Requirements Specification Document

for

FixIT

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0. Revision History

Name	Date	Version	Details
Matthew Rudge, Ben McDonnell, Jordan Maddock	10/04/2019	1.0	Initial draft for discussion with stakeholders.
Matthew Rudge, Ben McDonnell, Jordan Maddock	12/04/2019	1.1	Final revision for submission: Revised wording, formatting and layout; inserted use case diagrams and tables; added non-functional requirements.
Ben McDonnell, Matthew Rudge, Jordan Maddock	11/06/2019	2.0	Revisions based on client feedback; revisions to include design features present in current system prototype.

1. Introduction

1.1 Purpose

This document defines the requirements for design and implementation of the FixIT ticketing system. The ticketing system is a way for the users of an organisation to lodge a support ticket. The support ticket should be related to an IT problem, and the organization's IT support personnel should respond to the ticket. The leader of the IT support team will assign incoming tickets to team members for resolution. Upon resolution of an incident, the ticket lodger will indicate that the problem is solved to notify the member of the IT support team assigned to their ticket.

The core focus of the system is around tickets but additional functionality that includes a knowledge base and screen sharing integration will be included. The knowledge base will serve as a common repository for users of the organisation that contains information to assist with diagnosing and solving IT incidents. Insight gained from tickets that are solved can be added to the knowledge base for future reference. The screen sharing integration will give the IT support team the ability to launch a remote-control session with a ticket lodger from within the FixIT system. The screen sharing software is an external software package that is integrated into the system, whereas the knowledge base will be implemented in the system.

1.2 System Scope

The FixIT system is an IT helpdesk solution for use within a small or medium sized organisation. The system will enable staff in the organisation to lodge support tickets for IT issues which are responded to and assigned to IT support personnel. Support tickets in the system will be trackable, enabling the affected users and IT management staff to monitor the progress of tickets relevant to them.

The system is accessible via a web interface that is compatible with most common modern browsers. Users will access the system through a login portal managed by the system administrator. Access to the system is restricted to the organisation intranet in the initial deployment of the system. Personnel of the helpdesk staff are also able to create support tickets on behalf of users if they are unable to create it themselves.

The primary goal of the system is to support the organisation in resolving IT issues encountered by general staff in a user-friendly, streamlined, and effective manner. This will be achieved by creating a means of centralised communication between affected users and IT personnel and leveraging this to increase productivity and efficiency of IT support.

The secondary goal of this system is to act as a knowledge base for IT support challenges realised or previously experienced by the organisation. A major advantage of implementing a knowledge base within an IT support ticketing system is that existing problems that are solved can be stored and referenced by users having similar problems,

This software will implement the ability to store all tickets that have been lodged by all employees, both current and resolved, as well as storing tickets for frequent problems in a “Knowledge Base” for other users to browse for common solutions before submitting a new ticket.

Functionality that is outside of the system scope includes assistance in troubleshooting IT problems after the ticket is assigned to a helpdesk employee. Once a ticket has been assigned to a helpdesk employee, the status of the ticket is not followed up by the system, and the system does not provide any further support in troubleshooting that ticket. The IT personnel of the organisation are responsible for resolving and monitoring the status of tickets in the system.

1.3 Definitions and Abbreviations

Table 1: Definitions and Abbreviations

Term	Meaning
Incident Management System (IcM)	A software system with the purpose of facilitating the exchange of information and coordination of resources in response to an organisational incident. The system boundary of the IcM includes the initial record of an incident, the dispatch of resources to respond to an incident, and the operations unit that resolves the incident.
Incident	In the context of the FixIT IcM system, an incident is a problem experienced by a General Staff member that disrupts the regular operations of the organisation, requiring assistance from a Helpdesk Employee.
Support Ticket or Ticket	Records created in response to an incident or query directed to the IT Helpdesk. Support tickets serve as an information exchange between General Staff and Helpdesk Employees about a single incident or set of related incidents. For ticket state transitions, see Figure 2: State transition diagram showing possible ticket status changes (pg. 54).
Knowledge Base (KB)	An organisation's repository of knowledge gained from resolved support tickets. The knowledge base serves as a rich source of information for non-IT and IT staff to reference.
Knowledge Base Article	An informational unit contained within the knowledge base. Many times, an article will be related to an incident that was solved.
IT Helpdesk	The IT Helpdesk includes all staff of an organisation that are responsible for receiving and responding to reports of incidents.
Screen Sharing or Remote Desktop Control (RDC)	Screen sharing or RDC software in the context of this system will allow Helpdesk Caseworkers to remotely access and control the computers of those having technical difficulties with their computers.
Graphical User Interface (GUI)	A graphical user interface is the visual method of displaying and controlling computer software. The graphical user interface in the context of FixIT is the web graphical user interface displayed with a browser.

1.4 Document Overview

This document outlines the functional and non-functional requirements of system as well as several project requirements for consideration. The Overall Description section outlines the types of users that will interact with the system, and how the system functions in all possible use case scenarios. Specifically, this will involve a definition of user characteristics, product functions and use case scenarios. The Product Perspective section will outline several requirements that will influence and/or detail the required attributes of the system that do not directly relate to inputs, outputs and processing. The functional requirements will be detailed mainly in the Overall Description section of the document, and the non-functional requirements of the document will be outlined in the Product Perspective section. In addition to system requirements, this document includes sections related to identified development constraints and assumptions; and project requirements relating to costs, validation, verification and scheduling.

2. Overall Description

2.1 User Characteristics

The key users of the system and their characteristics in relation to operations performed and technical expertise are detailed in Table 2.

Table 2: User characteristics

User Type	Characteristics
Ticket Lodger *(Call Taker)*	Ticket Lodgers are general staff of the organisation that require assistance with an IT related problem or access to the knowledge base. The Ticket Lodger is equivalent to the 'Call Taker' of the general incident management system template. It is assumed that any user of this system has basic computer skills which allow them to: navigate to a webpage in a web browser, perform basic data entry into forms, and interpret information from a computer GUI. It is assumed that the technical proficiency of Ticket Lodgers is basic despite the real possibility that some will be more so than others. It is intended for the system to be accessible to any users in the organisation with IT problems, so special care should be taken to allow these users to benefit from the functionality of the system. It is also assumed that users' issues are urgent and need to be responded to quickly to minimise disruption. The process of creating support tickets should be efficient and fast so that issues may be resolved as soon as possible.
Helpdesk Caseworker *(Operations Unit)*	Helpdesk Caseworkers are members of the IT support team of the organisation. Helpdesk Caseworkers are assigned tickets by the Helpdesk Manager that they are responsible to resolve. The Helpdesk Caseworker is equivalent to the 'Operations Unit' of the general incident management system template. It is assumed that the technical proficiency of Helpdesk Caseworkers is relatively high, but the user interface design requirements will not differ significantly from that of the Ticket Lodger. In some situations, Helpdesk Caseworkers will need to ask for additional information from a Ticket Lodger in relation to their ticket. The Helpdesk Worker may need to discuss a problem with a Ticket Lodger.

Helpdesk Manager *(Dispatcher)*	Helpdesk Managers are coordinators of the IT support team of the organisation. The primary role of a Helpdesk Manager is to assign new tickets to Helpdesk Caseworkers and act as the system administrator of the system within the organisation. The Helpdesk Manager is equivalent to the 'Dispatcher' of the general incident management system template. The Helpdesk Manager is responsible not only for assigning new tickets, but also merging duplicate tickets, and closing a ticket if it should not be or does not need to be followed up. In addition to the roles performed in ticket management, the Helpdesk Manager should also monitor the progress and productivity of the IT support team using FixIT to ensure that all work is being completed to the standard required by the organisation. It is assumed that the technical proficiency of Helpdesk Managers is relatively high, but the user interface design requirements will not differ significantly from that of the Ticket Lodger or Helpdesk Caseworker.

