Managing Doordash Complaints

Problem Analysis and Requirements Document

IS / HCC 636: Systems Analysis and Design
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1. Introduction

Given the popularity of ordering food online and having it delivered in minutes, there are numerous food delivery services in the contemporary market. One of the most popular food delivery services is DoorDash. It is perhaps one of the fastest growing food delivery services in the United States. Doordash has been highly competitive with its market "rivals", UberEats and GrubHub. According to CNBC, most recently, within the past two years Doordash has surpassed their performance over UberEats and GrubHub [8]. One of the key reasons Doordash has gained unprecedented popularity is its return policy. Specifically, Doordash honors any form of complaints from its customers and provides a full 100 percent complimentary refund on their order. Once the complaint is logged Doordash is automatically obligated to provide 100 percent refund in form of Doordash credits to the customers' accounts.

Although honoring any form of complaints and refunding 100 percent of the ordered amount is an excellent customer service, it was discovered that many of its customers might be abusing the return policy. There is not only a misuse of a return policy, but also to some extent, this policy creates a negative image about the services offered by Doordash, food quality and quantity from the restaurants participating with Doordash, as well as the dasher, the delivery driver working for doordash, offering the actual service. It is well known that the complaints are public facing and directly affect the image of the food delivery service as well as participating restaurants.

Some of the other impacts of this policy include surges in unreliable customers who are participating in the transaction with the intent to take advantage of the return policy. This not only affects Doordash and restaurants, but also the loyal, valuable and true customers who are heavily dependent on the reviews about the service in a particular area and the restaurants around it. Due to the fake negative reviews, well-intentioned customers might look for an alternative to Doordash.

Although Doordash is aware that its return policy is being abused, there is a lack of action from the food delivery service to address this concern. Doordash might understand the problem at stake and leverage resources including technological resources to not only zoom in on the roots of the problem but potentially come-up with a solution to reduce the misuse of the refund policy and eventually stop it completely.

Project Scope

Analysis of Project scope

The project scope is mainly determined by understanding the problem space, identifying where in the overall business layout the problem is underlying and which stakeholders are involved. Activities such as receiving orders, locating dashers and restaurants, handling transactions and more are information systems activities that are seamlessly happening. However, we find the main origin of Doordash complaints to be in the lack of liability the stakeholders assume, but rather blindly attributed to the company.

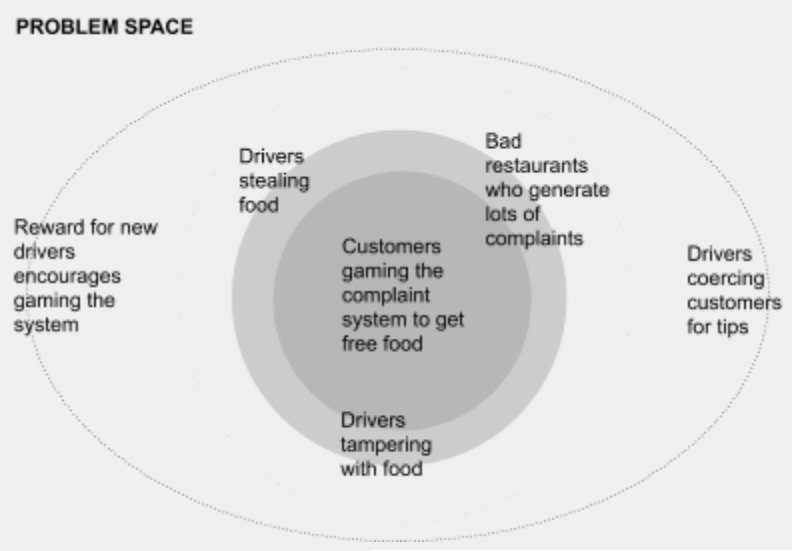


fig. 1.0 Analysis of problem space

It appears as though the company is shooting itself in the foot by paying for any wrong that goes in the transaction regardless of whom it was committed by. Even though this "appeal" enticed a large number of customers, it has and will cause significant financial burden to the company, which will inevitably end up unable to support the commitment. The project scope lies within the boundaries of introducing liability to the process and eliminating as many variables as possible.

Justification for using Information System (IS)

The aforementioned understanding of the problem space indicates that the problem is a missing link in the existing information systems platform of DoorDash. Thus, we see the value in leveraging information systems to address this problem faced by DoorDash, which itself is an existing IS platform. We believe **information systems will solve the problem** mainly for the following reasons:

- IS could be used to timestamp activities and processes that happen between the point of food being dispatched from the restaurant to delivery of the food. This will hold the dasher liable for delayed delivery, which is a big source of customer remorse.
- Another case IS can be leveraged in is the process of authentication. A "device"(container) with a digital lock can send an "unlocking(decryption) code" to the customer when the restaurant puts the food in the device and locks it for delivery. This will prevent dashers from tampering with the food.
- The third mechanism that could be put in place is leveraging AI, Artificial Intelligence to label and flag customers and for reinforcement learning. Reinforcement learning allows us to determine not only the immediate reward but also the next situation and, through that, all subsequent rewards.[1] With the previously mentioned checks in place, if a customer complains about the quality of food, the restaurant will pay for it for the first few orders, lifting the burden off DoorDash. However, If a user files more than a given number of complaints , say 5, in a month of time, they will be banned from the system thus not being able to make delivery requests. The restaurants may also be banned if they are complained about by multiple users. Similarly, the dashers will be rated by the customers (this is an existing feature).

The AI feature will label, flag or promote the stakeholders based on their performance in the transaction. With these information system measures put in place, we'll be able to introduce liability for the transaction.

2. Feasibility Analysis

DoorDash is a leader in online food Delivery and conjunctions throughout the United states. DoorDash has expanded to more than 4,000 cities and offered a 340,000 selection of stores across US and Canada, while Doordash application sales have grown over the past five year the rate of growth has slowed significantly. One key factor for this slowing growth rate is bad reviews and refund policy which has raised about 2 billion from investors including softbank in the two past years. This rate has began falling in recent years.[9]

Technical Feasibility

New technology may be developed internally or contracted through a service provider which incurs cost which must be weighted in determining path forward. Upgraded technological capabilities will be required for Doordash to move forward.

Familiarity with the technology

It is important to study about technologies that would be used for the Application. The primary purpose is to learn about which technologies can be used which result in reducing the chances of the detection of loyal customers. We need to focus on the proper utilization of resources, such as time and money. Knowledge is also a main concern.

DoorDash, a food delivery company, has now started working with Scotty Labs, a startup focused on developing autonomous and remote-controlled vehicle tech. CEO Tobenna Arodiogbu said the "central conviction" of the organization was that "the future of logistics would be autonomy and remote assistance". To build an application the analyst must make sure the team that would be working on this project are well-versed in the application development. The application should be user-friendly which requires employees who are expertised in Software skills. Scotty Labs is working on technology that allows people to monitor self-driving cars remotely. They raised a $6 million seed round from Gradient Ventures with participation from Horizon Ventures and Hemi Ventures.[10]

Project size

Evaluation of project size is done by taking into account the time constraint and skilled staff working on the project. It is dependent on which path DoorDash chooses as a solution. Please see the discussion in section, "Estimation of Schedule, Size, and Effort."

Compatibility

DoorDash is currently collaborating with partners in more than 25 cities, with the most involved work taking place in New York, California, Washington D.C, Austin, Toronto, Atlanta, Pittsburgh, Houston, and Oregon. However, this could spread to all four thousand cities in the U.S. and Canada where it regularly delivers food.[11]

Economic Feasibility

This helps in providing system analysis and financial credibility for the project. It includes analysis of financial opportunity, costs while development, cash flows, maintenance and operation costs, lastly the potential risks. It is an important aspect to provide an approximate estimation of the cost and benefit that the company is going to encounter. It will not only benefit the company in evaluating the development cost but also provide a brief on operational cost.

