Use Cases and Technical Specifications for DeliveryTracker™

A Mobile Communication Device Designed for Bicycle Couriers

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Physical Specifications

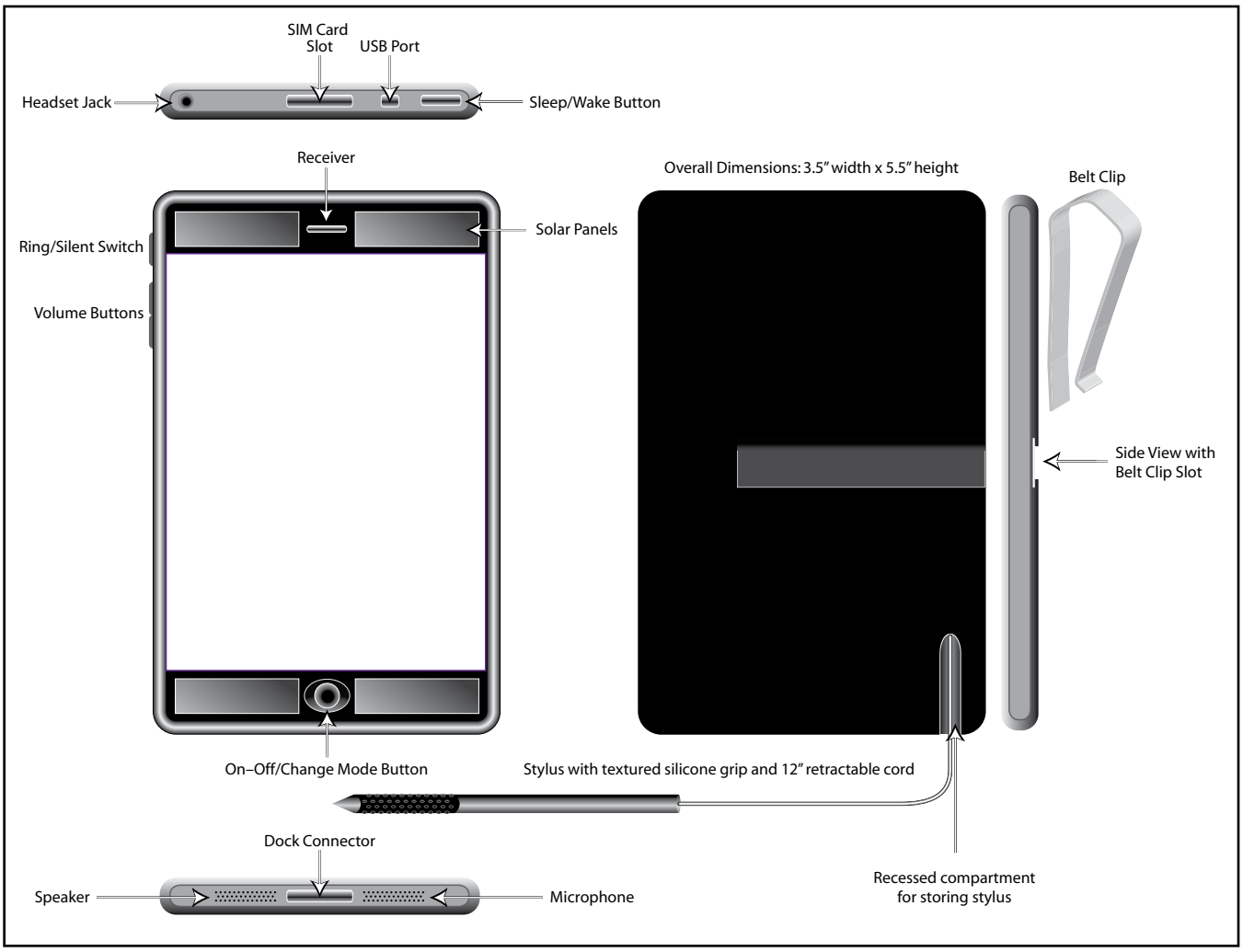

Figure 1. Device Physical Specifications

- Overall Device Dimensions: 3.5” width x 5.5” height
- Screen: 233 pixel width x 304 pixel height
  OLED display of hardened optical scratch-resistant glass and oleophobic coating to reduce smudging
- On-Off/Change Mode Button
  Toggles: “On,” > “GPS” > “Transaction” > “Desktop” > “Off”
- Sleep mode toggles between three states: bright, dim, and sleep (device is on but no display). When the user activates the device from “Sleep” mode, the device automatically refreshes with the last screen viewed.
- Headphones/Bluetooth Port
  Bluetooth headset with background noise reduction.
  Rubber sleeve surrounds connector to protect against moisture.
- Belt Clip
- Solar Panels

- USB Port
- Charger Dock
- Microphone/Speaker
- Stylus with 12” retractable cord. Pull gently to extend; again to retract.
- Device sensor determines that “up” is top so the device automatically adjusts for either horizontal or vertical display. 10-second time lapse for adjustment
- Bar-code scanner capability
- Signature recording capability. Will accept felt-tip pens for signatures in place of stylus.

Additional Accessories

- Watertight outer shell features include:
- Durable plastic case with clear cover over screen area that does not interfere with touch screen capability of device, and access panels for exterior controls
- Silicone bumper guard that fits over the watertight shell around corners and back to provide impact protection
- Slot for inserting belt clip
- Silicone covering to protect against impact if dropped
- Holder and handlebar mount allows the user to access the device while in transit
- Battery charging pack (watertight) that attaches to front wheel of bike for charging auxiliary battery.
- Velcro that wraps through the belt clip that attaches device to handlebar.

Global Technical Specifications

See *Local Technical Specifications* for more details.

GPS Mode
All of the following functions occur in GPS mode:

- Tracks courier along route
- Map function displays route and stops (default collapsed view).
- Turn-by-turn directions in both text and voice format.
- User can text enter destination information and obtain directions
- Text Message Alert Display

Transaction Mode
The user accesses the transaction details listed below. When users touch the “+” button, the section expands and the “+” button changes to a “–“ button. Users collapse each section by touching the “–“ button.

- ***Destination.*** Company name and address where pickup or delivery takes place
- ***Customer Information.*** Name and contact information of the initiator of the transaction.
- ***Transaction Type.*** One of the following options is indicated:
  - *Pickup*. If this is selected, the text for the other two options are displayed in a light gray color. Delivery information for item(s) picked up is provided.
  - *Delivery*. If this is selected, the text for the other two options are displayed in a light gray color. No other information is necessary.
  - *Other*. If this is selected, the text for the other two options are displayed in a light gray color. Two options for entering additional data are provided:

    Texting. If the user selects the “Text” tool, they are routed to the texting interface where they can enter data and click the “Save” button. A confirmation button appears informing the user that the information has been saved in the “Notes” section of the “Transaction Detail” interface. The user clicks the “Return to Transaction Detail” link and they are routed back to the previous “Transaction Detail” screen.

    Stylus. If the user selects the “Stylus” tool, a text input field expands and the user enters information using the stylus.
- ***Additional Requirements***. The following two options listed below are displayed with corresponding checkboxes:
  - Signature Required
  - Scan Bar Code

  When the checkbox for either one is selected, a field is expanded for completing the task. If both checkboxes are selected, a field for each option is displayed.