2.2 Product Functions

This section provides a summary of the major system functions that the system will perform in Table 3.

Table 3: Major system functions.

Functionality	Description
Incident Management: Create, modify and delete tickets	
Create Incident	Ticket Lodgers can create support tickets from the dashboard through a form.
Assign Incident	Helpdesk Managers can assign support tickets to Helpdesk Caseworkers for resolution.
Mark Incident as Resolved or Mark as Completed	Helpdesk Caseworkers can mark support tickets as “Resolved” if they have provided a pending solution or “Completed” if the issue is solved.
Accept Solution	Once a ticket is marked as ‘Resolved’ by a Helpdesk Caseworker, the ticker lodger that initially submitted the ticket can choose to accept the solution and the caseworker which updates the status of the ticket to Complete.
Reject Solution	Once a ticket is marked as ‘Resolved’ by a Helpdesk Caseworker, the Ticket Lodger can choose to reject the resolution and explain why it was rejected. This will change the status of the ticket to ‘In Progress’ and will notify the assigned Helpdesk Caseworker.
Close Incident	Helpdesk Managers and caseworkers may close a support ticket if decided that it should be removed for some reason. The ticket will remain in the system but not as an active ticket.
Comment on Incident	Users can comment on tickets that are viewable to them. New comments will create an alert on the dashboards of other users that the ticket is relevant to.
Incident Management: View, search, sort and filter tickets	
View My Incidents	Users can see tickets that are relevant to them. For example, a Ticket Lodger will see tickets that they created, a Helpdesk Caseworker will see tickets assigned to them, and a Helpdesk Manager will see tickets that are unassigned to a Helpdesk Caseworker.
View Incident	Users can select an incident to view its details.
Search Incidents, Sort Incidents and Filter Incidents	Users of the system can modify their view of incidents by searching, sorting and/or filtering the results.

Incident Management: Helpdesk Manager ticket actions	
Delete Incident	Helpdesk Managers can completely delete tickets from the system database.
Link (Duplicate) Incident	Helpdesk Managers can link a redundant ticket to one that already exists which merges the duplicate information into the existing ticket. This will change the status of the duplicate ticket to 'Closed'.
User Management	
Add User	Helpdesk Managers can add a new user to the system.
View User and Edit User	Helpdesk Managers can view and edit the details of an existing user.
Delete User	Helpdesk Managers can delete a user from the system.
Knowledge Base	
Add Incident to Knowledge Base	Helpdesk Managers and Caseworkers can add 'Completed' tickets to the knowledge base for future reference.
View Article in Knowledge Base	Users can access existing articles in the knowledge base.
Modify and Delete Article in Knowledge Base	Helpdesk Managers can modify or delete articles in the knowledge base.
Screen Sharing	
Share Screen	Ticket Lodgers can initiate a screen sharing session with a Helpdesk Caseworker through the third-party RDC software.
System Access	
Login and Logout	Sessions with the system can be initiated and terminated through a standard login interface and logout action button respectively.

2.3 Use Case Diagram

Diagram 1 gives an overview to the types of interactions that users will have with the system, and how the system functions in response to such interactions. In the diagram, stick figures represent user types and bubbles represent system functions or actions.

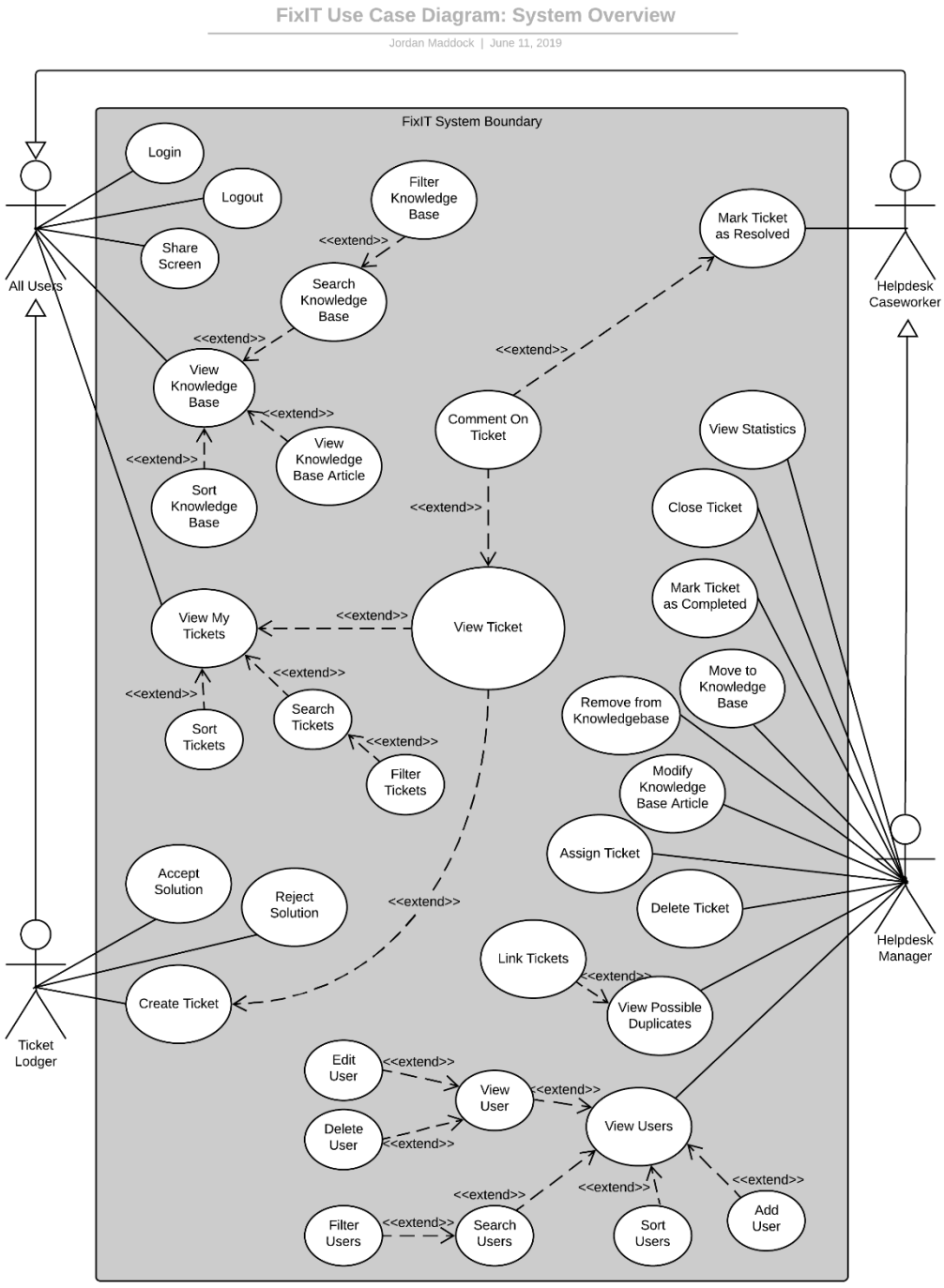

Figure 1: System use case diagram

2.4 Use Case Descriptions

This section follows from the use case diagram to define the detailed behaviour for each function of the system, or 'use case'. The use case descriptions in this section are divided into sections according to sub-module of the FixIT system they belong to.