Development Costs

Doordash is a food ordering platform hence it needs to be available on every crucial platform that is used by most people. The internet provides Doordash the unique opportunity to expose itself in the digital market and be available to a wide range of customers. Other than the internet, Doordash is also available on mobile applications mainly supported through iOS and Android. The reason for developing three different systems is to be pervasive and reach out to as many customers as it can. The Doordash development model is simple. Instead of making a monolithic system for each platform it is available on, it utilizes the tier architecture to develop the platform. The Doordash application system is complex and thus the costs cannot be evaluated simply, but we tried to evaluate the cost on the basis of the following tier breakdown:

Database tier: According to siliconangel.com, Doordash uses some cloud native database solutions on AWS. Database development involves several people including database administrator which costs up to $25 per hour, database architect which can cost up to $20 per hour. It is estimated at this time that the development can take up to three months.

It sums up to **$(25*2*160*3) = $ 24,000**

Backend tier: This tier is used as a common outlet for web front end tier and mobile front-end tier. To develop a backend, we need a team of engineers ranging from $25 per hour per person. The team involves 5 people at minimum and can take up to 6 months.

It sums up to **$(25*5*160*6) = $ 120,000**

Front end tier: This tier consists of 3 parts:

1. Android front end: A developer can take up to 3 months and a minimum costing of $25 per hour per person.
2. iOS front end: A developer can take up to 3 months and a minimum of $27 per hour per person.
3. Web front end: It will take a team of 5 people; each would take a minimum of $25 per hour per person. It would take up to 3 months.

Project Management costs: In this process many people will be involved project manager, dev ops, system integrator, system designers, UI/UX developer, QA testers, security policy developer and so on. They would work from the whole project lifecycle and could take from $25 to $70 per hour. Let's assume the approximate cost would be $40, 15 people and the project development life cycle would take 6 month.

It would sum up to **$(40*15*160*6) =**

* These costs are not fully accurate because the project management is fairly complex and the teams can be distributed over different continents and several other aspects of development could change the project cost.

* Assumption: each worker is paid same and works 40 hours a week and 160 hours a month

Operational Costs

Doordash operation would consider 3-part operation:

1. Software running cost: To make the software developed usable, Doordash needs to make it available to the public. They used AWS cloud architecture to deploy their software services, google play store to deploy android application, apple store to deploy iOS application.
    a. Database: Regardless of their usage of type of database (SQL/NoSQL), their estimated cost could range up to $0.912 to $2.736.
    b. Backend: Regardless of language used, it could cost around $0.408 per hour to $1.000 per hour depending upon the running time and space taken.
    c. Frontend: for web, it may take any amount between $0.408 per hour to $1.000 per hour.For mobile, it may take $25 per year for google play store which is used to publish android applications and $100 usd per year for iOS.
2. Business operations: Business operations: Doordash always needs funds to carry on their services; It needs to put money to its day to day operations such as customer support, delivery support, and so forth. They also need to put money on the marketing and their management team who constantly work on improving the Doordash. Marketing costs would probably be totaled to $5000 per month, considering online marketing across the USA (estimated calculated from Google AdWords). Management cost could take $25 per hour per person and would take a minimum of 50 persons to support a huge network of restaurants and customers. It would sum up to $(25*50*160) = $200,000. The total would be $5000+$200,000 = $205,000.
3. Software upgradation: Software upgradation: It is the continuous cost that would take place during the life cycle of the project. It would certainly need a team of 5 developers to manage, and fully fill the requirements of the customers. It could possibly sum up to $500,000 per month.

Organizational Feasibility

Organizational feasibility is the snapshot of the legal and corporate considerations that can influence the project. It also helps to understand how well consumers will embrace the program, involve stakeholders, coordinate strategically between project and business strategy, and chart risks from a legal perspective. Following these considerations help to determine the organizational viability.

Legal Obstacles

The principal legal challenge the business could foresee is the protection of food delivery employees, the fraudulent customer, the dishonest restaurant owners, the privacy of stakeholder's data. Privacy and Security of the data are of paramount importance. To mitigate those legal challenges, the organizational policies are built in such a way that it maintains transparency with its stakeholders.

Stakeholder Groups

Following stakeholder groups have been taken into consideration

1. Board of Directors
2. Doordash Management
3. Maintenance Personnel
4. Risk and Analytics Management
5. Customers

Time Constraint

There is a time constraint for one calendar year to implement the solution. This time frame would be enough to evaluate requirements, analyse, design, implement and test. As we are following the Incremental Iterative Methodology, one years time would be sufficient.

Risk Identification and Assessment

We used a probability level scale for our risk assessment: 0-5. The lowest, 0, corresponds to 0% probability and the highest, 5, corresponds to 100% probability. Each increment corresponds to 20% +/- 10%. The levels were determined by visibility, effort, how new the technology is in general, how new the technology is to Doordash, and whether Doordash has experienced problems in the past related to the particular risk. Although the probabilities are in rough increments, they still give qualitative information about the relative likelihood of one risk compared to other identified risks. The benefit of the scale is that it is easy to understand by all parties and easy to form an opinion about.

Justifications:

Loss of new hire or new hires not as competent as hoped (2/5) [13][14]

Losing new hires or new hires not performing as expected is a common experience in companies. However, the problems associated with it are able to be prevented or mitigated with training and multiple hires. The project will still be driven primarily by existing experienced staff aided by a number of new hires with specialized experience.

Restaurants and/or delivery drivers may not execute the time stamp correctly or accurately. (3/5)[15]

We consider this to be of higher likelihood. Doordash (and other companies in this field) have already experienced driver tampering and varying motivation by restaurants to log orders or delivery send-out information in a timely manner. The reason we have not scored this probability higher is because a new system to address this issue will be designed specifically to stop or minimize the problem. Nevertheless, there is still a better than average possibility that drivers and/or restaurants will not log times accurately if the system is not completely automatic. If a completely automated solution is designed, this level will decrease.

Doordash gathers or retains information illegally and is sued. (1/5)[16][17]

Doordash has experience with lawsuits and hopefully has improved its ability to avoid legally risky behavior. We placed strong emphasis on the need for intimate involvement and requirements from the legal department to craft both the policy change and in particular the possible AI/data gathering solution.

Moving into the physical device realm proves too far beyond Doordash's capabilities and business expertise to be successful. Multiple potential points of failure. (4/5)[18]

We consider this high risk from an industry perspective. There are numerous examples of expensive attempts to move a company into a new industry that have failed outright or not been sustainable and profitable in the long-term.

The cost of the authentication devices exceeds the savings of paying for fraudulent meals. (4/5)

We consider this to be high risk. Doordash has already calculated paying for fraudulent complaints as part of its cost of doing business. The introduction of physical devices, even simple, items and the logistics associated with that could easily surpass the savings of fraud reduction.

Unable to figure out how to distribute the right number of authentication devices to each restaurant and/or delivery driver in Doordash's service. (4/5)

Doordash has no experience with physical distribution. Moving into this field presents a high risk in particular because it requires initial non-trivial expenditures and significant new logistical challenges.

The cost of storing excess and disposing of broken devices exceeds the savings of paying for fraudulent meals. (3/5)
(Same as above) Doordash has no experience with physical distribution. Moving into this field presents a high risk in particular because it requires initial non-trivial expenditures and significant new logistical challenges.

