



STC

Southeastern Transportation Center

HazMat Shipment Tracking: e-HM Initiative

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e-HM Initiative Consortium

OHMS Research and Development Forum

US Department of Transportation

Washington, DC

April 16, 2015



Background

- Serious impediments to HazMat shipments
 - Discrepancies in information
 - Time lags in physical transfer of info between partners
 - Implications for emergency response
- Need: electronically manage and track HM shipments
 - HazMat Automated Cargo Communication for Efficient and Safe Shipments (HM-ACCESS)
- “Moving Ahead for Progress in the 21st Century Act” (MAP-21)
 - Directed that pilot test(s) to be conducted

e-HM Initiative Consortium

- Goal: to develop and demonstrate a proof-of-the-concept for an e-HM system
- Pilot tests to demonstrate how software, cloud computing and communications hardware can be used to:
 - Improve data availability and accuracy related to quantities and types of HM shipments
 - Improve the accuracy and speed of information accessible to emergency responders
 - Improve the availability of information needed by enforcement personnel
 - Communicate up-to-date information about packages in transit
 - Reduce the impact of delayed response including more effective remediation
 - Reduce adverse impacts to commerce and society (i.e., traffic congestion)

Participating Organizations

- University of Tennessee
- Label Master
- Blue Dot Solutions
- American Trucking Associations
- CHEMTREC
- Commercial Vehicle Safety Alliance
- Eastman Chemical Company
- FedEx
- International Association of Fire Chiefs
- Pilot / Flying J
- National Tank Truck Carriers
- OmniTracs
- ORNL
- UPS

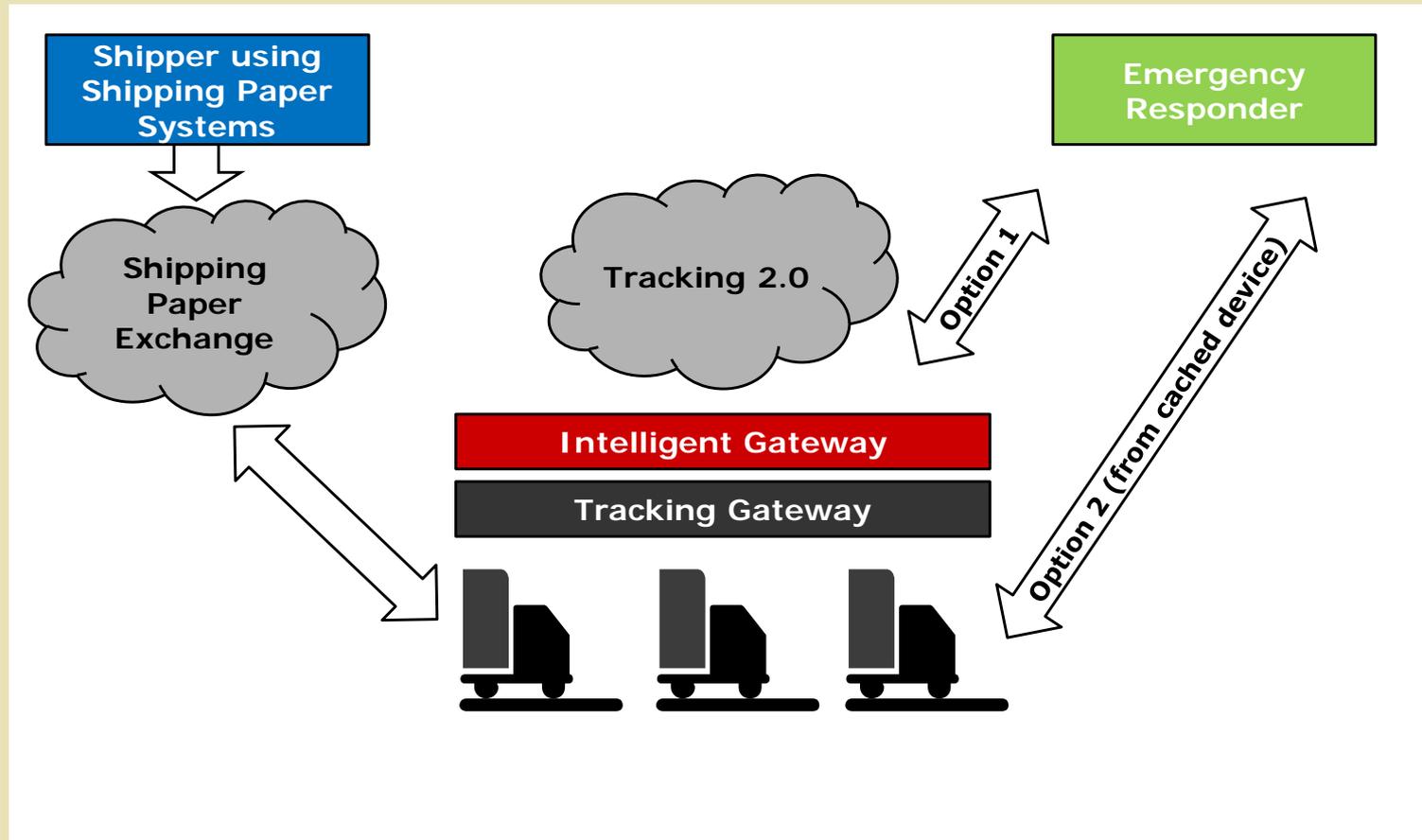
Ultimate Goal

- Amend HazMat regulations for all modes of transport to authorize the use of electronic shipping papers
- To promote the use of technologies to enhance
 - Safety and security
 - Response to incidents
 - Compliance assessments
 - Traceability of HazMat shipments
- To leverage and promote the use of technologies that can enhance safe and efficient transport of HazMat

