

**Test Report**

**(TR)**

MailSpeak Application (MSA)

University of Maryland Global Campus (UMGC)

Software Engineering (SWEN) 670

Fall Cohort 2022

Team B

November 5, 2022

Approval Signatures

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# Introduction

## Purpose

This Test Report (TR) documents the results of developmental, system, user acceptance, and regression testing as of 11/05/2022*.* Specifically, the TR:

* Describes the system functions tested.
* Evaluates the performance of the functions tested.
* Analyzes the system capabilities demonstrated during Testing.
* Identifies specific deficiencies and any indicated improvements in system design or operation based on the results of the Testing.
* Illustrates the workflow processes to be automated or supported.
* Presents determination concerning the readiness of the system for deployment.

## System Overview

The United States Postal Service (USPS) MSA provides users access to emails stored in the inboxes of their email accounts, with specific attention given to emails received through the USPS Informed Delivery service. The application places emphasis on accessibility for the visually impaired through the utilization of text-to-speech and speech-to-text functionality.

The enhancements to the informed delivery application that are to be implemented will expand the product’s current functionality. These enhancements will provide users with more powerful email search functionality, enhanced usability (with visually impaired users as the primary focus), and user behaviour reporting.

## Background

The application under test is a mobile application that has been created to be used in conjunction with USPS Informed Delivery service. Its purpose is to provide visually impaired and sighted users access to the service with accessibility features. The features will enhance the pre-existing text-to-speech and voice input functionality already implemented by the Operating System and will provide enhanced searching capabilities to allow for better navigation and organization of emails. A Chatbot will also be implemented to improve the user experience (UX) through a more natural interaction versus reading documentation on functionality.

## Identify Stakeholders

| Stakeholder Name | Organization | Project Role |
| --- | --- | --- |
| Mir Assadullah | UMGC | Professor, Program Manager |
| Roy Gordon |  | Project Mentor |
| Robert Wilson |  | DevSecOps Mentor |
| Robert Dixon | USPS Informed Delivery | Project Sponsor |
| Alexander Chan | UMGC | Software Engineer (SE) II |
| Andrew Asavarungsrikul | UMGC | Software Engineer (SE) I |
| Erin Sauter | UMGC | Software Engineer (SE) I |
| Jonay Simmons | UMGC | Software Engineer (SE) I |
| Lawrence Van Tassel | UMGC | Software Engineer (SE) III |
| Michael Conatser | UMGC | Project Manager (PM), Scrum Master |
| Minyahil Kebebegn | UMGC | Software Engineer (SE) II |
| Sarah Johnson | UMGC | Software Engineer (SE) I |
| Shane Knowles | UMGC | DevSecOps Engineer (Principal) |
| Tatiana Kozhevnikova | UMGC | Product Owner |
| TraMel Perry | UMGC | Principal Software Engineer (SE) |

## Security

The scope of security in this test plan is to provide login capabilities from native email systems and provide Terms and Conditions and Privacy Policies. When accessing MSA the user must have an active email that has been enrolled in USPS Informed Delivery service. MSA does not capture or save any of the login information provided by the user after initial authentication. Terms and Conditions are provided detailing any rules and regulations that will affect any security consideration in the use of the MSA system. The use of any personal information of the user is documented in the Privacy Policy provided. MSA will not save any personally identifiable information. All data provided for metrics are anonymous and not tied to an individual account.

## Project Documentation

### Project Suite of Documents

This Test Report is part of a set of essential documents created to adequately manage, control and deliver the Mail Speak Application. Artifacts that are provided within the document package contain vital information for the application’s ongoing support and operation throughout its life cycle. Each document is created within the specific Milestone of the project. Therefore, the version and date of some documents could be marked as “to be determined” (TBD) in Table 1.3.

Table 1. - Project Documentation Package

| Document | Version | Date |
| --- | --- | --- |
| Project Management Plan (PMP) | 3.0 | 10/29/2022 |
| Software Requirements Specification (SRS) | 4.0 | 10/29/2022 |
| Technical Design Document (TDD) | 3.0 | 10/29/2022 |
| Software Test Plan | 3.0 | 10/29/2022 |
| Programmer Guide | 2.0 | 10/29/2022 |
| Development and Operations Guide | 2.0 | 10/29/2022 |
| User Guide | 1.0 | 11/05/2022 |
| Test Report | 1.0 | 11/05/2022 |

# Assumptions and Constraints

## Assumptions

* Test account will be configured according to specification.
* Test data will be made available in testing account for all scenarios.
* Availability of project members to support testing efforts.

## Constraints

* The availability of users and equipment for iOS.
* The availability of developers understanding iOS development environments.
* Condensed timeframe of development effort further condenses testing effort.