Costs of development balloon unexpectedly because the technology is not mature. (2/5)[19]
This risk is associated with a potential AI solution. We believe the risk can be mitigated by having limited AI with a standard operation back up if the system proves too buggy, inaccurate, or otherwise problematic. The risk can also be prevented by training existing IT staff and involving them in the development of the new technology solution.

System breaks unexpectedly because of unforeseen issues with new technology. (2/5)[20]
(Same as above) This risk is associated with a potential AI solution. We believe the risk can be mitigated by having limited AI with a standard operation back up if the system proves too buggy, inaccurate, or otherwise problematic. The risk can also be prevented by training existing IT staff and involving them in the development of the new technology solution.

Policy is not implemented or communicated consistently from customer to customer. (1/5)[20][21]
This is low probability but it is something Doordash needs to keep in mind. The design and implementation of a change from the 100% guaranteed return policy needs to be fair and consistent.

Lose key experts, poor meshing of new technology experts with the existing IT staff. (1/5)
Some of the new hires might be experts but most of the experts will be experienced staff at Doordash. The introduction of new technology and the incorporation of new employees to help in that matter should not undermine current employees' sense that the company values them.

Legal staff not experienced with intricacies of desired new policy. Some may disagree with aspects of the new policy. (1/5)
Incorporating the legal/policy employees in the changes and design of the new technology will maximize their buy-in and support of the project.

Some in management/business analysis may categorically disagree with a change from this policy. (4/5)
This is a high risk. In fact, the project may not be able to go forward at all unless everyone in management agrees that at least some modification of the current policy is potentially a good idea.

Customers no longer see a difference between Doordash and its many competitors causing Doordash to lose its dominance. (3/5)
This is an above average risk. The project must be undertaken to prevent customers from believing Doordash's return policy is more complicated or less certain than it used to be or that customer service has declined. The customer service department will need to be well-trained leading up to the shift.

Legal and/or marketing plan not well developed and new policy is launched with problems. (1/5)
This issue can be minimized with incorporation of legal and marketing in the design from the beginning.

Customers unable to order or unable to reach customer service for a period of time. (1/5)
This issue can be minimized by careful implementation and a back-up system ready to resume in the case of problems with new system changes.

Please see Table 1 in Appendix B.

Estimation of Schedule, Size, and Effort

Within the work breakdown analysis (see Appendix A), the requirements elicitation and extraction (E&E) can be broken down among the following areas:

- Technical requirements
- Legal/policy requirements
- Organizational requirements
- Business requirements, which can potentially be broken down further between
    - Cost/funding requirements, and
    - Marketing/business plan requirements

Following the technical requirements E&E to its termini, we estimate the sum of actions required will take approximately eleven (11) weeks. Although there are four to five (4-5) E&E branches, we do not assume that the total time required will be five (5) times that required for technical E&E alone. Some of the work will overlap and be able to be compressed. For example, assembling written and digital manuals for all subjects will be done at the same or overlapping times; the work for all areas can thus be joined. The same thing is true of extraction. However, interviews will need the full allocation of time and will not be able to be compressed to a significant degree.

Given these further assumptions, the time required for all requirements E&E will be eleven (11) weeks plus three (3) weeks per additional subject area, total: 20 - 23 weeks. This may seem a long time for requirements E&E but we are proposing a change to one of Doordash's key business differentiators and it is important to fully understand the needs and limitations of all areas of the business before going forward.

Once the requirements have been assembled, we can push through the work of requirements modeling and system proposal preparation. In reality, some of the early stages of modeling will begin as requirements are still being extracted. Therefore we estimate that the modeling and system proposal preparation will require approximately four (4) additional weeks.

The total time required for analysis: 6 months.

Regarding design, the schedule depends on which route Doordash decides to take. A straight-forward cap on the number of complaints per customer or per restaurant with subsequent intervention by customer service or accounting could be designed in six (6) months. A more sophisticated and subtle AI solution that involves tracking of and evaluation using a variety of variables would require at least twelve (12) months. A solution that takes Doordash into the realm of manufacturing or sourcing, storage, and distribution of physical items would realistically be another six to nine (6-9) months at a minimum to be ready to launch a pilot.

The total time required for design:

Simple caps/policy change: 6 months
AI/holistic tracking: 1 year
Manufacturing distribution: 21 months

The size of the project and the effort required to execute it also depend on which route Doordash chooses to take. A simple change in policy with programming of automatic caps and flags could be done all in-house, from IT to legal to customer service to marketing, with no outside consultation or additional hiring. The only additional training required would be of customer service representatives and customer-facing accounting, but that training could also be created and executed with in-house resources. It would be low visibility and low technical risk. All of the effort would be within Doordash's current abilities and experience. **Small project, modest effort.**

A complex AI-run database that creates and monitors sophisticated profiles of customers, drivers, or restaurants and uses them to penalize fraud or persistent poor service would require additional hiring. Furthermore, some of that hiring would be of people with expertise not currently within Doordash's human resources. Training and integration of new technical staff with the existing staff would be necessary and it would require much greater effort and planning by the legal department to ensure data being collected is legal and that algorithms are ethical and non-discriminatory. It would be low visibility but greater technical and legal risk. The project would require a dedicated team of four to ten (4-10) people working at a high level of abstraction across the IT, legal, and perhaps business planning department for at least half a year. **Medium project, high effort.**

A solution that incorporates manufacturing or sourcing and subsequent storage and distribution would be a major change from Doordash's existing business model and experience. If this solution is undertaken as part of a larger business vision, it could be another key business differentiator for Doordash. However, it would require extensive additional hiring and outside consulting work. It would require the development and population of a new department with expertise far beyond what Doordash currently has. It would be high visibility and high risk. Not only would a large effort be required but so would a long-range vision for how the project could help lead Doordash in a future direction. It should only be undertaken if it fits within a compatible long-term business plan. **Large project, high effort.**

3. SDLC Methodology Selection and Justification

The choice of SDLC methodology depends on several factors such as the nature of the project, the time constraint, available expertise and technology. And none of development methodologies could provide a perfect solution for any any set of problems. Thus, with our analysis of the problem space, potential solutions forwarded and the availability of numerous development teams with experience in a wide variety of methodologies at hand, we select a single methodology that best addresses the problem.

For the context of this project there are three SDLC methodologies which we consider appropriate for this project and hence will be analyzing them in a little more detail. We consider these methodologies specifically appropriate for the project based on the six selection criteria that will be discussed in detail in the context of this project in a later section. The general description of the potential three SDLC methodology we consider, the Waterfall Model, Agile Model and Iterative and Incremental Method, is discussed below.

I. Waterfall Model:

A. In general in this approach, the activities are broken down into the linear sequential phases. To do a deeper dive in this the various phases are dependent on the actual deliverables of the tasks. This process originated in the construction industry (Technology Conversation, 2014). Particularly because of the physical work environment where the actual changes in the design can perhaps be utterly expensive. There are in general six different phases in the Waterfall model; Systems and Software Requirements, Analysis, Design, Coding, Testing and Operations. This allows any issues to be detected early in an effort to avoid expensive redesign later in the developmental process.

B. However, as everything has advantages and disadvantage, so is the case with the Waterfall model: [4]

1. Advantages of the waterfall model:
    a) The overall management is easy
    b) The workflow will be in phases and completed one at a time
    c) Beneficial for small projects
2. Disadvantages of waterfall model:
    a) It takes quite some time to compile a final product.
    b) High risk and uncertainty.
    c) Not beneficial for complex and object-oriented projects.

II. Agile Model

A. In general in this approach, the activities and the software development are based on iterative development. In this model the requirements and the solutions are evolved through collaboration and organization through the cross-functional teams. This allows the team to deliver the pieces of the systems in smaller chunks.