2.4.1 Package: Incident Management

This package details functions related to the core ticketing functionality of the system. This core functionality includes ticket creation, viewing and retrieval, commenting, ticket assignment and ticket completion.

Use case name	**Create Ticket**
Participating actors	Ticket Lodger
Related Use Cases	• Extends View My Tickets • Extended by Comment on Ticket
Flow of events	1. Ticket Lodger clicks the Create a Ticket button on FixIT dashboard. 2. FixIT loads the Create a Ticket page. 3. Ticket Lodger enters important information about the incident into the text form. 4. Ticket Lodger clicks Submit. 5. FixIT saves the ticket to the database with its state set to "Open". 6. FixIT displays a success message. 7. Ticket Lodger is taken to the View Ticket page for the newly created ticket.
Entry condition	• Ticket Lodger is logged in • User is on dashboard.
Exit condition	• Ticket is in the database. • Ticket State is "Open". • Ticket Lodger is on the View Ticket page for their ticket.
Alternate Flow	5.1. FixIT displays an error if inputted details cannot be saved to the database: "Ticket could not be created", as well as additional information about why, e.g. "name cannot contain special characters". Ticket Lodger remains on the Create a Ticket page.
Quality requirements	• FixIT updates the database and displays a success message in no more than 3 seconds. • FixIT presents the pages in no more than 1 second.

Use case name	**Assign Ticket**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks on the Assign Ticket button. 2. FixIT displays the list of all available Helpdesk Caseworkers in a drop-down menu. 3. Helpdesk Manager clicks on an available Helpdesk Caseworker. 4. FixIT displays a success message. 5. Helpdesk Manager is returned to the View Ticket page.
Entry condition	● The Helpdesk Manager is on the View Ticket page for a ticket. ● Helpdesk Manager is logged in
Exit condition	● The ticket is assigned to the chosen Helpdesk Caseworker.
Alternate Flow	4.1. FixIT displays a greyed-out message in the drop-down menu area: "No Caseworkers available at the moment".
Quality requirements	● FixIT presents the drop-down menu of available Helpdesk Caseworkers in no more than 1 second. FixIT updates the database and displays a success message in no more than 3 seconds.

Notes: Will re-assign the ticket to the newly specified Helpdesk Caseworker if it is already assigned. A ticket with the state “Open” is automatically changed to “In Progress” when assigned to a Helpdesk Caseworker.

Use case name	**Mark Ticket as Resolved**
Participating actors	Helpdesk Caseworker
Related Use Cases	• Extended by Comment On Ticket
Flow of events	1. Helpdesk Caseworker enters details about the incident resolution into the comments field. 2. Helpdesk Caseworker ticks the Mark as Solution tick box. 3. Helpdesk Caseworker clicks submit. 4. FixIT posts the comment and changes the ticket state to “Resolved”. 5. FixIT displays a success message. 6. FixIT sends the Ticket Lodger an alert with a hyperlink linking to this ticket when they next log in to the system.
Entry condition	• The Helpdesk Caseworker is on the View Ticket page for a ticket. The ticket state is “In Progress”.
Exit condition	• The ticket state is “Resolved”. • The relevant Ticket Lodger has a pending alert. • Helpdesk Caseworker is logged in
Alternate Flow	4.1. FixIT displays a message: "Could not save. Please try again" and returns to the View Ticket page.
Quality requirements	FixIT updates the database and displays a success message in no more than 3 seconds.

Use case name	**Mark Ticket as Completed**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks on the Mark as Completed button. 2. FixIT changes the ticket state to “Completed”. 3. FixIT displays a success message. 4. FixIT sends the Ticket Lodger an alert with a hyperlink linking to this page when they next log in to the system.
Entry condition	• Helpdesk Manager is on the View Ticket page for a ticket. • Helpdesk Manager is logged in
Exit condition	• The ticket state is “Completed”. The relevant Ticket Lodger has an alert on their dashboard.
Alternate Flow	none
Quality requirements	FixIT updates the database and displays a success message in no more than 3 seconds.

Notes: A unique case where the Ticket Lodger who submitted the ticket has not responded within three seconds, but the issue is solved.

Use case name	**Accept Solution**
Participating actors	Ticket Lodger
Related Use Cases	none
Flow of events	1. Ticket Lodger clicks on the Accept Solution button. 2. FixIT changes the ticket state to “Completed”. 3. FixIT displays a success message. 4. FixIT sends the Helpdesk Caseworker assigned to this ticket an alert with a hyperlink linking to this page when they next log in to the system.
Entry condition	• Ticket Lodger is on the View Ticket page for a ticket. • Ticket Lodger is the user who submitted this ticket. • Ticket state is “Resolved”. • Ticker Lodger is logged in
Exit condition	• Ticket state is “Completed”. • The relevant Helpdesk Caseworker has an alert on their dashboard.
Alternate Flow	none
Quality requirements	• FixIT updates the database and displays a success message in no more than 3 seconds.

Use case name	**Reject Solution**
Participating actors	Ticket Lodger
Related Use Cases	none
Flow of events	1. Ticket Lodger clicks on the Reject Solution button. 2. Ticket Lodger is prompted with a text box asking for information as to why the solution was rejected. 3. Ticket Lodger enters the information and clicks on the Submit button. 4. FixIT displays a success message. 5. FixIT saves the text as a comment below the ticket. 6. FixIT changes the ticket state to “In Progress”. 7. FixIT sends the Helpdesk Caseworker assigned to this ticket an alert with a hyperlink linking to this page when they next log in to the system.
Entry condition	• Ticket Lodger is on the View Ticket page for a ticket. • Ticket Lodger is the user who submitted this ticket. • Ticket state is “Resolved”. • Ticker Lodger is logged in
Exit condition	• Ticket state is “In Progress”. • The ticket now has an addition comment. • The relevant Helpdesk Caseworker has an alert on their dashboard.
Alternate Flow	3.1. Ticket Lodger clicks cancel and returns to the View Ticket page.
Quality requirements	• FixIT updates the database and displays a success message in no more than 3 seconds. • FixIT displays the text box prompt in no more than 1 second.

Use case name	**Close Ticket**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks the Close Ticket button. 2. FixIT displays a prompt asking, “Are you sure?” 3. Helpdesk Manager selects Yes. 4. FixIT changes the ticket state to “Closed”. 5. FixIT sends all users involved with this ticket an alert with a hyperlink linking to this page when they next log in to the system.
Entry condition	• Helpdesk Manager is on the View Ticket page for a ticket. • Helpdesk Manager is logged in
Exit condition	• The ticket state is “Closed”. • The other relevant users have an alert on their dashboard.
Alternate Flow	3.1. Helpdesk Manager selects No and remains on the page.
Quality requirements	• FixIT updates the database and displays a success message in no more than 3 seconds.

Notes: A unique case where the ticket is deemed to be irrelevant or unfixable, and so does not require a solution. This does not delete it from the database.

Use case name	**Search Tickets**
Participating actors	All Users
Related Use Cases	• Extends View My Tickets • Extended by Filter Tickets
Flow of events	1. Actor enters their search query in the search box. 2. FixIT displays all the stored tickets that match the entered search term, provided that the actor can view them, 3. FixIT provides a new button that removes the search query and displays all available tickets again.
Entry condition	• Actor is on the View My Tickets page. • Actor is logged in
Exit condition	• FixIT has updated the View My Tickets page to only show tickets that match the search query. • Remove search query button visible.
Alternate Flow	2.1. FixIT displays a message: "No tickets match the search term(s)".
Quality requirements	• Search takes no more than 3 seconds to return all relevant results. • Search only returns results that match the search terms.