# Test Results Summary

The Mail Speak application went through three categories of testing within the boundaries of this effort from 8/17/2022 to 11/5/2022. This effort of test was separated into three categories of test Unit/Integration, System, and User Acceptance testing (UAT). Each category executed at least one iteration of test. Unit/Integration and System testing executed two iterations each. While User Acceptance testing was only executed during Iteration 2 of the test cycle. Due to the phased approach in introducing functionality, it was determined that UAT testing would be better executed after the final build was delivered to provide the best user experience for the UAT testers.

Iteration 1 of Unit/Integration test was executed from 9/18/22 – 10/8/22 and Iteration 2 10/9/22 – 10/23/22. All testing of this category was executed using automated testing builds built into the build process to assist in maintaining the quality of the code during the development phase. This testing resulted in a total of 20 defects across all iterations of test with 3 defects remaining unresolved at the conclusion of Unit/Integration test.

System testing Iteration 1 was completed 10/23/22 – 10/27/22 and Iteration 2 10/28/22 – 11/1/22. The system test iteration was able to confirm the 20 defects identified throughout the Unit/Integration phase and did not identify any additional defects. Each defect was carefully tested by multiple testers and confirmed that all defects except for the three identified were resolved, retested, and verified.

User Acceptance testing was only executed as an Iteration 2 activity to ensure a stable system of test for the UAT team. This iteration spanned 10/31/22 – 11/1/22. The UAT team consisted of two individuals (1 using iOS and 1 using Android) that through disability exercised the application, as well as one member without disabilities. Allowing for the tester’s privacy, they have been identified in the detailed test summary table by initials. There was a total of 3 defects identified by the UAT team. These 3 defects were in line with the remaining unresolved defects identified in the previous testing efforts. The Android user verifying 2 of the unresolved defects and all three verifying the remaining unresolved defect.

Testing overall provided results for a system that is stable and can consistently provide agreed upon functionality stated in the SRS. There are three open defects identified that either would not be implemented during this project or are in relation to the generalized Gmail defect. While the accessibility defect of left/right swiping can be added in future development efforts it is recommended that the inability to login with Gmail through OAuth be remediated before implementation of this application is considered.

## System Testing

### Unit/Integration Testing

### Iteration 1

Unit/Integration Testing for iteration 1 was executed during Milestone 2 and 3 of the projects. The development team executed unit/integration testing using automated testing identified in the CI/CD pipeline. Any issues identified within this build process was manually tested and verified before defect is identified and assigned. Throughout, iteration 1 testing seven defects were found and verified. Below is a table summarizing the severity and resolution status of identified defects:

| Severity | Resolved Defects\* | Unresolved Defects\*\* | Totals |
| --- | --- | --- | --- |
| Critical | 2 | 0 | 2 |
| Major | 2 | 1 | 3 |
| Average | 2 | 0 | 2 |
| Minor | 0 | 0 | 0 |
| **Totals** | **6** | **1** | **7** |
| \* Resolved defects include any defects within the Closed State and any duplicates associated with the closed defects within GitHub.  \*\* Unresolved defects include any defects in the states Submitted, Accepted, Assigned, Open, or Resolved within GitHub. | | | |

Defects that were identified in this iteration are:

* Critical
  + Google Cloud Vision subscription expired
  + iOS app does not load
* Major
  + Voice input is broken
  + Bug with searching Gmail – Gmail currently is working for iOS, but not Android.
* Average
  + “Delete All Local Data” does not function
  + Notifications display goes off-screen

### Iteration 2

Unit/Integration Testing for iteration 2 was executed during Milestone 4 of the project. The development team executed unit/integration testing using automated testing identified in the CI/CD pipeline. Any issues identified within this build process was manually tested and verified before defect is identified and assigned. Throughout, iteration 2 testing thirteen defects were found and verified. Below is a table summarizing the severity and resolution status of identified defects:

| Severity | Resolved Defects\* | Unresolved Defects\*\* | Totals |
| --- | --- | --- | --- |
| Critical | 1 | 1 | 2 |
| Major | 3 | 0 | 3 |
| Average | 6 | 0 | 6 |
| Minor | 1 | 1 | 2 |
| **Totals** | **11** | **2** | **13** |
| \* Resolved defects include any defects within the Closed State and any duplicates associated with the closed defects within GitHub.  \*\* Unresolved defects include any defects in the states Submitted, Accepted, Assigned, Open, or Resolved within GitHub. | | | |

Defects that were identified in this iteration are:

* Critical
  + Email fetch failure upon login
  + Digest view does not work with Google logins – Unresolved Defect
* Major
  + Keyword search is not functional
  + Can’t login with Gmail account on iOS
  + Runtime error when logging in with Gmail account on iOS
* Average
  + Accessibility issue with login screen
  + Accessibility issue with digest page
  + Accessibility issue with chatbot
  + Long sender names in the search results cause the date to be formatted wrong
  + iOS fixes for chatbot
  + Chatbot keyword search bug
* Minor
  + Add left/right swipe between mail pieces – Unresolved Defect
  + Type ahead not automatically visible

## Functional Testing

### Iteration 1

Functional Testing for iteration 1 was executed during Milestone 2 and 3 of the project. The test team executed functional testing using manual testing scripts written in conjunction with the Software Requirements Specification and Technical Design Document. Each requirement was validated and reported on and bugs were provided to the development team to address. The bugs that were identified by the development team were validated by the test team before any work effort was put toward defect. No additional defects were found during these phases than what was found during unit test iteration as total functionality was not available. Throughout, iteration 1 testing seven defects were found and verified. Below is a table summarizing the severity and resolution status of identified defects:

| Severity | Resolved Defects\* | Unresolved Defects\*\* | Totals |
| --- | --- | --- | --- |
| Critical | 2 | 0 | 2 |
| Major | 2 | 1 | 3 |
| Average | 2 | 0 | 2 |
| Minor | 0 | 0 | 0 |
| **Totals** | **6** | **1** | **7** |
| \* Resolved defects include any defects within the Closed State and any duplicates associated with the closed defects within GitHub.  \*\* Unresolved defects include any defects in the states Submitted, Accepted, Assigned, Open, or Resolved within GitHub. | | | |

Defects that were identified in this iteration are:

* Critical
  + Google Cloud Vision subscription expired
  + iOS app does not load
* Major
  + Voice input is broken
  + Bug with searching Gmail – Gmail currently is working for iOS, but not Android.
* Average
  + “Delete All Local Data” does not function
  + Notifications display goes off-screen

### Iteration 2

Functional Testing for iteration 2 was executed during Milestone 4 of the project. The test team executed functional testing using manual testing scripts written in conjunction with the Software Requirements Specification, Technical Design Document, and feedback from iteration 1 testing. Each requirement was validated and reported on and bugs were provided to the development team to address. User Acceptance testing was done three external testers two users having disabilities that required accessibility features and one user that does not require any accessibility features. Any issues identified within this build process was manually tested and verified before defect is identified and assigned. Throughout, iteration 2 testing thirteen defects were found and verified that mirrored the defects found by the development team. Each defect was verified, fixed, and retested in the final iteration of test. Below is a table summarizing the severity and resolution status of identified defects:

| Severity | Resolved Defects\* | Unresolved Defects\*\* | Totals |
| --- | --- | --- | --- |
| Critical | 1 | 1 | 2 |
| Major | 3 | 0 | 3 |
| Average | 6 | 0 | 6 |
| Minor | 1 | 1 | 1 |
| **Totals** | **11** | **2** | **13** |
| \* Resolved defects include any defects within the Closed State and any duplicates associated with the closed defects within GitHub.  \*\* Unresolved defects include any defects in the states Submitted, Accepted, Assigned, Open, or Resolved within GitHub. | | | |

Defects that were identified in this iteration are:

* Critical
  + Email fetch failure upon login
  + Digest view does not work with Google logins – Unresolved Defect
* Major
  + Keyword search is not functional
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  + Runtime error when logging in with Gmail account on iOS
* Average
  + Accessibility issue with login screen
  + Accessibility issue with digest page
  + Accessibility issue with chatbot
  + Long sender names in the search results cause the date to be formatted wrong
  + iOS fixes for chatbot
  + Chatbot keyword search bug
* Minor
  + Add left/right swipe between mail pieces – Unresolved Defect
  + Type ahead not automatically visible

# Test Results

## Unit/Integration Test Results

### Iteration 1

#### Search

Search functionality was implemented using date range and keyword variables using the search screen by the development team. The development team tested through automation the following conditions during the unit/integration of the date range criteria on the Search Screen: no date, single date in range, and multiple date range. All unit/integration tests for the search screen using date range were successfully executed except when searching Gmail. The development team tested through automation the following conditions during the unit/integration of the keyword criteria on the Search Screen: blank keyword and entered keyword. All unit/integration tests for the search screen using keyword were successfully executed except when searching Gmail. At this point there is a global defect for integrating with Gmail that could hinder the final acceptance of this requirement.

#### Chatbot

Chatbot functionality was implemented using initial chat suggestions, request help documentation, listing notifications, adding notifications, and removing notifications. The development team tested through automation the following conditions during the unit/integration of basic chat functionality within the chatbot: suggestions, help, and notifications. All unit/integration test supporting basic chat functionality were successfully executed.

#### Gestures

Gestures accessibility functionality was not specifically tested for this iteration as the development effort was evaluating the native OS accessibility features. Any code changes necessary to meet requirements will be tested in Iteration 2 of test.

#### Voice Driven

Voice driven accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The development team focused on ensuring that all objects in code were properly tagged to ensure the proper recognition of the voice-to-text conversion which will provide the most efficient execution of the voice driven functionality. The development team tested through automation the following conditions during the unit/integration of the following actions: login, menu, search, notifications, settings, digest, and basic navigation functionality. All unit/integration tests exercising voice driven functionality were successfully executed.

#### Reading Mode

Reading mode accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The development team focused on ensuring that all objects in code were properly tagged and ordered to display the most efficient view and order for the text-to-voice to interpret the screen. The development team tested through automation the following conditions during the unit/integration of the following actions: whole screen and single user interface element. All unit/integration tests exercising reading mode functionality were successfully executed.

### Iteration 2

#### Search

Search functionality was implemented using date range and keyword variables using search screen and chatbot implementation by the development team. All test conditions noted for Iteration 1 were retested as well as functionality implemented to support initiating a search from the chatbot. Through automation the following were exercised during the unit/integration of the date range criteria on the Search Screen and Chatbot implementation: no date, single date in range, and multiple date range. All unit/integration tests for the search screen and chatbot using date range were successfully executed except when searching Gmail on Android OS. Through automation the following conditions were exercised during the unit/integration of the keyword criteria on the Search Screen and Chatbot: blank keyword and entered keyword. All unit/integration tests for the search screen and chatbot using keyword were successfully executed except when searching Gmail on Android OS. At this point there is still a global defect for integrating with Gmail that hinders the final acceptance of this requirement.

#### Chatbot

Chatbot functionality was implemented using initial chat suggestions, request help documentation, listing notifications, adding notifications, removing notifications, search mail by name, search mail by specific date, search mail by specific date range. All test conditions noted for Iteration 1 were retested as well as the additional chatbot search functionality which is tested along with previous search testing. The development team tested through automation the following conditions during the unit/integration of basic chat functionality within the chatbot: suggestions, help, and notifications. All unit/integration test supporting basic chatbot functionality were successfully executed.

#### Gestures

Gestures functionality was implemented by using as much of the native built in OS accessibility tools. The items focused on by the development team are hold down, left swipe, right swipe, right swipe from far left, swipe up, and tap out. The development team tested through automation the following conditions during the unit/integration of gestures to assist accessibility: hold down, left swipe, right swipe from far left, swipe up, and tap out. During testing it was found that the native OS provided most of this functionality as long as the device has accessibility turned on within the settings. During testing left swipe, right swipe, right swipe from far left, and tap out were successfully executed in appropriate screen combinations. However, hold down, left/right swipe of mail pieces, and swipe up are functionality that is not covered by the native OS and will not be implemented within this project effort.

#### Voice Driven

Voice driven accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The development team continued to focus on ensuring that all objects in code were properly tagged to ensure the proper recognition of the voice-to-text conversion which will provide the most efficient execution of the voice driven functionality. The development team tested through automation the following conditions during the unit/integration of the following actions: login, menu, search, notifications, settings, digest, and basic navigation functionality. All unit/integration tests exercising voice driven functionality were successfully executed.

#### Reading Mode

Reading mode accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The development team continued to focus on ensuring that all objects in code were properly tagged and ordered to display the most efficient view and order for the text-to-voice to interpret the screen. The development team tested through automation the following conditions during the unit/integration of the following actions: whole screen and single user interface element. All unit/integration tests exercising reading mode functionality were successfully executed.

## Functional Test Results

### Iteration 1

#### Search

Search functionality was implemented using date range and keyword variables using the search screen. The following conditions were exercised during the system testing using written manual test using the date range criteria on the Search Screen: no date, single date in range, and multiple date range. All manual functional tests for the search screen using date range were successfully executed except when searching Gmail. The following conditions were exercised during the system testing using written manual test using keyword criteria on the Search Screen: blank keyword and entered keyword. All unit/integration tests for the search screen using keyword were successfully executed except when searching Gmail. At this point there is a global defect for integrating with Gmail that could hinder the final acceptance of this requirement.

#### Chatbot

Chatbot functionality was implemented using initial chat suggestions, request help documentation, listing notifications, adding notifications, and removing notifications. The test team tested through written manual test exercised the following conditions during the functional test of basic chat functionality within the chatbot: suggestions, help, and notifications. All manual functional test supporting basic chat functionality were successfully executed.

#### Gestures

Gestures accessibility functionality was not specifically tested for this iteration as the development effort was evaluating the native OS accessibility features. Any code changes necessary to meet requirements will be tested in Iteration 2 of test.

#### Voice Driven

Voice driven accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The test team focused testing by written functional manual test ensuring that all objects could be recognized through the voice driven functionality. The test team tested through manual test cases the following conditions during the effort of test: login, menu, search, notifications, settings, digest, and basic navigation functionality. All manual functional tests exercising voice driven functionality were successfully executed.

#### Reading Mode

Reading mode accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The test team focused testing by written functional manual test ensuring that all objects in code were properly tagged and ordered to display the most efficient view and order for the text-to-voice to interpret the screen. The test team tested through functional manual test the following conditions: whole screen and single user interface element. All unit/integration tests exercising reading mode functionality were successfully executed.

### Iteration 2

#### Search

Search functionality was implemented using date range and keyword variables using search screen and chatbot implementation by the testing team. All test conditions noted for Iteration 1 were retested as well as functionality implemented to support initiating a search from the chatbot. The following conditions were exercised during the system testing using written manual test using the date range criteria on the Search Screen and Chatbot: no date, single date in range, and multiple date range. All manual functional tests for the search screen and chatbot using date range were successfully executed except when searching Gmail on Android OS. The following conditions were exercised during the system testing using written manual test using keyword criteria on the Search Screen and Chatbot: blank keyword and entered keyword. All manual functional tests for the search screen and chatbot using keyword were successfully executed except when searching Gmail on Android OS. At this point there is still a global defect for integrating with Gmail that hinders the final acceptance of this requirement.

#### Chatbot

Chatbot functionality was implemented using initial chat suggestions, request help documentation, listing notifications, adding notifications, removing notifications, search mail by name, search mail by specific date, search mail by specific date range. All test conditions noted for Iteration 1 were retested as well as the additional chatbot search functionality which is tested along with previous search testing. The test team tested through written manual test exercised the following conditions during the unit/integration of basic chat functionality within the chatbot: suggestions, help, and notifications. All unit/integration test supporting basic chatbot functionality were successfully executed.

#### Gestures

Gestures functionality was implemented by using as much of the native built in OS accessibility tools. The items focused on by the test team are hold down, left swipe, right swipe, right swipe from far left, swipe up, and tap out. The test team tested through written manual test the following conditions during the functional test of gestures to assist accessibility: hold down, left swipe, right swipe from far left, swipe up, and tap out. During testing it was found that the native OS provided most of this functionality as long as the device has accessibility turned on within the settings. During testing left swipe, right swipe, right swipe from far left, and tap out were successfully executed in appropriate screen combinations. The test team confirmed that left/right swipe of mail pieces, and swipe up are functionality are not covered by the native OS and will not be implemented within this project effort

#### Voice Driven

Voice driven accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The test team continued focused testing by written functional manual test ensuring that all objects could be recognized through the voice driven functionality. The test team tested through manual test cases the following conditions during the effort of test: login, menu, search, notifications, settings, digest, and basic navigation functionality. All manual functional tests exercising voice driven functionality were successfully executed.

#### Reading Mode

Reading mode accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The test team focused testing by written functional manual test ensuring that all objects in code were properly tagged and ordered to display the most efficient view and order for the text-to-voice to interpret the screen. The test team tested through functional manual test the following conditions: whole screen and single user interface element. All unit/integration tests exercising reading mode functionality were successfully executed.

## User Acceptance Test Results

### Iteration 1

The user community was not engaged until Iteration 2 of testing to provide the most complete application.

### Iteration 2

#### Search

Search functionality was implemented using date range and keyword variables using search screen and chatbot implementation by a user acceptance team. The user acceptance team consisted of two individuals (1 using iOS and 1 using Android) that through disability exercised the application, as well as one member without disabilities. The following conditions were exercised during the user acceptance testing using written manual test with accessibility features turned on and off appropriate for each user; using the date range criteria on the Search Screen and Chatbot: no date, single date in range, and multiple date range. All user acceptance tests for the search screen and chatbot using date range were successfully executed except when searching Gmail on Android OS. The following conditions were exercised during the user acceptance testing using written manual test with accessibility features turned on and off appropriate for each user; using keyword criteria on the Search Screen and Chatbot: blank keyword and entered keyword. All manual functional tests for the search screen and chatbot using keyword were successfully executed except when searching Gmail on Android OS. At this point there is still a global defect for integrating with Gmail that hinders the final acceptance of this requirement.

#### Chatbot

Chatbot functionality was implemented using initial chat suggestions, request help documentation, listing notifications, adding notifications, removing notifications, search mail by name, search mail by specific date, search mail by specific date range by the user acceptance team. The user acceptance team consisted of two individuals (1 using iOS and 1 using Android) that through disability exercised the application, as well as one member without disabilities. Chatbot search functionality is tested along with previous search testing. The following conditions were exercised during the user acceptance testing using written manual test with accessibility features turned on and off appropriate for each user the following conditions during the unit/integration of basic chat functionality within the chatbot: suggestions, help, and notifications. All user acceptance test supporting basic chatbot functionality were successfully executed.

#### Gestures

Gestures functionality was implemented by using as much of the native built in OS accessibility tools. The items focused on by the user acceptance team are hold down, left swipe, right swipe, right swipe from far left, swipe up, and tap out. The user acceptance team tested through written manual test the following conditions during the user acceptance testing of gestures with accessibility technology: hold down, left swipe, right swipe from far left, swipe up, and tap out. During testing it was found that the native OS provided most of this functionality as long as the device has accessibility turned on within the settings. During testing left swipe, right swipe, right swipe from far left, and tap out were successfully executed in appropriate screen combinations. The user acceptance team confirmed that left/right swipe of mail pieces, and swipe up are functionality are not covered by the native OS and will not be implemented within this project effort

#### Voice Driven

Voice driven accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The user acceptance team consisted of two individuals (1 using iOS and 1 using Android) that through disability exercised the application, as well as one member without disabilities. The user acceptance team continued focused testing by written functional manual test ensuring that all objects could be recognized through the voice driven functionality. The test team tested through manual test cases the following conditions during the effort of test: login, menu, search, notifications, settings, digest, and basic navigation functionality. All manual functional tests exercising voice driven functionality were successfully executed.

#### Reading Mode

Reading mode accessibility functionality was implemented by using as much of the native built in OS accessibility tools. The user acceptance team consisted of two individuals (1 using iOS and 1 using Android) that through disability exercised the application, as well as one member without disabilities. The user acceptance team focused testing by written functional manual test ensuring that all objects in code were properly tagged and ordered to display the most efficient view and order for the text-to-voice to interpret the screen. The test team tested through functional manual test the following conditions: login, menu, search, notifications, settings, digest, and basic navigation functionality. All acceptance tests exercising reading mode functionality were successfully executed.

# Defect Report Summary

## Resolved Defects

| Defect ID # | Defect Summary | Resolution |
| --- | --- | --- |
| 192 | Voice input is broken | Voice input was fixed to operate correctly within application |
| 193 | Google Cloud Vision (used for the scanning function) doesn’t work (expired subscription) | Subscription was renewed |
| 632 | Using the “Delete All Local Data” function didn’t delete all data | Function was corrected |
| 638 | iOS app doesn’t load | Build was fixed |
| 662 | Notifications display goes off-screen | Formatting for notification was adjusted |
| 601 | Email fetch failure upon login | Email method was corrected to correctly retrieve mail |
| 665 | Type ahead not automatically visible | Field was corrected to show type ahead when in focus and text is typed |
| 666 | Keyword search is not functional | Search was corrected |
| 668 | Can’t login with Gmail account on iOS | OAuth on iOS was implemented to access Gmail accounts |
| 674 | Runtime error when logging in with Gmail account on iOS | Error message was captured, and timeout was corrected |
| 681 | Accessibility issue with login screen | Tags were corrected |
| 682 | Accessibility issue with digest page | Tags were corrected |
| 683 | Accessibility issue with chatbot | Tags were corrected |
| 695 | Long sender names in the search results cause the date to be formatted wrong | Formatting for results was adjusted to wrap text |
| 703 | iOS fixes for Chatbot | Various pointers added |
| 704 | Chatbot keyword search bug | Search was corrected to submit text provided by keyword field |

## Unresolved Defects

| **Defect ID#** | **Defect Summary** | **Resolution** |
| --- | --- | --- |
| 671 | Bug with searching Gmail | This will not be fixed within the timeframe of the project |
| 648 | Add left/right swipe between mail pieces | Functionality won’t be implemented. |
| 721 | Digest view does not work with Google logins | This will not be fixed within the timeframe of the project |

# Attachment A – Acronyms and Abbreviations

| Acronym/Abbreviation | Definition |
| --- | --- |
| CI/CD | Continuous Integration/Continuous Deployment |
| DEV | Development |
| iOS | iPhone Operating System |
| MSA | Mail Speak Application |
| MTP | Master Test Plan |
| PM | Project Manager |
| PMP | Project Management Plan |
| PO | Product Owner |
| QA | Quality Assurance |
| SDLC | Software Development Lifecycle |
| SE | Software Engineer |
| SRS | Software Requirements Document |
| STP | Software Test Plan |
| SWEN | Software Engineering |
| TBD | To Be Determined |
| TDD | Technical Design Document |
| TRTM | Test Requirements Traceability Matrix |
| UAT | User Acceptance Testing |
| UI | User Interface |
| UMGC | University of Maryland Global Campus |
| USPS | United States Postal Service |
| UX | User Experience |