B. Some of the advantages and disadvantages of the Agile Model are as follows:

1. Advantages of Agile Model: [5]
    a) Face to face meeting promotes effective communication.
    b) Flexibility of accommodating late changes.
    c) Constant technical attention to detail for accuracy
2. Disadvantages of Agile Model:

a) Lack of emphasis on necessary designing and documentation.
b) Lack of clear communication during the face to face meeting could cause the project to derail in pieces.
c) Only senior management will have input

III. Iterative and Incremental Method

A. Iterative and Incremental Model is a process of developing a software technology in the process of gradual increase. It generally begins with the planning phase and then continues through the iterative development loop with key feedback from the team.
B. Some of the advantages and disadvantages of the Iterative and Incremental Method includes: [7]
    1. Advantages of Iterative and Incremental Method:
        a) The progress is easily measurable.
        b) flexibility in making changes to the requirements.
        c) It is easy to control risk as high risk tasks are completed first.
    2. Disadvantage of Iterative and Incremental Method:
        a) In general it requires more resources than the waterfall model.
        b) It requires constant management involved.
        c) It might not be suitable for small projects.

Selection criteria usefulness

According to the analysis of the problem space and the requirements identified, the critical aspects of the methodology selection for this particular project are concern for time, complexity and familiarity to the technology, of the six SDLC methodology selection criterias. The identified selection criterias are the ones with comparative relevance to the specific project as opposed to the remaining three. The details of each selection criteria in reference to the methodologies is discussed In the following section.

Concern for time

The concern for time is apparent in the project as more and more are growing dissatisfied with DoorDash and choosing other competitors. As the effort is to reclaim and increase the customer confidence which is deteriorating, a quick action needs to be taken to introduce liability in the transaction procedure and save the company from losing its market share. Projects with this nature are known to be best suited for RAD, Rapid application methodologies, as these methodologies are designed to increase the speed of the development. Iterative development, agile development and system prototyping are excellent choices when time lines are short [2].

Agile Development, which is an ideal choice for the project concerning time, is a streamlined and simple iterative application development in which every iteration is a complete application development project. This is due to the nature of the proposed solution which is divided into three steps of interventions to the doordash application, a time stamping feature, flagging and endorsement using artificial intelligence and introducing a shipping device with an authentication system, as discussed in detail in the “justification for the IS” section of this text. Thus, using agile development, each feature of the three can be developed separately as a complete package and apply all three in a series of steps based on how effective they are in solving the problem. This offers the opportunity to cut cost on a spending that might not entirely necessary and most importantly cut short on the time it takes for the solution needs to be addressed.

Complexity of the project

The intervention addressing the problem can be considered less complex compared to developing a fully fledged application as it is only an update to the existing doordash application. In addition, the development of the proposed features will not be a task of reinventing the wheel but applying common technologies that are also existing in the current DoorDash application. Thus, the poor performance of agile development for complex projects does not hinder the implementation of the proposal as the proposed solution is not a complex development and implementation procedure.

Familiar technology

The downside to choosing agile development for this particular project could be attributed to the unfamiliarity of the one of technologies proposed as agile methodology has poor performance with unfamiliar technology. The solution forwarded to securely transport the food from the restaurant to the customer, without giving the dasher a chance of tampering with it, is using a packaging device with an a locking system that registers the time and sends the "unlocking" code to the customer who ordered the food. Despite solving a significant portion of the issue, this also poses a huge cost and technology burden. Thus, this section of the intervention should be saved as the last resort. Other than that, the application of AI to determine which actions yield the most reward for the user by trying them out is an already established reinforcement learning application of artificial intelligence [1].

4. Requirements Summary

Requirement Elicitation

Requirement elicitation is the process of discovering and gathering the requirements of a system from users, and different types of stakeholders. The requirements of a system is generally in the minds of the stakeholders, in the feedback of the end users. So, there is a need to draw out the requirements which are then analyzed in terms of problems regarding the scope, problems related to the feasibility. To understand these problems, the requirements should be stated more precisely.

The first step is identifying the stakeholders and the end users. In this problem statement the stakeholders are the dashers, the restaurants, the higher authorities of the Door Dash, the customers and the end user will be the customers. For the requirement elicitation process, we will outline several situations and techniques to ensure the effective collection of requirements elicitation.

Interviews with Senior management, dasher, restaurant owner

The interviews with higher authorities are scheduled to have a better understanding on what they want the system to do. The interview and meetings will help us to understand the viewpoint of upper management in drawing out the requirements. For the requirement elicitation process, the stakeholder was interviewed with the questions. For example, what is the most common method used to manage complaints currently being used, what type of functionalities do you want in your system, what kind of problems you face managing your complaints from end users? How is the 100% refunding policy affecting the progress? Does it make any significant changes to the count of the loyal customers? How are the dashers responding to the complaint of 100% refund policy? How do restaurants deal in terms of ratings when there are repetitive complaints of wrongdoing by the same customers? How many times a customer can file a complaint for a 100% refund? Interviews with stakeholders and multiple end users here plays an important role to gain in-depth understanding of the existing system which will also create an opportunity for open discussions and will clear all sorts of statements of stakeholders from the past. Interviews can help us to dig through the stakeholder and end users' understanding and think about what they need which is a prominent part of the requirement elicitation process. The interview should be unstructured enough to successfully dig into the stakeholder and end users thought process but structured enough to cover all the basic questions to identify the requirements. After the interview process, a report is generated to solve any uncertainties related to the system.

Survey

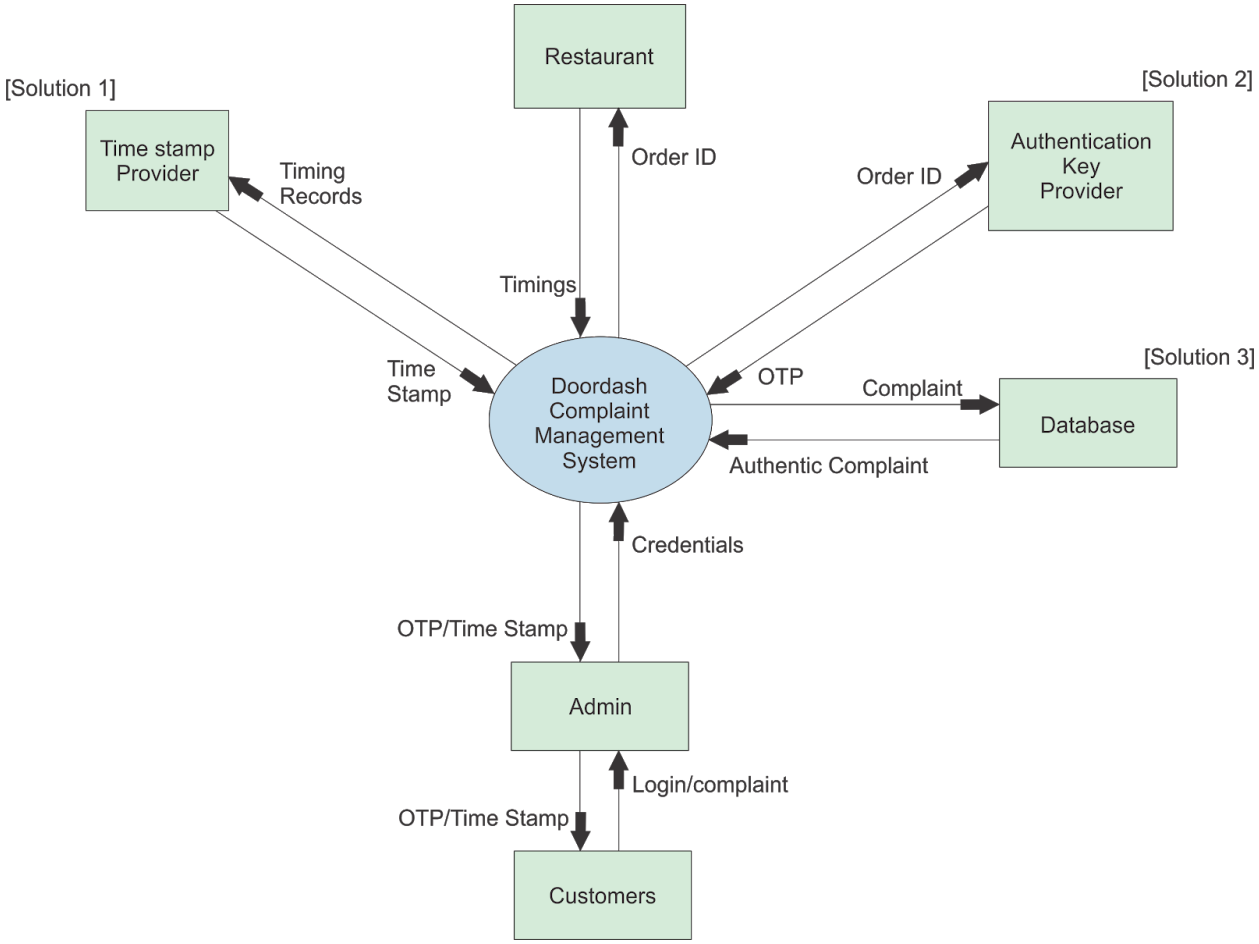
Along with the interview a survey was created to collect the information about what users will want at the end from the system. The purpose of the survey was to gather information from people with a wide variety and majority about which type of restaurants they like to go to, what is the excuse given by the dasher for any delay? How is the most common complaint faced by the customers in terms of delay, quality of food, cost of the food? Based on the problem encountered we have tried to resolve it by

