Requirements Engineering and Management

Project Review

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20MIS0177

Problem Statement

The Harbor management department(Privately Owned) is not able to keep track of ships entering and leaving the harbor with proper permission and protocol.

Design a Harbor management system that keep record of ships entering and leaving the dock, they are paying correct fees and whether they have proper permission to enter and leave.

Problem Domain

- The current system is not able to manage increasing traffic leading to confusion , loss of revenue , fraud , illegal practices.
- Entry and exit of vehicle are hard to monitor.
- Lack of communication between harbour master and ship captain , due to poor signal or language barrier.
- Hard to keep track of fees that’s need to be paid for various services. Increase paperwork
- Increase illegal entry/exit by blacklisted containers. Proper protocol are not followed due to negligence.

Solution Domain

- Captains can ask for permission to enter online in-order to reduce traffic.
- Automated gates to allow entry to stop any illegal entry / exit.
- Services can be chosen online and entire fee can be paid through a portal hazel free. Paperless transaction
- Multiple language option .
- Secure connection between website and customs to stop any blacklisted shipments/container.

5 Steps Problem Analysis

1) Gain Agreement on problem definition
2) Understanding the Root cause
3) Identify the Stakeholder and Users
4) Define Solution System Boundary
5) Constraints

Gain Agreement on problem definition(Increased Traffic)

Element	Description
The problem of……	not able to keep track of ships entering and leaving the harbor with proper permission and protocol.
Affects ...	Sales order personnel, customer, shipping and customer services, statistician, harbor master, administrative officer
And results in ...	Increased scrap , customer dissatisfaction and decreased profitability.
Benefits of a solution ...	Increased accuracy of sales orders at point of entry Increased accuracy in fee collection Improved reporting of total cost data to management Higher profitability Better customer satisfaction

Gain Agreement on problem definition(Inaccurate fee)

Element	Description
The problem of……	Inaccuracies in fees according to amenities and time used
Affects ...	Sales order personnel, customer, shipping and customer services, statistician, administrative officer
And results in ...	Increased scrap , customer dissatisfaction and decreased profitability.
Benefits of a solution ...	Increased accuracy of sales orders at point of entry Increased accuracy in fee collection Improved reporting of total cost data to management Higher profitability Better customer satisfaction

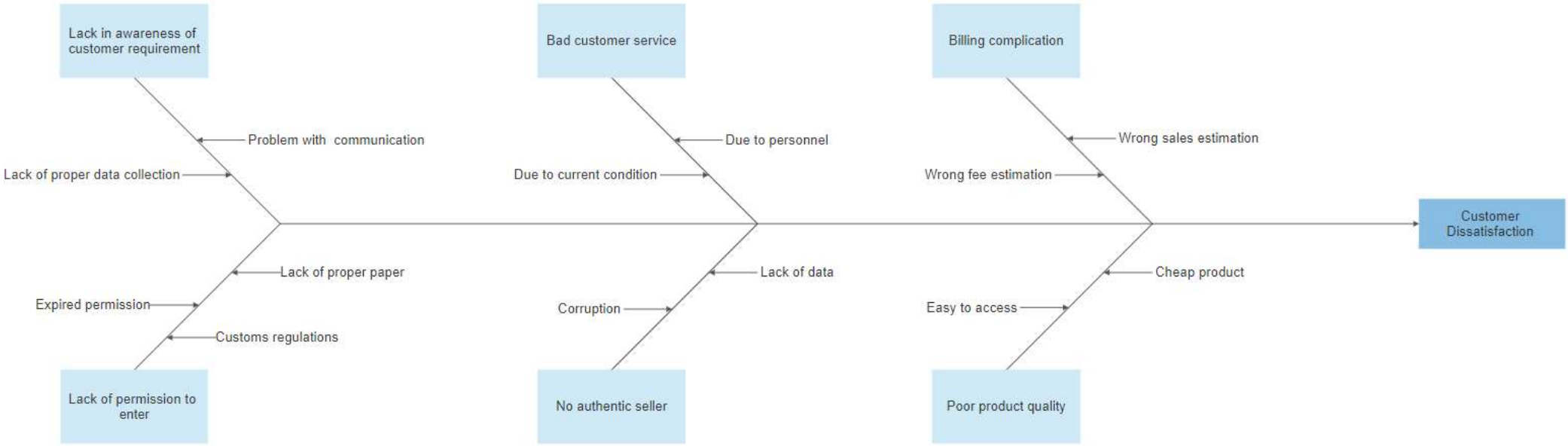
Gain Agreement on problem definition(lack of surveillance)

Element	Description
The problem of……	lack of surveillance
Affects ...	shipping and customer services, harbor master, administrative officer
And results in ...	Increased scrap , customer dissatisfaction and decreased profitability.
Benefits of a solution ...	Better customer satisfaction Safety

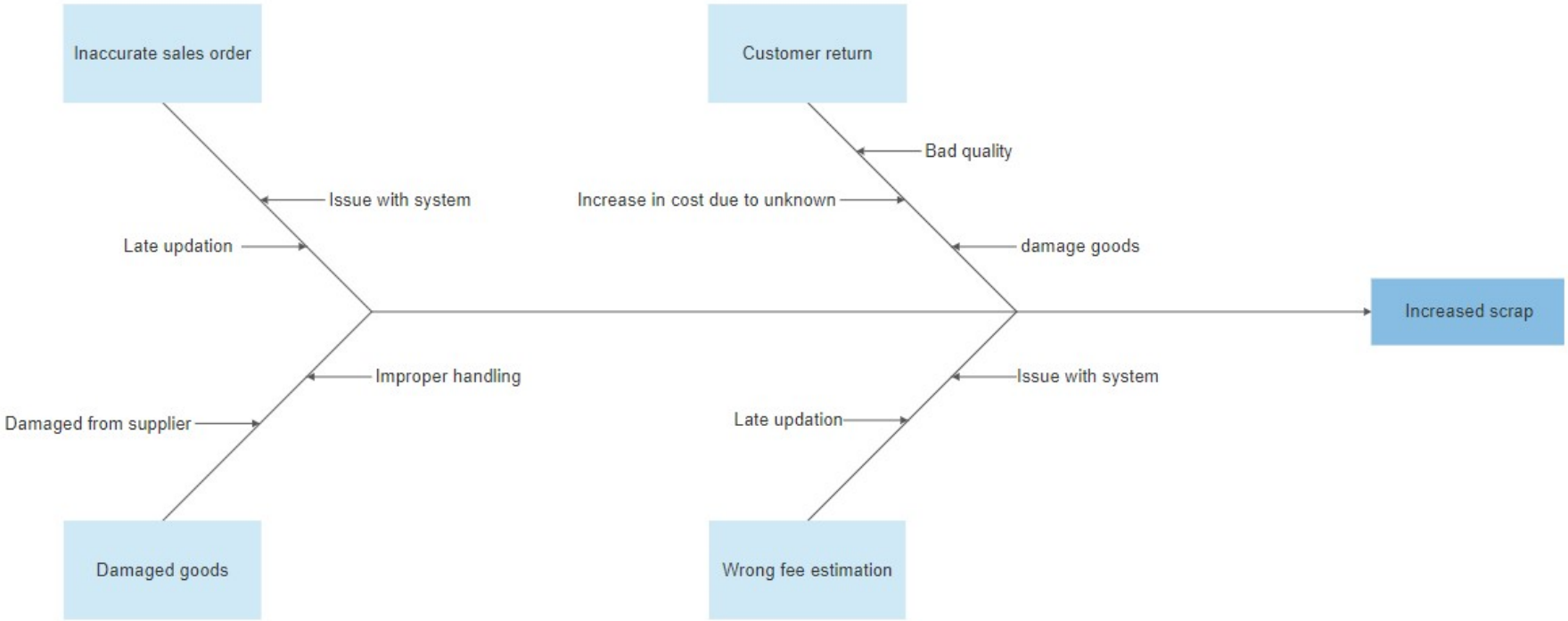
Understanding the Root cause

- Fishbone Diagram
- Pareto Chart
- 5 why analysis

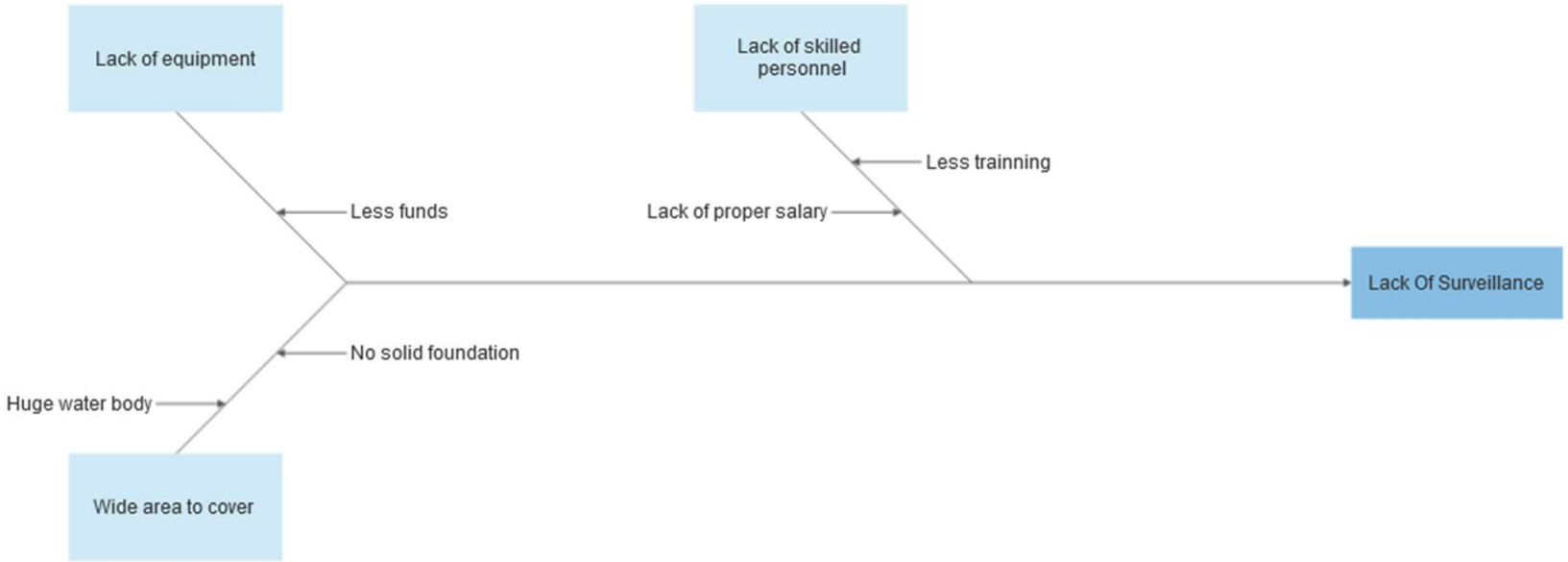
Fishbone diagram for Customer Dissatisfaction