Notes: Ticket Lodgers can only see their own tickets, Helpdesk Caseworkers can only see tickets they are assigned to, Helpdesk Managers can see all tickets.

Use case name	**Sort Tickets**
Participating actors	All Users
Related Use Cases	• Extends View My Tickets
Flow of events	1. Actor clicks on a heading field of the tickets list table. 2. The tickets list table is sorted ascending according to that field. 3. Additional clicks will alternate between ascending/descending for that field.
Entry condition	• Actor is on the View My Tickets page. • Actor is logged in
Exit condition	• The tickets listed on that page will be sorted.
Alternate Flow	none
Quality requirements	• Sorting of tickets will complete in 10ms of less.

Use case name	**Filter Tickets**
Participating actors	All Users
Related Use Cases	• Extends Search Tickets
Flow of events	1. Actor clicks the Filters dropdown under the search bar. 2. FixIT displays a drop down showing the search filter criteria. 3. Actor can select their desired search filter criteria 4. FixIT displays search results that are applicable to filter criteria.
Entry condition	• Actor is on the View My Tickets page. • User is logged in
Exit condition	• FixIT has updated the View My Tickets page to only show tickets that match the search and filter query. • Remove search query button visible.
Alternate Flow	none
Quality requirements	• Search and filtering process take no more than 3 seconds. • Search only returns results that match the terms and filters.

Use case name	**View My Tickets**
Participating actors	All Users
Related Use Cases	• Extended by View Ticket • Extended by Search Tickets • Extended by Sort Tickets
Flow of events	1. Actor clicks on the View My Tickets button. 2. Actor is taken to a page where they may view a list of all tickets that are relevant to them.
Entry condition	• Actor is on the dashboard • Actor is logged in
Exit condition	• Actor is on the View My Tickets page.
Alternate Flow	none
Quality requirements	• Retrieval of the list of tickets takes no more than 3 seconds.

Use case name	**View Ticket**
Participating actors	All Users
Related Use Cases	• Extends View My Tickets • Extended by Comment on Ticket
Flow of events	1. Actor clicks on a ticket from the list provided on the View My Tickets page. 2. Actor is taken to the page for that ticket and shown all the relevant information for it.
Entry condition	• Actor is on the View My Tickets page. • Actor is logged in
Exit condition	• Actor is on the View Ticket page for a ticket.
Alternate Flow	none
Quality requirements	• Retrieval of ticket page takes no more than 2 seconds

Use case name	**View Possible Duplicates**
Participating actors	Helpdesk Manager
Related Use Cases	• Extended by Link Tickets
Flow of events	1. Helpdesk Manager clicks View Possible Duplicates. 2. Helpdesk Manager is taken to the View My Tickets page where the results are filtered to only show tickets tagged as “Duplicate?”
Entry condition	• Helpdesk Manager is on the dashboard. • There are possible duplicate tickets in the database that the system has flagged as “Duplicate?” • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager is on the View My Tickets page which is displaying a subset of flagged tickets.
Alternate Flow	none
Quality requirements	• No more than 25% of flagged duplicates will be false positives. • Retrieval of View My Tickets takes no more than 3 seconds.

Use case name	**Comment on Ticket**
Participating actors	All Users
Related Use Cases	• Extends View Ticket • Extends Mark Ticket as Resolved
Flow of events	1. Actor clicks on the comment text box. 2. Actor types their comment and clicks Submit. 3. FixIT adds comment to ticket. 4. FixIT ends all users involved with this ticket an alert with a hyperlink linking to this page when they next log in to the system.
Entry condition	• Actor is on the View Ticket page for a ticket. • Actor is logged in
Exit condition	• FixIT adds comment successfully. All other relevant users have an alert on their dashboard.
Alternate flow	none
Quality requirements	• Comment is added in no more than 2 seconds.

Use case name	**Delete Ticket**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks Delete Ticket. 2. FixIT displays a confirmation message: "Are you sure you want to delete this ticket?" 3. Helpdesk Manager clicks Yes. 4. FixIT deletes the ticket. 5. FixIT displays a success message 6. Helpdesk Manager is taken to the View My Tickets page.
Entry condition	• Helpdesk Manager is on the View Ticket page for a ticket. • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager is on the View My Tickets page. • Ticket is no more in the database.
Alternate flow	3.1. Helpdesk Manager clicks No. 3.2. Dialogue box closes, the ticket has not been deleted.
Quality requirements	• Deletion takes no more than 3 seconds. • Deletion can only be performed by Helpdesk Manager. • Retrieval of View My Tickets takes no more than 3 seconds.

Use case name	**Link Tickets**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View Possible Duplicates
Flow of events	1. Helpdesk Manager clicks Link to Duplicate. 2. FixIT loads a View My Tickets page where a second ticket can be selected. 3. Helpdesk Manager selects a second ticket. 4. FixIT displays a prompt confirming the linking to this ticket. 5. Helpdesk Manager clicks Yes. 6. FixIT sets the state of the first ticket to “Closed”. 7. FixIT inserts a short message at the top of the View Ticket page for the first ticket stating that it is a duplicate and provides a link to the View Ticket page of the second ticket. 8. FixIT displays a success message 9. Helpdesk Manager is returned to the View Ticket page of the first ticket.
Entry condition	• Helpdesk Manager is on the View Ticket page for a ticket. • Helpdesk Manager is logged in
Exit condition	• The state of the first ticket is “Closed”. • The View Ticket page of the first ticket now has a short message at the top linking to the View Ticket page of the second ticket. Helpdesk Manager is on the View Ticket page for the first ticket.
Alternate flow	1.1, 2.1, 3.1: Helpdesk Manager clicks the Go Back to Ticket button to return to the View Ticket page. 4.1. Helpdesk Manager selects No. 4.2. The prompt box closes. 4.3. Helpdesk Manager remains on page, returning to step 2.
Quality requirements	• Retrieval of the list of tickets takes no more than 3 seconds. • Linking of the tickets takes no more than 3 seconds.

Use case name	**View Statistics**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks on View Statistics. 2. FixIT displays Statistics page showing graphs indicating: tickets and their states, users in the system, knowledge base articles, and more when functionality is added.
Entry condition	• Helpdesk Manager is on the dashboard. • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager navigates away from page
Alternate flow	none
Quality requirements	• User Statistics page is loaded in no more than 2 seconds.

2.4.2 Package: User Management

This package contains use case descriptions related to creating users, deleting users, editing user details and retrieving the list of system users.

Use case name	**View Users**
Participating actors	Helpdesk Manager
Related Use Cases	• Extended by View User • Extended by Search Users • Extended by Add User • Extended by Sort Users
Flow of events	3. Helpdesk Manager clicks on Manage Users. 4. FixIT displays User Management page with a list of users currently in the system.
Entry condition	• Helpdesk Manager is on the dashboard. • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager is on the User Management page.
Alternate flow	none
Quality requirements	• User Management page is loaded in no more than 2 seconds.

Use case name	**Add User**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View Users
Flow of events	1. Helpdesk Manager clicks Add User. 2. FixIT displays an Add User page with fields for entering a username, password, etc. 3. Helpdesk Manager enters credentials and clicks Add User. 4. FixIT adds the new user to database. 5. FixIT displays a success message. 6. Helpdesk Manager is taken back to the User Management screen.
Entry condition	• Helpdesk Manager is on the User Management page. • Helpdesk Manager is logged in
Exit condition	• The user is successfully added to FixIT and can now login with their credentials. Helpdesk Manager is on the User Management screen.
Alternate flow	4.1. Passwords entered did not match or were otherwise invalid, User is not added to the database. 4.2. FixIT displays an error message: "The passwords that you entered do not match". Actor stays on same page.
Quality requirements	• Add User page loads in no more than 1 second. • User is added to database in no more than 3 seconds.