making appropriate changes in the model. The purpose of taking the survey was to make the model more efficient and precise by giving the required training. Analysis of the existing system would be beneficial when the system requires any upgrade or the stakeholder's point of view may be unclear, the knowledge extraction from the study of existing documents can be beneficial in such a situation. Observational analysis will be done to observe what exactly needs to be changed from the current system of managing complaints.

Requirement Analysis and Specification

After the requirement identification process , all the collected information about the stakeholder and the end user needs will be the input for the requirement analysis process and as an output there will be model or structure for the gathered information which will make us clear about the list of requirements with regard to privacy and relevancy to the project. Requirements Analysis is the method of defining the expectations of the users for associate degree applications that needs to be designed or modified. In this phase, the effectiveness, feasibility analysis and resolving conflicts which be the focus points for the process. The feasibility test will help us reduce high cost mistakes, user dissatisfaction or failure to deliver expected results. The system will be tested for business feasibility to ensure that the project will stay within the manageable cost and the expected business benefits will not only cover the cost but also provide profits. The system will then also be tested for technical and deliverability feasibility which will make sure that the proposed technical solution meets all the requirements and that the adequate resources are available throughout the development process as well as for the maintenance process. The effectiveness of the solution will also be analyzed and the alternative solution can be proposed in case the previously proposed solution is not proved as effective as it should be. There may arise some conflicts between the stakeholders in concern with the requirements, for example a stakeholder's requirement can directly conflict with the requirement of another stakeholder, or some stakeholder proposed a new requirement later on which was not identified beforehand, for all such cases communication will be the key to resolve such conflicts. It is often going back again to the sources of conflicts and trying to address them differently which will resolve the conflicts on some common grounds. The final list of clear, unambiguous, feasible requirements will be the outcome of the requirement analysis process.

5. Context Diagram



6. Functional Requirements

Functional requirements provide the behavior of the product. It basically gives the functionality/characteristic of the product. Functional requirements specify the action of the application/product i.e., how the application must perform. These requirements are essential in designing any application, the designed application should meet user expectations. The functional requirements for managing Doordash complaints are included below.

1. Managing Doordash complaints customer care or website must take customer name, order information and complaint information from each customer.
2. Customers should have a pop-up option to write a review after the order has been delivered.
3. Customers should be able to add feedback /review about the restaurant with pictures. They can also write reviews about delivery or payment.
4. Doordash should mark reviews as unreliable if the same customer gives fake reviews for more than 5 times.
5. Doordash should identify unreliable customers.
6. If the same type of complaint is given by a customer without providing images, when ordered food from different restaurants then doordash should mark those types of customer as unreliable.
7. Doordash should identify a restaurant as bad, if that particular restaurant is getting negative reviews.
8. Customers who are continuously giving fake reviews should be fined by doordash.
9. Doordash should identify drivers who are tampering with food.
10. Doordash should make necessary actions on those drivers who always ask for tips.
11. Doordash should continuously monitor drivers and their activities.
12. If the customer has already paid for a particular dish and if it is not available, Doordash should refund the amount.
13. Customers must be provided with details of drivers and should also be able to track drivers.
14. Customers should be able to rate on the scale of 1-5 after the order has been delivered.
15. Doordash algorithm should give priority advantage for top-rated users.
16. The website should categorize the complaints based on issues such as billing issues, App troubleshooting, and delivery issues.
17. Doordash should have a separate FAQ page for frequently asked questions (issues with payment, order, delivery) with answers.
18. Every complaint registered needs to be associated with the customer or confirmation number.
19. Doordash website should have a separate FAQ page for frequently asked questions (issues with payment, order, delivery) with answers.
20. Apart from the website, customers should also register complaints with Doordash App.
21. Both Android/ios devices should support the Doordash app.
22. Doordash App/Website should locate customers accurately and should be able to find all nearby restaurants within a given radius.
23. When a customer searches for any hotel/restaurant, search results must contain its location, restaurant menu, pricing details and delivery time.
24. Doordash should allow users to update /delete orders in the cart.
25. Doordash should allow users to move to the checkout screen when mandatory fields such as order, location of the order, restaurant to be picked up are mentioned.
26. Doordash must allow users to enter promotions codes at checkout and Doordash system should be able to process and apply proper discounts to only applicable selections.

27. Customers should be given access to make payments through debit card/ credit card.
28. Order confirmation text message/email with the expected time of delivery should be sent to customers.

7. Non-Functional Requirements

Non-Functional Requirements are the implicit expectations of the product. They are also known as quality attributes. Usually, clients do not specify non-functional requirements but they are expected. Non-functional requirements are the constraints imposed while designing the application to ensure the application is secure, robust and reliable. The non-functional requirements for managing Doordash complaints are included below.

1. When a customer creates an account, their data should be properly encrypted and stored.
2. While creating passwords to the account, the application should impose certain restrictions such as password should be 8 characters long, must contain one capital letter, must not contain spaces.
3. Doordash online services should be compatible with windows as well as mac environments.
4. Doordash website must be able to support different browsers such as Mozilla, Chrome, Internet Explorer, Safari.
5. While sending and receiving data, Doordash should make sure it is done on secured connection (HTTPS).
6. Doordash website should have a simple GUI/design standards as it is easy for customers to understand.
7. Customers should get confirmation code, once a complaint is logged.
8. Doordash should respond to complaints within 24hrs.
9. If the customer is trying to register a complaint through the phone, then doordash should not make customers stay on the line but should immediately connect to the concerned individual and solve the problem.
10. Doordash should return the search results without any wait time.
11. Doordash should have real-time search experience with minimum latency.
12. Doordash website should take less than 5 seconds when loading the application or refreshing it.
13. Doordash should support a heavy search load as there will be a lot of search requests at the same time.
14. Doordash should be highly reliable, any item added in the cart should not be lost.
15. At the checkout screen, while handling payments the system should be secure and the database should be ACID Complaint.
16. All the drivers must be provided with good condition vehicles in order to make deliveries faster and on time.
17. Drivers should not lose track of GPS due to connectivity issues while delivering.
18. Doordash website or app should be available at all times and on all days. If any updations are to be performed it is better to have them at night.
19. If there is an application failure, Doordash should not take more than 10 seconds to get the system backup.
20. Doordash should send emails/text messages regularly regarding promotions/deals.