Fishbone diagram for Increased scrap

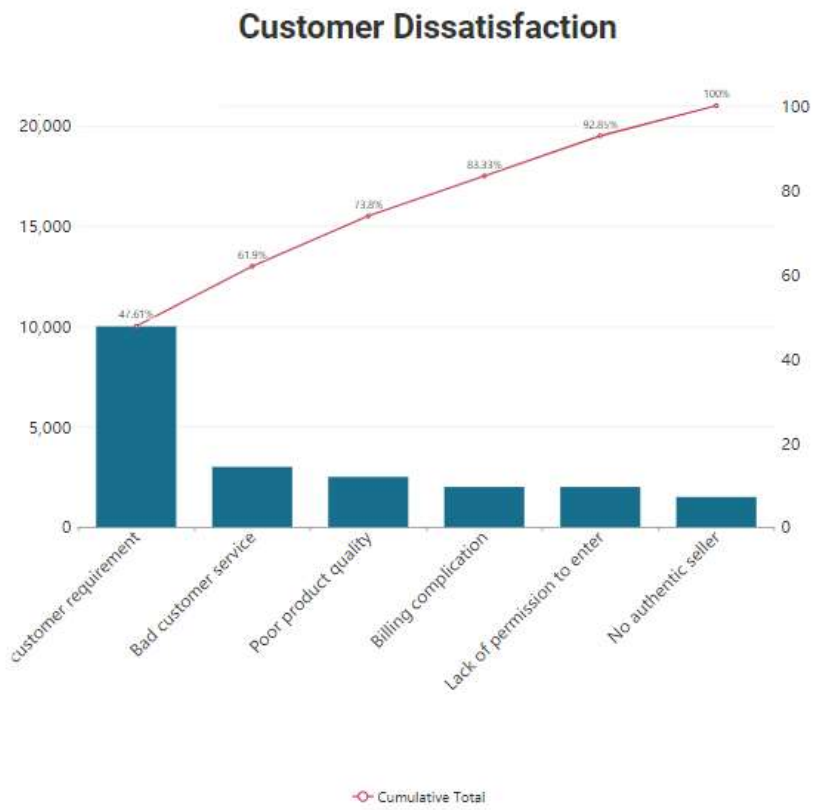


Fishbone diagram for lack of surveillance



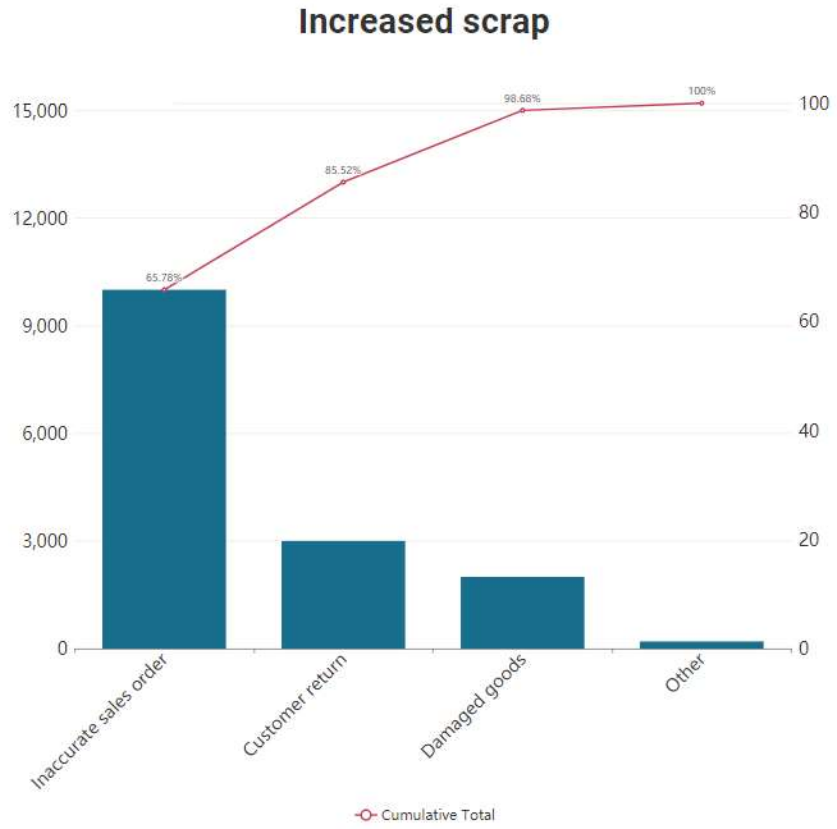
Pareto chart for Customer Dissatisfaction

	A	B
1		
2	Customer requirement	10000
3	Bad customer service	3000
4	Poor productquality	2000
5	Billing complication	2000
6	Lack of permission to enter	1500
7	No authentic seller	1500
8		
9		



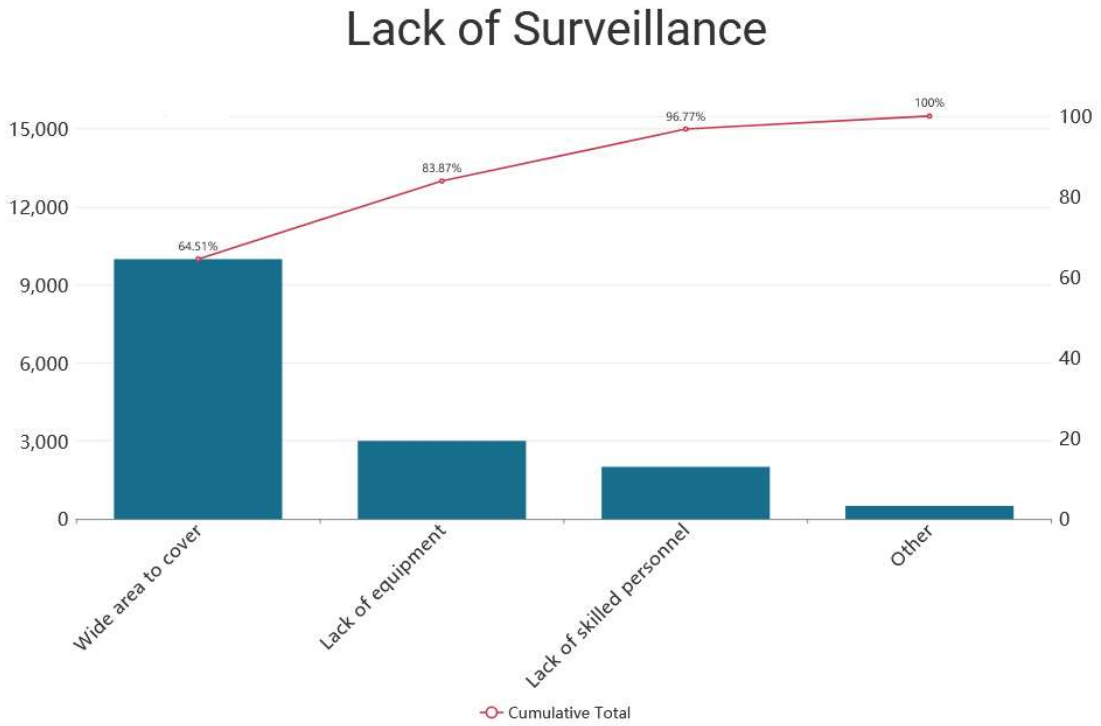
Pareto chart for Increased scrap

	A	B
1		
2	Inaccurate sales order	10000
3	Customer return	3000
4	Damaged goods	2000
5	Other	500
6		