  Signature Required. Users select the checkbox labeled “Done” when they have collected the required signature. This activates a time stamp that is stored along with the signature. The following confirmation message appears informing the user that the signature has been recorded:

  “The signature you entered is saved!“

Scan Bar Code. The device “beeps” and the bar code is displayed when the bar code has successfully been recorded. The bar code is automatically saved so no further action by the user is necessary.

- ***Transaction Status***. The user completes this portion of the Transaction interface by selecting one of the following radio buttons. When one of these radio buttons is selected, a time stamp is automatically activated and stored along with the signature in the “Notes” section:
  - Completed. No further action is required.
  - Not Completed. If the user selects the “Not Completed” radio button, the following list is displayed with corresponding radio buttons:
  - NA (designated signer not available). The user selects this radio button if a signature is required in order to release the package and that signer is not available. When this button is selected, data fields appear for entering the date and time to return
  - NR (not ready). The user selects this radio button if the package was not ready to release. When this button is selected, data fields appear for entering the date and time to return.
  - X (cancelled). The initiator of the transaction cancelled the order.) Users can receive cancellation orders from the dispatcher via text, voice, or phone, or may arrive at the transaction site to find out that the order is cancelled.
  - AU (attempt unsuccessful). The user selects this radio button when any or both of the following criteria are true:
    - The user could not gain access to the transaction facility
    - No instructions to leave the delivery at the door were provided. In this case, the user posts a notice of the delivery/pickup attempt to the door.
  - Other. Two modes for entering additional data are provided:

    Texting. When the user clicks the “Text” tool, they are routed to the texting interface where they can enter data and click the “Save” button. A confirmation button appears informing the user that the information has been saved in the “Notes” section of the Transaction Detail” interface. The user clicks the “Return to Transaction Detail” link and they are routed back to the previous “Transaction Detail” screen.

    Stylus. The user writes the information in the designated field with the stylus. At any time, the user can select “Clear” to start over. When the user is done, they select the “Save” button to record and store the information. A confirmation message appears:

    “Your information has been saved!”
- Help. Online help is accessed from the desktop.

Use Case 1. Using DeliveryTracker™ to Complete a Pickup / Delivery Transaction

Description:

The DeliveryTracker™ is a dedicated mobile communication device that includes a portal interface designed to assist bicycle couriers with tasks along their delivery route. This device provides software and hardware features tailored to the needs of the bicycle courier. The following use case describes how couriers interact with the application's features to perform their job tasks. See *Interface Specifications* for technical details.

A description of hardware features is provided in the *Physical Specifications* section.

The DeliveryTracker™ provides three modes of operation:

1. **Desktop Mode** (Figures 2–4)
   The user accesses the following utility applications that are standard features on most mobile communication devices:

   - Phone
   - Email
   - Texting
   - Notes
   - Web Access
   - Help

   The user accesses either DeliveryTracker's GPS or Transaction modes in one of two ways:

   - *Control Panel links.* The user touches to select either GPS or Transaction mode.
   - *On-Off/Change Mode button.* Pressing this button toggles the user through the modes in the following order:

     On (defaults to Desktop mode) > GPS mode > Transaction mode > Off.

2. **GPS Mode (**Figures 5–9)
   - Displays a map of the route with markers indicating each stop along the route.
   - Provides turn-by-turn directions to each stop.
   - Allows headquarters to track the courier's progress so they can determine if new delivery/pickup requests can be accommodated and which courier to assign the new stop and users can follow their progress along the route.

3. **Transaction Mode (**Figures 10–21)
   - Provides details about each transaction that the user needs to know in order to successfully complete each transaction.
   - Allows the user to enter new information, collect a signature or scan a bar code when completing the transaction.

Actor: The bicycle courier for a bicycle delivery service, referred to hereon as the "user" in this narrative.

Precondition: The user leaves headquarters with the route information loaded into their DeliveryTracker™ device. The user is viewing the GPS interface.

Post-condition: The user has completed the first transaction successfully. The task flow is then repeated for each successive stop along the route.

Primary Scenario: The user utilizes features of the DeliveryTracker™ device to successfully complete a delivery/pickup transaction.

Primary Task Flow:

1. The user leaves headquarters with route and destinations programmed into the GPS program.
2. If desired, the user can mount the device to the bicycle handlebar and use the following GPS features to navigate through their route:
   - Voice directions typical of existing GPS devices.
   - Map displaying numbered markers that represent the sequence of scheduled stops.
   - If desired, the user selects the slider bar located at the far right of the screen to expand the turn-by-turn text directions.
3. When users arrive at a destination, they touch that destination's marker icon to view the Transaction mode. The following sections are displayed in a collapsed menu:
   - Destination. Lists the company name and address for destination.
   - Customer Information. Lists name and contact information for the initiator of the transaction request.
   - Transaction Type. Informs the user whether it is a pickup or delivery.
   - Additional Requirements. The user views whether a signature or bar code scan is required.
   - Transaction Status. The user indicates whether the transaction was successful or unsuccessful.
   - Notes. The user enters other details regarding the transaction in this section.
4. While the user completes the pick-up/delivery transaction, they update the transaction detail database:
   a. If a designated signature is required, the user collects the signature from the designated individual.
   b. If a non-designated signature is required, the user text enters the name of the signer, then collects the signature.
   c. The user scans the bar code in the designated area if required.

d. The user indicates the transaction status as either successful or unsuccessful. When the user indicates the status, a time/date stamp is automatically entered into the database for that transaction.

e. If the user indicates that the transaction was unsuccessful, the following checklist expands and the user chooses one of the following codes depending on the reason the transaction was unsuccessful:

- NA (not available) = Designated signer was not available.
- NR (not ready) = Package not ready. Fields for the user to enter the time and date for the return visit appear.
- X (cancelled) = Request was cancelled by the customer.
- AU (attempt unsuccessful) = Could not gain access and no instructions to leave the delivery at the door, so the user posts a notice of delivery/pickup attempt on the door.

f. During the transaction, if the customer requests to schedule a new delivery/pickup, the user collects the new request data from the customer and sends it to headquarters where the order is processed and added to the schedule.

5. The user touches the “GPS” link in the control panel to view the next stop.

6. The user taps the marker for the next stop 2 times, and the device displays the turn-by-turn directions in the text portion of the GPS interface.

7. The user repeats steps 2–6 to proceed to the next stops on the route.

Alternate Scenario 1: A new destination has been added. A new marker appears in sequence with the order in which the user is to complete the updated route. The device beeps and the marker for the added destination flashes until the user taps the icon two times to acknowledge.

Alternate Task Flow 1:

1. The user notices that a new destination has been added and acknowledges notification of the amended route by tapping the flashing marker icon two times.

2–7. Task flow is identical to *Primary Task Flow*.

Alternate Scenario 2: The user receives an alert while on route. An alert can occur for the following reasons:

- A new destination has been added and additional instructions are necessary
- A stop has been cancelled
- A stop has been rescheduled (earlier or later)
- A scheduled stop that was not urgent is now urgent so the destination sequence has been rearranged.
- A transaction detail for a previous stop was overlooked and therefore not completed requiring a return visit.

Alternate Task Flow 2:

1. The user receives a text message alert. A text message window appears at the top of the GPS display.
2. The device beeps until the user acknowledges the alert.
3. The user taps the text message window two times to acknowledge they have received the text message.
4. If a reply is requested, a button is provided for the user to switch to reply mode if a return text message is requested.