Use case name	**View User**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View Users • Extended by Edit User • Extended by Delete User
Flow of events	1. Helpdesk Manager clicks on a user. 2. FixIT displays User Details screen.
Entry condition	• Helpdesk Manager is on the User Management Screen. • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager is on the User Details screen for the selected user.
Alternate flow	none
Quality requirements	• User Details screen loads in no more than 1 second.

Use case name	**Edit User**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View User
Flow of events	1. Helpdesk Manager clicks Edit User. 2. Helpdesk Manager is taken to the Edit User screen for this user. 3. Helpdesk Manager edits details and clicks Confirm. 4. FixIT prompts “Are you sure? This will overwrite the old details” 5. Helpdesk Manager clicks Yes. 6. FixIT displays a success message. 7. FixIT saves edited details to database. 8. Helpdesk Manager is taken back to the User Details screen.
Entry condition	• Helpdesk Manager is on the User Details screen for a user. • Helpdesk Manager is logged in
Exit condition	• User’s details have been changed in database. • Actor is on the User Details screen for this user.
Alternate flow	5.1. Helpdesk Manager clicks No and is taken back to the User Details page for this user.
Quality requirements	• Edit User screen loads in no more than 1 second. • User is updated in no more than 3 seconds.

Use case name	**Delete User**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View User
Flow of events	1. Helpdesk Manager clicks Delete User. 2. FixIT displays confirmation message: "Are you sure you want to delete this user?” 3. Helpdesk Manager clicks Yes. 4. FixIT deletes user from database. 5. FixIT displays a success message 6. Helpdesk Manager is taken to the User Management page.
Entry condition	• Helpdesk Manager is on the User Details screen for a user. • Helpdesk Manager is logged in
Exit condition	• User is deleted from system. Helpdesk Manager is returned to the User Management page.
Alternate flow	none
Quality requirements	• Deletion takes no more than 3 seconds.

Use case name	**Search Users**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View Users • Extended by Filter Users
Flow of events	1. Helpdesk Manager types a search query into the search bar. 2. Helpdesk Manager presses the Search button. 3. FixIT returns a list of users who match the search query. 4. FixIT provides a new button that removes the search query and displays all users again.
Entry condition	• Helpdesk Manager is on the User Management Page • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager remains on the User Management Page. • Search results are visible on screen. • Show all users button visible.
Alternate flow	none
Quality requirements	• Search takes no more than 3 seconds. • Search only returns results that match the search terms.

Use case name	**Filter Users**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends Search Users
Flow of events	1. Helpdesk Manager types a search query into the search bar 2. Helpdesk Manager presses the Filters dropdown button 3. FixIT shows a list of filters to use to narrow down search results 4. Helpdesk Manager selects the desired filters and presses the Search button. 5. FixIT returns a list of users who match the search and filter query. 6. FixIT provides a new button that removes the search query/filters and displays all users again.
Entry condition	• Helpdesk Manager is on the User Management Page • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager remains on the User Management Page. Search/Filter results are visible on screen. • Show all users button visible.
Alternate flow	none
Quality requirements	• Search takes no more than 3 seconds. • Search only returns results that match the terms and filters.

Use case name	**Sort Users**
Participating actors	Helpdesk Manager
Related Use Cases	• Extends View Users
Flow of events	1. Helpdesk Manager clicks on a heading field of the users list table. 2. The users list table is sorted ascending according to that field. 3. Additional clicks will alternate between ascending/descending for that field.
Entry condition	• Helpdesk Manager is on the User Management Page • Helpdesk Manager is logged in
Exit condition	• Helpdesk Manager remains on the User Management Page. Users list is sorted successfully.
Alternate flow	none
Quality requirements	• Sort appears instantaneous.

2.4.3 Package: Knowledge Base

This package contains use cases related to the creation, modification, deletion, retrieval and sorting of knowledge base articles.

Use case name	**View Knowledge Base**
Participating actors	All Users
Related Use Cases	• Extended by View Knowledge Base Article • Extended by View
Flow of events	1. Actor clicks the View Knowledge Base Button. 2. Actor is taken to the Knowledge Base page displaying a list of Knowledge Base articles.
Entry condition	• Actor is on the Dashboard. • Actor is logged in
Exit condition	• Actor is on the Knowledge Base page.
Alternate flow	none
Quality requirements	• Knowledge Base page is loaded with all articles from database in no more than 3 seconds

Use case name	**View Knowledge Base Article**
Participating actors	All Users
Related Use Cases	• Extends View Knowledge Base
Flow of events	1. Actor clicks on a Knowledge Base Article from the list. 2. FixIT loads the selected Knowledge Base article, displaying all the relevant information.
Entry condition	• Actor is on the Knowledge Base page. • Actor is logged in
Exit condition	• Actor is on the Knowledge Base Article page for a specific article.
Alternate flow	none
Quality requirements	• FixIT loads the page and selected article in no more than 3 seconds.

Use case name	**Search Knowledge Base**
Participating actors	All Users
Related Use Cases	• Extends View Knowledge Base • Extended by Filter Knowledge Base
Flow of events	1. Actor types a search query into the search bar 2. Actor presses the Search button. 3. FixIT returns a list of articles that match the search query. 4. FixIT provides a new button that removes the search query and displays all articles again.
Entry condition	• Actor is on the Knowledge Base page. • Actor is logged in
Exit condition	• Actor remains on the Knowledge Base page. Search results are visible on screen. • Show all articles button visible.
Alternate flow	none
Quality requirements	• Search takes no more than 3 seconds. • Search only returns results that match the terms and filters.

Use case name	**Filter Knowledge Base**
Participating actors	All Users
Related Use Cases	• Extends Search Knowledge Base
Flow of events	1. Actor types a search query into the search bar 2. Actor presses the Filters dropdown button 3. FixIT shows a list of filters to use to narrow down search results 4. Actor selects the desired filters and presses the Search button. 5. FixIT returns a list of articles that match the search and filter query. 6. FixIT provides a new button that removes the search query/filters and displays all articles again.
Entry condition	• Actor is on the Knowledge Base page. • Actor is logged in
Exit condition	• Actor remains on the Knowledge Base page. • Search/Filter results are visible on screen. • Show all articles button visible.
Alternate flow	none
Quality requirements	• Search takes no more than 3 seconds. • Search only returns results that match the terms and filters.

Use case name	**Sort Knowledge Base**
Participating actors	All Users
Related Use Cases	• Extends View Knowledge Base
Flow of events	1. Actor clicks on a heading field of the articles list table. 2. The articles list table is sorted ascending according to that field. 3. Additional clicks will alternate between ascending/descending for that field.
Entry condition	• Actor is on the Knowledge Base page. • Actor is logged in
Exit condition	• Actor remains on the Knowledge Base page. Articles list is sorted according to the Actor's choices.
Alternate flow	none
Quality requirements	• Sort appears instantaneous.