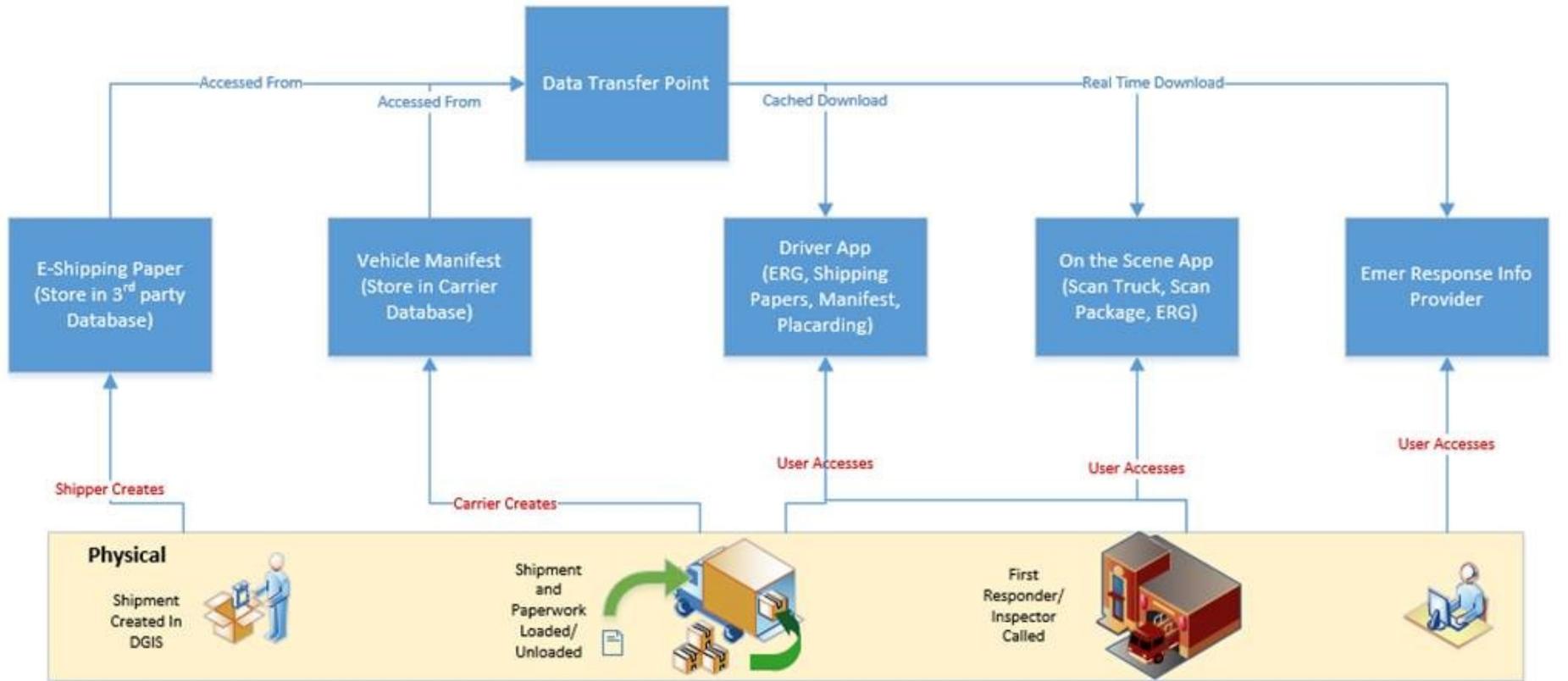
e-HM Initiative

CONCEPT OVERVIEW

Concept Overview



Concept Overview



Demonstration Scenario

ELECTRONIC SHIPPING PAPERS (e.g., DGIS SHIPMENT)



Shipment

Current Shipment
Overpack [123]
Package - Fibreboard Box (4G)
UN1263, Paint, 3, III
UN1263, Paint related material, 3, III

Manage Overpack
Manage Shipment Collections

Drafts (47)

Manage

History
Templates
Package Marking Settings

Print

Shipments
Certifications
Package Markings
Shipment Collections

Tools

Address Book
Advanced Alignment
Report Layout Editor
Integration

Actions: **New** **Add Material** Save template Save Draft Complete

Regulation: 49 CFR
Form Type: FedEx Laser
Carrier: Federal Express
Transport Mode: Ground
[Add Carrier](#)

Shipper [Look up](#)
Reference:
[Find](#)
Name: Labelmaster
Address Info: 5724 N. Pulaski Rd
City: Chicago State: IL
Postal Code: 60646 Country: U.S.A.
Phone: 888-123-1245

Consignee [Look up](#)
Reference:
[Find](#)
Name: University of Tennessee
Address Info: 600 Henley St
City: Knoxville State: TN
Postal Code: 37996 Country: U.S.A.
Phone: 888-333-5555



Account Number: HM Access
Emergency Contact: Chemtrec
Emergency Contact Phone: 800-911-9111
Contract: contract field
Shipment Date: 09/22/2014
Signature:

REMOVE THIS COPY AND
APPLY TO PACKAGE

Account Number
HM Access

Emergency Contact Number
Dom 60291911178
+35319119111

Shipper Name
Chemtec

Tracking ID

Hazardous Materials Description and Quantity
UN1263, Paint (Mineral Spirits), 3, III
4 L
UN1263, Paint related material (Mineral Spirits), 3, III
4 L
All packed in one Fibreboard Box
Flammable Liquid
OVERPACK USED (1)

This is to certify that the above-named materials are properly classified, described, packaged, marked and labeled, and are in proper condition for transportation according to the applicable regulations of the Department of Transportation.

Signature _____ Date 8/11/2014



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HAZARDOUS MATERIALS
SHIPPING PAPER

HAZARDOUS MATERIALS
SHIPPING PAPER

SHIPPER COPY

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HAZARDOUS MATERIALS
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DRIVER COPY

COPY

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2012 Emergency Response Guide for ID Number 1263

ID Number Index

(TIH-Toxic Inhalation Hazard, WR-Water Reactive Gase: Produced)

ID No.	Name of Material	TIH	WR
1263 128	Paint (flammable)		
1263 128	Paint related material (flammable)		

GUIDE 128 Flammable Liquids (Non-Polar/Water-Immiscible)

ERG
2012

POTENTIAL HAZARDS

FIRE OR EXPLOSION

- **HIGHLY FLAMMABLE: Will be easily ignited by heat, sparks or flames.**
- Vapors may form explosive mixtures with air.
- Vapors may travel to source of ignition and flash back.
- Most vapors are heavier than air. They will spread along ground and collect in low or confined areas (sewers, basements, tanks).
- Vapor explosion hazard indoors, outdoors or in sewers.
- Those substances designated with a (P) may polymerize explosively when heated or involved in a fire.
- Runoff to sewer may create fire or explosion hazard.
- Containers may explode when heated.
- Many liquids are lighter than water.
- Substance may be transported hot.
- For UN3166, if Lithium ion batteries are involved, also consult GUIDE 147.
- **If molten aluminum is involved, refer to GUIDE 169.**

