Software Requirements Specification

for

Crew Connect

Version 1.9 approved

Prepared by Adrian Brown

Worldwide Airline Supply Unified Procurement

April 23, 2022

Table of Contents

Revision History

Name	Date	Reason For Changes	Version
Adrian A. Brown	2/14/22	1st Draft Section 1	1.1
Adrian A. Brown	3/1/22	2nd Draft Section 1 Revision	1.2
Adrian A. Brown	3/15/22	1st Draft Section 2	1.3
Adrian A. Brown	3/21/22	2nd Draft Section 2 Revision	1.4
Adrian A. Brown	3/29/22	1st Draft Section 3	1.5
Adrian A. Brown	4/11/22	1st Draft Section 4	1.6
Adrian A. Brown	4/12/22	1st Draft Section 4 Update	1.7
Adrian A. Brown	4/19/22	1st Draft Section 5 and 6 and 3rd Draft Section 3 and fixed spacing on tables for Section 4 and fixed number of functional requirements for specific features to not always be 2. Table of contents need to update to reflect the images attached, I was able to attach them using the outline format.	1.8
Adrian A. Brown	4/23/22	2nd Draft all – updated date before final submission	1.9

1. Introduction

1.1 Purpose

This is a software requirement specification document for Crew Connect v. 1.2. The purpose of this project is to provide Corporate and Employee (crew) communication while the crew is overseas. This system considers the crew's contracted rest hours, the workers' home bases (which is critical), and scheduled **legs** (the connections of flights from one airport to another).

1.2 Document Conventions

For most of this text, we're going to use Arial as the text font. If there is something in **bold** in this document, it will mean there is something notable, and there are important definitions and terms emphasized throughout this document. If there is text in red, it means it's something critical. If text is underlined, it means the text is addressing weather topics in this document.

1.3 Intended Audience and Reading Suggestions

This document is intended for subject matter experts, project managers, IT, developers and senior executives. The following table addresses the suggested reading sections for the following intended audiences:

Subject Matter Experts (**SME**s)	Section 2, Section 3
Project Managers	Section 5
IT Personnel	Section 3
Developers	Section 3, Section 4
Senior Executives	Section 2

1.4 Product Scope

Crew Connect, the specified software, has objectives focused on business strategy and user-efficiency. After the users log in, a home screen will guide them through a main menu and recent notifications. Under schedule, the users will have access to observe the flight schedules, and under notifications, the users can see weather, schedule and travel updates. Under travel, users can find car company and hotel info. Under human resources, users can access personal information, and there will be a way for users to contact support when necessary.

1.5 References

Taylor, Scott. "Automated Intercompany Deadheading." *Worldwide Airline Supply Unified Procurement,* 26 January 2022. Accessed 14 February 2022.

2. Overall Description

2.1 Product Perspective

This product is a replacement for a certain existing system for WASUP airlines, because the previous solution prior to this product relied on communication achieved mainly through email. This SRS does not define a component of a larger system, but it replaces a weaker system the organization, crew, travel department and trainers depended upon. This diagram displays the product's proposed mobile solutions to the current communication issues through email.

Product's Proposed Mobile Solution:	**The Issue Resolved:**
Weather updates are integrated through the CrewConnect mobile app interface.	Weather updates had to be sent one by one through email every time there were updates.
Crew can submit vacation requests and travel changes through the CrewConnect app.	Crew had to send their vacation schedules to HR every time they booked a vacation.
Crew receives push notifications for travel/limo delays so they know when they'll be picked up.	For every travel or limousine delay, the travel department needs to email or call the crew.
CrewConnect organizes categories into a main menu so the user can find specific info quickly.	There is no menu for categories since weather, travel and schedule info is all sent via email.

2.2 Product Functions

These are the product functions' related requirements, and what they allow the user to accomplish:

- Login
  - This allows the user to access a Single Sign-On page and enter their email and password. They can change their password through a code sent to their phone.
- Home Screen
  - This screen displays recent notifications and a menu of icons the user can press to connect them to various pages including email, schedule, travel, etc.
- Schedule
  - This page allows the user to see the flight schedule and gain access to a vacation planner where they can request their vacation in a specific time slot.
- Notification
  - This allows the user to see instant notifications about alerts, weather, schedules, travel updates and maintenance updates.
- Travel
  - This page allows the user to receive hotel information or car company info when they wish to find more about hotel reservations or contact the car company team.
- Human Resource
  - This portal sends the user to information about PTO, years in service, flight hours and the days in which they were absent or on vacation.
- Email
  - This page shows the user their unread and red emails and provides for them an easy way to create emails, typical of any email platform but with added security.
- Support
  - This allows the user to submit a contact form so if they have any questions or concerns, this form sends their submission so Support can reach out to them.