5–10. The user proceeds with steps 2–7 of the *Primary Task Flow*.

Alternate Scenario 3: The user needs to change the sequence of stops along the route for some reason.

Alternate Task Flow 3:

1. The user calls the dispatcher at headquarters to get a revised route.
2. The revised route is sent to the user and the route and all corresponding transaction data is automatically updated.

3–8. The user proceeds with steps 2–7 of the *Primary Task Flow* for the updated route.

Alternate Scenario 4: The user has not entered required data into the Transaction interface.

Alternate Task Flow 4:

1–5. Task flow is identical to *Primary Task Flow*.

6. An error message appears indicating the missing detail.
7. The user completes the missing information in the Transaction interface.
8. The user repeats step 5 of the *Primary Task Flow*.

9–10. The user proceeds with steps 6–7 of the *Primary Task Flow*.

Alternate Scenario 5: The user activates a different mode by mistake and needs to return to the desired mode.

Alternate Task Flow 5:

1.a. The user toggles the On-Off/Change Mode button located on the front of the device

OR

1.b. The user accesses the desired mode from the control panel.

Use Case 2. Scheduling a New Pickup / Delivery Transaction

Description: A customer has just requested to schedule a new pickup/delivery transaction.

Actors: The bicycle courier for a bicycle delivery service, and a customer who has just requested a new request to schedule a pickup or delivery.

Precondition: While completing a transaction, the customer has requested to schedule a new pickup or delivery. The user has accessed the “Transaction” interface and is completing the already scheduled transaction.

Post-condition: The user has successfully entered the data for the new transaction and is ready to proceed to the next stop.

Primary Scenario: The user successfully collects the new transaction data from the customer and enters it into the Notes section of the Transaction interface.

Primary Task Flow:

1. From the Transaction interface, the user expands the “Notes” section.
2. The user touches the “Schedule New Request” link to activate. A text input field appears. The customer’s name, billing address, and phone number are automatically filled in.
3. The user enters the destination information in one of two ways:
    a. *Texting.* If the user selects the “Texting” icon, they are routed to a texting interface where they navigates through a series of texting screens to complete entering all the data. When the user has completed all necessary information, they select the “Save” button and the data is stored.
    b. *Stylus.* The user chooses the stylus icon and uses the stylus to enter the destination information directly into the device. When they are done, they touch the “Save” button to and store the information they entered.
4. When the information has been entered and stored, a confirmation message appears:

    “Your new transaction data has been saved.”

Data Display

Control Panel
By default, the control panel is displayed in the expanded view (Figure 2) and is available in all 3 interfaces: Desktop, GPS, and Transaction. The following elements are displayed:

The Navigational Area is displayed with a dark background. Links for the non-active interfaces are grouped in this darker background area and are displayed with underline text decoration to indicate they are clickable.

The Active Interface Area is displayed with a light background. The active interface title is displayed in bold text and the link is disabled. The control tools are all located to the right of the interface title, from left to right:

- Back button: Routes the user sequentially through the previous screens viewed.
- Forward button. Routes the user forward sequentially when navigating the most current screen viewed.
- Current time is displayed in X:XX AM or X:XX PM. This element is collapsed when the device is viewed vertically.
- Zoom. The user clicks the “+” button to zoom in for an enlarged view; and clicks the “–“ button to shrink the view.
- Text. When the user clicks the “Text” icon the user is routed to the texting interface (see Figure 4).
- Sound. When the user clicks the “Sound” icon a slider appears and the user adjusts the sound by moving the slider up for louder and down for softer.
- Close Button. When the user clicks the “Minimize” button, the control panel is minimized and displays only the current time (Figure 3). From the collapsed view, the user clicks the “+”button and the control expands to display all the above elements.

Desktop Mode (Figures 2–4)
By default the Desktop mode is displayed when the user turns on the device. These utility applications standard on most mobile communication devices can be activated from this mode:

- Phone
- Email
- Texting (as shown in Figure 4).
- Notes
- Help. This section provides online help and FAQs specifically for the DeliveryTracker™ application.
- Internet Access (www).