HEALTH

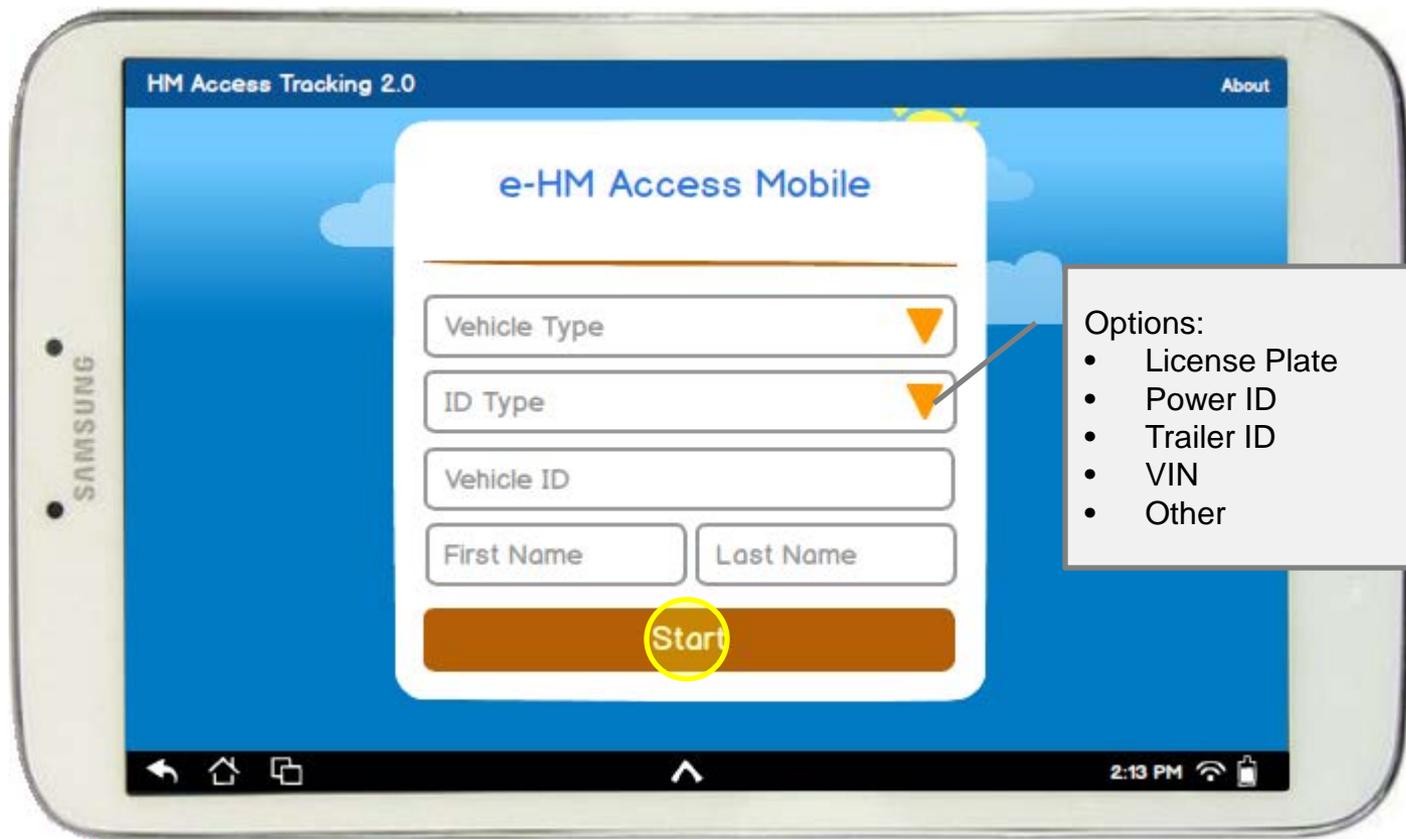
- Inhalation or contact with material may irritate or burn skin and eyes.
- Fire may produce irritating, corrosive and/or toxic gases.
- Vapors may cause dizziness or suffocation.
- Runoff from fire control or dilution water may cause pollution.