Use case name	**Move to Knowledge Base**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks Move to knowledge base button. 2. FixIT will display a confirmation prompt: "Are you sure you want to move this ticket to the knowledge base?” 3. Helpdesk Manager clicks Yes. 4. FixIT adds the ticket to the Knowledge Base. 5. Helpdesk Manager is taken to the View Ticket page for this ticket.
Entry condition	• Helpdesk Manager is on the View Ticket page for a ticket. Ticket state is “Completed”. • Helpdesk Manager is logged in
Exit condition	• Ticket is included in the Knowledge Base database. • Ticket is now listed in the View Knowledge Base page.
Alternate flow	3.1. Helpdesk Manager clicks No and remains on same page.
Quality requirements	• FixIT updates the database and displays a success message in no more than 3 seconds. • FixIT displays the prompt in no more than 1 second.

Notes: When a ticket is added to the Knowledge Base, the copy in the Knowledge Base is referred to as a Knowledge Base article.

Use case name	**Remove From Knowledge Base**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks on Delete Article. 2. Helpdesk Manager displays confirmation message: "Are you sure you want to delete this article?” 3. Helpdesk Manager clicks Yes. 4. FixIT deletes article. 5. FixIT displays a success message. 6. Helpdesk Manager is taken to the View Knowledge Base page.
Entry condition	• Helpdesk Manager is on the View Knowledge Base Article page for an article. • Helpdesk Manager is logged in
Exit condition	• Article ticket state is changed, removing it from the knowledge base. • Helpdesk Manager is on View Knowledge Base page.
Alternate flow	3.1. Helpdesk Manager selects No. The article remains in the knowledge base. Helpdesk Manager stays on this page.
Quality requirements	• Article is deleted in no more than 3 seconds

Use case name	**Modify Knowledge Base Article**
Participating actors	Helpdesk Manager
Related Use Cases	none
Flow of events	1. Helpdesk Manager clicks on Modify Article. 2. FixIT displays the article in an editable format. 3. Helpdesk Manager makes their desired changes and clicks Save. 4. FixIT prompts “This will overwrite the old data, are you sure?” 5. Helpdesk Manager clicks Yes. 6. FixIT updates the database for this Knowledge Base article. 7. FixIT displays a success message. 8. Helpdesk Manager is taken to the View Knowledge Base Article page for this article with their changes now visible.
Entry condition	• Helpdesk Manager is on the View Knowledge Base Article page for an article. • Helpdesk Manager is logged in
Exit condition	• Article is modified. • Helpdesk Manager is on View Knowledge Base Article page for this article.
Alternate flow	5.1. Helpdesk Manager selects No. The article remains unchanged. 5.2. Helpdesk Manager is returned to the View Knowledge Base Article page for this article.
Quality requirements	• Article is modified in no more than 3 seconds. • Actor is returned to the View Knowledge Base Article page in no more than 1 second.

2.4.4 Package: Screen Sharing

This package contains the use case related to the system screen sharing functionality implemented with third-party software.

Use case name	**Share Screen**
Participating actors	All Users
Related Use Cases	none
Flow of events	1. Actor clicks on Share Screen. 2. FixIT opens 3rd party screen sharing software on the operating system.
Entry condition	• Actor is on the dashboard. • Actor is logged in
Exit condition	• Actor is on the dashboard. • 3rd party software has been opened on the operating system.
Alternate flow	2.1. A prompt is displayed notifying the user that the screen sharing system is currently down.
Quality requirements	• System should be up to date with software package updates considered critical for ongoing functionality or security. • Security measures specified in future security documentation.

Notes: The screen sharing functionality is outside the scope of the FixIT but is initiated from the dashboard.

2.4.5 Package: System access

This package contains use cases related to users logging in and logging out.

Use case name	**Login**
Participating actors	All Users
Related Use Cases	none
Flow of events	1. Actor enters credentials into a login form and clicks Login. 2. FixIT presents the Dashboard homepage for a logged in user.
Entry condition	• Actor is on the Login page. • User is logged in
Exit condition	• Actor is on the Dashboard page. • Actor is successfully logged into system in a new session.
Alternate flow	2.1. Actor enters incorrect credentials or only one of the two required fields (StaffID or password). 2.2. FixIT displays an error message: "StaffID or password not recognised. Please try again.”
Quality requirements	Login takes no more than 3 seconds

Notes: Available functionality on the Dashboard page depends on the type of user.

Use case name	**Logout**
Participating actors	All Users
Related Use Cases	none
Flow of events	1. Actor clicks Logout on any page within FixIT. 2. FixIT displays the message: "Are you sure you want to logout? Any unsaved data will be lost." 3. Actor clicks Yes. 4. FixIT logs Actor out and returns them to the login page.
Entry condition	• Actor is logged in and on any page in FixIT.
Exit condition	• Actor is logged out, ending their session. • Actor is on the Login page.
Alternate flow	3.1. Actor clicks No, remains logged in on the same page
Quality requirements	• Logging out takes no more than 3 seconds

3. Product Perspective

FixIT is a software system with the purpose of facilitating the exchange of information and coordination of resources in response to an incident that requires attention from the IT personnel of the organisation. This section outlines the various aspects of the system to give a full overview of the operations and attributes of FixIT.

3.1 System Interfaces

The FixIT system is standalone and does not require integration with other software in an organisation. The FixIT system does interact with a remote screen control software package, but this is considered non-essential to the operation of FixIT as an external component that is called when needed.

3.2 User Interfaces

All user interaction made with the system will be made through the GUI web interface. There is no requirement for any other type of interface to be implemented, and the user should be able to interact with only a keyboard and mouse/trackpad. The system will use a dashboard as a landing page for users to gain an overview of all relevant information and actions available to them within the system.

The implemented user interface should be accessible to users with visual or auditory impairments. The user interface should have the ability to be used with various technologies that enable impaired users to still use the full functionality of the system. (See [6])

Attached in Appendix B is a navigational diagram for a Helpdesk Manager showing UI flow as they use the application.

3.3 Hardware Interfaces

The FixIT system is a web-based platform and therefore should not have specific hardware requirements other than basic hardware requirements of standard web applications. This system should be versatile and widely accessible to a range of devices in the organisation for future development, which the requirement for specific hardware devices contradicts.

3.4 Software Interfaces

The FixIT will interact with external software systems for some essential and non-essential functions outlined in Table 4.

Table 4: Outline of software interfaces

Interface Name	Essential or Non-essential	Purpose of Interface
Database Management System (*DBMS*)	Essential	Stores all persistent information contained within the system. This includes tickets, user details and knowledge base articles.
Desktop Web Browser Technologies (*Browsers*)	Essential	This is the primary interface for the client side of the system. Web technologies are used to send and receive data between the users of the system and the system itself. Web technologies used with this interface include protocols related to information exchange and tools related to displaying information and user interaction.
Remote Desktop Control Software (*RDC*)	Non-essential	This is an external component of the system that is used to initiate RDC sessions from within the FixIT system. The only interaction that the system has with the RDC software is through API calls that link the Helpdesk Caseworker and Ticket Lodger for their initiated RDC session.
Text Similarity Checker (*TSC*)	Essential	This is an external software package implemented to check text the text similarity of tickets in the system for duplicate detection and knowledge base article suggestions.

3.5 Communications Interfaces

Communications made to and from the system will be made with HTTP over standard TCP/IP connections.

3.6 Memory Constraints

With the system being hosted on a cloud platform, there are essentially no technical constraints on the amount of persistent memory available. Despite the storage capabilities of cloud platforms, the effect of the amount of storage needed on the ongoing costs associated with storing it should be considered. The system should have the ability to hold at least 10,000 tickets in storage.