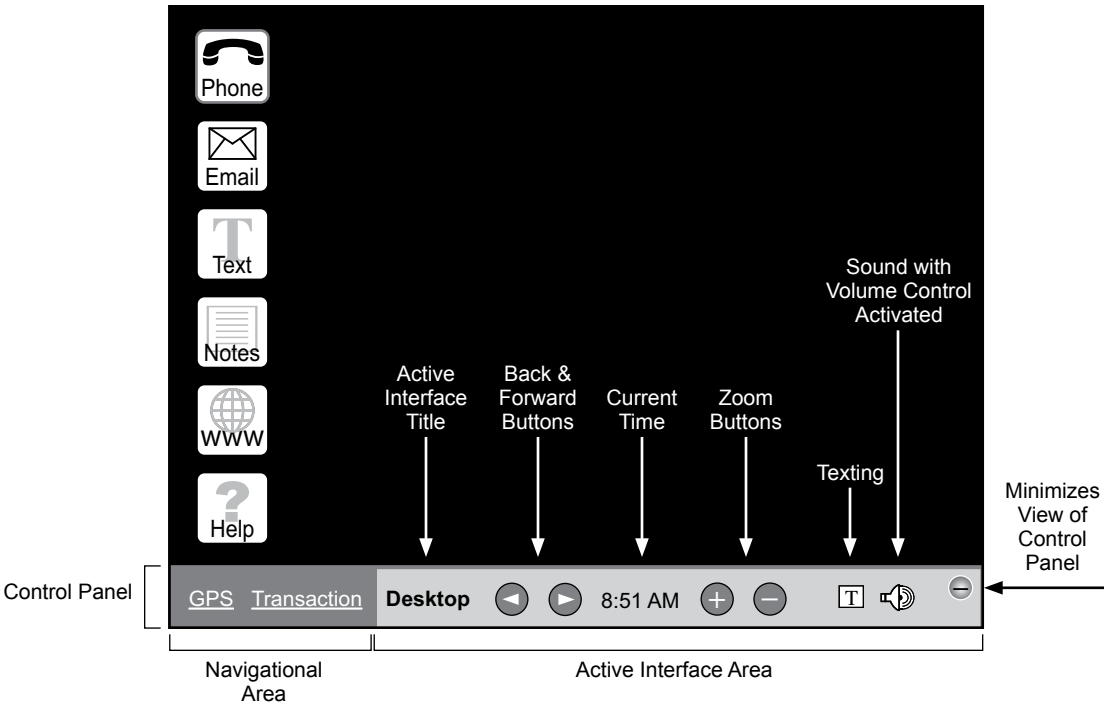

Figure 2. Default Desktop Mode

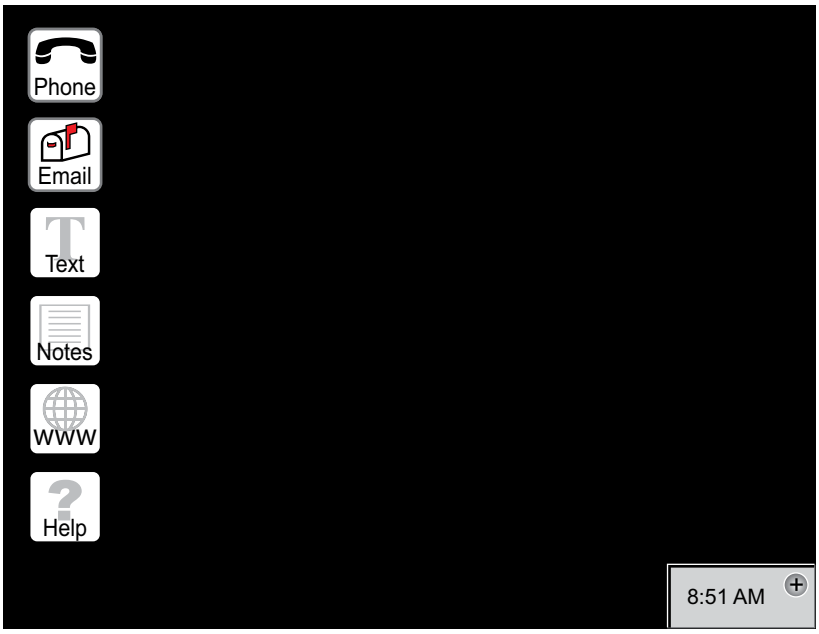

Figure 3. Desktop Mode Showing New Email in InBox and Control Panel Collapsed

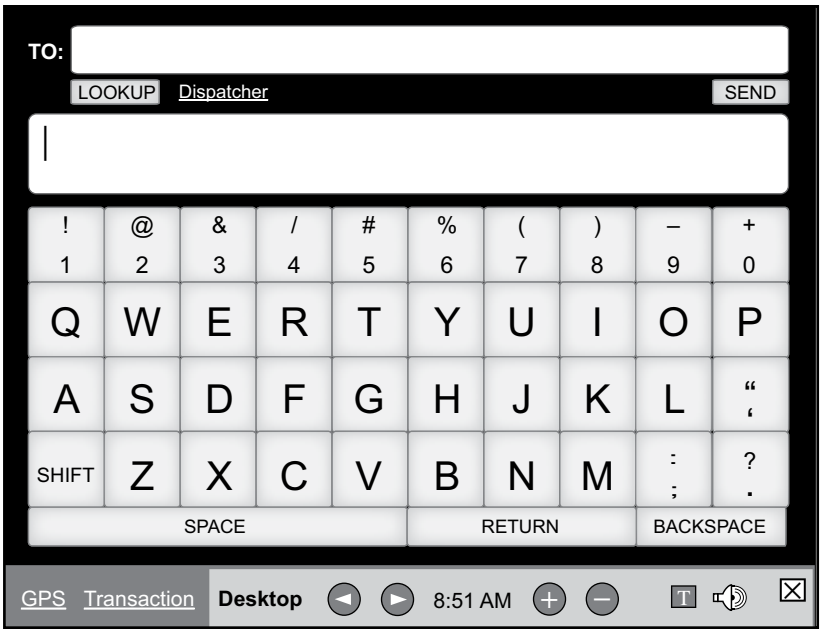

Figure 4. Desktop Mode, Text Message Interface

GPS Mode

By default, the GPS interface displays the map for the current route (see Figure 5). The route is highlighted and numbered markers indicate the sequence of scheduled stops. There is also a marker that indicates the user's current location. This marker updates every 15 seconds as the user progresses through their route. During the course of the day, a dispatcher from headquarters also follows the user's progress so that they can make adjustments to the route as needed and so that if new transaction requests come in, the dispatcher can assign them to the appropriate courier.

In addition to the map, the user can access turn-by-turn directions by moving the slider at the far left to the desired position. As the user moves the slider, the text directions text wrap to the available width and the map adjusts to display the user's location and the next section of their route (See Figure 6). Screen refresh to accommodate these actions occurs every 5–10 seconds.

The current portion of the text directions is displayed in black text. All previous and future portions are displayed in a light gray color.

The text directions area also displays a link where users can obtain new route information. When clicked the user is routed to a text interface that allows them to enter the start and finish destinations of the route they want to view (see Figure 7).

- Markers are displayed with the number in the sequence of stops for the route.
- A normal request is displayed in a turquoise color.
- A red marker signifies an urgent request.
- When a destination has been added, the user is notified by the following prompts:

  A flashing yellow marker appears on the GPS map and the device beeps. The user acknowledges the route adjustment by tapping the marker two times. If the user fails to respond within 5–10 minutes, a text message also appears at the top of the screen (see Figure 8). The user acknowledges the route adjustment by tapping the "close" button in the text message window two times. If desired, instead of selecting the "close button, the user can return a text message by selecting the "Texting" icon in the message window.

Alert Messages

The dispatcher can send the courier an alert message. If the message indicates that a response is required, the "Text" icon is displayed. If the message indicates the user must call the dispatcher a link is included that automatically dials the dispatcher's number when the user selects by touching it.