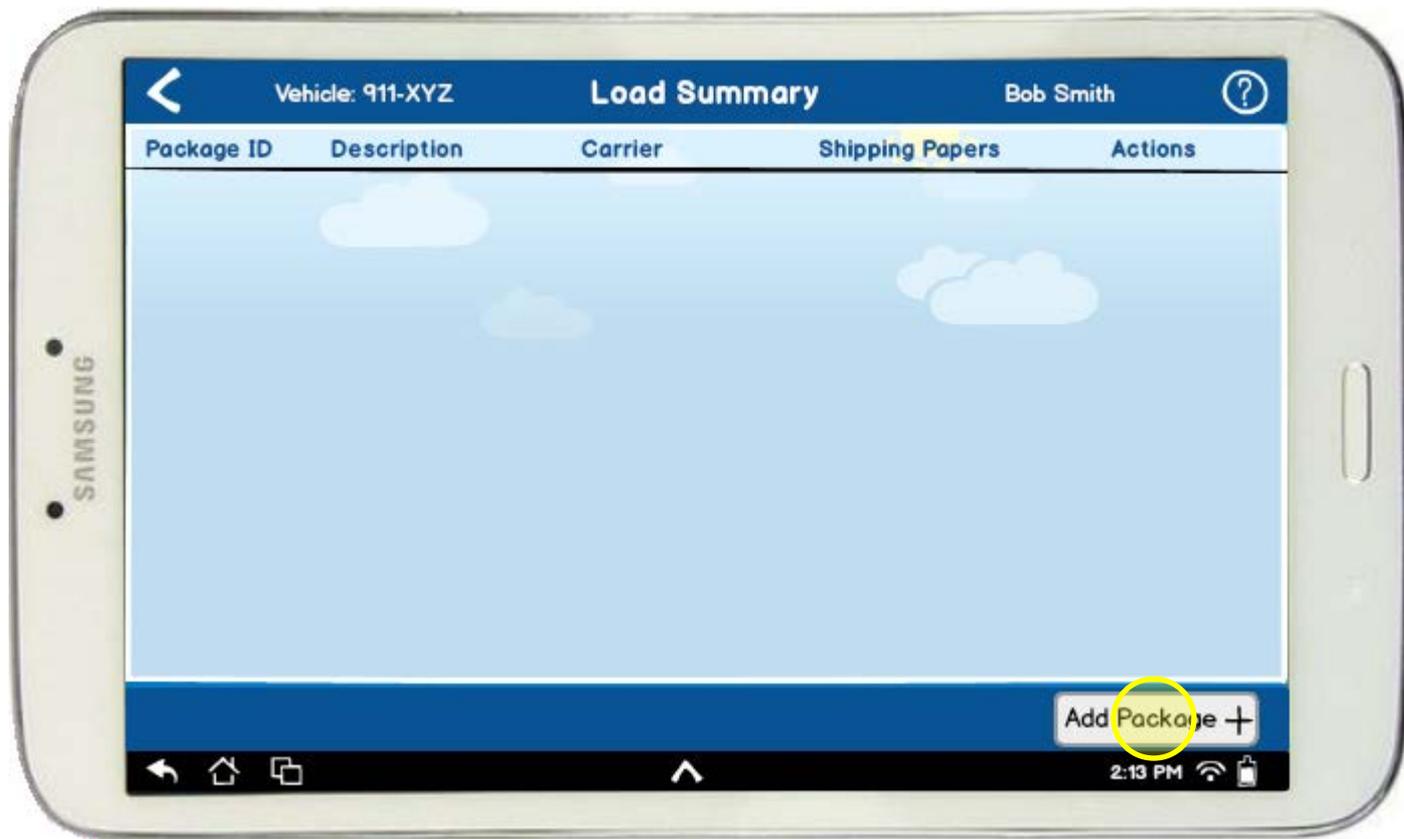
PUBLIC SAFETY

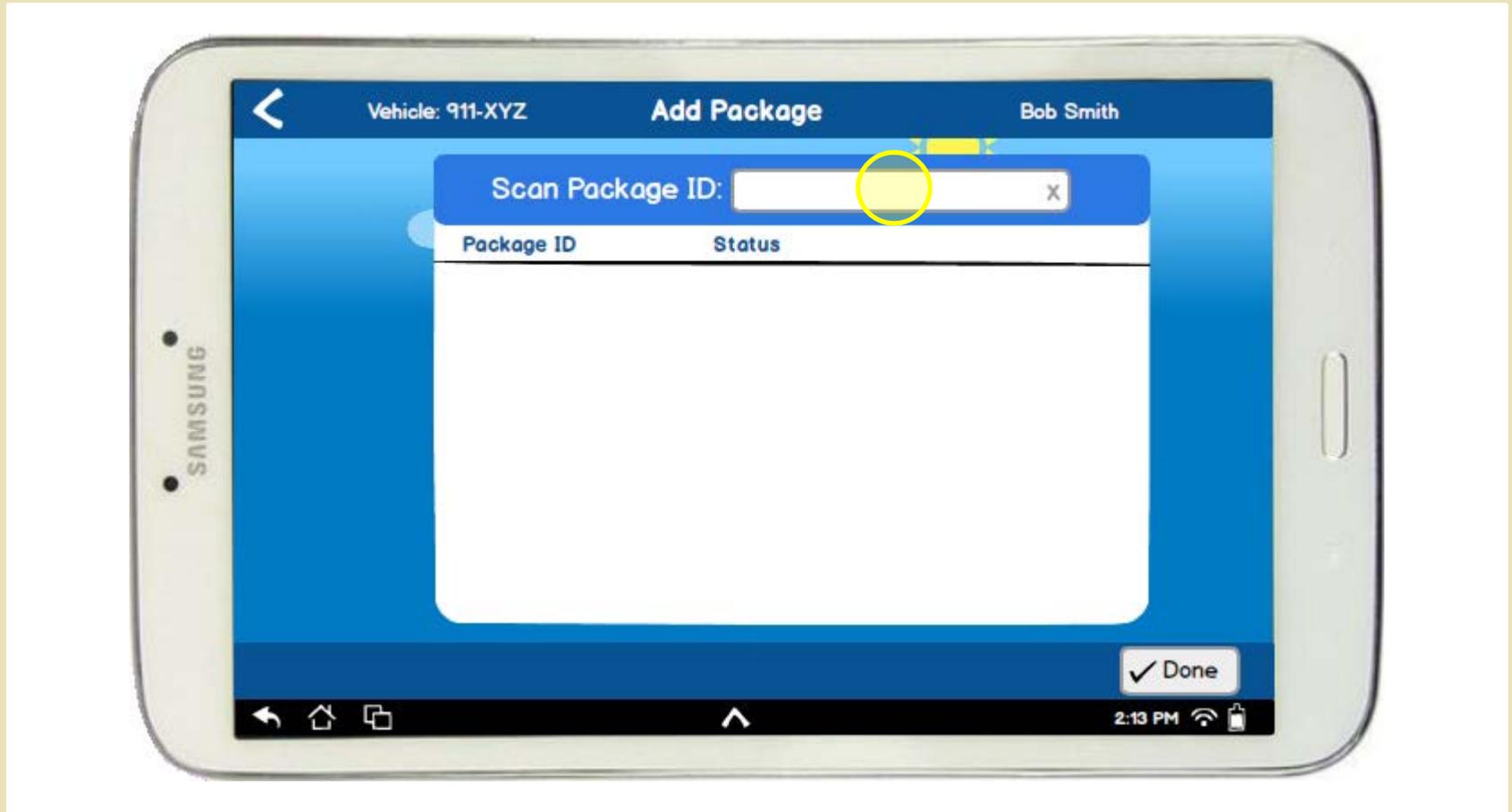
- **CALL EMERGENCY RESPONSE Telephone Number on Shipping Paper first. If Shipping Paper not available or no answer, refer to appropriate telephone number listed on the inside back cover.**
- As an immediate precautionary measure, isolate spill or leak area for at least 50 meters (150 feet) in all directions.
- Keep unauthorized personnel away.