8. Project Plan

- For successful implementation of the project we made the following plan, it will keep track of all the progress and proper functioning which is needed to manage the doordash application.
- Based on the risk identification and assessment, the feasibility assessments, and the functional and non-functional requirements we recommend a solution that introduces a partial AI solution in conjunction with a carefully crafted legal, business, and marketing plan.
- The AI and traditional algorithmic solution will create a database to flag and track customers, drivers, and restaurants that exhibit possibly problematic behavior.
- The initial launch of the new system will be designed to only catch the worst offenders of these three groups. The intention is that for the vast majority of eating customers, the service change will go unnoticed, and will be marketed not as a rescinding of the 100% guarantee but as fraud capture.
- However, to the degree that it is legal, as determined by the legal and policy portion of this system development, we will keep track of all potentially problematic elements.

Doordash can evaluate after initial roll-out what if any effect this has had in:

1) lowering losses or slowing losses to fraud

2) perceptions of the company's customer service among the public. If the system is benefitting Doordash and the reception by consumers is positive or unnoticed, Doordash can consider other targeted restrictions or bans on a wider group of problematic elements.

Meanwhile, we also find out some of the possibilities that we should take into consideration while implementing to technologies:

1. <u>leveraging information systems</u>

- If we take this system into consideration then we could find it as a quicker service, much efficient work.
- On the other hand, it may put more pressure on the door dashers and could lead to the large number of unsatisfactory drivers. could also damage the company's reputation.
- The company needs to operate the system internally, if made public could lead to the large loss of the company. The company also needs not to be stringent on the time constraints and policies. Company needs to make sure that it does not upset their stakeholders, and would provide loyalty benefits to the dashers.

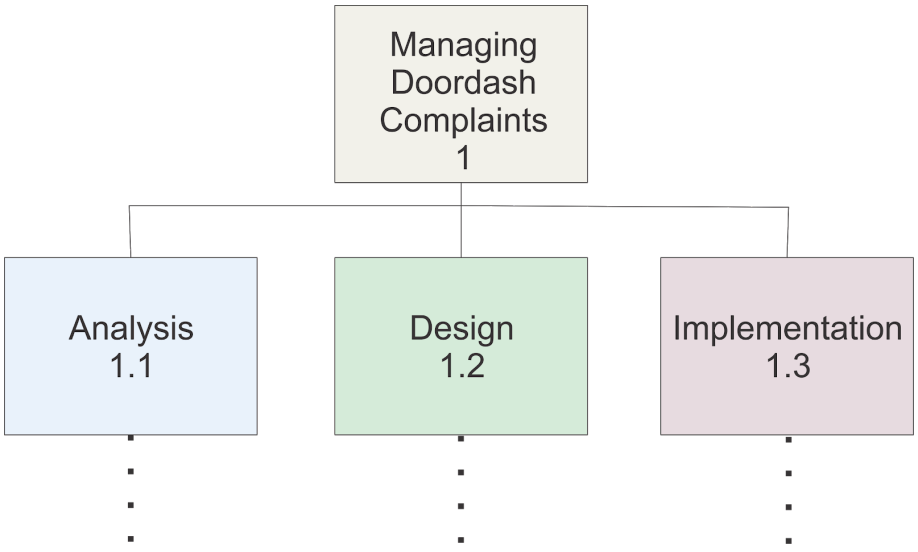
2. <u>Digital clocks</u>

The digital lock would provide the company a higher ground and wont adversely affect any stakeholder. It would be a financial burden on the company, since the locks would be a costly investment to the firm. Every order needs to be packed in the lock which means the company would have to purchase a large number of locks and the dashers need to keep them safe. The restaurant needs to ensure that the food is kept inside the locks, the customer should ensure that the locks are delivered to them, the driver should ensure that locks are kept safely and should be returned by the customer. The company has to allocate a separate unit of work to ensure the lock's safety. The lock would depreciate with the time, that would lead the company to pay attention to the lock's maintenance.

3. Artificial Intelligence

The AI would monitor the data record of all data points the doordash would record and also observe the past records. It would generate a machine defined algorithm which would predict the theft before it happens. It would also monitor the past record of the person as well as the past record of the customer which could help it to predict the outcome of the transaction. It would provide an upper hand to the company in case of fraud and cheating. The company has to provide time and separate development units to prosper the Artificial intelligence system.

Appendix A: *Work Breakdown Structures*



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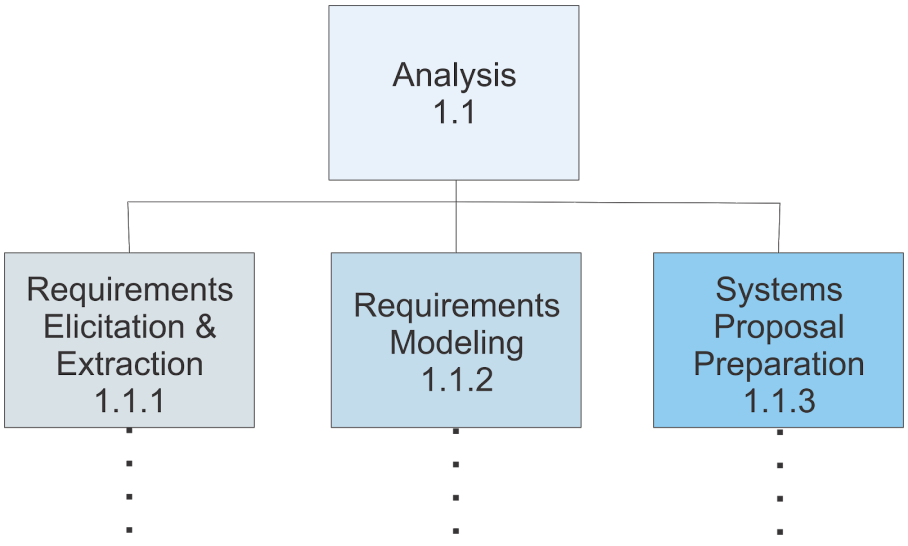
i



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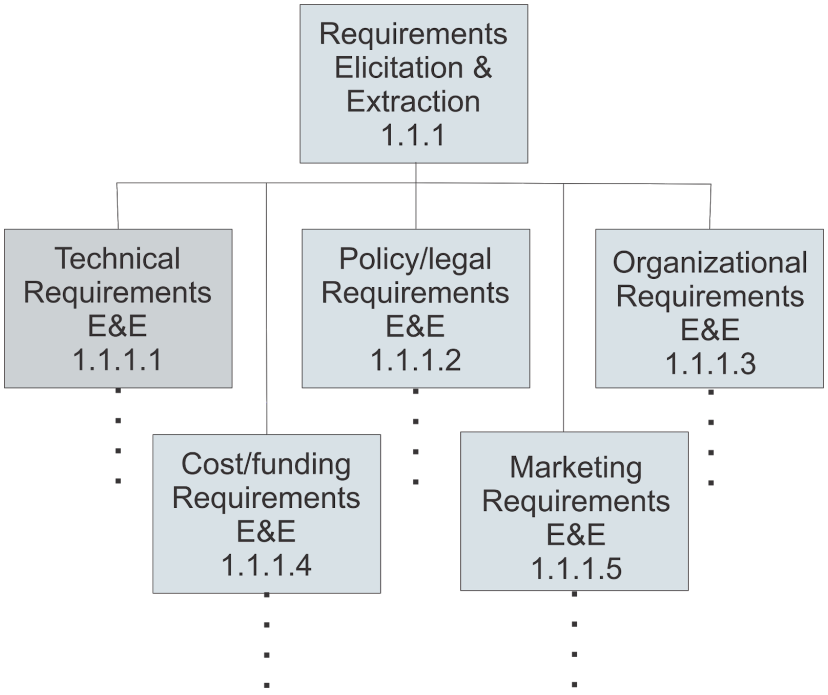
ii