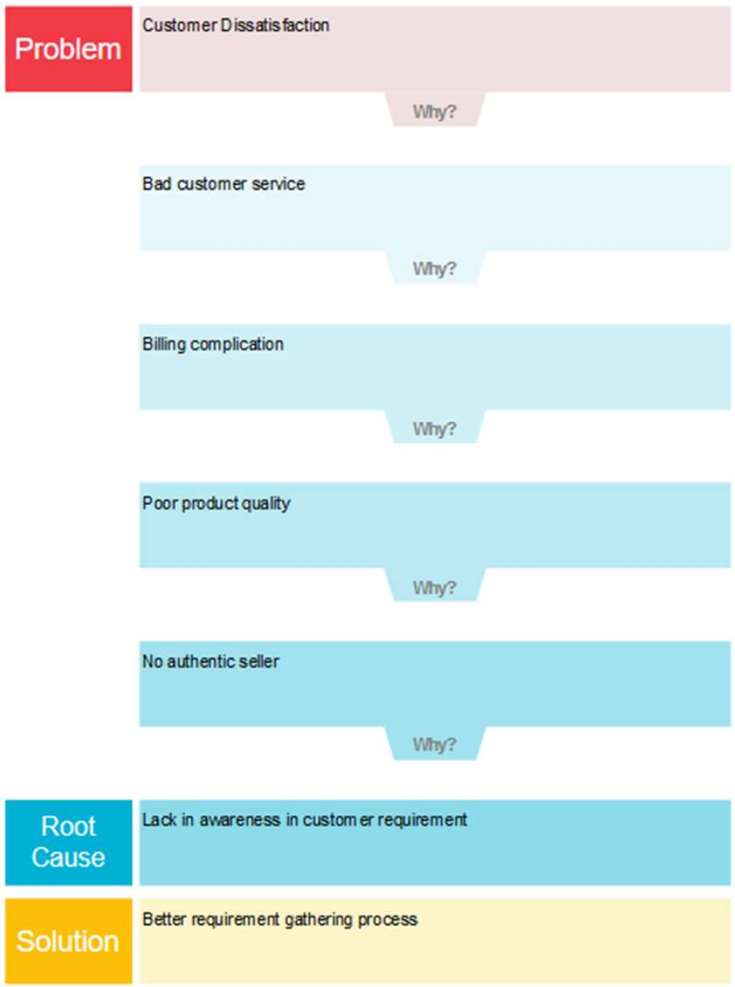


Pareto chart for Lack of surveillance

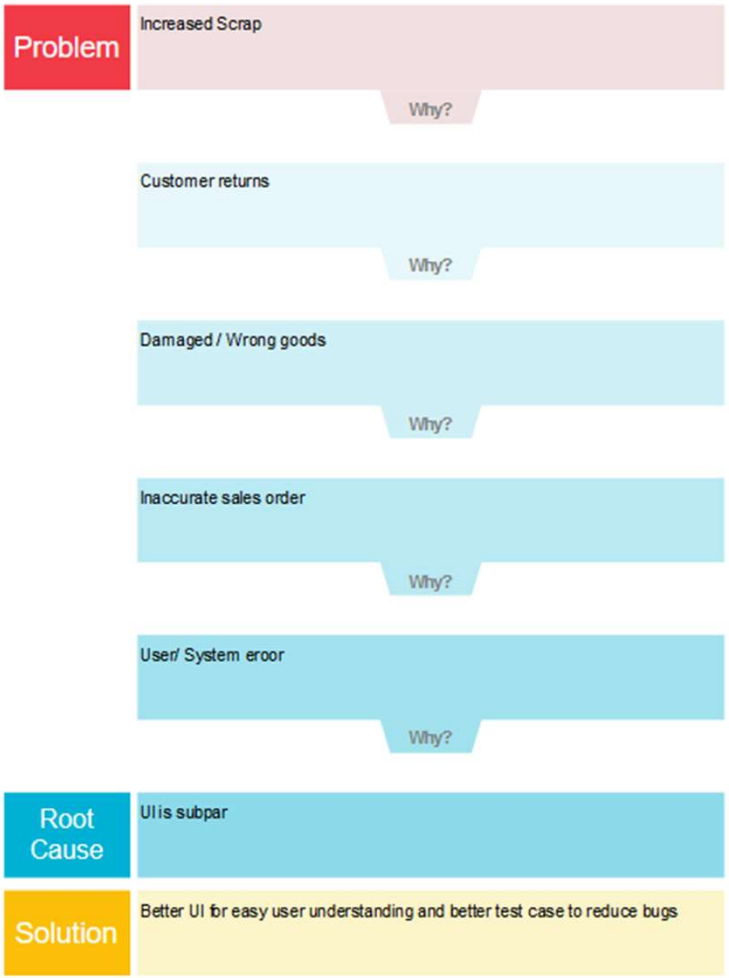
	A	B
1		
2	Wide area to cover	10000
3	Lack of equipment	3000
4	Lack of skilled personnel	2000
5	Other	500
6		



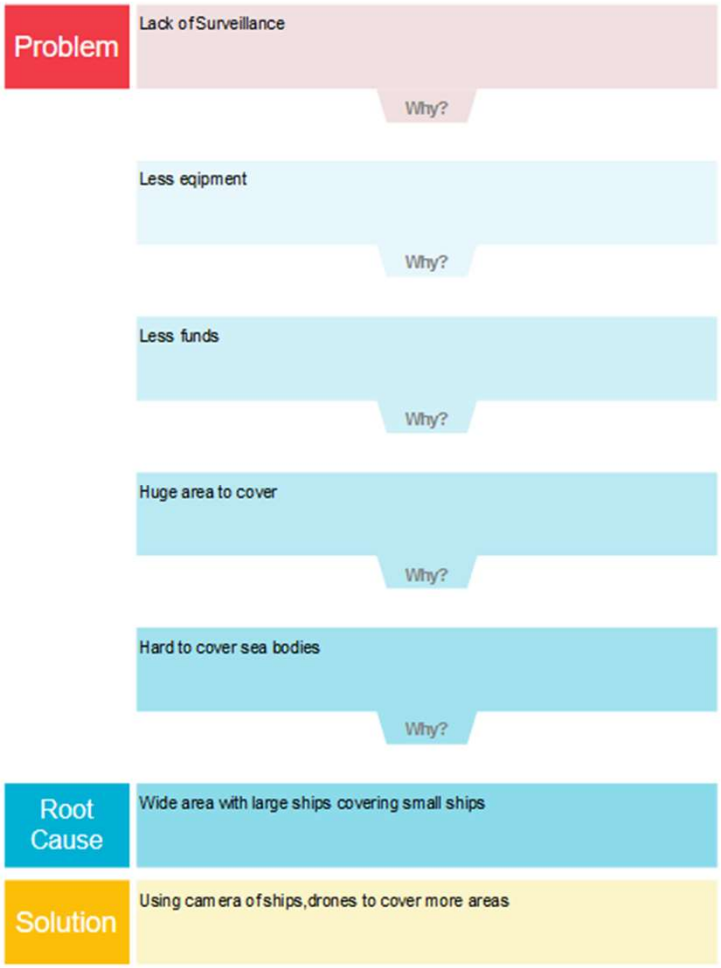
5 why analysis (Customer Dissatisfaction)



5 why analysis (Increased scrap)



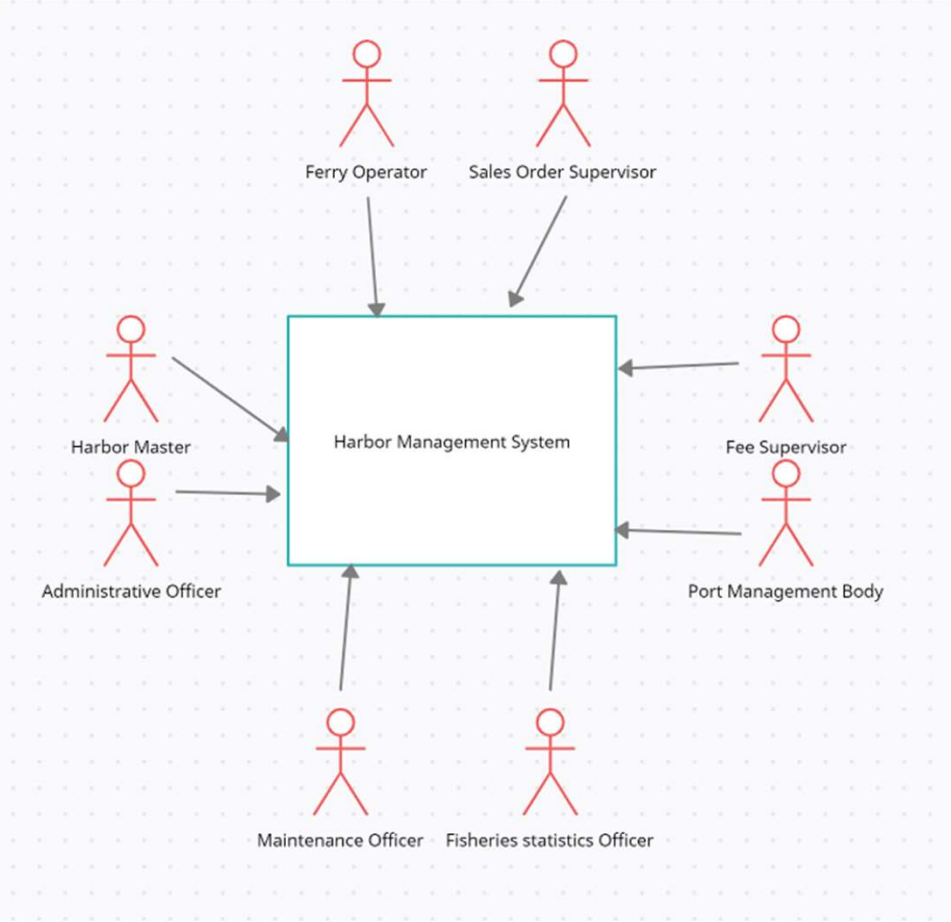
5 why analysis (Lack of surveillance)



Identify the Stakeholder and Users

Users	Stakeholders
Ferry operator	Port management body
Sales order supervisor	Administrative officer
Fee supervisor	Maintenance officer
Harbor master	Fisheries statistics officer