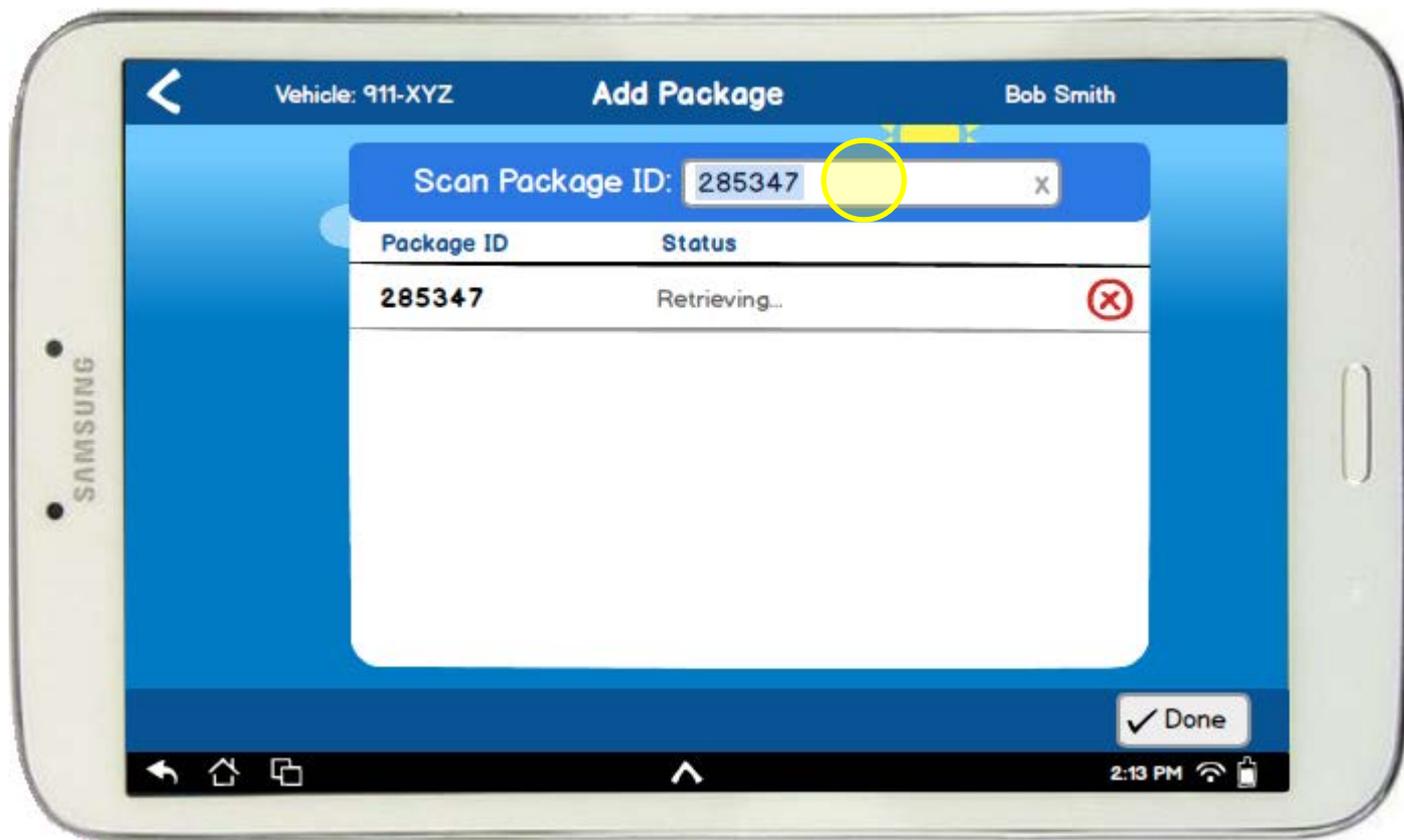
Demonstration Scenario

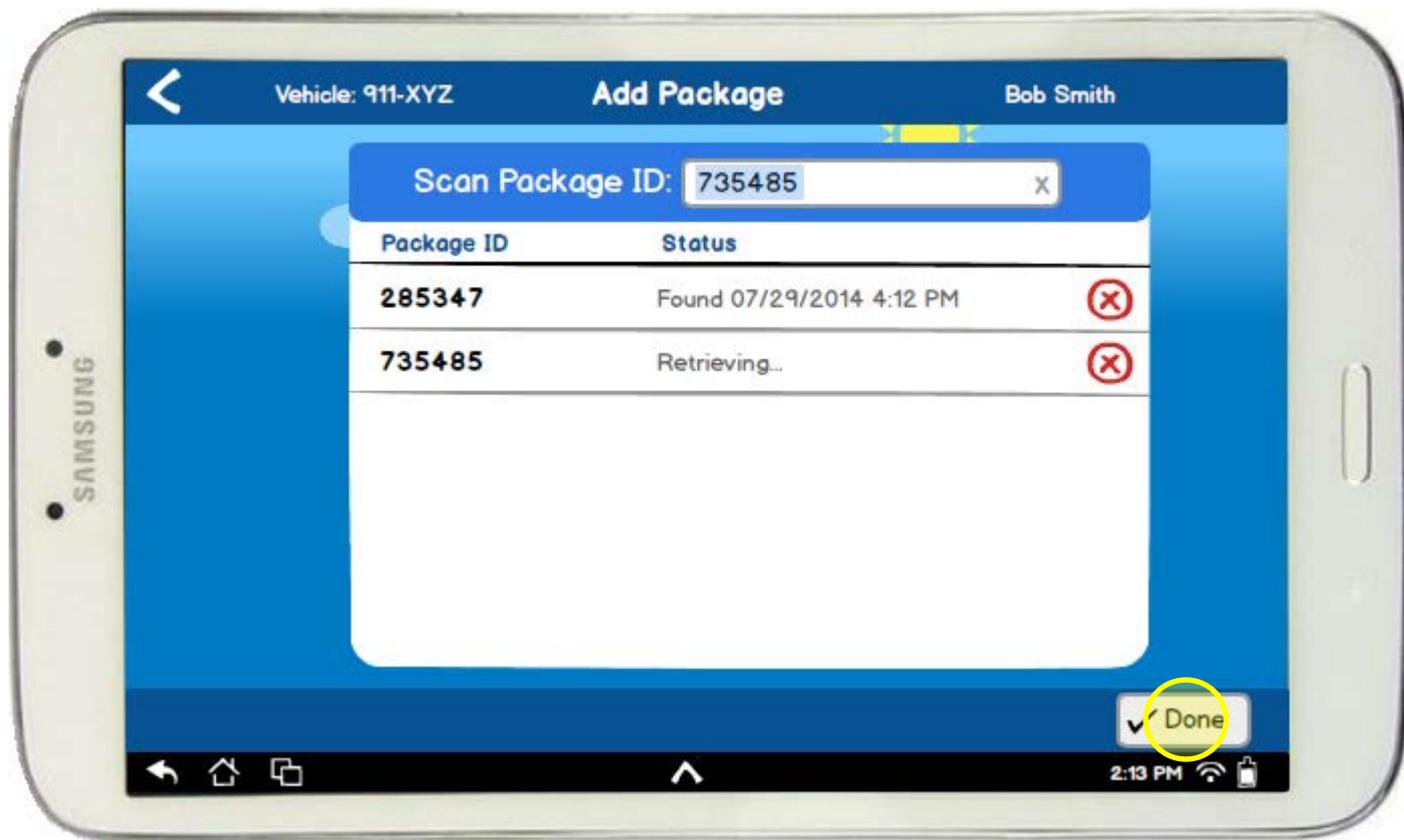