3.7 System Operations

An important user-initiated function of the system is listing support tickets, knowledge base articles and other information hosted in the database, and additionally doing filtering or sorting on the results depending on the permissions of the initiating user and manual commands from the user. Additionally, the system should perform creation, modification and deletion operations on tickets and users when initiated by the user.

The system will also perform background operations that compare the text similarity between tickets for the duplicate detection and providing knowledge base article suggestions. This will call the text similarity checker software package that is implemented in the system.

The integration of a screen sharing software product means that the system will also need to utilise the RDC API to automatically initiate sessions.

3.8 Site Adaptation Requirements

Achieving the primary functionality of the system requires minimal adaptation on the client side. Users of the system only require a compatible browser, which is most likely already present on their machine. The individual installation and configuration of client devices will be necessary to set up the remote-control component of the system; however, this is not necessary to achieve the core functionality involved with creating tickets/requests and accessing the knowledge base.

4. Constraints and Assumptions

4.1 Development Constraints

This section provides a general description on constraints placed upon the design development of the system in Table 5. Constraints not included are not required for consideration.

Table 5: Development constraints

Constraint	Description
Parallel Operations	The system should support parallel access to the system for all users. Users should be able to view, create and modify tickets in parallel. Parallel operations are not allowed on a single ticket by one user if there are other users viewing or modifying that ticket simultaneously. The system should have the capability to support 500 users
Control Functions	The system should implement the ability for the system administrator to start, stop or restart the system.
Availability Requirements	Due to its role as an IT support system, the availability of the system should achieve at least 99.96%, which is approximately 15 minutes of downtime monthly. This specification was revised from 99.999% availability after assessing the feasibility of a value that high. A monthly downtime of 15 minutes is considered enough for this business application.
System Criticality	The FixIT system is considered an organisation-critical system because of the role it assumes as a central point of communication for critical IT issues that will dramatically impact on standard operations of an organisation. The importance of the system should be considered when developing the application.
Security Considerations	While it is assumed that the system will not store or process a large volume of sensitive information, information that may be used for exploitation may still be present. The design of the system components should provide enough security measures to ensure that users do not have access rights to information that they do not need, and that system-external actors cannot gain access to the system. Users should be encouraged not to enter sensitive or confidential information into the system, with emphasis on not entering passwords into plain text.

4.2 Assumptions and Dependencies

This section lists key assumptions that the requirements make in Table 6. These assumptions may be changed or removed in the future but the current version of this document takes them into account.

Table 6: Assumptions

Assumption	**Description**
Client-side operating system	This document assumes that client-side machines used to access the system will be running Windows 10 only. Other desktop operating systems may be implemented in the future.
Use on mobile devices	This system does not officially support accessing the system on a mobile web browser but may be implemented in the future.
Hosting method and service	The system will be hosted off-site on the Heroku cloud application platform. (See [1])
Data backup	The Heroku cloud hosting service puts in place various backup and data-loss prevention measures. It is assumed that these measures are enough to meet the needs of the organisation. (See [2])
System user capacity (non-parallel)	The organisation requires up to 500 users to have access to the system. This capacity is not parallel access capacity, but rather the number of users that have login credentials and can access
Data security requirements	It is assumed that the organisation will not store critically sensitive information within the system. Because of this, the system will not require resting encryption of data stored. Despite this, standard measures should be put in place to prevent unauthorised access.

5. Project Requirements

This section includes project requirements and constraints that are not specifically related to the software system produced, but rather to the costs and quality assurance.

5.1 Costs

The FixIT system is cloud-hosted, which means that there are ongoing costs incurred for cloud hosting services. Screen sharing services also charge a monthly licensing fee. Costs associated with hosting the application on the Heroku cloud application platform are detailed in Table 7.

Table 7: Ongoing hosting and licensing costs

Cost Type	**Monthly Amount**	**Description**
Cloud Computation Service	$250.00	Heroku Dyno is the component of the system that will be responsible for general computation and most of the business logic of the system. This is scalable depending on main memory required and processing power required. (See full Heroku pricing in [3])
Database Hosting Service	$350.00	Heroku Postgres is the database service that will be used to host persistent application data. (See full Heroku pricing in [3])
Key-Value Storage Service	$120.00	Heroku Redis is a key-pair hosting service that can be used for storing user login credentials. (See full Heroku pricing in [3])
RDC and Screen Share	$225.00	ConnectWise is a third-party screen sharing and remote desktop control service that will be used with the system to provide support to Ticket Lodgers by Helpdesk Caseworkers. (See [4]) This is licensed at $45.00 per technician, and it is assumed that initially there are five technicians. (See full ConnectWise pricing in [5])
Total	**$945.00**	

5.2 Validation and Verification of Requirements

Specific constraints taken from the use case descriptions should be verified during and after system development. Time constraints on data retrieval and load times should be tested against the specified time.

5.3 Delivery Time Frame

This section details some major project deadlines in Table 8.

Table 8: Project deliverables

Deliverable	Deadline	Description
Requirements Specifications Document (Draft)	April 2019	The completed draft version of the requirement specifications document should be ready for consultation with stakeholders.
System Prototype	May 2019	A working prototype of the system with core functionality demonstrated at a minimum.
Requirements Specifications Document (Final)	June 2019	The final version of the requirements specifications document should be complete, and ready for design and implementation.
Final Project Implementation	November 2019	The entire system should be past implementation and ready to be used.

References

[1] Salesforce. (2019). *Cloud Application Platform Heroku* [Online]. Available: https://www.heroku.com/

Note: the reference above has the date sourced from the copyright date shown at the bottom of the web page.

[2] Salesforce. (2019). *Heroku Security Heroku* [Online]. Available: https://www.heroku.com/policy/security

Note: the reference above has the date sourced from the copyright date shown at the bottom of the web page.

[3] Salesforce. (2019). *Pricing Heroku* [Online]. Available: https://www.heroku.com/pricing

Note: the reference above has the date sourced from the copyright date shown at the bottom of the web page.

[4] ConnectWise, LLC. (2019). *Remote Support That Just Works ConnectWise Control* [Online]. Available: https://www.connectwise.com/software/control

Note: the reference above has the date sourced from the copyright date shown at the bottom of the web page.

[5] ConnectWise, LLC. (2019). *ConnectWise Control Pricing Remote Access Tool* [Online]. Available: https://www.connectwise.com/software/control

Note: the reference above has the date sourced from the copyright date shown at the bottom of the web page.

[6] Microsoft and A. Shum et al. (2016). *Inclusive 101* [Online]. Available: https://download.microsoft.com/download/b/0/d/b0d4bf87-09ce-4417-8f28-d60703d672ed/inclusive_toolkit_manual_final.pdf

Note: the reference above has the date sourced from the copyright date shown on page 32 of the document.