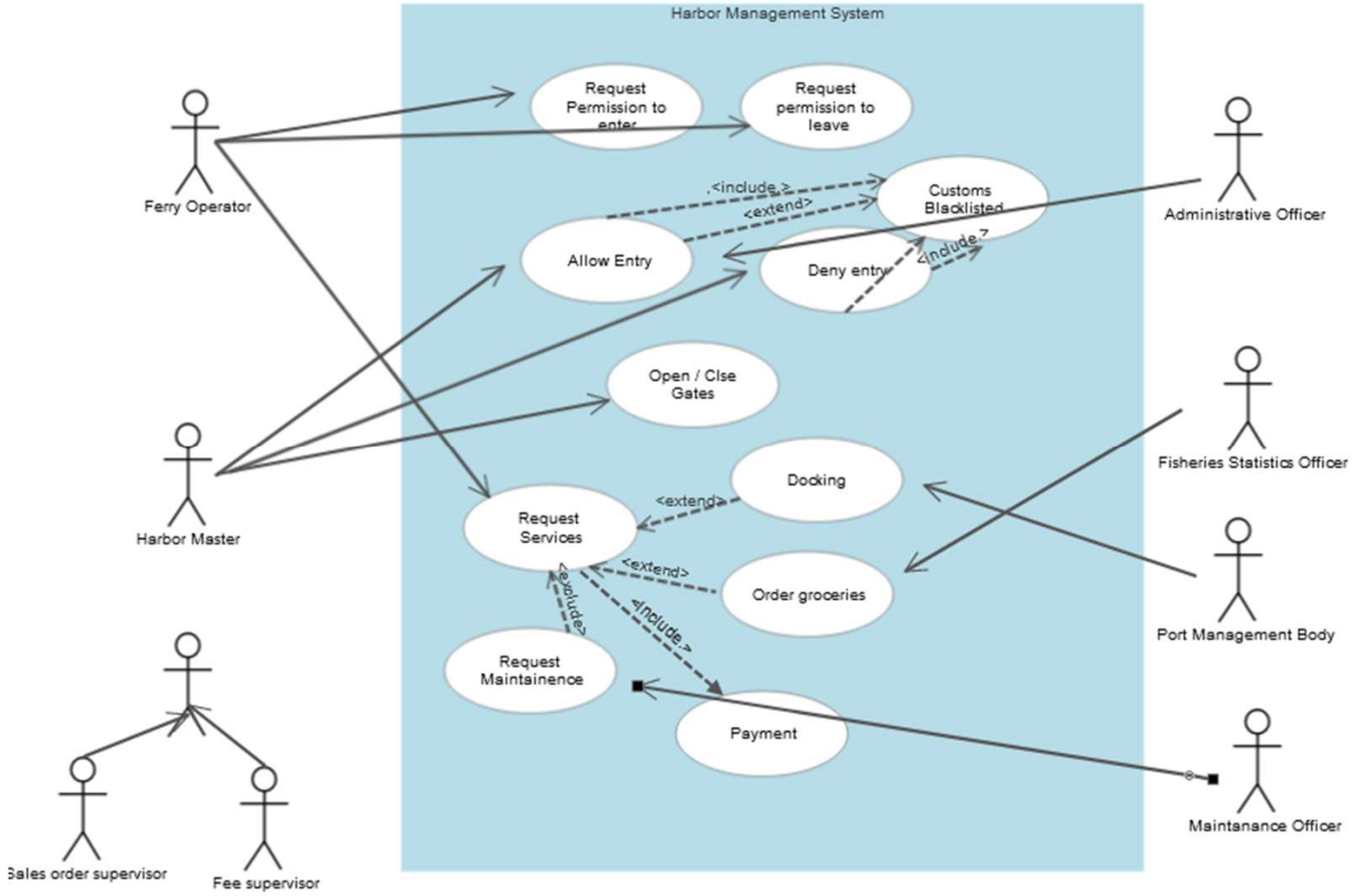
Define Solution System Boundary



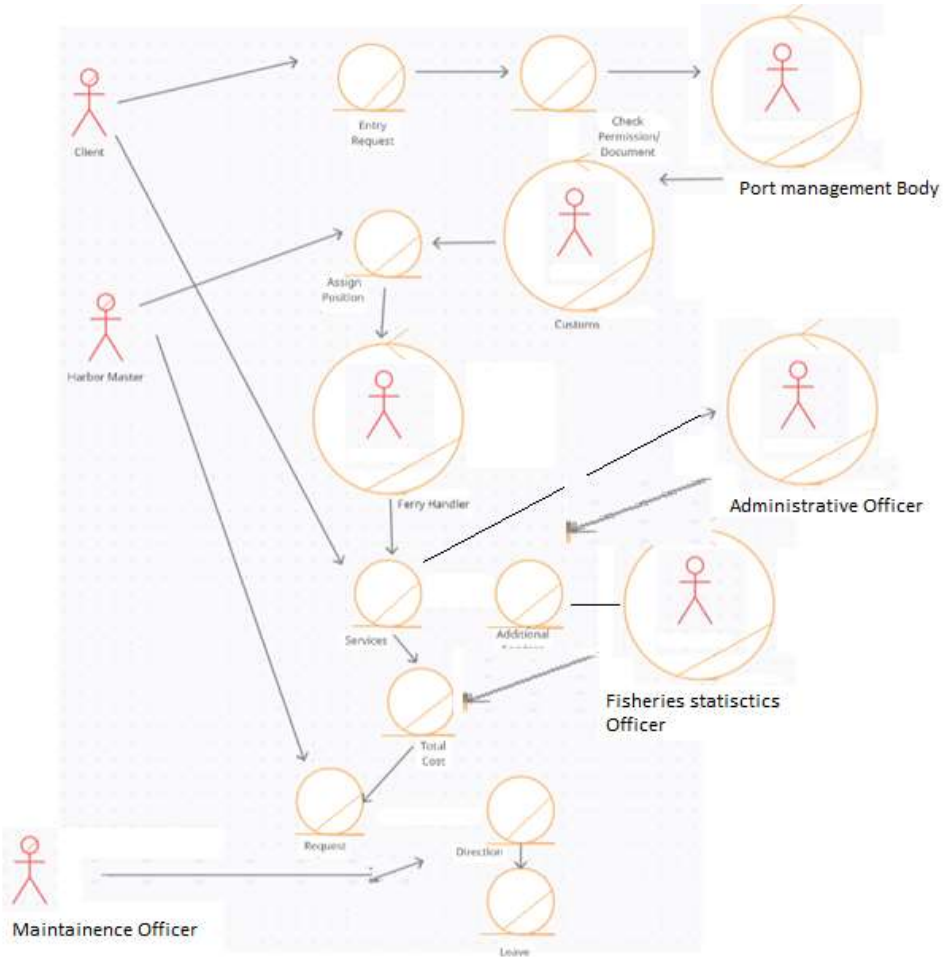
Constraints to be Imposed on the Solution

Source	Constraint	Rationale
Operations	An exact copy of records must remain on the database for up to one year.	The risk of data loss is too great.
System	The application footprints on the server must be less than 20 MB.	We have limited server memory available
Personnel budget	Staffing resources are fixed ; not outsourcing is possible.	The current budget calls for fixed operating costs.
Technology mandate	A new object-oriented methodology should be used	We believe that this technology will increase productivity.
Politics /Fees	Should not be more than the prescribed limit set by port management body in compliance with laws, regulations and rules governing the use of the facility (landing fees, berthing charges, sale of water and fuel etc.)	Fair practice

Use case diagram



Business Object Model



Requirement Gathering Technique

- Interview
- Workshop
- Brainstorming and Idea Reduction
- Storyboarding

Interview

Generic Interview Template – Parts

1. Establishing the customer or user profile
2. Assessing the problem
3. Understanding the user environment
4. Recap for understanding
5. The analyst's inputs on the customer's problem
6. Assessing your solution (if applicable)
7. Assessing the opportunity
8. Assessing the reliability, performance and support needs
9. Other requirements
10. Wrap-up
11. The analyst's summary

1. Establishing the customer or user profile

- Name: Mr. Rohit Mehra
- Company: HarborX
- Industry: Harbor Management
- Job Title: Chief Technical Officer

- What are your responsibilities?

Providing system with high reliability and maintenance, which makes the system more efficient providing details of the customers with high security maintaining the activities In a well planned manner.

- What deliverables do you produce?

Custom Information about Ships and Containers

Past dues

Services

- How is success measured?

1.Software reaches the expectations of users and stakeholders
2.When the number of users reaches the max level to this software.

3.Increase in revenue

- Which problems interfere with your success:-

Not able to connect with customs

Server offline during rush hour

2. Assessing the problem

- Maintenance is hard
- ->Why exists?: Need to manage multiple database for efficiency.
- Solution: Fast processors.

- Monitoring of small ships
- ->Why exists?:Hard to track their movements as they can be easily hide between large ships
- Solution : Gates that can be controlled by authorities. Different docking site.

- Similar sounding/spelling names of ships leads to confusion
- ->Why exists?:Clients from different countries and language .
- Solution : Better universal indexing algorithm.

- Security
- ->Why exists?: Illegal practices
- Solution :Hiring Security Firms

Language Barrier

->Why exists?:Clients from different countries and language .

Solution : Multiple Language Option

3. Understanding the user environment

- Port management workers and Ship personnel are the users.
- Foreign Ship personnel are experienced with this types of application.

- Future plans include increase in processing size, better connection between Customs Agents and increase in Security

- Additional Application Used: Custom Database.: It includes varies ships that are blacklisted from entering the regions.

- Training Time: 2 weeks to a month

4. Recap for understanding

- Maintenance is hard
- Monitoring of small ships
- Language Barrier
- Similar sounding/spelling names of ships leads to confusion
- Security

- Current Problem Includes :
- Fast Processor
- Monitoring of small ships
- Similar sounding/spelling names of ships leads to confusion

5. The analyst's inputs on the customer's problem

- Maintenance is hard

Is this a real Problem?: YES

Reason for this problem: Slow processor. Large Database

How to Solve: Faster Processor. Better Algorithm to traverse the database

Rank: 3

- Monitoring of small ships.

Is this a real Problem?: No

Reason for this problem: Lack of Surveillance .

How to Solve: Hindering movement using gates. And designated path for entering and exiting and different docking site according to sizes

Rank: 4

- Language Barrier

Is this a real Problem?:No
Reason for this problem: Different countries different languages.
How to Solve: universal language or multiple language option
Rank:5

- Similar sounding/spelling names of ships leads to confusion

Is this a real Problem?:Yes
Reason for this problem: Different countries different languages.
How to Solve: Better universal indexing algorithm.
Rank:2

- Security

Is this a real Problem?:YES
Reason for this problem: Hackers
How to Solve: Using Security Firms
Rank:1

6. Assessing your solution (if applicable)

- Faster Processor. Better Algorithm to traverse the database

Rank: 3

- Hindering movement using gates. And designated path for entering and exiting and different docking site according to sizes

Rank:2

- universal language or multiple language option

Rank:4

- Better universal indexing algorithm.
- Rank:5

- Using Security Firms

Rank:1

7. Assessing the opportunity

Who would need this application?

- Sales order supervisor
- Fee supervisor
- Port management body
- Harbor master
- Administrative officer
- Maintenance officer
- Fisheries statistics officer

By the economic factors effort, time, accuracy of the project we value a successful solution.

8. Assessing the reliability, performance and support needs

• Our expectations for reliability is the product should perform as mentioned and will not hang up or get crashed.

• The product would be supported by the company HarborX

• No special needs for support. This service can be accessed through apps in phones.