e-HM MOBILE APP CONCEPT

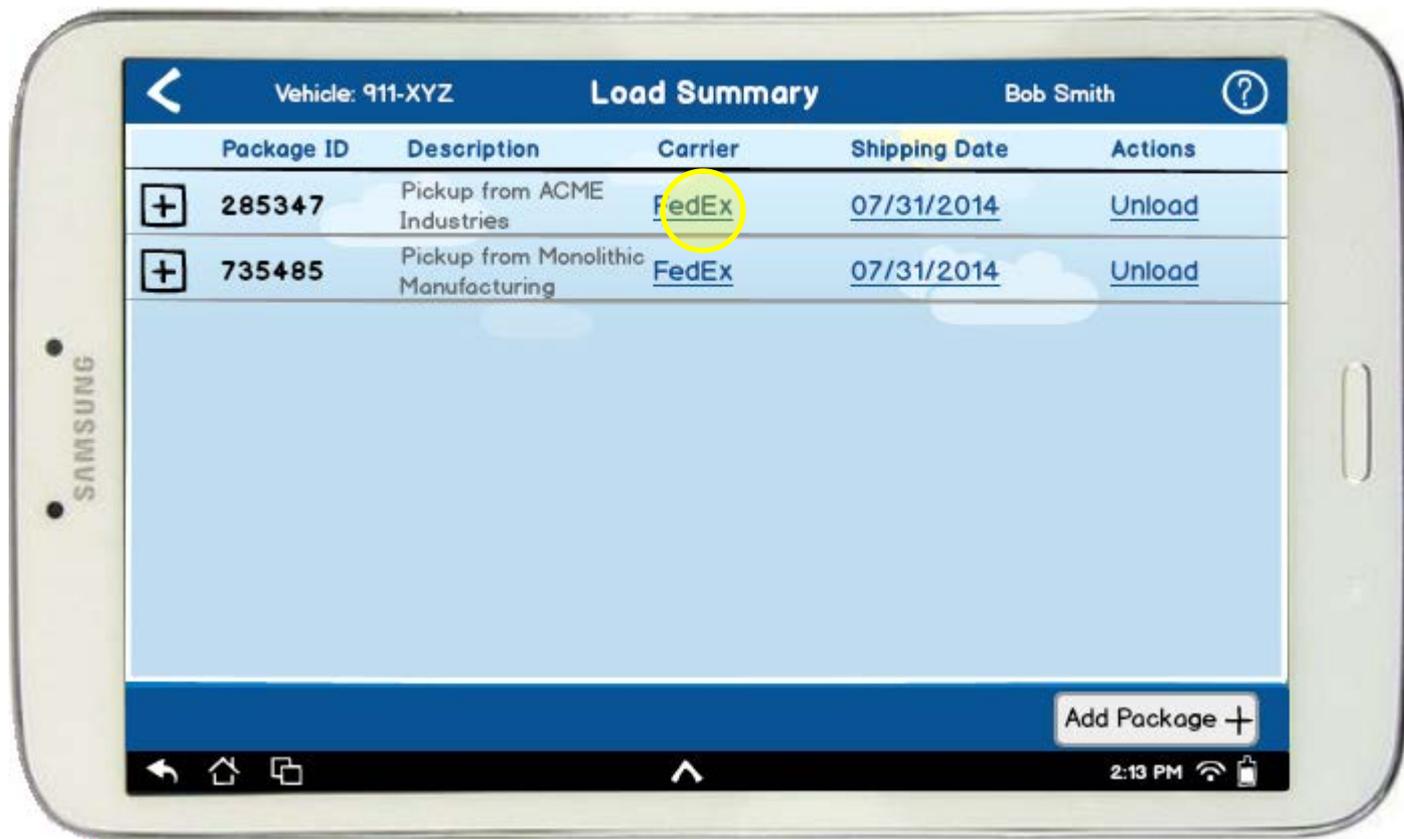