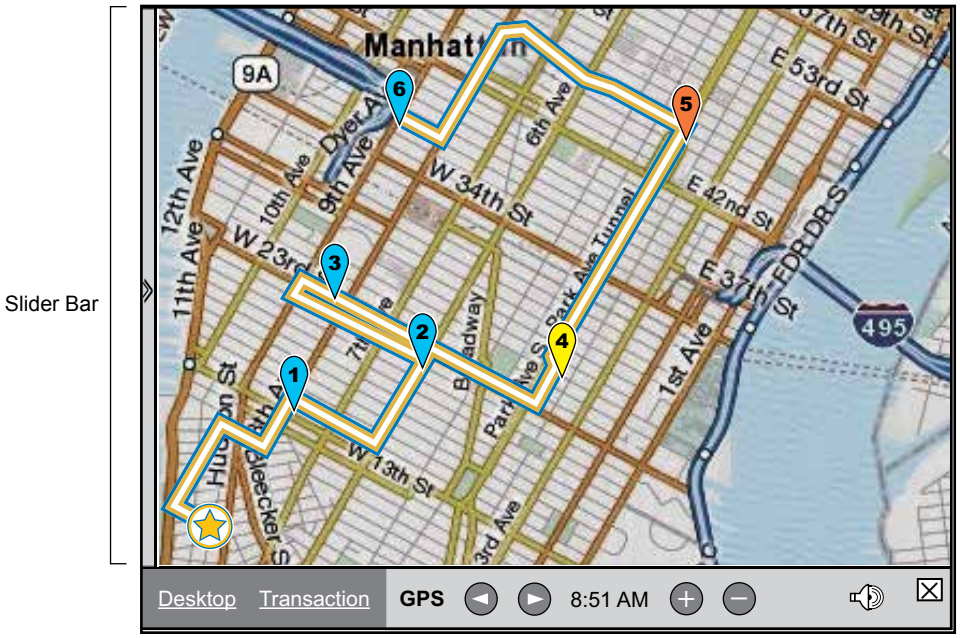

Figure 5. GPS Default Screen

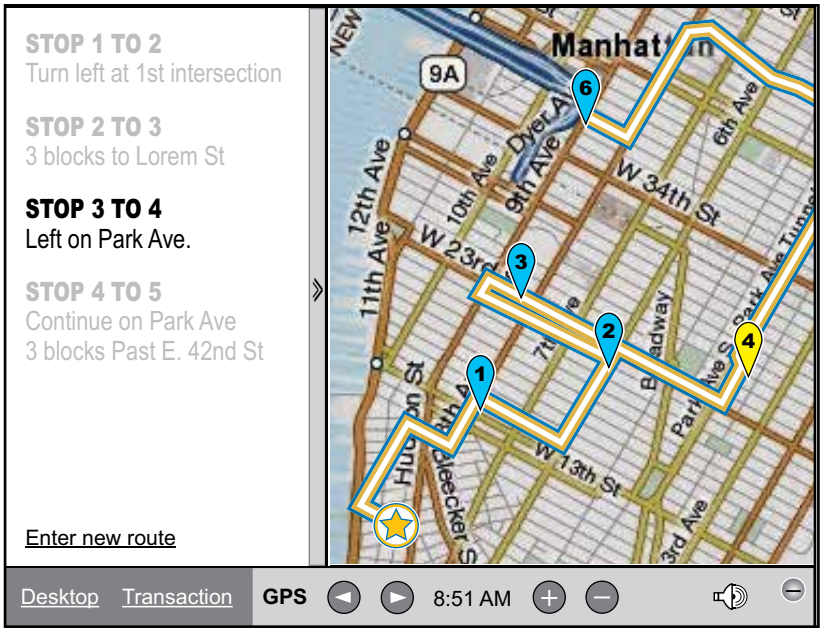

Figure 6. GPS Mode with Turn-by-Turn Directions Expanded

Figure 7. GPS Mode with Enter New Route Interface

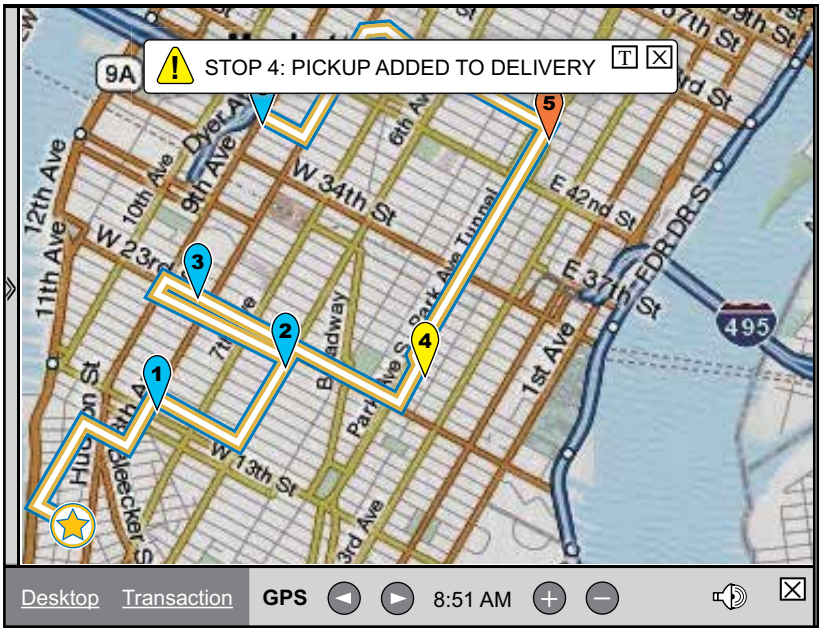

Figure 8. GPS Mode with Alert Message Display

Figure 9. GPS Mode with Urgent Message Display

Transaction Mode
When the user has arrived at one of the transaction locations, they complete the transaction by accessing the Transaction interface. By default, all sections of the Transaction interface are collapsed (see Figure 10). The user sequentially accesses each of the following sections of the interface to complete the transaction:

Destination (Figure 11).

- By default, the user views the information for the current transaction:
- The user verifies that the company name and address matches their current location. If there is a specific individual they need to report to, that information is also listed.
- If the user wishes to view the entire menu of transactions, they click the “View All” link (Figure 12).

Customer Information (Figure 13)
This section contains information regarding the initiator of the transaction request. This allows the user to contact the initiator if there are questions or problems with the transaction request that need to be clarified or resolved. The initiator’s preferred phone number is displayed as a text link indicated with underline text decoration that will automatically dial the number when the user selects it.

Transaction Type (Figure 14)
This section informs the user whether the transaction is a pickup or delivery. The transaction type is displayed in black text with the radio button selected and the other options are displayed in a light gray color and cannot be selected or clicked. If the transaction is a pickup, the address of the delivery destination is included.

Additional Requirements (Figure 16)
The checkboxes for Signature Required or Scan Bar Code cannot be selected or clicked, and are meant only to indicate to the user what, if any, the requirements are.

If no signature or bar code scanned is required, the checkboxes for “Signature Required” and “Bar Code” are unselected and the text is displayed in a light gray color and cannot be selected or clicked.

If either or both conditions are required, the checkbox is selected and an interface area is designated to collect the signature and/or scan the bar code.

When a signature is required:

- The designated signer is listed, or “None” is listed as the signer if anyone can sign.
- If anyone can sign, the user must first text enter the signer’s name by clicking the “Text” icon. The user is routed to a texting interface (Figure 16) where they enter first and last name.
- The user clicks the “Save” button and they are routed back to the “Additional Requirements” screen.
- The signer uses the stylus to enter their signature. As they complete their signature, the signature appears in the signature field. The signer then selects the “Done” checkbox and a confirmation message appears:

  “Your signature has been saved!”

When a bar code scan is required:

- The user scans the bar code across the scanning area. The device beeps and the bar code appears in the scanning field if the scan is successful. The scan is automatically saved. No further action is required.

Transaction Status (Figure 17)

- The user selects either the “Successful” or Unsuccessful” radio button.
- If the user selects “unsuccessful” the following list with radio button selectors appears (see page 5 for details regarding each selection):
  - NA
  - NR
  - X
  - AU
  - Other
  - Notes

Notes (Figures 18–21)
The user accesses this section to enter data for the tasks listed below:

- The user enters general data along their route
- The user records notes specific to a single transaction
- The user schedules a new request (Figure 21)

The user selects either the “texting” (Figure 19) or “stylus” (Figure 20) icon to choose their preferred method for entering data.

If texting is selected, the user is routed to the texting interface where they enter their note data. If stylus is selected, the user completes their note in the text input field provided. In both cases, a “Save” button is provided that saves the information in the “Notes” application on the desktop.