• It requires a operating system to run smoothly.

• No special licensing requirements.

• Software will be distributed through online.

9. Other requirements

- Services should not charge more than 1.5 times of marker value

- Ships should be seized if blacklisted by Customs

10. Wrap-up

- There are no other questions for you.

- You can give a call if u want to follow up questions.
- Company representative will participate in a requirement review.

11. The analyst's summary

- The highest priority

1. Security/Security Firm Contract.
2. Better Maintenance.
3. Specific Docking Position based on sizes .

Workshop

The Attendees

The workshop has been held at HarborX Meeting Room 5A-12 on 1st October 2021 at 3.30 p.m. to reduce the difficulty by users and to satisfy their needs. Many common issues have been tried to solve in this workshop. There is an outside facilitator

Facilitator : Mr. Krab Naveen, Senior Marketing Manager

The participants were : Tobin J ,Director of Maintenance

Ronny J, Senior Operation Controller

Many other HarborX employees attended the session and step forwarded to reduce the queries of the passengers.

Other team members would not participate but would simply attend the workshop in order to observe the process, listen to the customers, and see the results immediately.

The team also decided to include representation from the four "classes" of customers and invited the following participants:

1) Clients :

Cain M, CEO of the company's largest Client, and Rafael, the general manager of the company's exclusive Client in South Sea

2) Ronald, a local fishing club member.

3) Beatrice, a local Shipping Containers contractor

4)Prospective fishermen, identified with Ronald's help.

Name	Role	Title	Comments
Mr. Krab Naveen	Facilitator	Senior Marketing Manager	
Tobin J	Participants	Director of Maintenance	Project champion
Ronny J	Participants	Senior Operation Controller	Development responsibility for Harbour Management System
Cain M	Participants	CEO, Yakuro Inc.	HarborX Largest Client
Rafael K	Participants	General manager, Jatora Inc.	HarborX South Sea Client
Ronald	Participants	President, Fishing Association	Fishing club member
Beatrice	Participants	President, StrongT Inc.	Local Shipping Containers contractor
Tony	Observer	VP, Fed&Sons	Boat Repair Contractor
Bobby	Observer	VP , Dentro	Supply Contractor
Various Member	Observer	Development Team	All Team Members who were available

Agenda for the Workshop

Time	Agenda item	Description
9.00a.m.-9.30a.m.	Introduction	Agenda ,Facilities, Rules
9.30a.m.-11.00a.m	Context	Project status, market needs, results of users interview, etc.
11.00a.m-1.00p.m.	Brainstorming session	Brainstorming about new features to be introduced.
1.00p.m.-2.00p.m.	Lunch	Lunch Break
2.00p.m.-3.00p.m.	Round Robin	About the Features
3.00p.m.-3.30p.m.	Idea Reduction	Prioritizing the features
3.30p.m.-4.30p.m.	Idea Voting	Voting the ideas from the participants perspective
4.30p.m.-5.00p.m.	Wrap up	Analysis of results and conclusion

Warm-up

Prior to the workshop, the team put together a warm-up package consisting of:

- A few recent magazines articles highlighting the trends in fishing season, boating season , weather changes.
- Copies of selective interviews that had been conducted
- A summarized list of the needs that had been identified to date
- Letters from customers
- New management directives
- New marketing data

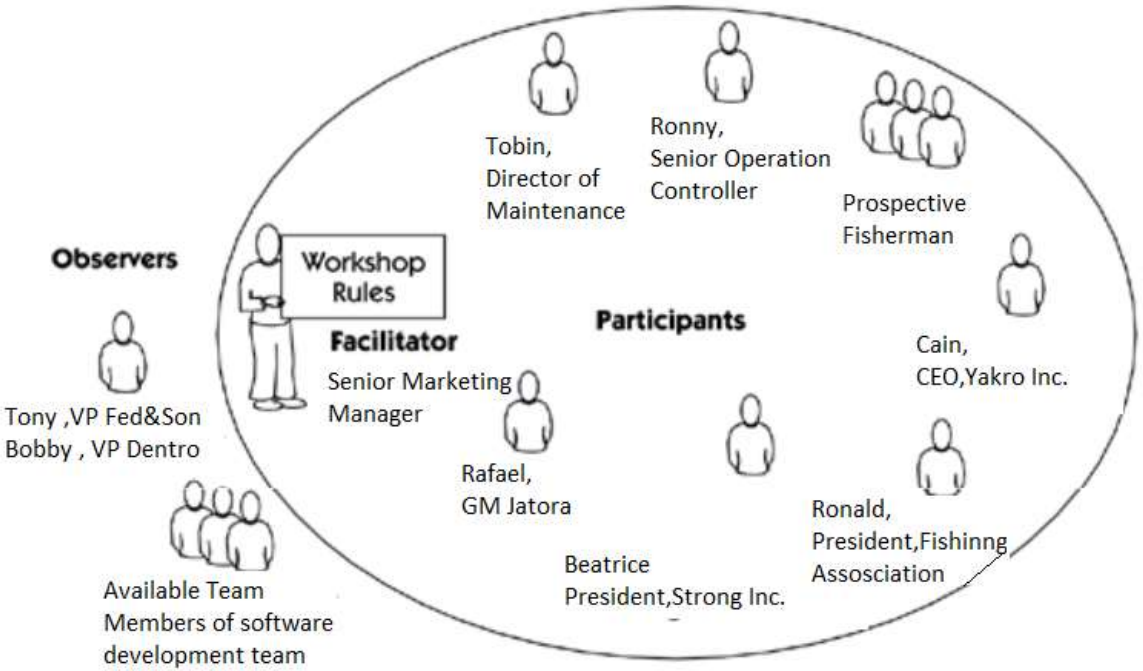
Krab brushed up on his facilitation skills, and Tobin handled the logistics for the workshop.

The Session

- The workshop has been held at HarborX Meeting Room 5A-12 on 1st October 2021 at 3.30 p.m.

- Krab introduced the agenda for the day and the rules for the workshop, including the workshop tickets.

Perspective on the workshop



In general, the workshop went very well, and all participants were able to have their input heard. Krab did a fine job of facilitating.

Rick led a brainstorming session on potential features for the HARBOR Management System, and the team used cumulative voting to decide on relative priorities.

The Analysis Of Results

- The new features and requirements that have been introduced in Harbor Management System are:

ID	Features from the workshop
1	Easy access
2	Outsourcing Security
3	Advertisement free web
4	Check Status
5	Error free service
6	Provide docking services
7	User friendly

ID	Features
8	Receive Notification if any cancellation
9	Gates can be opened and closed
10	Payment Option
11	Assign deck
12	Web site like user presentation
13	Increase processing power
14	Better server relay from Custom
15	Change Language Option
16	AI to assign Deck

Votes Ranking and Priority

ID	Features	Votes	Ranking
1	Easy access	81	3
2	Outsourcing Security	62	9
3	Advertisement free web	84	2
4	Check Status	45	12
5	Error free service	80	4
6	Provide docking services	41	15
7	User friendly	90	1
8	Receive Notification if any cancellation	50	11
9	Gates can be opened and closed	78	6
10	Payment Option	79	5
11	Assign deck	64	8
12	Web site like user presentation	58	10

ID	Features	Votes	Ranking
13	Increase processing power	44	13
14	Better server relay from Custom	42	14
15	Change Language Option	67	7
16	AI to assign Deck	12	16

Brainstorming

Brainstorming Tools

- Paired Comparison Analysis
- Decision Making Analysis
- Affinity Diagram

Paired Comparison Analysis

- Step 1: Make a list of option and assign letters to each options

- Fund Distribution priority between New Features :

Easy Access →A

Catering Services → B

Gate Controls →C

Increase Processing Power →D

Step 2 : Make a table

Option	A. Easy Access	B. Catering Services	C. Gate Controls	D. Increase Processing Power
A. Easy Access				
B. Catering Services				
C. Gate Controls				
D. Increase Processing Power				

Step 3: Compare the options in the row with the option in columns. Decide which one is important and write down the letter

Option	A. Easy Access	B. Catering Services	C. Gate Controls	D. Increase Processing Power
A. Easy Access				
B. Catering Services	A			
C. Gate Controls	C	C		
D. Increase Processing Power	A	D	C	

Step 4: Score the difference in importance between the options , running from 0 to 3

Option	A. Easy Access	B. Catering Services	C. Gate Controls	D. Increase Processing Power
A. Easy Access				
B. Catering Services	A,1			
C. Gate Controls	C,2	C,1		
D. Increase Processing Power	A,1	D,1	C,2	

- Step 5:
- Adding up the values and converting them into a percentage of total.
- The Calculation yields the following totals:

- A=2(25%)
- B=0(0%)
- C=5(62.5%)
- D=1(12.5%)

- Step 6: Make a decision
- The team decides to allocate most fund toward C (Gate Controls)

Decision Making Analysis

- Choosing between different Security Firm:
- Step 1: List the number of options and factors
- Brinks Company , Booz Allen Hamilton , GardaWorld , DynCorp ,Securitas AB
- Based on : Cost , Realtime Help , Reliability , Stocks , Concessions

Step 2: Make a table

	Cost	Realtime Help	Reliability	Concessions	Stocks	Total
Brinks Company						
Booz Allen Hamilton						
GardaWorld						
DynCorp						
Securitas AB						

Step 3: Fill the value

	Cost	Realtime Help	Reliability	Concessions	Stocks	
Brinks Company	13	3	9	12	7	
Booz Allen Hamilton	9	3	8	8	5	
GardaWorld	7	5	10	7	9	
DynCorp	5	8	13	9	9	
Securitas AB	3	12	13	13	11	

Step 4: Assign Weight to each factor

	Cost	Realtime Help	Reliability	Concessions	Stocks	
WEIGHTS:	5	3	4	2	1	
Brinks Company	13	3	9	12	7	
Booz Allen Hamilton	9	3	8	8	5	
GardaWorld	7	5	10	7	9	
DynCorp	5	8	13	9	9	
Securitas AB	3	12	13	13	11	