Appendix A: Ticket State Model

Figure 2: State transition diagram showing possible ticket status changes

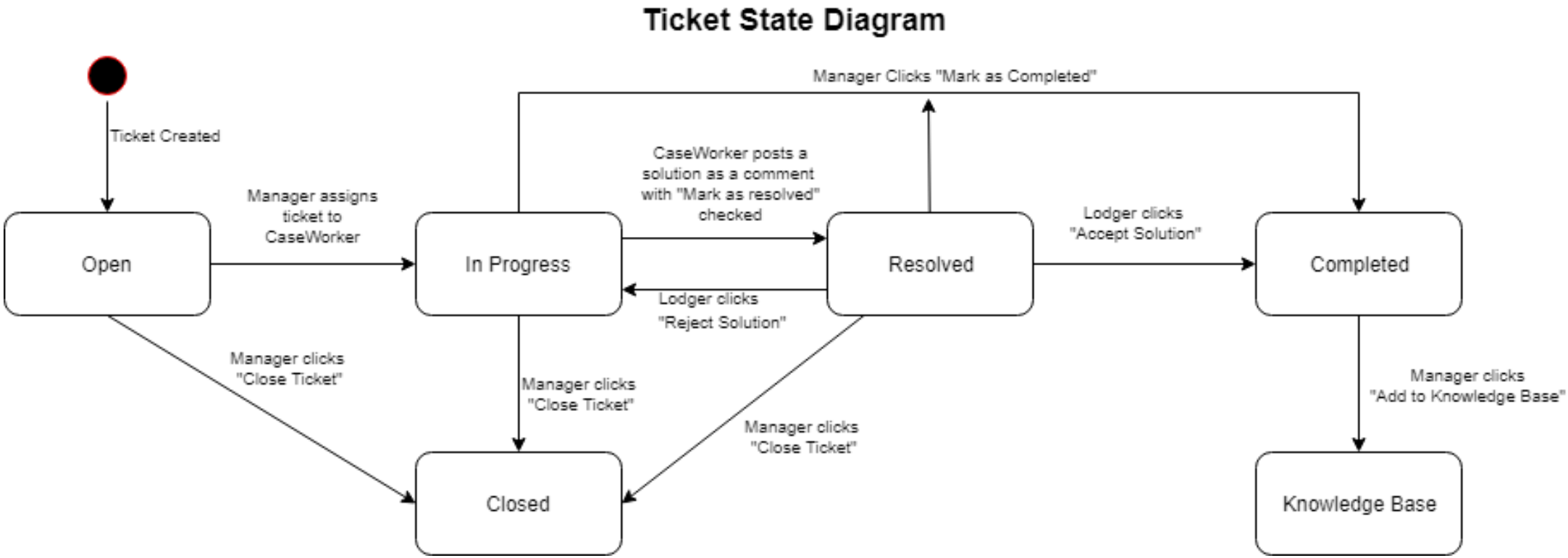

Table 9: Definition of ticket states

Ticket State	Definition
Open	Ticket Lodger has submitted an incident report ticket, it is in the system but has not been viewed by the Helpdesk Manager yet.
In Progress	The Helpdesk Manager has viewed the ticket, deemed it to be of merit, and assigned it to a Helpdesk Caseworker to be worked on. Ticket Status is automatically changed to In Progress when assigned to a worker. In this stage the Helpdesk Caseworker may contact the Ticket Lodger who submitted this ticket via the comments section for more information.
Resolved	The Helpdesk Caseworker believes they have solved the problem and has relayed the solution to the Ticket Lodger via the comments section. The Ticket Lodger will be notified and now has the functionality to Reject the solution setting the stage back to In Progress, or Accept the solution setting the state to Completed.
Completed	The Ticket Lodger has accepted the proposed solution. Alternatively, if the Helpdesk Caseworker has successfully fixed the problem but the Ticket Lodger has not Rejected or Accepted the solution in a given period of time, the Helpdesk Caseworker can mark the ticket as Completed themselves. This is the final possible state.
Closed	If the Helpdesk Manager deems the ticket to not have merit, they may close the ticket at any time in the process. This locks the ticket and provides an always-on-top message in the comments about why the ticket was locked. The ticket may also be Closed if it is a duplicate, and a link to the other similar ticket will be provided in the message.
Knowledge Base	The Helpdesk Manager may move a completed ticket to the knowledge base if the ticket may be useful for future use by Ticket Lodgers experiencing problems, or by Helpdesk Caseworkers looking for solutions to similar problems.

Appendix B: UI Navigational Diagram for Helpdesk Manager

This diagram shows an example of the way the Helpdesk Manager navigates between pages of the website. This diagram is not complete, nor is it an accurate representation of the planned user interface but serves as a guide to explain the navigation of the system.

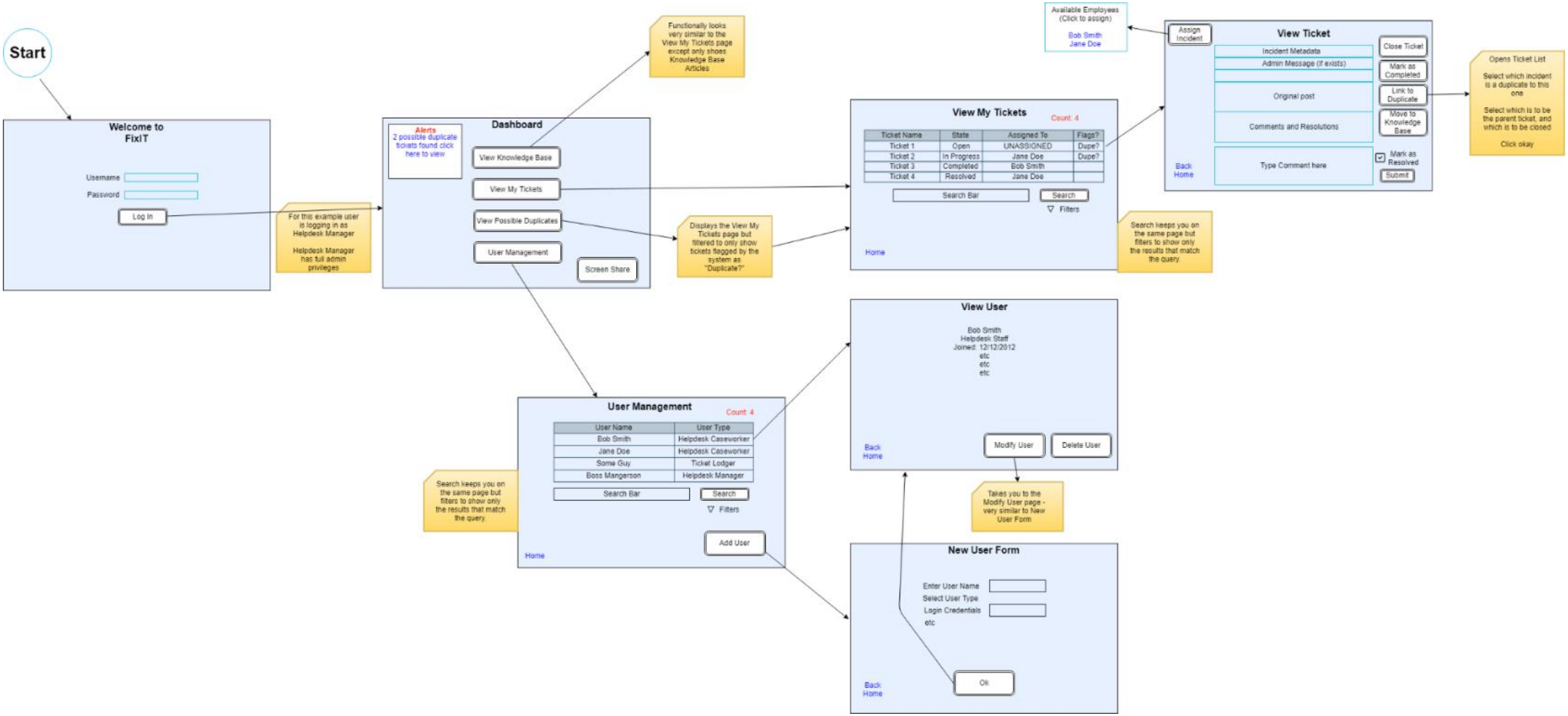

Figure 3: UI Navigational Diagram for Helpdesk Manager