1. Identify the problem as stated by the customer.
   1. Purpose: Once the initial problem is received from the customer, it must be properly identified and broken down for team understanding before the engineering of a solution can begin.
   2. Expected Duration: 1 day
   3. Expected Input: Initial Staring Point
   4. Expected Output: Formalized Problem Statement.
2. Solicit initial goals from customer for the stated problem.
   1. Purpose: Multiple goals could be identified once the problem is identified but soliciting the goals from the customer removes the possibility of over or under engineering a solution. This prevents additional wasted effort.
   2. Expected Duration:1 day
   3. Expected Input: Initial Starting Point
   4. Expected Output: Formalized goals for derivation of functional and non-functional requirements.
3. Discuss worst case scenarios for the solution.
   1. Purpose: What an engineer identifies as a worst case scenario and what a customer identifies as the worst case scenario can be two different things. This clarifies what is and is not expected from the problem solution when it is under extreme stress.
   2. Expected Duration: 1 day
   3. Expected Input: Initial Starting Point
   4. Expected Output: Expected worst case scenarios for tailoring requirements.
4. Define initial functional requirements for the system.
   1. Purpose: Once the initial discussions are done, the actual functional requirements must be defined and sorted into use cases.
   2. Expected Duration: 2 days
   3. Expected Input: Initial customer information i.e. formal problem statement, formal goals, expected worst case scenarios for the solution.
   4. Expected Output: Initial Functional Requirements.
5. Define Worst Case Scenarios for the functional requirements of the system.
   1. Purpose: The worst case scenarios must be formally defined and documented before actualizing an approach to the functional requirements. This prevents initially engineering an approach to a requirement that would violate the customer’s defined worst case scenario.
   2. Expected Duration: 2 days
   3. Expected Input: Initial customer information i.e. formal problem statement, formal goals, expected worst case scenarios for the solution.
   4. Expected Output: Formal definition of worst case scenarios for system contrainsts.
6. Discuss Initial constraints with the customer.
   1. Purpose: While not worst case scenarios, a customer may have specific constraints for their problem where they want specific behavior. These constraints can sometimes be counterintuitive which necessitates early definition.
   2. Expected Duration: 1 day
   3. Expected Input: Initial customer information i.e. formal problem statement, formal goals, expected worst case scenarios for the solution.
   4. Expected Output: Expected system constraints not included in worst case scenarios.
7. Define initial non-functional requirements.
   1. Purpose: Once constraints are discussed with the customer, they are formalized into non-functional requirements and enforced in the implementation of the functional requirements.
   2. Expected Duration: 1 day
   3. Expected Input: Expected System constraints.
   4. Expected Output: Initial Non-functional requirements.
8. Solicit customer feedback on initial functional and non-functional requirements.
   1. Purpose: Once initial descriptions are created for the identified functional and non-functional requirements, customer feedback is necessary to check early verbiage and to spot contradictions in the requirements. Customer’s can also change their mind on details so early feedback could save time in the long run.
   2. Expected Duration: 2 days
   3. Expected Input: Initial Non-Functional and Functional Requirements
   4. Expected Output: Feedback for non-functional and functional requirements.
9. Revise non-functional requirements based on customer feedback.
   1. Purpose: Revisions based off of customer feedback, may not be necessary depending on the solicitation but included as it is always possible.
   2. Expected Duration: 1 day.
   3. Expected Input: Initial Non-functional requirements feedback from customer.
   4. Expected Output: Revised Non-functional requirements.
10. Create initial approach to functional requirements.
    1. Purpose: Once the verbiage is agreed upon by the customer and any issues are ironed out, the actual approach to solving those problems can be defined in depth.
    2. Expected Duration: 3 days
    3. Expected Input: Feedback from initial Functional Requirements.
    4. Expected Output: Functional requirements with initial definitions to their underlying implementation. I.E. R1 -> 1.1, 1.2 -> 1.2.1, 1.2.2
11. Create Feasibility Tests based off worst case scenarios.
    1. Purpose: Even if the requirements and approach are defined, it may not be feasible in its current state based off the customers worst case scenario. This allows for the analysis of if the requirements are even viable.
    2. Expected Duration: 2 days
    3. Expected Input: Initial Approach to each functional requirement.
    4. Expected Output: Feasibility test cases.
12. Review Feasibility results and requirement revisions with the customer.
    1. Purpose: The customer may have concerns based off feasibility results. This also presents another opportunity to verify requirements revisions.