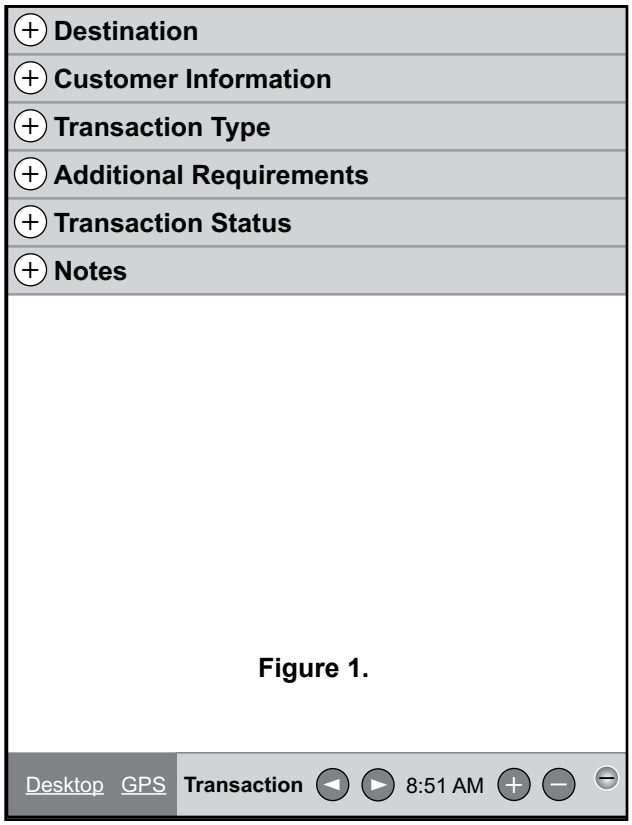

Figure 10. Transaction Mode Collapsed View

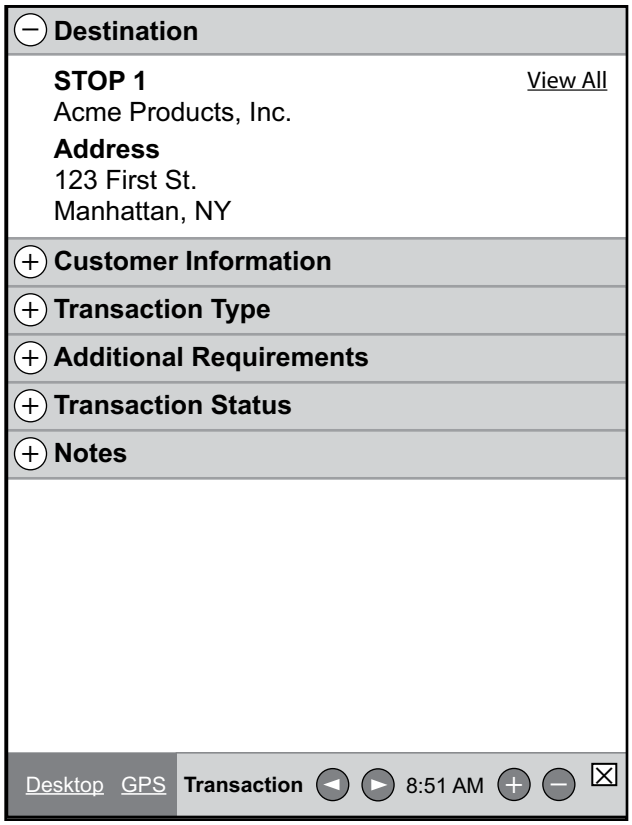

Figure 11. Transaction Mode with Destination Section Expanded

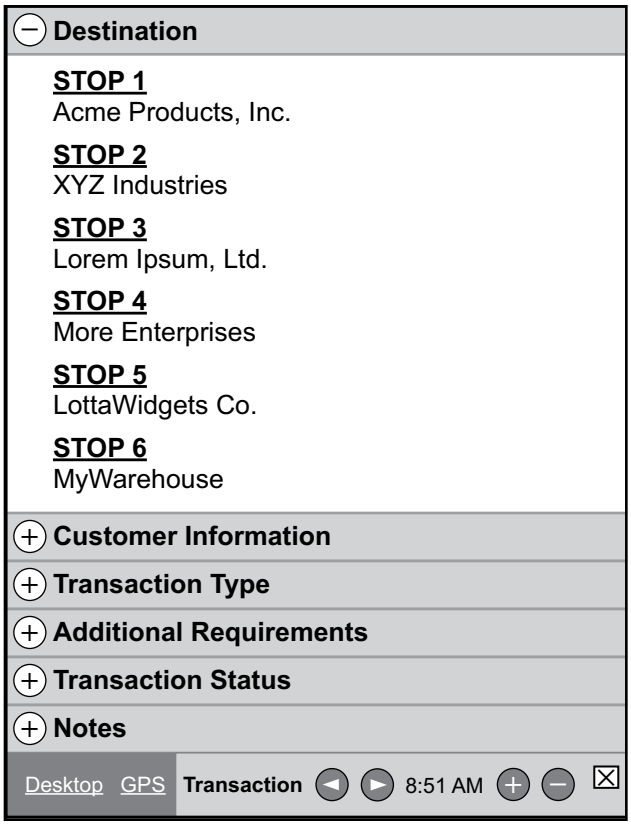

Figure 12. Transaction Mode with “View All” Display

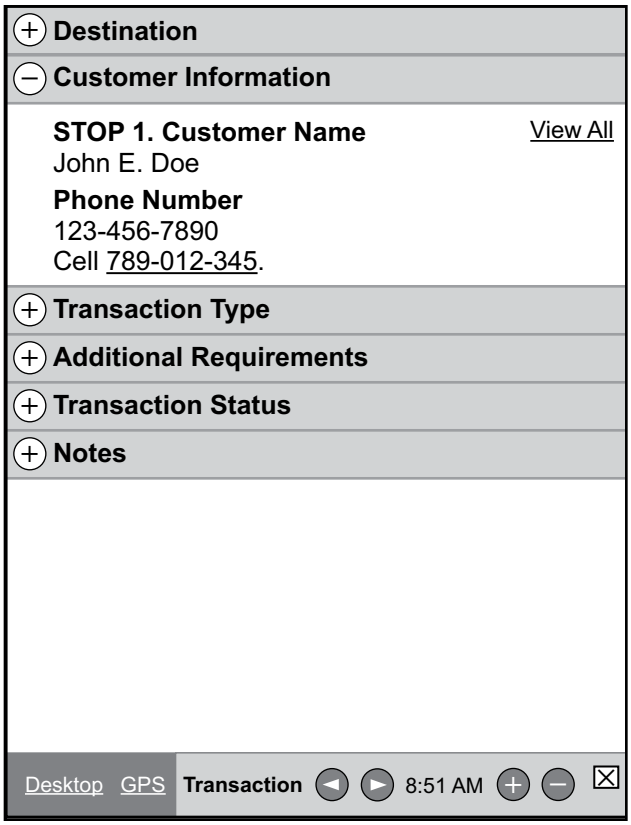

Figure 13. Transaction Mode with Customer Information Section Expanded

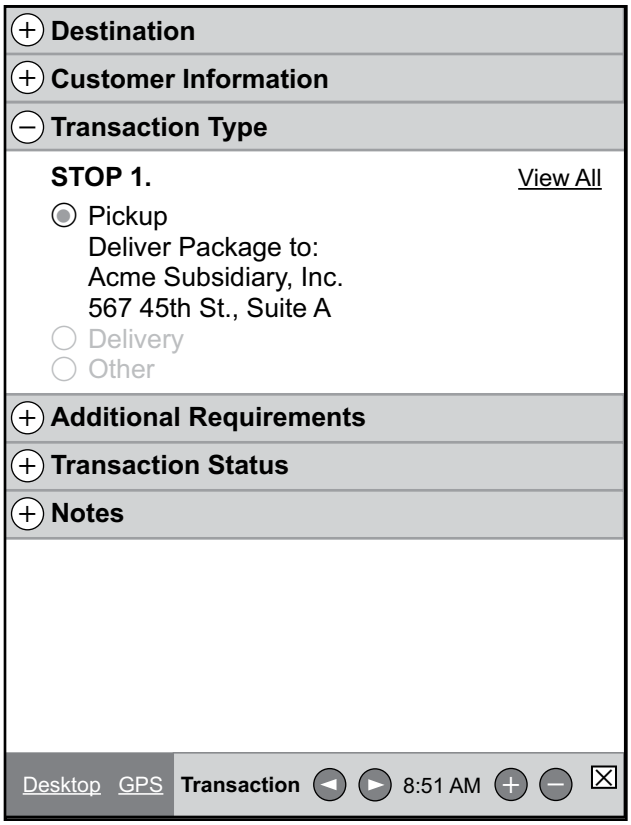

Figure 14. Transaction Mode with Transaction Type Section Expanded with “Pickup” Selected