Step 5: Multiply each column value and factor weight value

	Cost	Realtime Help	Reliability	Concessions	Stocks	
WEIGHTS:	5	3	4	2	1	
Brinks Company	13*5	3*3	9*4	12*2	7	
Booz Allen Hamilton	9*5	3*3	8*4	8*2	5	
GardaWorld	7*5	5*3	10*4	7*2	9	
DynCorp	5*5	8*3	13*4	9*2	9	
Securitas AB	3*5	12*3	13*4	13*2	11	

Step 6: Add all the values in row

	Cost	Realtime Help	Reliability	Concessions	Stocks	Total
WEIGHTS:	5	3	4	2	1	
Brinks Company	65	9	36	24	7	141
Booz Allen Hamilton	45	9	32	16	5	117
GardaWorld	35	15	40	14	9	104
DynCorp	25	24	52	18	9	128
Securitas AB	15	36	52	26	11	129

Step 7: Take the maximum value from the total column

	Cost	Realtime Help	Reliability	Concessions	Stocks	Total
WEIGHTS:	5	3	4	2	1	
Brinks Company	65	9	36	24	7	141
Booz Allen Hamilton	45	9	32	16	5	117
GardaWorld	35	15	40	14	9	104
DynCorp	25	24	52	18	9	128
Securitas AB	15	36	52	26	11	129

Step 8 : Make a decision

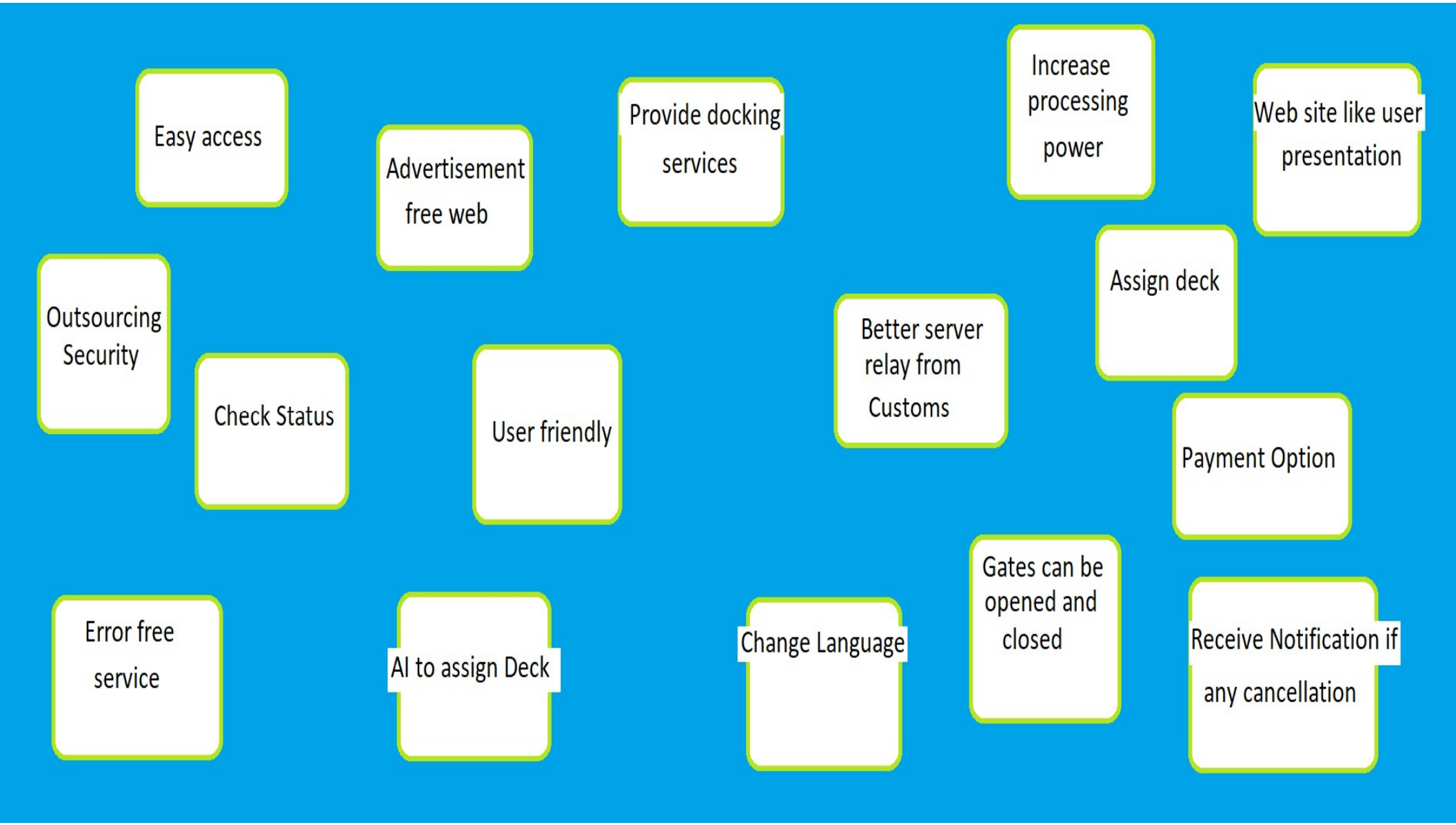
- This makes it clear to the company that Brinks Company is the best option
- Despite lack of Realtime Help and Stock
- Because its total value is maximum

Affinity Diagram

1. Transfer Ideas onto Sticky Notes
2. Sort Ideas into Themes

1) Transfer Ideas onto Sticky Notes

- Easy access
- Outsourcing Security
- Advertisement free web
- Check Status
- Error free service
- Provide docking services
- User friendly
- Receive Notification if any cancellation
- Gates can be opened and closed
- Payment Option
- Assign deck
- Web site like user presentation
- Increase processing power
- Better server relay from Custom
- Change Language Option
- AI to assign Deck


Easy access
Advertisement free web
Provide docking services
Increase processing power
Web site like user presentation
Outsourcing Security
Check Status
User friendly
Better server relay from Customs
Assign deck
Payment Option
Error free service
AI to assign Deck
Change Language
Gates can be opened and closed
Receive Notification if any cancellation

2) Sort Ideas into Themes

- User Interface

Advertisement free web
User friendly
Web site like user presentation
Change Language Option

- Services

Check Status
Error free service
Provide docking services
Payment Option

- Features

Easy access
Receive Notification if any cancellation
Gates can be opened and closed
Assign deck

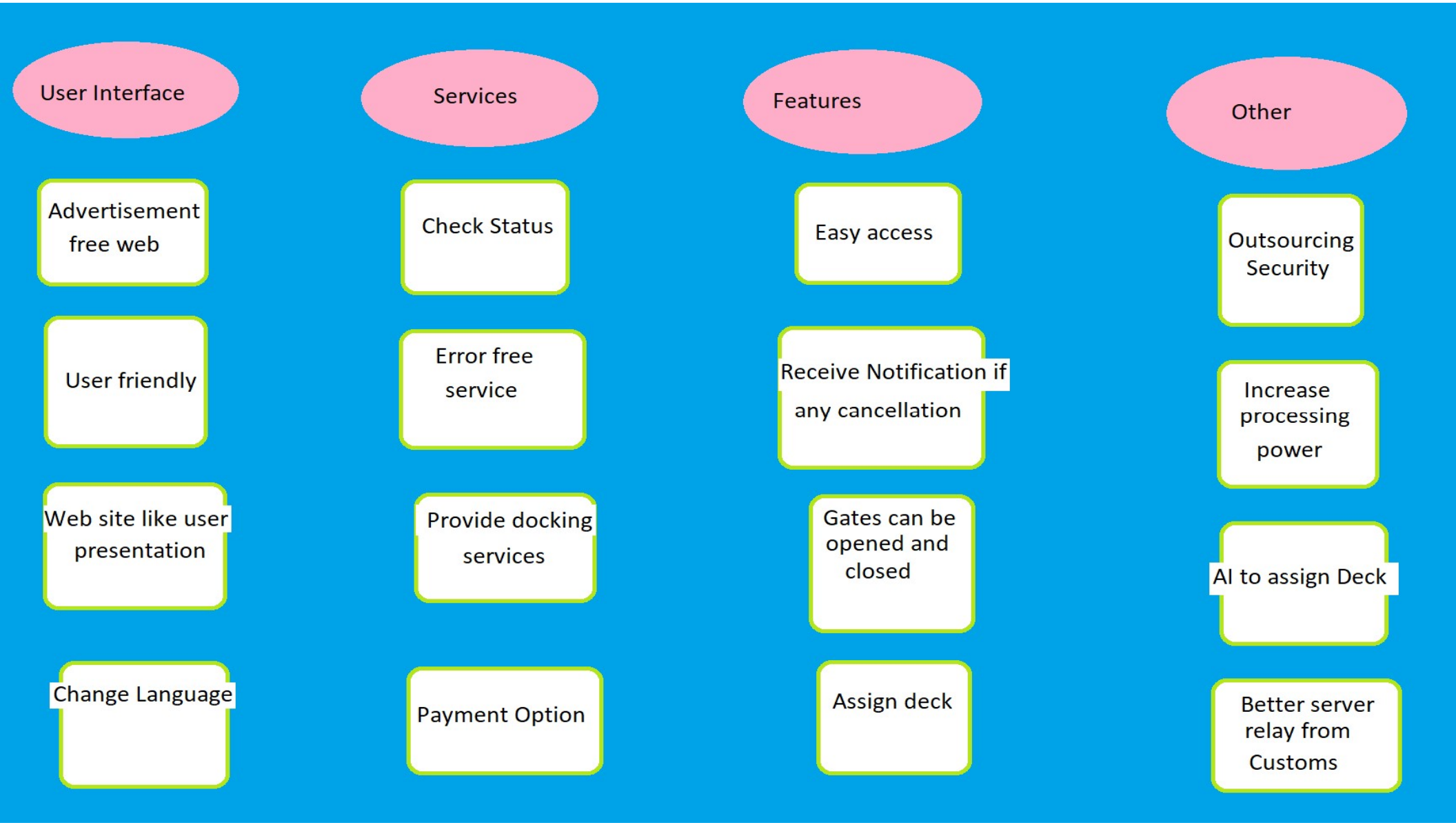
- Other

Outsourcing Security

Increase processing power

AI to assign Deck

Better server relay from Custom


User Interface
Advertisement free web
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Easy access
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Gates can be opened and closed
Assign deck
Other
Outsourcing Security
Increase processing power
AI to assign Deck
Better server relay from Customs

Vision Document

1. Introduction

1.1 Purpose

The main purpose of this vision document is to list the requirements of the Harbour Management System project. This document also helps us to collect and analyse the ideas gathered for the project. It focuses on the capabilities needed by the stakeholders and the target users, and why these needs exist.