    2. Expected Duration: 1 day
    3. Expected Input: Feasibility Test Cases, Functional Requirements initial implementation, revised non-functional requirements.
    4. Expected Output: Customer feedback on all submitted information up to this point.
13. Revise non-functional requirements based on customer feedback.
    1. Purpose: Revisions based off customer feedback, may not be necessary depending on the solicitation but included as it is always possible.
    2. Expected Duration: 1 day
    3. Expected Input: Non-functional requirements feedback and suggested revisions.
    4. Expected Output: Refined non-functional requirements.
14. Revise Functional requirements approach based on customer feedback.
    1. Purpose: The customer may have feedback to the functional requirements approach. While revisions to the main functional requirements should not be occurring, error handling and additional minor tweaks to the approach may be changed by the customer.
    2. Expected Duration: 1 day
    3. Expected Input: Functional requirements implementation feedback.
    4. Expected Output: Refined functional requirements feedback.
15. Discuss Acceptability testing for requirements.
    1. Purpose: The customer input is required for in house testing of what is and is not acceptable for the solution and those are generated both from the requirements and from the customer.
    2. Expected Duration: 1 day
    3. Expected Input: Customer feedback from previous submission.
    4. Expected Output: Defined expectations for acceptability testing.
16. Generate Acceptability Test Cases
    1. Purpose: The customer needs cases to validate that the solution is necessary for their use case. This allows in house testing and clearly defined functional test points.
    2. Expected Duration: 3 Days
    3. Expected input: Defined expectations for acceptability testing.
    4. Expected output: Initial Acceptability Test Cases.
17. Discuss user interface preferences with customer.
    1. Purpose: The user interface can be semi-defined from the requirements but there could be certain stylistic decisions both in the design and overall UX. The customer needs to define what they expect not only on the functionality level but on the graphical level as well.
    2. Expected Duration: 1 day
    3. Expected Input: Customer feedback from previous submissions.
    4. Expected Output: Defined user interface preferences and flow.
18. Generate user interface mockups.
    1. Purpose: Initial mockups will be required for customer verification and validation.
    2. Expected Duration: 3 days
    3. Expected Input: Defined user interface preferences and flow.
    4. Expected Output: Initial GUI Mockups.
19. Submit requirements and GUI requirements to customer for final review.
    1. Purpose: Requirement updates and initial mockups will need customer feedback. Frequent customer reviews may take up time in the early phases but could reduce time lost to large scale changes later in the timeline.
    2. Expected Duration: 1 day
    3. Expected Input: Revisions to functional and non-functional requirements for the software, acceptability test cases, and initial GUI mockups.
    4. Expected Output: Final customer feedback for final requirements revision.
20. Revise user interface mockups from customer feedback.
    1. Purpose: While there may not be feedback on the initial mockups, there usually are at least minor changes. This task reflects those by having a minimum requirement of no changes but a maximum of 2 days.
    2. Expected Duration: 2 days
    3. Expected Input: Initial GUI Mockup feedback.
    4. Expected Output: Finalized GUI Mockup
21. Revise functional requirements approach from customer feedback.
    1. Purpose: The customer may have feedback to the functional requirements approach. While revisions to the main functional requirements should not be occurring, error handling and additional minor tweaks to the approach may be changed by the
    2. Expected Duration: 1 day
    3. Expected Input: Functional Requirements feedback
    4. Expected Output: Finalized Functional Requirements specifications.
22. Revise non-functional requirements from customer feedback.
    1. Purpose: Revisions based off customer feedback, may not be necessary depending on the solicitation but included as it is always possible.
    2. Expected Duration: 1 day
    3. Expected Input: Non-functional requirements specification.
    4. Expected Output: Finalized functional requirements.
23. Finalize the requirements documentation with final GUI mockups.
    1. Purpose: This task assumes that customer feedback at this point is minimal, where changes are minor tweaks or already preapproved and awaiting a formalized submission.
    2. Expected Duration: 2 days
    3. Expected Input: Compilation of User interface revisions, functional requirements revisions, and non-functional requirements revisions.
    4. Expected Output: Finalized Requirements Document.
24. Receive final customer approval / sign off.
    1. Purpose: With final edits completed and everything formalized, the requirements are submitted to the customer for a final sign off signifying the end of the analysis phase.
    2. Expected Duration: 1 day
    3. Expected Input: Finalized Requirements Document.
    4. Expected Output: Signed Finalized Requirements Document.

Pert Chart: See Project File (Will Not Fit), TE/TL in Notes section of each task/milestone

Gantt chart: