (D2) | 8 weeks |
| Testing (T2) | 5 weeks |
| Development Frontend (D3) | 8 weeks |
| Testing (T3) | 5 weeks |
| Development Live Environment (D4) | 8 weeks |
| Testing (T4) | 5 weeks |
| User Acceptance Testing (UAT) | 7 weeks |

**Q13: Fixed Bidding vs Billing**

**Fixed Bidding Projects:**

* A project with a fixed budget agreed initially is fixed bidding project.
* The requirements are fixed.
* High risk for vendors in case the cost overruns.
* Changes are not accommodated as they involve more revenue.
* The project delivery should be within the time frame.
* Less involvement of the Client.

**Billing Projects:**

* In Billing projects, the budget is based on the hours worked and resources used.
* The requirements can change over time.
* Client and vendor share responsibility for the additional cost.
* Changes are flexible.
* Project Delivery can be adjusted based on the complexity and for any requirement change.
* More involvement of the client throughout the project.

**Q14: Prepare timesheets of a BA in various stages of SDLC**

|  |
| --- |
| **Requirement Gathering** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | Identify the stakeholders | List down the stakeholders | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | Requirement Gathering | Collecting all the requirements from the client | 2:00 PM | 3:30 PM | 1.5 hours |
| 3 | Inputs for BRD document | Ask for BRD from the client and SME Discussion | 3:30 PM | 5:30 PM | 2 hours |
| 4 | Brainstorming to be done | Sorting and documenting the requirements | 5:30 PM | 7:00 PM | 1.5 hours |
| 5 | Prioritize and Validating requirements | Equip MOSCOW and FURPS techniques | 7:00 PM | 9:30 PM | 2.5 hours |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Requirement Analysis** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | UML Diagram | Preparing use case and activity diagrams | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | Functional Requirements | Preparing all the functional requirements from the requirements gathered | 2:00 PM | 3:30 PM | 1.5 hours |
| 3 | SSD | Architects come up with technical requirements.  | 3:30 PM | 5:30 PM | 2 hours |
| 4 | SRS Document | The SRS document will have both technical and functional requirements. Take sign-offs on SRS from the client. | 5:30 PM | 7:00 PM | 1.5 hours |
| 5 | RTM | Prepare RTM from the SRS document before design to trace the requirements. | 7:00 PM | 9:30 PM | 2.5 hours |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Design Timesheet** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | Test Cases | From use case diagrams, prepare test cases | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | Client communication | Communication with the client on the designs | 2:00 PM | 4:30 PM | 2.5 hours |
| 3 | RTM | Updating the progress in RTM | 4:30 PM | 5:30 PM | 1 hour |
| 4 | User Manual | To prepare the end-user manual | 5:30 PM | 7:00 PM | 1.5 hours |
| 5 | Solution | From use case diagrams, prepare solutions | 7:00 PM | 9:30 PM | 2.5 hours |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Development Timesheet** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | JAD Session | Conducting JAD sessions | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | Queries | BA clarifies the queries of the technical team during coding | 2:00 PM | 3:30 PM | 1.5 hours |
| 3 | RTM | Updating the progress in RTM | 4:30 PM | 5:30 PM | 2 hours |
| 4 | User Manual | To prepare the end-user manual | 5:30 PM | 7:00 PM | 1.5 hours |
| 5 | Status Meet | Conduct regular status meetings with the client and technical team and prepare client for UAT | 7:00 PM | 9:30 PM | 2.5 hours |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Testing Timesheet** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | Test Cases | From use case diagrams, prepare test cases | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | Testing | Performs high-level testing | 2:00 PM | 4:30 PM | 2.5 hours |
| 3 | Test Data | Requests testing from the client | 4:30 PM | 5:30 PM | 1 hour |
| 4 | RTM | Updating the progress in RTM | 5:30 PM | 7:00 PM | 1.5 hours |
| 5 | User Manual | To prepare the end-user manual | 7:00 PM | 9:30 PM | 2.5 hours |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **UAT Timesheet** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | Design | Working on UAT design | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | Testing | Supporting users in testing | 2:00 PM | 4:30 PM | 2.5 hours |
| 3 | Test Data | Preparing the client for UAT and showing the results of UAT | 4:30 PM | 5:30 PM | 1 hour |
| 4 | RTM | Updating the progress in RTM | 5:30 PM | 7:00 PM | 1.5 hours |
| 5 | Signoff | Taking signoffs from the client on the Client Project Acceptance Form | 7:00 PM | 9:30 PM | 2.5 hours |
|  |  |  |  |  |  |
|  |  |  |  |  |  |
| **Deployment and Implementation Timesheet** |
| **S.No** | **Tasks**  | **Actionable items** | **Start Time** | **End Time** | **Duration** |
| 1 | RTM | Forwards RTM to client or PM, which should be attached to Process Closure Document | 10:30 AM | 1:00 PM | 2.5 hours |
| 2 | User Manual | Coordinate to complete the User manual | 2:00 PM | 4:30 PM | 2.5 hours |
| 3 | Training Sessions | Providing training sessions to the end users | 4:30 PM | 7:00 PM | 2.5 hours |
| 4 | Lessons | Prepare Lessons learned from this project to avoid mistakes on the next project | 7:00 PM | 9:30 PM | 2.5 hours |