2.3 User Classes and Characteristics

There are various user classes that will use the Crew Connect product, including the entire crew. Testers and people in training may need to use this product on occasion, but for most concern, the crew uses this product. This is specifically for the organization to connect to the crew, and for the crew to connect to the organization as a whole.

2.4 Operating Environment

The operating environment for Crew Connect will only be for Android, because there are too many specific requirements for Apple's proprietary operating system, and Android is more open for developers to customize the mobile compatibility. This allows the developers to customize mobile compatibility more so than Apple's operating environment. For this product, the Samsung Galaxy Zfold3 is one of the most powerful Android phones to use, and it comes with a very clear display. It often comes with a Google Play gift card, which is helpful for recreation during break periods, and the Samsung Care+ insurance deal is also helpful for the crew. Without a doubt, Android is the right operating environment for this product.

2.5 Design and Implementation Constraints

There are certain design and implementation constraints in this product, including security considerations for the email system and login form. Since the login form requires the user to enter sensitive information, this needs to be encrypted and meet the industry standards for security. There will be memory requirements less than 2GB since the app does not need to store anything offline as the crew will always have access to a strong Wi-Fi connection. Language requirements will be English and Spanish, as these are the most common requirements for airport systems.

2.6 User Documentation

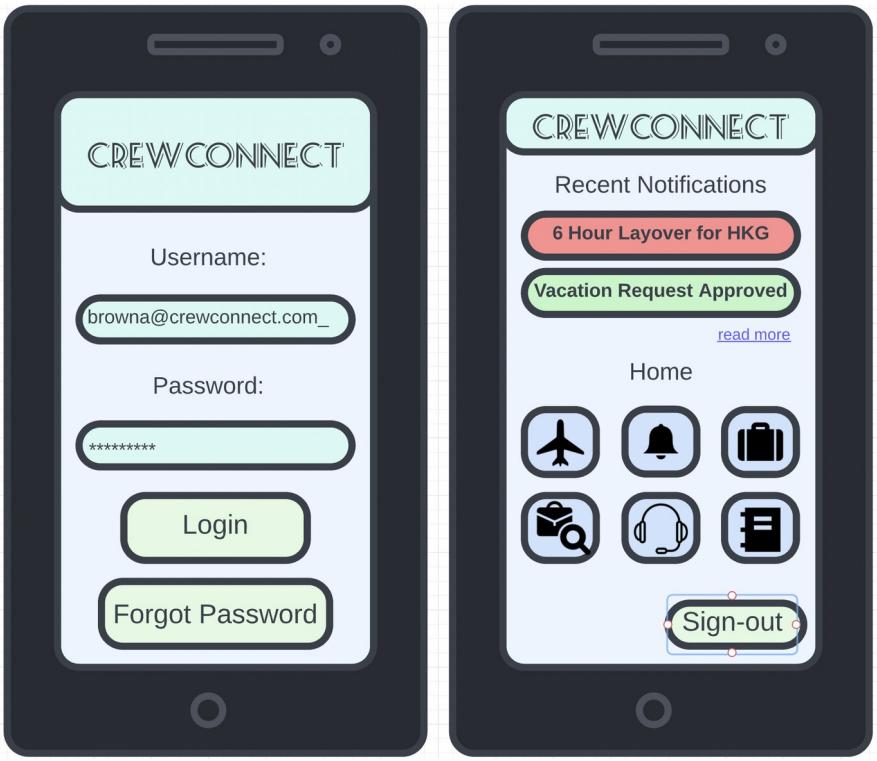
There will be a user manual and tutorials in this SRS under "Other Non-Functional Requirements" so the user will have access to a guide when learning CrewConnect. On-line help through a submission form will allow the user to contact Support when necessary, and once Support receives a few questions that are the same amongst various crew members, then Support will create a Knowledge Base so the user will have access to FAQs, or Frequently Asked Questions if they have a question that is similar to the ones the other crew members were also previously asking.