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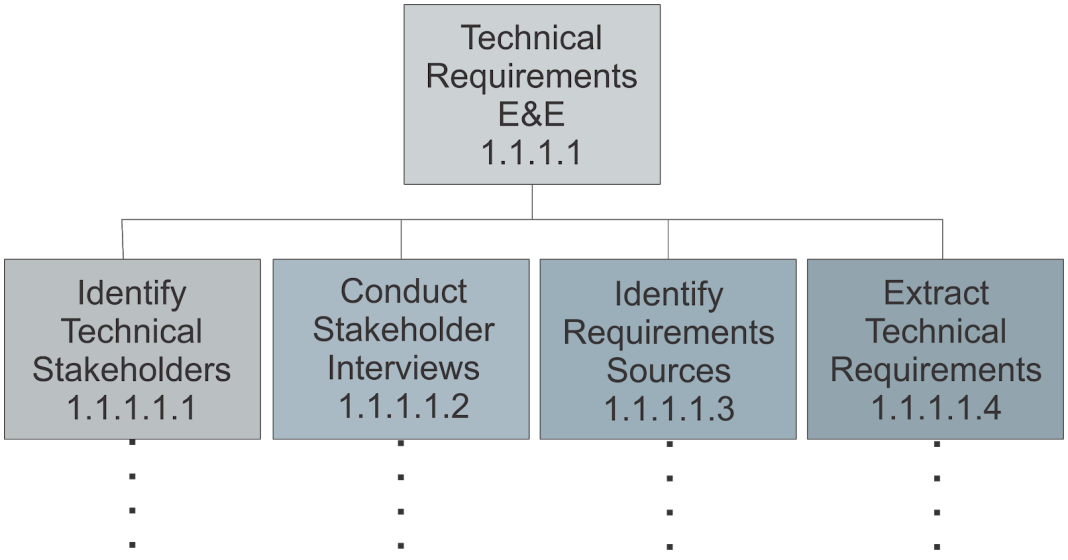
iii



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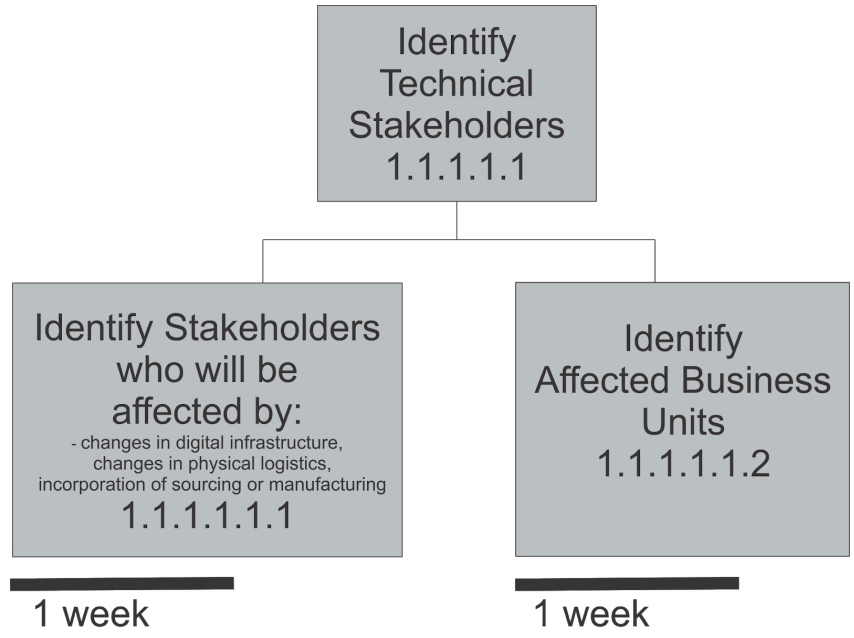
iv



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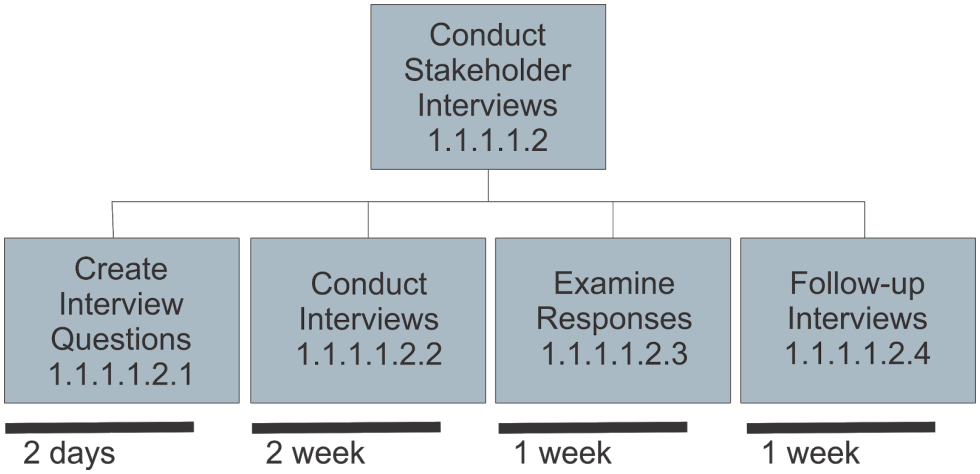
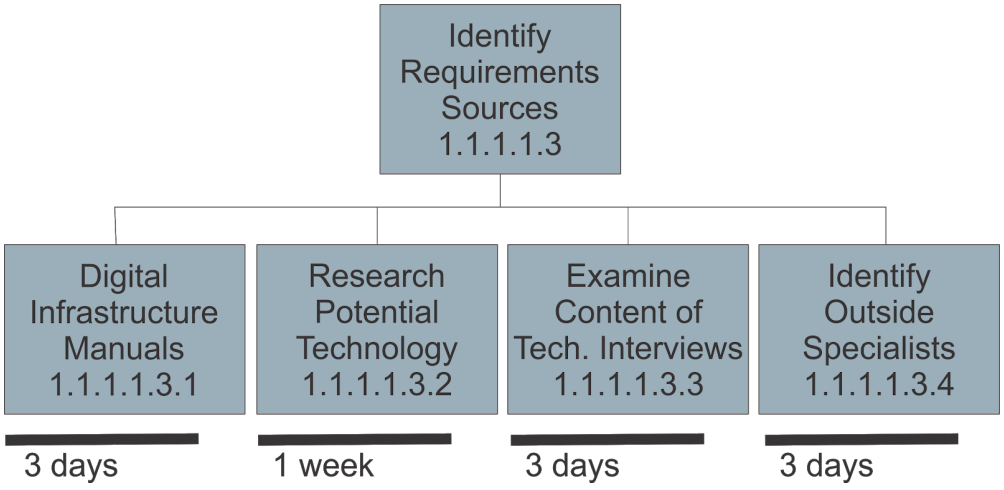
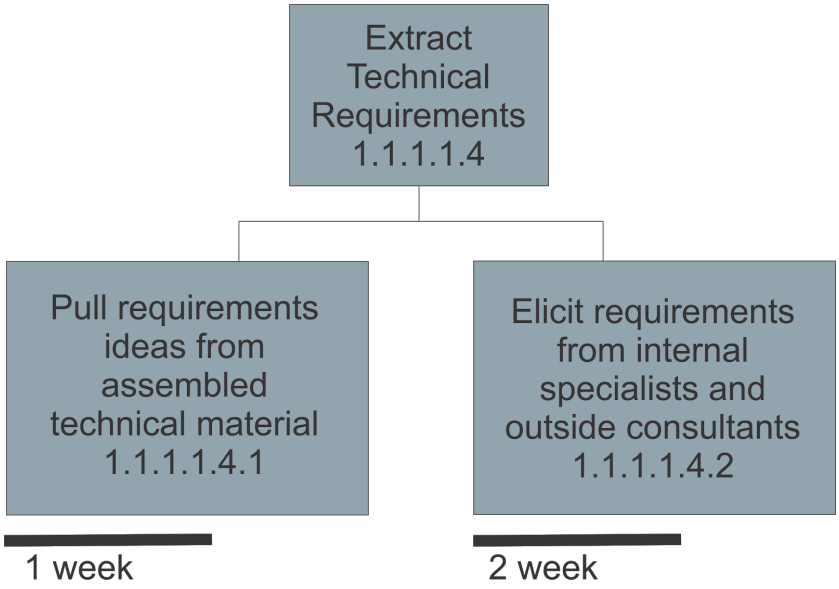