1.2 Scope

The vision document applies to Harbor Management System, which will be developed by Harbor X. The Harbour Management systems will develop this client-server system. The system allows the passengers to enter the dock and provide a safe platform to buy products. The Harbour management department will keep track of ships entering and leaving the harbour with proper permission and protocol .The system keeps record of ships entering and leaving the dock, whether they are paying correct fees and whether they have proper permission to enter and leave.

1.3 Definitions, Acronyms and Abbreviations

Terms	Definition
User	Someone who interacts with the web portal
Admin	Administrator- the person who maintains the entire web application
Harbour master	decides how a harbour facility is used
Ferry operator	pilotage of ships
Administrative Officer	tasks would normally include maintenance of records; accounts; collection of berthing charges; sale of water and fuel; recruitment of harbour personnel and levying of fines imposed by the harbour master
Maintenance Officer	upkeep of navigational equipment; updating hydrographic information of the harbour basin, entrance and approach; maintenance and monitoring of the water supply system; and maintenance of water treatment and refrigeration systems

Ship Operators	responsible for the safe and efficient operation and maintenance of their ships
DFD	Data Flow Diagram
Web Portal	A web application which presents special facilities for analysing performance of student.
HMS	Harbour Management System

1.4 References

1. IEEE Software Engineering Standards Committee, "IEEE Std 830-1998, IEEE Recommended Practice for Software Requirements Specifications", October 20, 1998.
2. 6.3 Harbour management.html
3. Harbour Management _ HARBOUR ASSIST marina management software,html
4. i1883e03.html
5. Item_3_23042020 _1_Harbour_Safety_MGMT_System.html

2. Positioning

2.1. Business Opportunity

Harbour Management System shoots up the sales of the port and increase all round businesses. The primary reason for choosing this system is to for management of the port. It also increases profit amount by eliminating agents and thus directly providing services to travellers. More advanced systems like ours demonstrate the ability to book and pay through a variety of online methods, including mobile. Not only do they greatly expand the potential of your business, but also, they better leverage the power of the Internet to drive growth and revenue

2.2. Problem Statement

2.2.1.Increased Traffic

Elements	Description
The problem of.....	not able to keep track of ships entering and leaving the harbour with proper permission and protocol
Affects ...	Sales order personnel, customer, shipping and customer services, statistician, harbour master, administrative officer
And results in ...	Increased scrap , customer dissatisfaction and decreased profitability.
Benefits of a solution ...	Increased accuracy of sales orders at point of entry Increased accuracy in fee collection Improved reporting of total cost data to management

	Higher profitability Better customer satisfaction

2.2.2.Inaccurate fee

Elements	Description
The problem of.....	Inaccuracies in fees according to amenities and time used
Affects ...	Sales order personnel, customer, shipping and customer services, statistician, harbour master, administrative officer
And results in ...	Increased scrap , customer dissatisfaction and decreased profitability.
Benefits of a solution ...	Increased accuracy of sales orders at point of entry Increased accuracy in fee collection Improved reporting of total cost data to management Higher profitability Better customer satisfaction

2.2.3.lack of surveillance

Elements	Description
The problem of.....	lack of surveillance
Affects ...	shipping and customer services, statistician, harbour master, administrative officer
And results in ...	Increased scrap , customer dissatisfaction and decreased profitability.
Benefits of a solution ...	Safety Better customer satisfaction

2.3. Product Position Statement

For	Harbor, port
Who	Manages port
Harbor Management System	Web based application
That	Keep track of ships entering and leaving the port
Unlike	Existing paper based system
Our product	Provides information in real time, keep track of entering and leaving, portal for payment

3. Stakeholders and Users Descriptions

3.1. Market Demographics

The major factor boosting the market for harbour management systems is the growing need for next generation port management. The growing demand for advanced technologies for planning , services and security, harbour management systems have been developed and introduces in some of the modern port. The harbour management systems are developed with an objective to improve traffic efficiency, reduction in pilot workload, services and safety. This factor is anticipated to boost the market for harbour management systems. Moreover, growing number of ships across the globe is increasing the demand for fun and transport is also propelling the market for port management systems. The harbour management systems are beneficial to port in various ways. Owing to the fact that, the human error is growing in the industry, the manufacturers of harbour management systems are focusing of reducing these errors and ensuring safety of the harbour and the passengers or cargoes by implementing advanced and technologically enhanced management systems.

3.2. Stakeholders Summary

Stakeholders	Description	Responsibilities
Port management body	Manages the port	Proper code and rules are followed by all personnel Make required rules and guidelines
Administrative officer	keeping the harbour's books in order.	The tasks would include: • keeping a record of all the licenced craft operating from the facility, liaison with those responsible for the issue of a licence to fish and, where applicable, the register of the vessels and keep records as may be required. • accounting for the cash receipts for harbour dues and fish handling charges; • sale of potable water and fuel to vessels inside the port facility; and • administer the fines imposed by the harbour master.
Maintenance officer	charged with keeping the harbour infrastructure in good working order.	Typical duties of a maintenance officer include: • regular maintenance of the harbour beacons (batteries, cables, lamps, etc.), light fittings, fences, painting of steel structures, maintenance

		of port boundary; and • occasional maintenance of the harbour's water supply system (replacing corroded pipe work, leaking taps, unblocking water drains, replenishing the chlorinators, ensuring the waste collection receptacles are in good working order and that the port's wastes are being handled according to the approved waste disposal plan, ensuring that the generator or pumping equipment is serviced regularly or that the right spares are available, etc.).
Fisheries statistics officer	usually a government employee (fisheries department) seconded to the port management body. The officer's duty is to compile statistics on the resources being harvested	His observations must include: • name of vessel and its licence to fish as well as details of its registration; • quantity of species harvested; • individual fish sizes and/or weights, especially undersized fish; and • wholesale prices fetched at the local auction (unless already computerized).

3.3. User Summary

Name	Description	Responsibilities	Stakeholders
Ferry operator	Manages ferry as a service	responsible for the safe and efficient operation and maintenance of ferry	Self-represented
Sales order supervisor	Keep track of sales	Proper code is followed during all transaction	Self-represented
Fee supervisor	Keep track of fees	Proper code is followed during all transaction	Self-represented
Harbour master	single most important person inside a harbour and decides	role of the Harbourmaster is to; • Develop, implement	Self-represented

	how a harbour facility is used.	and maintain an effective and appropriate Harbour SMS • Ensure the Harbour SMS complies with applicable legislation, regulation, codes and guidelines • Define the policies, plans and budgets of the Harbourmaster Group together with its strategic objectives • Provide the Council, via Council Committees, with regular reports on the performance of the Harbourmaster group in meeting its objectives • Inform the Council and Executive on matters of Navigation Safety or Maritime Safety as relevant to the region • Provide the Council with independent professional advice regarding matters of maritime and navigation safety. • Work with Port Marlborough to ensure compliance with the Code and effective management of maritime and navigation safety risk as pertains to Port Operations, Pilotage and Towing. • Exercise regulatory powers as required to ensure maritime safety • Encourage the	

		effective management maritime risk by all harbour users	

3.4. User Environment

The User Community is a large sophisticated community that demands the flexibility and response time that an on-line system can provide.
The users are educated, computer literate, and in most cases have basic understanding of internet. The ability to register for entry and services via personal computers and to review their fees and sales would greatly streamline registration.
The initial release of will be limited to all Harbour X port. Marketing subsequent releases to other port is under consideration
As a result HMS will be designed to be expandable and all user community data) will be table driven and easily modifiable upon system installation.

3.5. Stakeholders Profiles

3.5.1.Port Management Body

Representative	John A, Chairman
Description	Approval Authority
Type	Manages day-to -day activity of port
Responsibilities	Proper code and rules are followed by all personnel Make required rules and guidelines
Success Criteria	Success is completion of the project within approved budget, and a demonstrated reduction in workload
Involvement	Project reviewer. Budgetary approval signatory. Involved in staff performance reviews.
Deliverables	Control
Comment Issues	System might need to be modified according to regulations

3.5.2.Administrative officer

Representative	John B, Head
Description	Proper administrative work is followed
Type	Manages day-to-day administration
Responsibilities	The tasks would include: • keeping a record of all the licenced craft operating from the facility, liaison with those responsible for the issue of a licence to fish and, where applicable, the register of the vessels and keep records as may be required. • accounting for the cash receipts for harbour dues and fish handling charges; • sale of potable water and fuel to vessels inside the port facility; and • administer the fines imposed by the harbour master.
Success Criteria	Decrease Workload

Involvement	Project reviewer. Budgetary approval signatory.
Deliverables	All documents collected
Comment Issues	Copy maintained in cloud

3.5.3.Maintenance officer

Representative	John C , Head
Description	Maintenance of port ,Proper Regulations are followed
Type	Manages day-to-maintenance
Responsibilities	Typical duties of a maintenance officer include: • regular maintenance of the harbour beacons (batteries, cables, lamps, etc.), light fittings, fences, painting of steel structures, maintenance of port boundary; and • occasional maintenance of the harbour's water supply system (replacing corroded pipe work, leaking taps, unblocking water drains, replenishing the chlorinators, ensuring the waste collection receptacles are in good working order and that the port's wastes are being handled according to the approved waste disposal plan, ensuring that the generator or pumping equipment is serviced regularly or that the right spares are available, etc.).
Success Criteria	Easy management
Involvement	Project reviewer
Deliverables	All maintenance request
Comment Issues	Recipe maintained in cloud

3.5.4.Fisheries statistics officer

Representative	John D, Head
Description	Maintain fish statistics
Type	Professional with statistic skills.
Responsibilities	His observations must include: • name of vessel and its licence to fish as well as details of its registration; • quantity of species harvested; • individual fish sizes and/or weights, especially undersized fish; and • wholesale prices fetched at the local auction (unless already computerized).
Success Criteria	Easy to compile data
Involvement	Project reviewer
Deliverables	All statistics report

Comment Issues	Documents copied to cloud

3.6. User Profiles

3.6.1.Ferry operator

Description	Primary end user
Type	This can be a casual or novice user and uses the application to enter the port and request services
Responsibilities	uses the application to enter the port and request services
Success Criteria	The success is defined as the customers continuing to use our system.
Involvement	We will have sample customers to evaluate our system which will guide our vision
Deliverables	Income
Comment Issues	More the better

3.6.2.Sales order supervisor

Description	Person who manages the sales of services
Type	This a specific user who would be experienced in working with the application
Responsibilities	Verifies and details the services used by user
Success Criteria	Efficient management
Involvement	We will have sample customers to evaluate our system which will guide our vision.
Deliverables	All sales changes
Comment Issues	Modify values according to requirement

3.6.3.Fee supervisor

Description	Manages the fee required to pay
Type	This a specific user who would be experienced in working with the application
Responsibilities	Verifies and details the time of entry and leave and due fee to be paid by user
Success Criteria	Efficient management
Involvement	We will have sample customers to evaluate our system which will guide our vision.