2.7 Assumptions and Dependencies

This product will work depending on a strong Wi-Fi connection, in which WASAP's COO confirmed there will be strong Wi-Fi the crew will always have access to on the planes. This product will not reuse software components from another project, and it will be a product designed specifically for the crew and members in-training who are learning the product for intended future use. This product is also dependent on corporate systems working and that none are down. This project requires the HR database and flight schedule databases to be up and running.

3. External Interface Requirements

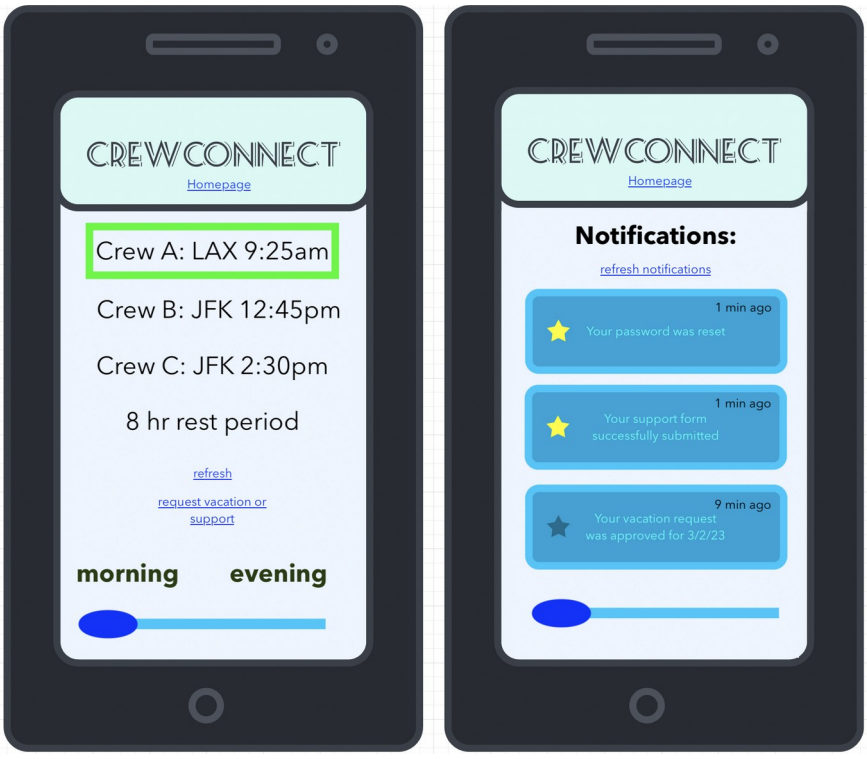
3.1



3.2


CREWCONNECT
Homepage
Travel
map
Search
GO
LAX - 4 hrs away
CREWCONNECT
Homepage
Human Resource
PTO
2 sick days this year
Years in Service
2/3/22 and 4/5/22
Sick Days
Reason for absence: recovering from covid
Flight Hrs
Approved: 2/4/22 and 4/6/22
refresh

3.3


CREWCONNECT
Homepage
Crew A: LAX 9:25am
Crew B: JFK 12:45pm
Crew C: JFK 2:30pm
8 hr rest period
refresh
request vacation or support
morning
evening
CREWCONNECT
Homepage
Notifications:
refresh notifications
1 min ago
Your password was reset
1 min ago
Your support form successfully submitted
9 min ago
Your vacation request was approved for 3/2/23

3.4

3.5 User Interfaces

CrewConnect will first have a screen for the users to submit the simple login form or change their password, sending them a code to their phone. The app will not show the home screen until the user fills out the single sign-on, and then the home screen will appear, showing a preview of the most recent notifications at the top with a read more option, and then the menu at the bottom. The menu will have a grid of icons for schedule, notification, travel, human resource and support. When the user presses “Schedule,” it will show them tabs for the airports and sub-tabs revealing the times of the flights. Notifications will look like the home screen, only expanded to see more recent and missed notifications. Travel will have tabs as well for car company and hotel info, and then sub-tabs will reveal more information. HR will have four tabs consisting of PTO, Years in Service, Sick Days and Flight Hrs., and Support will have a simple contact form the user can fill out.