Attachment B – Test Requirements Traceability Matrix

| Use Case | Test Case(s) |
| --- | --- |
| UC - 1. Search past emails using specific date range and keyword | TC – 1(a), TC – 1(b) |
| UC - 2. Chatbot: Initial chat suggestions | TC - 2 |
| UC - 3. Chatbot: Request help documentation | TC – 3 |
| UC - 4. Chatbot: Adding notifications | TC - 4 |
| UC - 5. Chatbot: Removing notifications | TC - 4 |
| UC - 6. Chatbot: Search mail by name | TC - 5 |
| UC - 7. Chatbot: Search mail by specific date | TC - 5 |
| UC - 8. Chatbot: Search mail by specific date range | TC - 5 |
| UC - 9. Gesture: Left swipe | TC – 6 |
| UC - 10. Gesture: Right swipe | TC – 6 |
| UC - 11. Gesture: Right swipe from far left | TC – 6 |
| UC - 12. Gesture: Tap out | TC – 6 |
| UC - 13. Voice Driven: Login | TC - 7 |
| UC - 14. Voice Driven: Show Menu | TC - 7 |
| UC - 15. Voice Driven: Show Menu - Settings | TC - 7 |
| UC - 16. Voice Driven: Show Menu - Logout | TC - 7 |
| UC - 17. Voice Driven: Open Search Mail | TC - 9 |
| UC - 18. Voice Driven: Search Mail | TC - 9 |
| UC - 19. Voice Driven: Search Mail: Open Individual Mail Piece | TC - 9 |
| UC - 20. Voice Driven: Open Notifications | TC - 10 |
| UC - 21. Voice Driven: Add Notification | TC - 10 |
| UC - 22. Voice Driven: Delete Notification | TC - 10 |
| UC - 23. Voice Driven: Open Chatbot | TC - 8 |
| UC - 24. Voice Driven: Chatbot Commands | TC - 8 |
| UC - 25. Voice Driven: Open Settings | TC - 7 |
| UC - 26. Voice Driven: Settings – View “Terms and Conditions” | TC - 7 |
| UC - 27. Voice Driven: Settings – View “Privacy Policy” | TC - 7 |
| UC - 28. Voice Driven: Dismiss Dialog | TC - 7 |
| UC - 29. Voice Driven: Open Daily Digest | TC - 11 |
| UC - 30. Voice Driven: Daily Digest – View Next Mail Piece | TC - 11 |
| UC - 31. Voice Driven: Daily Digest – View Previous Mail Piece | TC - 11 |
| UC - 32. Voice Driven: Open Upload Mail | TC - 12 |
| UC - 33. Voice Driven: Open Scan Mail | TC - 12 |
| UC - 34. Voice Driven: Home Action/ Main Menu | TC - 9 |
| UC - 35. Voice Driven: Back Action | TC - 9 |
| UC - 36. Reading Mode: Whole Screen | TC - 13 |
| UC - 37. Reading Mode: Single User Interface (UI) Element | TC - 13 |

Attachment C – Detailed Test Case Results

C – 1 System Test

| **Iteration** | **Test Case ID** | **Date Tested** | **Tester** | **Pass/Fail** | **Severity of Defect** | **Summary of Defect** | **Closed prior to Production Release?** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 1 | **1(a)** | 10/26/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **1(b)** | 10/26/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **9** | 10/26/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **5** | 10/26/22 | Minyahil Kebebegn | Pass |  |  |  |  |
| 1 | **5** | 10/26/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **8** | 10/26/22 | Jonay Simmons | Fail | Average | Accessibility for chatbot not working | Yes |  |
| 1 | **7** | 10/26/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **2-5** | 10/26/22 | Minyahil Kebebegn | Fail | Average | Accessibility for chatbot not working | Yes |  |
| 1 | **7** | 10/26/22 | Jonay Simmons | Fail | Average | Accessibility for login not working | Yes |  |
| 1 | **5** | 10/27/22 | Michael Conatser | Fail | Major | Chatbot search not working | Yes |  |
| 1 | **4** | 10/27/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **5** | 10/27/22 | Minyahil Kebebegn | Pass |  |  |  |  |
| 1 | **2-5** | 10/27/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **1(a) & (b)** | 10/27/22 | Michael Conatser | Fail | Major | Search doesn’t work with Gmail (Android) | No | Gmail defect will be deferred to future development |
| 1 | **1(a) & (b)** | 10/27/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 1 | **11** | 10/27/22 | Michael Conatser | Pass |  |  |  |  |
| 1 | **7** | 10/27/22 | Michael Conatser | Pass |  |  |  |  |
| 2 | **7** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **9** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **10** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **11** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **12** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **8** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **7** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **13** | 10/28/22 | Jonay Simmons | Pass |  |  |  |  |
| 2 | **1(a)** | 10/30/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **1(b)** | 10/30/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **1(a) & (b)** | 10/31/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **9** | 10/31/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **4** | 10/31/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **2-5** | 10/31/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **7** | 10/31/22 | Minyahil Kebegegn | Pass |  |  |  |  |
| 2 | **1(a)** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **1(b)** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **9** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **5** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **4** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **4** | 11/1/22 | Lawerence Van Tassel | Pass |  |  |  |  |
| 2 | **2-5** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **2-5** | 11/1/22 | Lawrence Van Tassel | Pass |  |  |  |  |
| 2 | **8** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **7** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **11** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **13** | 11/1/22 | Tatiana Kozhevnikova | Pass |  |  |  |  |
| 2 | **1(a)** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **1(b)** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **2** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **3** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **4** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **5** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **6** | 10/31/22 | TraMel Perry | Fail | Minor | Left/right swipe between email pieces does not work | No – Will not be implemented | Defect will be deferred to future development |
| 2 | **7** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **8** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **9** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **10** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **11** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **12** | 10/31/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **1(a)** | 11/1/22 | TraMel Perry | Fail | Major | Does not work with Gmail on Android | No | Gmail defect will be deferred to future development |
| 2 | **1(b)** | 11/1/22 | TraMel Perry | Fail | Major | Does not work with Gmail on Android | No | Gmail defect will be deferred to future development |
| 2 | **2** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **3** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **4** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **5** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **6** | 11/1/22 | TraMel Perry | Fail | Minor | Left/right swipe between email pieces does not work | No – Will not be implemented |  |
| 2 | **7** | 11/1/22 | TraMel Perry | Fail | Critical | Does not work with Gmail accounts on Android | No | Gmail defect will be deferred to future development |
| 2 | **8** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **9** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **10** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **11** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **12** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |
| 2 | **13** | 11/1/22 | TraMel Perry | Pass |  |  |  |  |