Conduct Stakeholder Interviews 1.1.1.1.2
Create Interview Questions 1.1.1.1.2.1
Conduct Interviews 1.1.1.1.2.2
Examine Responses 1.1.1.1.2.3
Follow-up Interviews 1.1.1.1.2.4
2 days
2 week
1 week
1 week

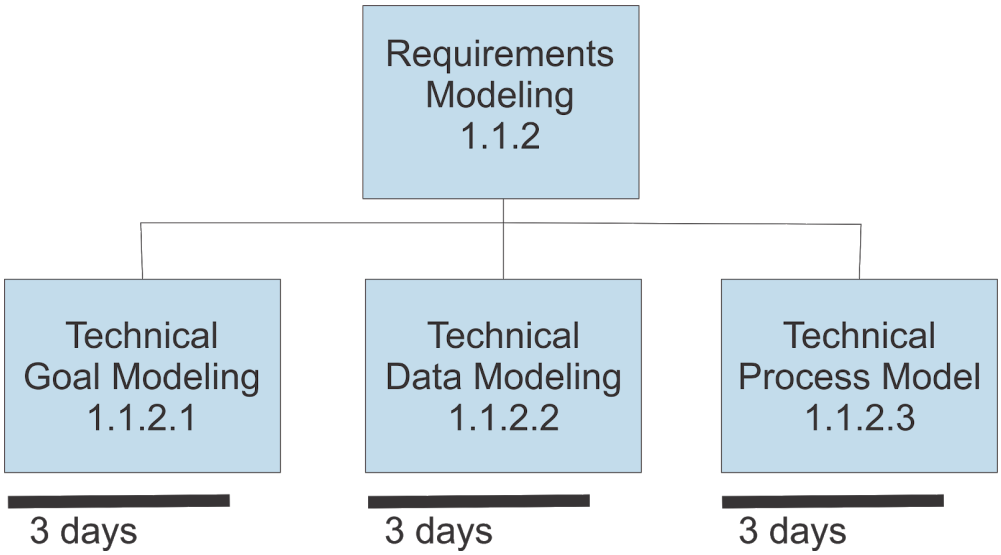
vi


Identify Requirements Sources 1.1.1.1.3
Digital Infrastructure Manuals 1.1.1.1.3.1
Research Potential Technology 1.1.1.1.3.2
Examine Content of Tech. Interviews 1.1.1.1.3.3
Identify Outside Specialists 1.1.1.1.3.4
3 days
1 week
3 days
3 days

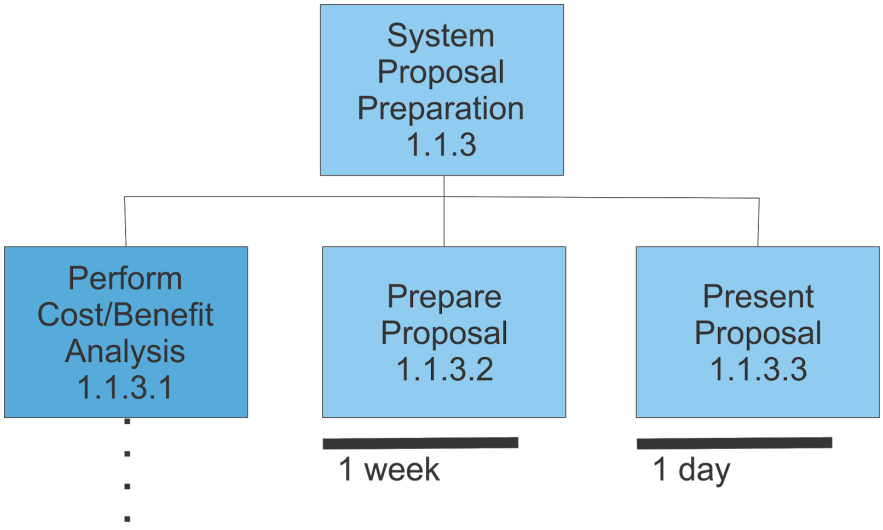
vii


Extract Technical Requirements 1.1.1.1.4
Pull requirements ideas from assembled technical material 1.1.1.1.4.1
Elicit requirements from internal specialists and outside consultants 1.1.1.1.4.2
1 week
2 week

viii


Requirements Modeling 1.1.2
Technical Goal Modeling 1.1.2.1
Technical Data Modeling 1.1.2.2
Technical Process Model 1.1.2.3
3 days
3 days
3 days

viiii



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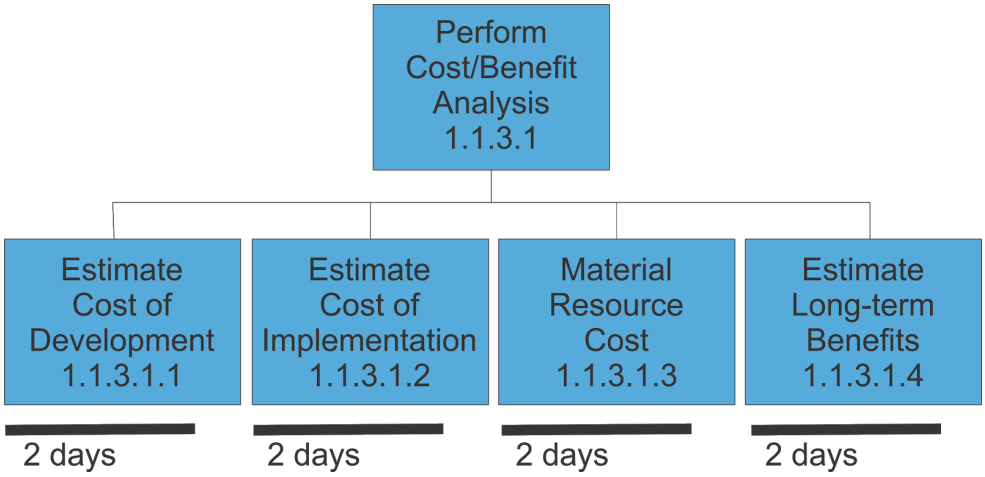
x



xi

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