3.6 Hardware Interfaces

CrewConnect depends on a reliable hardware interface consisting of several components. First of all, a consistently fast processing speed is necessary, which should be 2GHz or more. Secondly, the user needs enough RAM, preferably more than 4GB, and the hardware needs to be Wi-Fi compatible as the users rely on a solid Wi-Fi connection during their flights. A strong Internet connection is especially important to maintain during flights. There will also need to be servers,

and there should be a server for each system: one for travel, one for HR, one for flight systems, and these will be different servers interfaced to CrewConnect.

3.7 Software Interfaces

CrewConnect will need drivers for the application to communicate with the Android operating system, and there will be many needs for technological communication. There will be databases and integration needed for the flight schedule, travel information and HR, and data conversion within these databases is essential. The phone needs to integrate into the airplane electronics so that CrewConnect has a way to integrate to the Wi-Fi that's on the plane. There are data items coming into the phone such as notifications, HR information, flight schedule details, vacation updates, car information and hotel details. All of these will require data integration within the software interface. The developers will definitely need to know this portion of the document. The most important interface needed for this software is the Application Programming Interface, or API, so that this software can communicate with the phone's software and hardware components.

3.8 Communications Interfaces

The user will need protocols for the phone, such as HTTP to connect with the web-browser portion of the software, and SSL to provide a secure way for the user to log in and log out of the application. SMTP and POS will be very helpful as email protocols. While email is not part of Phase 1, it is still needed for the electronic form necessary to contact the support team with necessary questions. Fast data transfer rates are very important to consider, so transfer rates should be higher than 7kb/s. Synchronization will be a key aspect for CrewConnect's communication interfaces, and there will need to be a way to ping and test connections to ping file folders or tables in databases and see if there's a record that shows a weather alert or travel update, in which case a ping will be sent back to the phone.

4. System Features

4.1 User Login

4.1.1 Description and Priority

The login feature of the *Crew Connect* application is a critical component of the software, for this is the entry point where the user will gain access to their account. It is a high priority, for the user cannot use the application without putting in their credentials or logging in information.

4.1.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User opens the application	Login page is displayed
2	User enters Username and Password	The userame and password information is validated.
3	User taps on Login Button	Homepage will be displayed if the username and password is correct. If not, an error message will be displayed.
4	User taps Forgot Username and Password	User will receive a notification to reset password

4.1.3 Functional Requirements

REQ-1: The user shall be able to enter both username and password
REQ-2: The user shall be able to reset their password

4.2 Home Screen

4.2.1 Description and Priority

The home screen feature of the *Crew Connect* application is a portal for the various components in the software, as this is the main screen where the user will see time/ battery life along with most recent notifications, and they will be able to access a menu of icons, linking them to many different pages for scheduling, travel information, etc. It is a high priority, for the user cannot use the application without accessing the menu of icons and notifications.

4.2.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User finishes logging in	Home Screen displays menu of icons and recent notifications.
2	User taps on the recent notification section of the home screen	The recent notifications expand for the user to view.
3	User taps on an icon from the menu of icons in the home screen	The icon will expand so the user may view its information, whether it be schedule, support, etc.
4	User taps “Logout”	The app will redirect the user to the user login SSO.
5	User types in the search bar	The app will find keywords to redirect them to various features.

4.2.3 Functional Requirements

REQ-1: The user shall be able to tap and expand several icons and notifications.
REQ-2: The user shall be able to type in the search bar to find various features.

4.3 Schedule

4.3.1 Description and Priority

The schedule feature of the *Crew Connect* application allows the user to access the flight schedule. It is a high priority, for the user cannot use the application without seeing this information to stay on top of the flight schedules, schedule updates, information about flight schedules, etc.

4.3.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User taps on the schedule icon or searches keywords to see the schedule	Schedule page expands
2	User scrolls through the timeline and can request a vacation or help through support	The schedule will synchronize according to the timeline scrollbar
3	User taps on “refresh”	The schedule will refresh to check for any current updates.
4	User taps “Homepage”	User will be redirected to the homepage.
5	User taps “request help”	The schedule page will redirect the user to the support page for additional assistance

4.3.3 Functional Requirements

REQ-1: The user shall be able to scroll through the schedule timeline
REQ-2: The user shall be able to refresh for current updates and request help when needed or necessary.
REQ-3: The user shall be able to request help for additional assistance.

4.4 Notification

4.4.1 Description and Priority

The notification feature of the *Crew Connect* application is a high priority of the software, for this is the central update portal where the user will gain access to updates regarding crew availability, schedule and travel notifications, password resets, etc. Without notifications, the user cannot use the application at its full potential and optimal performance.