C – 2 User Acceptance Test

Users external to UMGC were invited to perform UAT, some of them had disabilities. In the tester field, initials of the external users were used.

| **Iteration** | **Test Case ID** | **Date Tested** | **Tester** | **Pass/Fail** | **Severity of Defect** | **Summary of Defect** | **Closed prior to Production Release?** | **Comments** |
| --- | --- | --- | --- | --- | --- | --- | --- | --- |
| 2 | **1(a)** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **1(b)** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **2** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **3** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **4** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **5** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **6** | 10/31/22 | SH | Fail | Minor | Left/right swipe between email pieces does not work | No – Will not be implemented |  |
| 2 | **7** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **8** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **9** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **10** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **11** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **12** | 10/31/22 | SH | Pass |  |  |  |  |
| 2 | **1(a)** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **1(b)** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **2** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **3** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **4** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **5** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **6** | 10/31/22 | MP | Fail | Minor | Left/right swipe between email pieces does not work | No – Will not be implemented |  |
| 2 | **7** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **8** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **9** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **10** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **11** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **12** | 10/31/22 | MP | Pass |  |  |  |  |
| 2 | **1(a)** | 11/1/22 | JB | Fail | Major | Does not work with Gmail on Android | No | Gmail defect will be deferred to future development |
| 2 | **1(b)** | 11/1/22 | JB | Fail | Major | Does not work with Gmail on Android | No | Gmail defect will be deferred to future development |
| 2 | **2** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **3** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **4** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **5** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **6** | 11/1/22 | JB | Fail | Minor | Left/right swipe between email pieces does not work | No – Will not be implemented |  |
| 2 | **7** | 11/1/22 | JB | Fail | Critical | Does not work with Gmail accounts on Android | No | Gmail defect will be deferred to future development |
| 2 | **8** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **9** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **10** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **11** | 11/1/22 | JB | Pass |  |  |  |  |
| 2 | **12** | 11/1/22 | JB | Pass |  |  |  |  |

Appendix - Document References

During the process of writing current TR the following documents were referenced:

* Team B. (2022). *United Global Master Coders Team B PMP*. <https://umgcdev361.sharepoint.com/:w:/r/sites/SWEN670Fall2022/Shared%20Documents/Team%20B%20Channel/Milestone%201%20(SAT%20SEP%203)/ProjectManager-Project-Plan-Template.docx?d=w671384dfe89d46d7a2583b60416fb909&csf=1&web=1&e=xeRN2o>
* Team B. (2022). *United Global Master Coders Team B SRS*. <https://umgcdev361.sharepoint.com/:w:/r/sites/SWEN670Fall2022/Shared%20Documents/Team%20B%20Channel/Milestone%201%20(SAT%20SEP%203)/Informed%20Delivery%20Enhancement%20Team%20B%20SRS.docx?d=w9b27ad03c5c145a09edc6b22427bc8ba&csf=1&web=1&e=85qCsH>
* Team B. (2022). *United Global Master Coders Team B STP*. <https://umgcdev361.sharepoint.com/:w:/r/sites/SWEN670Fall2022/Shared%20Documents/Team%20B%20Channel/Milestone%202%20(SAT%20SEP%2017)/STP%20-%20Team%20B%20-%20MSA.docx?d=w581cec4a88e24d8e89233ef490621b90&csf=1&web=1&e=ve7aLK>
* Team B. (2022). *United Global Master Coders Team B TDD*. <https://umgcdev361.sharepoint.com/:w:/r/sites/SWEN670Fall2022/Shared%20Documents/Team%20B%20Channel/Milestone%202%20(SAT%20SEP%2017)/TDD%20-%20Team%20B%20-%20MSA.docx?d=wf0a49ae72fc0497b9dfb0322352b8025&csf=1&web=1&e=fgAyQh>