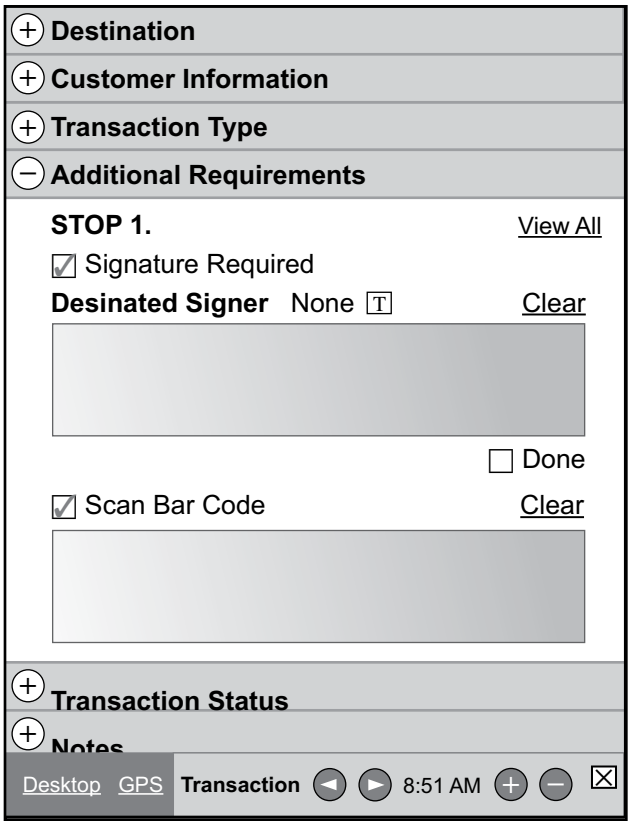

Figure 15. Transaction Mode with Additional Requirements Section Expanded

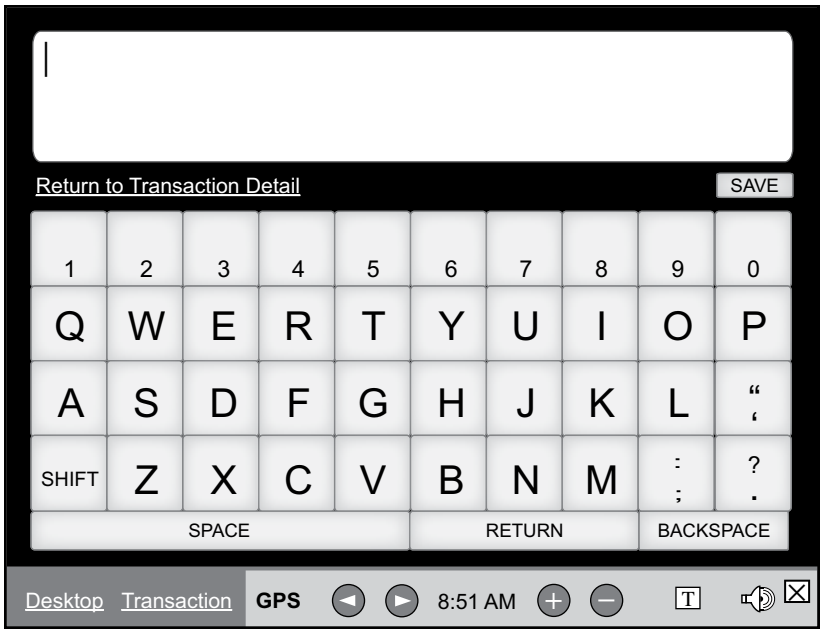

Figure 16. Transaction Mode with Text Interface Display

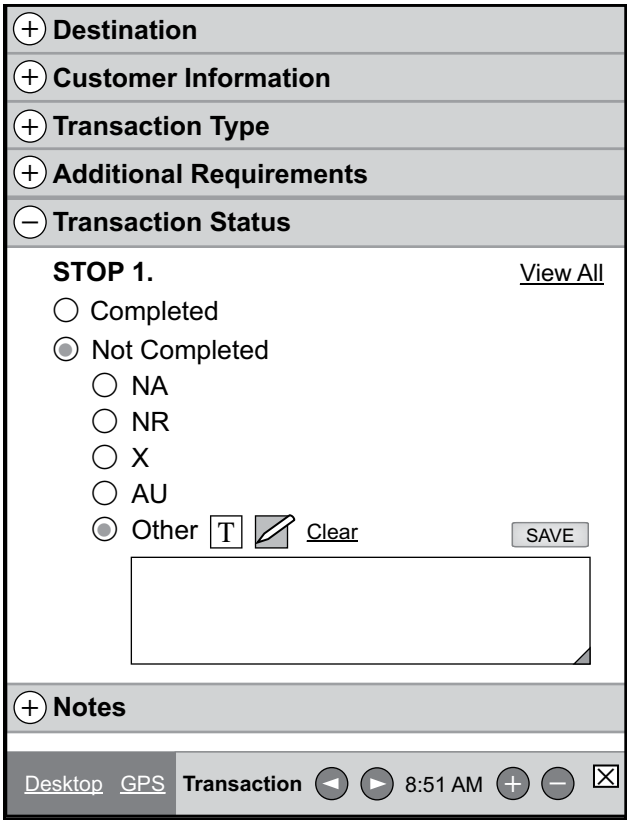

Figure 17. Transaction Mode with Transaction Status Section Expanded

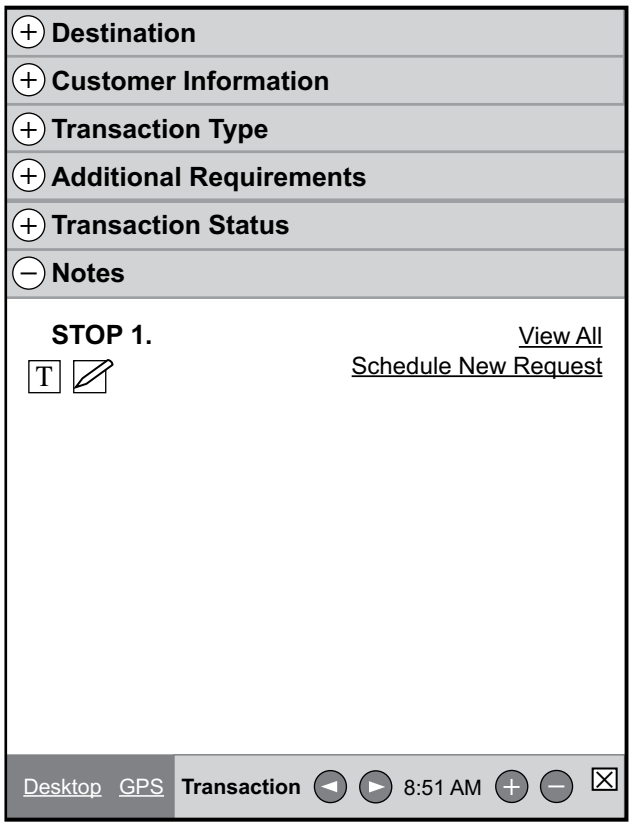

Figure 18. Transaction Mode with Notes Section Expanded

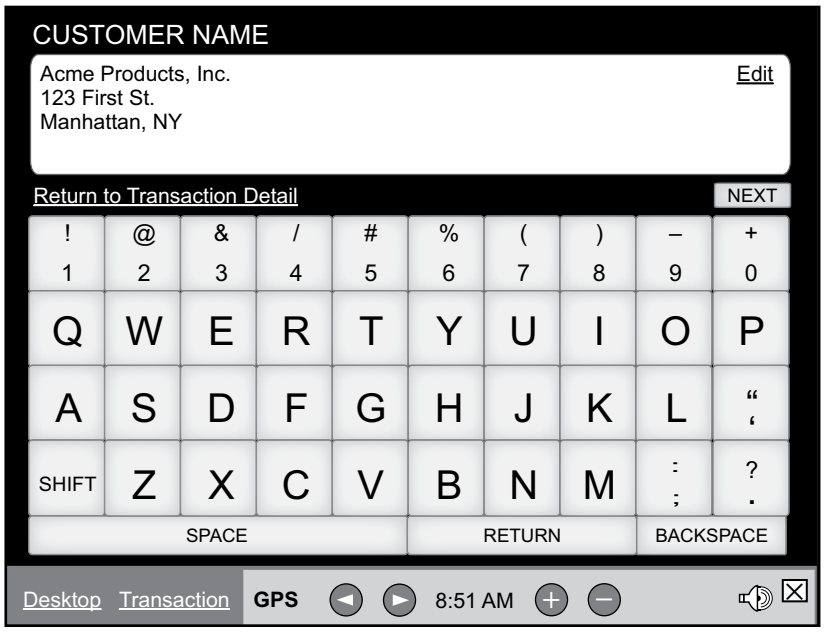

Figure 19. Transaction Mode with Notes Section Expanded with Texting Selected

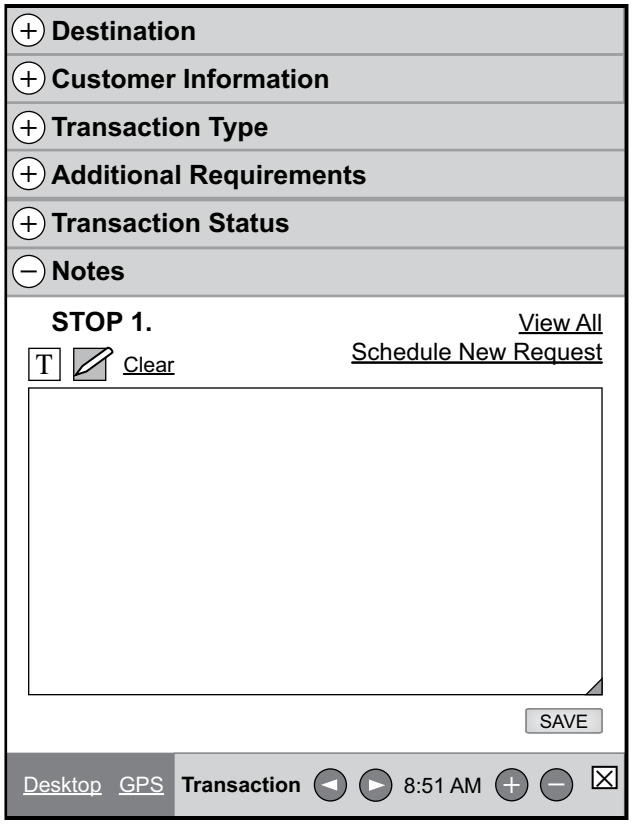

Figure 20. Transaction Mode with Notes Section Expanded with Stylus Selected

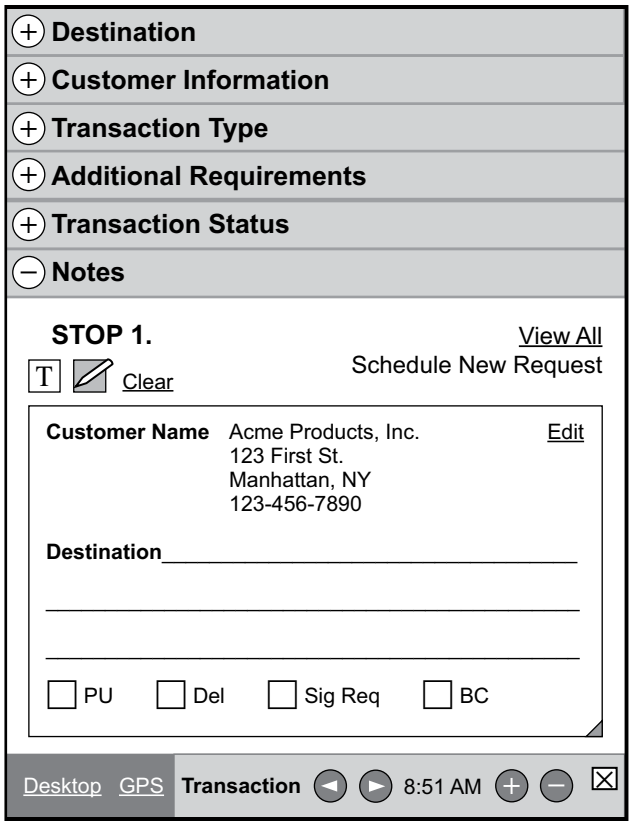

Figure 21. Transaction Mode with Schedule New Request—Stylus Selected

Data Handling

Autocomplete
JavaScript autocomplete is used in the following instances:

- Texting (Figure 4). As the user enters text into the text input area, a drop down menu displays options that the user can then select without having to enter the entire text.
- Entering New Route (Figure7). Text for the nearest cross street automatically appears in the “From” text input window.
- Scheduling New Request. The customer name and address for the transaction in process is already entered in the texting interface for scheduling a new transaction request. The user clicks the “Edit” link to delete the text and enter new information.

Expand/Collapse
The Transaction Interface uses an expand/collapse interface. Figure 10 shows the collapsed view. Figures 11–21 show the expanded view for each section.

Hypertext Links
All hypertext links are displayed with underline text decoration. Some hypertext links route users to new screens whereas some will complete a function, such as dial a phone number or clear a text input field.

Buttons
Buttons are used to perform certain functions:

- Save (saves the data to the appropriate section of the interface.
- Send (sends text or email messages)
- Lookup (used in the texting interface to route users to their address book.
- Icons
- Icons are used to display “Texting” and “Stylus” options for entering data.
- The following buttons are also used in the control panel:
  - Back
  - Forward
  - Zoom (“+” and “–”)

Form Fields
All form elements are displayed with standard HTML form control appearance unless otherwise noted. The following form elements are displayed throughout:

Checkboxes
The following checkbox selections are not editable by the user:

- Signature Required
- Scan Bar Code

All other checkboxes can be selected and deselected by the user.

Radio Buttons

The following radio buttons are not editable by the user.

• Transaction Type

All other radio buttons can be selected and deselected by the user.

Text Input Fields

Text input fields can be expanded touching the expanding triangle located in the lower right of the form element and dragging to expand. As the user is dragging, the screen scrolls to accommodate the enlarged field.