4.4.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User taps on the notification icon or the list of recent notifications in the homepage.	The homepage redirects the user to the notification center.
2	User stars certain notifications based on urgency and importance.	The notifications will assemble in order of marked urgency/importance.
3	User swipes notifications they are aware of and have already completed and/or acknowledged.	Acknowledged notifications will scroll to the bottom and disappear within 24 hours.
4	User taps “refresh notifications” and scrolls to see previous notifications	Updates will refresh and the scrollbar will roll through notifications
5	User taps “Homepage”	The notification center will redirect the user to the homepage

4.4.3 Functional Requirements

REQ-1: The user shall be able to star notifications based on urgency and importance

REQ-2: The user shall be able to swipe notifications that are acknowledged

4.5 Travel

4.5.1 Description and Priority

The travel feature of the *Crew Connect* application allows the user to be directed to hotel and car company information. It is a high priority, for the user cannot use the application without receiving the direct access to car company and hotel info.

4.5.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User taps on the travel icon or searches keywords to see the travel page	Travel page is displayed.
2	User taps the link above the travel icon on this current page to navigate	A map expands so the user can see car company and hotel locations.
3	User taps on the search text field	The travel page searches for results matching the user’s keywords on car company and hotel information.
4	User taps “Homepage”	User will be redirected to the homepage.

4.5.3 Functional Requirements

REQ-1: The user shall be able to navigate the map of car company and hotel locations

4.6 Human Resource

4.6.1 Description and Priority

The human resource feature of the *Crew Connect* application is a critical component of the software, for this is the bridge that connects the user to HR personnel. It is a high priority, for the user cannot use the application without viewing the flight hours, and it is important to see PTO information as well as years in service and sick days/ absent records, etc.

4.6.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User taps on the human resource icon or searches keywords to see the HR page	HR page is displayed
2	User scrolls through a tab system, where PTO, Years in Service, Sick Days and Flight Hrs are all divided into readable tabs	The HR page will scroll through these tabs and expand them in a smooth and professional GUI experience.
3	User taps on “refresh” link	The HR page will refresh and receive any current updates.
4	User taps “Homepage”	User will be redirected to the homepage.

4.6.3 Functional Requirements

REQ-1: The user shall be able to scroll through and expand the HR tab system
REQ-2: The user shall be able to refresh the tabs to observe any current updates

4.7 Support

4.7.1 Description and Priority

The support feature of the *Crew Connect* application is a critical component of the software, for this is the connection point where the user will gain access to contacting the CC support team. It is a high priority, for the user cannot use the application without relying on a secure system to ask necessary questions and get answers.

4.7.2 Stimulus/Response Sequences

#	Stimulus	Response
1	User taps on the support icon.	The support page is displayed
2	User fills out their username and email on an accessible form	The support page allows them to continue in the form.
3	User fills out the rest of the form, addressing their questions and concerns and pressing submit	The support page will send the user’s questions and concerns to the support team
4	User taps “Homepage”	Homepage appears

4.7.3 Functional Requirements

REQ-1: The user shall be able to fill out their username and email address
REQ-2: The user shall be able to describe their questions and concerns on the form
REQ-3: The user shall be able to fill out the form and address their concerns with accuracy and clarity.

5. Other Nonfunctional Requirements

5.1 Performance Requirements

Images and information will need to be stored onto the phone as cache in a temporary location on the phone. This is a necessary performance requirement because if someone visits a page on the app more than once, the second time should be able to run faster than the first time loading a particular page. Another performance requirement includes accessible, real-time weather. As the user will want to see real-time weather, the device will need to check the weather periodically every ten to fifteen minutes. The number of minutes is important because every time the device checks for weather updates, the necessary processing to accomplish this task will drain the battery of the device. At the same time, checking every twenty minutes is too much of a gap in between updates, so ten minutes is an efficient balance for this performance requirement.

5.2 Safety Requirements

One of the safety requirements include securing processing data and speeds to a limit within boundaries, so the phone battery does not get too hot and explode. Contrary to the prior incident with the Samsung battery, where planes were not allowing passengers to bring Samsung devices on planes due to batteries exploding, the crew devices' speeds and processing will have guidelines that do not allow the CrewConnect app to use more than 5GB of ram within a given session, allowing the crew to use their devices on any plane and any scenario. Another safety requirement includes informing the user of how much screen time they were on while using the CrewConnect application. This is important as the user screen time needs boundaries for optimal vision and health. After an hour of continual use, the app will send a notification to the user of the screen time.