Deliverables	Track all fees
Comment Issues	Modify values according to requirement

3.6.4.Harbour master

Description	Manages the port, link to custom
Type	This a specific user who would be experienced in working with the application
Responsibilities	Verifies and details the activities of the port
Success Criteria	Efficient management
Involvement	We will have sample customers to evaluate our system which will guide our vision.
Deliverables	Control of gates
Comment Issues	Oversee daily operations

3.7. Key Stakeholder/ User Needs

Needs	Priority	Concerns	Current Solutions	Proposed Solutions
Better Management of traffic	High	Time and others	Tokens and proper verification	AI
Decrease of inaccurate fees	High	Efficiency	Double checking by users and staffs	Better interfaces
Better Surveillance	High	Equipment cost	CCTV inside the ships	More Equipment

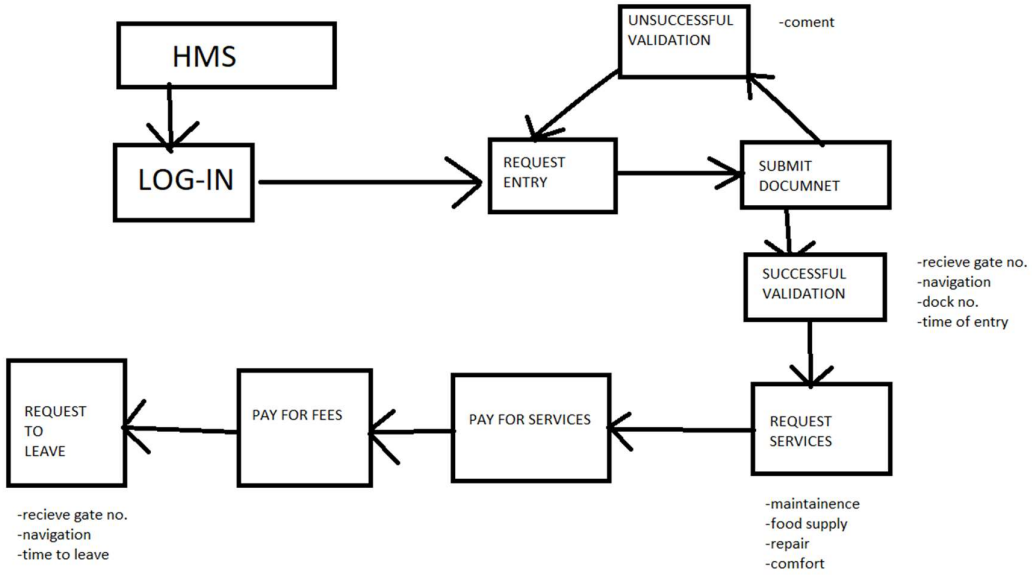
3.8. Alternatives and Competition

The user community was unaware of any viable alternatives or off-the-shelf solutions. The user community supported the strategy that the system should be developed internally by the Harbour X in order to reduce costs, ensure appropriate functionality, and to guarantee continued support and maintenance on the system.

4. Product Overview

4.1. Product Perspective

The system allows the passengers to enter the dock and provide a safe platform to buy products. The Harbour management department will keep track of ships entering and leaving the harbour with proper permission and protocol .The system keeps record of ships entering and leaving the dock, whether they are paying correct fees and whether they have proper permission to enter and leave.



4.2. Summary of Capabilities

Customer Benefits	Supporting Features
To create a new user account Login	To create a new user account Login
Get proper Navigation	Navigation
Get service updates	Service Detail
Pay Fees	Fee payment Portal
Pay for Services	Service payment Portal

4.3. Assumptions and Dependencies

It is assumed that the details of the cost of ticket are already known to the customer. Future changes like providing different types of ships sizes with different classes like business class, economic class will allow the customers to benefit from one facility.
A request for booking/cancellation of a entry from any source
Calculation of frequent customers and calculating appropriate reward points for these customers
an assumption might be that a specific operating system would be available on the hardware designated for the software product.

4.4. Cost and Pricing

Due to funding constraints, the costs for developing the system must not exceed Rs 22,00,000/-.
It is anticipated that existing computers of the users will be used as the target machines and that no hardware budget is required.

4.5. Licensing and Installation

The license for the software is created as soon as the users create their own user id. The account can be maintained for the period of time based on the package of premium that the user paid, and for that particular period of time the software is licensed and the security of each and every activity is maintained perfectly and this software does not require any money for the installation of this software

5. Product Features

5.1. LOG IN

User can log in using id and password. Registered user needs to submit less document

5.2. Request Entry

Users can request the system to enter the port

5.3. Submit Documents

The user need to submit all the documents required

5.4. Authenticate Documents

The system will authenticate the documents and send Ok sign to users

5.5. Receive Token

The user will be provide Gate number and timing to enter

5.6. Navigation

Proper navigation to dock will be provided

5.7. Request Services

The users will be shown al the service provided by the port. User can use these services

5.8. Pay for Services

Payment portal for all services

5.9. Pay for Fees

Payment for any fees

5.10. Request Leave

Check any dues and send the navigation details , gate number and timing for leaving

6. Constraints
   6.1. The system shall not require any hardware development or procurement.
   6.2. The documents submitted is limited to the type of data supported by the existing CatLog Database.

7. Quality Ranges
   7.1. Availability: The System shall be available 24 hours a day, 7 days a week.
   7.2. Usability: The System shall be easy-to-use and shall be appropriate for the target market of computer-literate captains or personnel's.
   7.3. Usability: The System shall include online help for the user. Users should not require the use of a hardcopy Manual to use the System.
   7.4. Maintainability: The System shall be designed for ease of maintenance.

8. Precedence and Priority

This section provides some direction on the relative importance of the proposed system features. The features defined in this Vision Document should be included in the first 2 releases of the system. All features critical requirement are planned for the first release.
As development progresses on this system, the feature attributes (referenced in Section 7 of this document) will be used to weight the relative importance of the features and to plan the release content. The benefit, effort, and risk attributes are used to determine priority of a feature and target release.
It is anticipated that the HMS will be released for general use at Harbour X through 2-4 main releases.

Release 1 must contain as a minimum the basic functionality as listed below:
Request Entry
Submit Documents
Authenticate Documents
Receive Token

Navigation
Request Services
Pay for Services
Pay for Fees
Request Leave

Release 2 should include:
- Customs Check
- Personnel Check
- Sell by user

The functionality for Release 3 has not yet been determined. It is anticipated that this release will contain enhancements to the existing functionality.

9. Other Product Requirement

9.1. Applicable Standards

The desktop user-interface shall be Windows 7 or above compliant.

9.2. System Requirement

The server component of the system shall operate on the Harbour X
Server and shall run under the UNIX operating system.
The client component of the system shall operate on any personal computer
with a 486 Microprocessor or better.
The client component of the system shall not require more than 2 GB RAM
and 100 GB Disk Space.
The client component of the system shall run on Windows 7 or above.

9.3. Performance Requirement

The system shall support up to 200 simultaneous users against the central database at any given time, and up to 50 simultaneous users against the local servers at any one time.
The system shall provide access to the legacy CatLog Database with no more than a 10 second latency.
The system shall complete 80% of all transactions within 2 minutes.

9.4. Environment Requirement

Document verification done by custom
No damage to surrounding
Should not be more than the prescribed limit set by port management body in compliance with laws, regulations and rules governing the use of the facility (landing fees, berthing charges, sale of water and fuel etc.)

10. Document Requirement

10.1. User Manual

The User Manual explains us the step by step procedure to set up and use the Harbour Management System web application. The instructions on how to book a deck will be provided on the website for inexperienced users.
The User Manual shall include:

- ➢ Minimum System Requirements
- ➢ Installation of the software in different places
- ➢ Logging In
- ➢ Logging Off
- ➢ All System Features
- ➢ Customer Support Information

10.2. Online Help

Online Help shall be available to the user for each system function. Each topic covered in the User Manual shall also be available through the online help.

10.3. Installation Guides, Configuration, Read Me File

This section describes the required software and hardware for the Harbour Management System project.
The Installation Guide for the server portion shall include:
Minimum System Requirements
Installation Instructions
Parameters
How to initialize the usage
Database
How to Retain the Existing data
Customer Support Information

The Read Me File shall be available for display following installation. The Read Me file will also reside on disk and be available for viewing at any time by the user. The Read- Me File shall include:
1 New release features
2 Known bugs and workarounds.

10.4. Labelling and Packaging

The Harbour X logo shall be prominent on the user documentation and splash screens.
As the initial releases are strictly for Harbour X and not the general market, product marketing literature, product packaging, and promotional materials will not be developed.