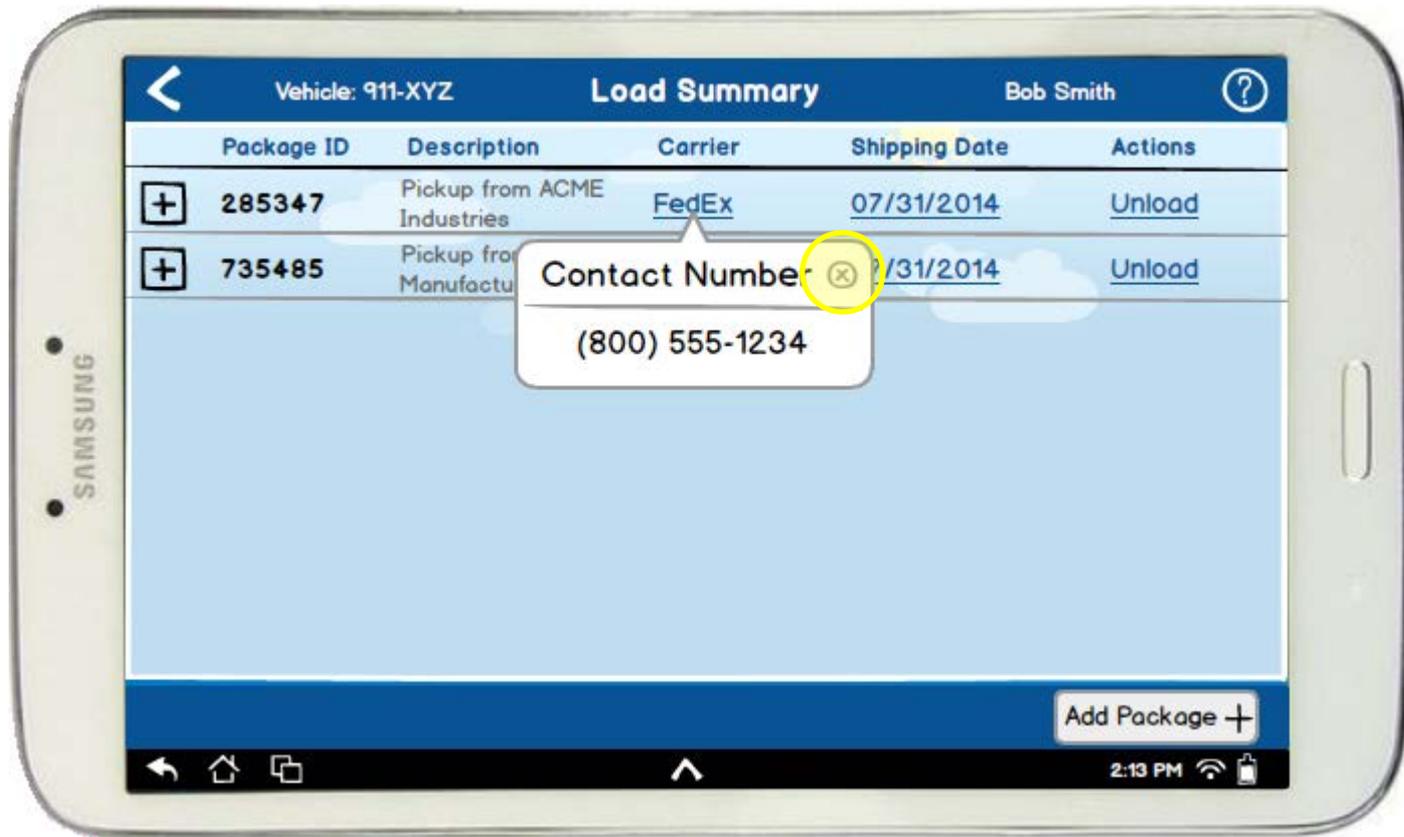


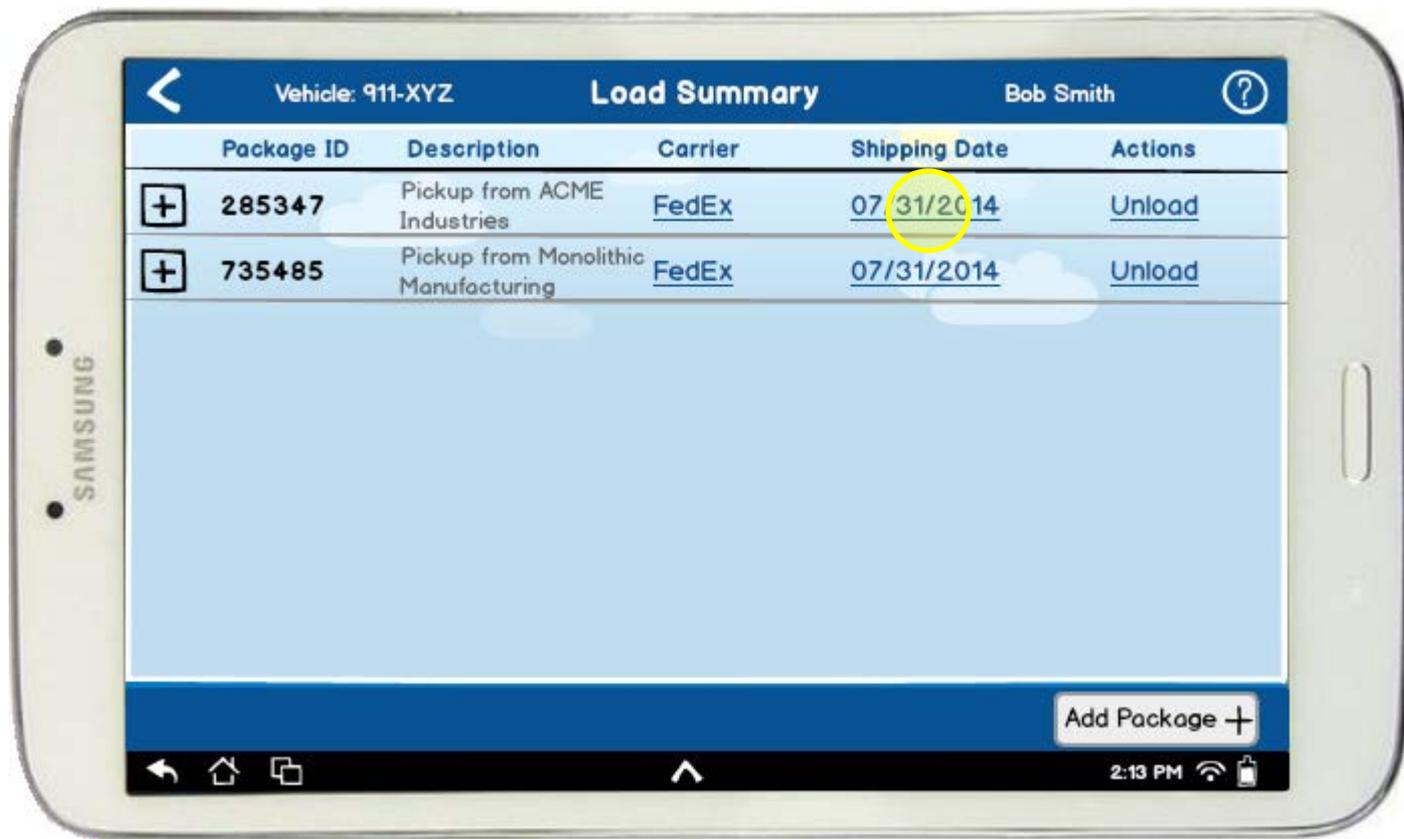