5.3 Security Requirements

The application will not stay idle for more than five minutes for security measures, unless if something operational the user is watching for needs to be running for a long period of time, such as navigation, weather, schedule and travel updates. This is a significant security requirement, because if a crew member leaves their phone somewhere and forgets to grab it, an unauthorized individual will not be able to access the phone if they attempt to steal it. Another security requirement will include the login page requiring both fingerprint and facial recognition technology for extra security purposes. For security, there will be a policy the user agrees to stating that certain sensitive information will not be collected, but rather implemented as a trustworthy means of verification. This way the user will be assured that no one is intruding upon this information.

5.4 Software Quality Attributes

In the event of a crew member flipping through several applications on their mobile device, it is crucial for the CrewConnect application to log out of the application after ten minutes of inactivity on the app for security purposes. As long as a user is on their phone, it will not time out for ten minutes unless if there is an important operation in progress. Developers will need to know this software quality attribute, because if they are reviewing possible instances and sessions, they will need to know that there will be a session timeout every ten minutes. The application will have

flexibility on this attribute depending on if there are operations that need to be uninterrupted. The software will be intuitive, so if a user follows a pattern of opening certain tabs every day, the application will show the user's suggested pages on the home page according to daily patterns.

5.5 Business Rules

There are certain business rules to be implemented in the application, serving as certain exceptions to common security measures within the application. As one business rule, if a user cannot get through the login page for whatsoever reason, but if they need to see their flight schedule or recent notifications, the application will have a "quick access" tab above the login, which shows recent information while blurring out sensitive information so that if a user needs to bypass the login page in the case of an emergency, this can be done. Another business rule is allowing the user to have a longer session before a timeout on the application when using navigation, travel or other operations that require more idle time.

6. Other Requirements

Other requirements include a way for the device to connect the GPS with the app for navigation purposes, while connecting to the weather and schedule databases already operating within WASUP Airlines. The application will have terms of use for the user to agree to, because this way the user will be confident that the application is using sensitive information only for necessary purposes and practices within the company. International requirements include a way for the application to update time zones right away with no lag, because when traveling internationally, the crew members will want an easy and efficient way to have a current time zone right away.

Appendix A: Glossary

CrewConnect: the application the crew members use referenced in this document.

C-Suite: the chief operators, in this case the higher-ups for Worldwide Airline Supply Unified Procurement

Home Bases: the destination the employees return to in preparation for their next flight assignment.

Leg: a connection from one flight to another, in terms of air route legs.

Phase 1: the top necessary requirements needed for CrewConnect.

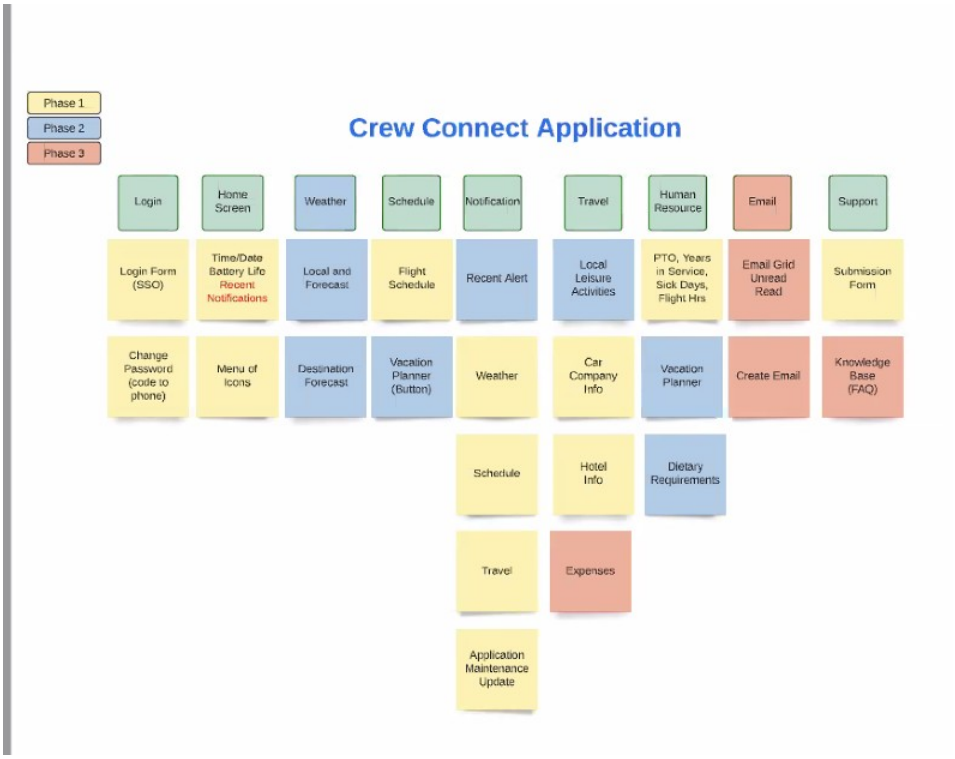
Push-notifications: important updates sent directly to each of the crew members' phones.

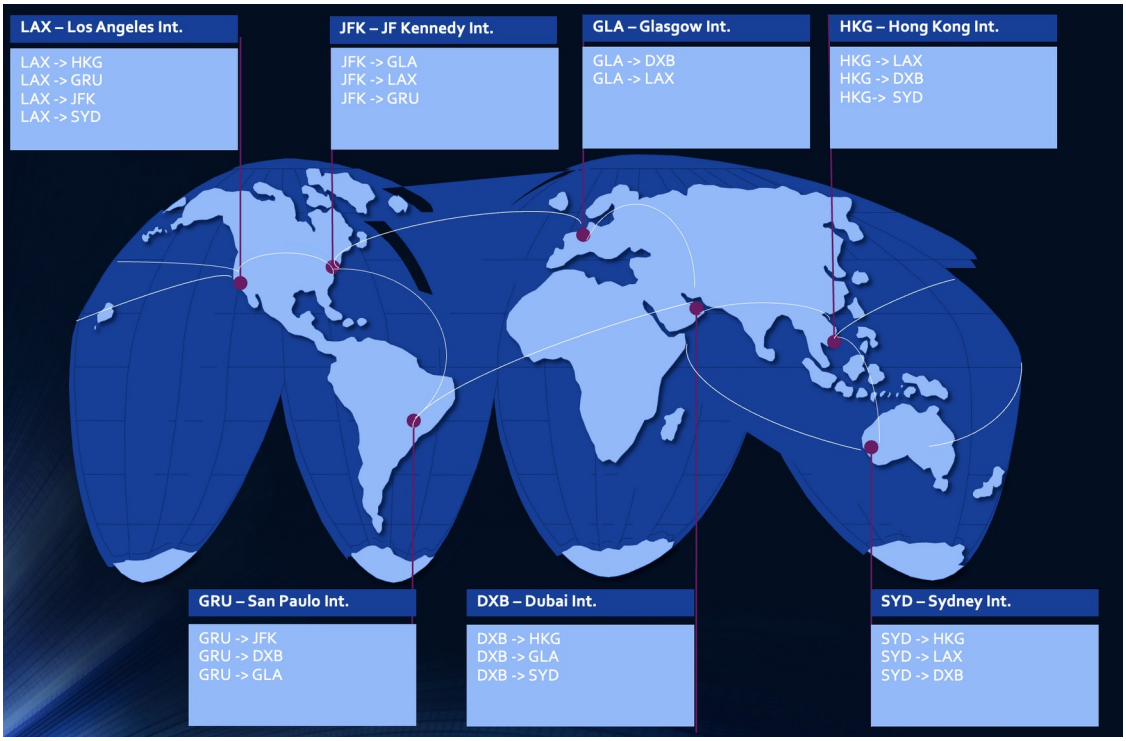
Session: the active allotted time a crew member is using the CrewConnect application

SSO: the single sign-on operation responsible for logging in the crew member, providing access to a range of tabs, pages and features through a one-time login.

Timeout: the operation responsible for logging out the crew member when offline for more than five minutes or idle while using various mobile applications for more than ten minutes.

Appendix B: Analysis Models





Appendix C: To Be Determined List

TBD 1: Functional requirements need to be reviewed before final submission.

TBD 2: Glossary needs to be reviewed so that modifications will be finalized.

TBD 3: Make sure that you update the table of contents.