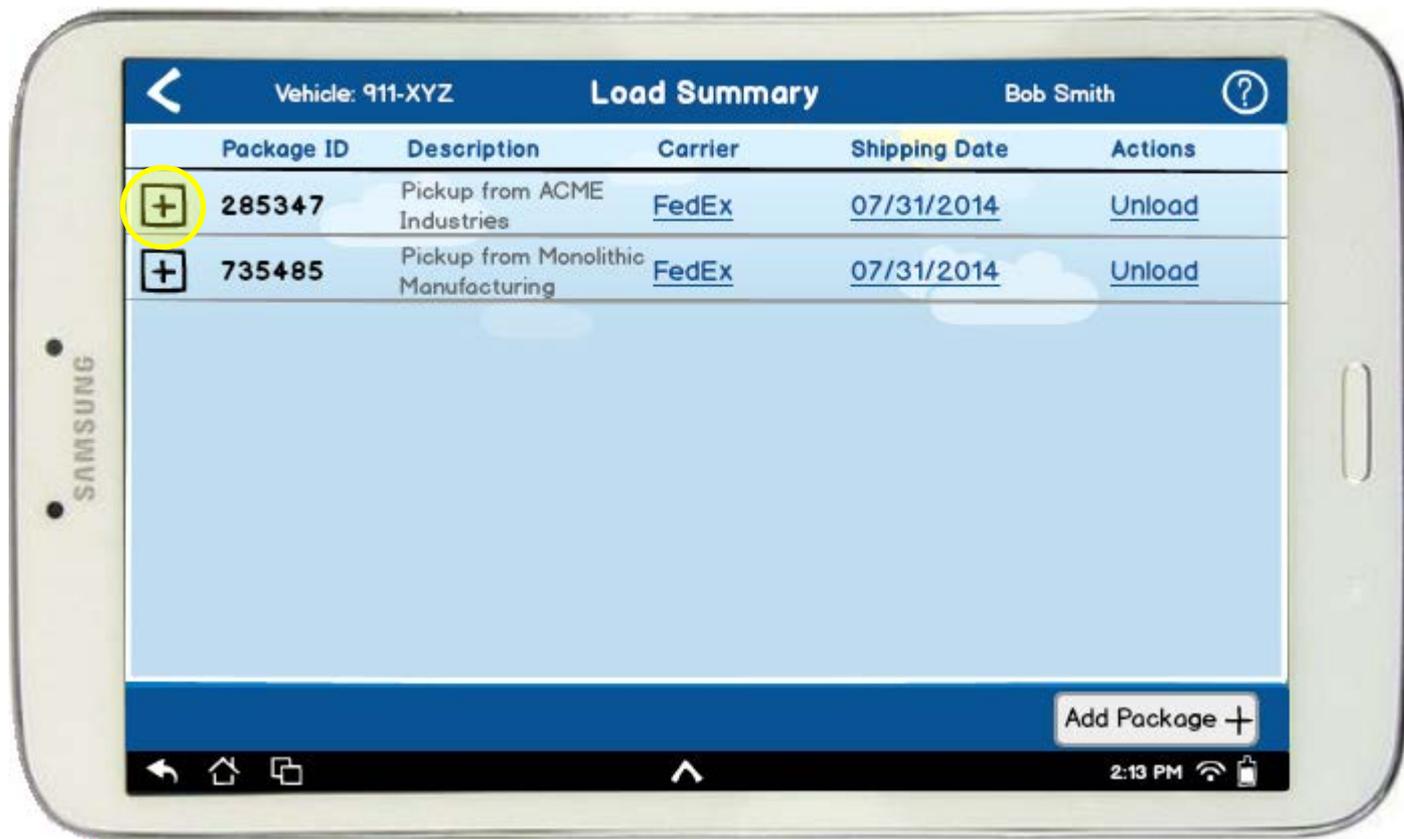


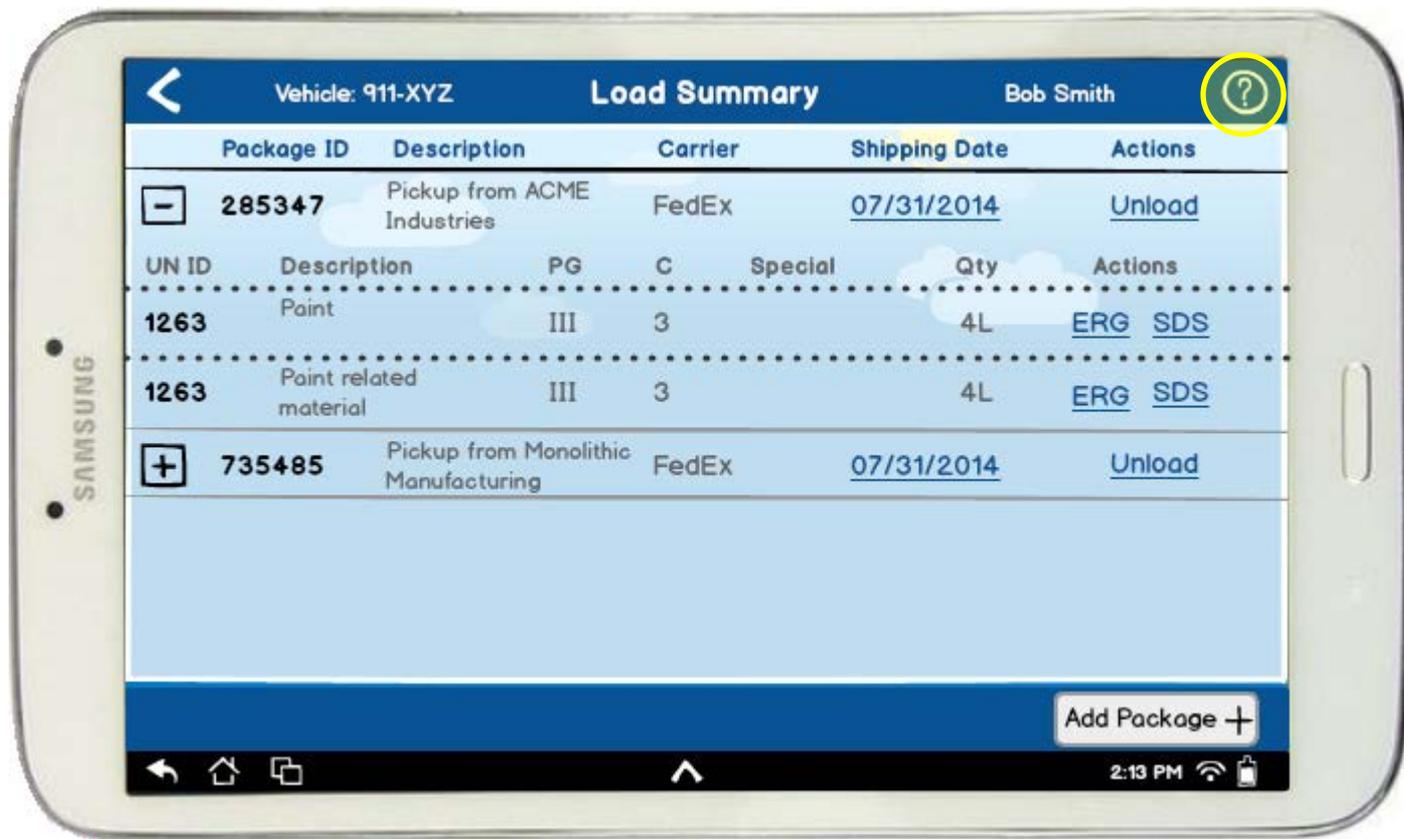


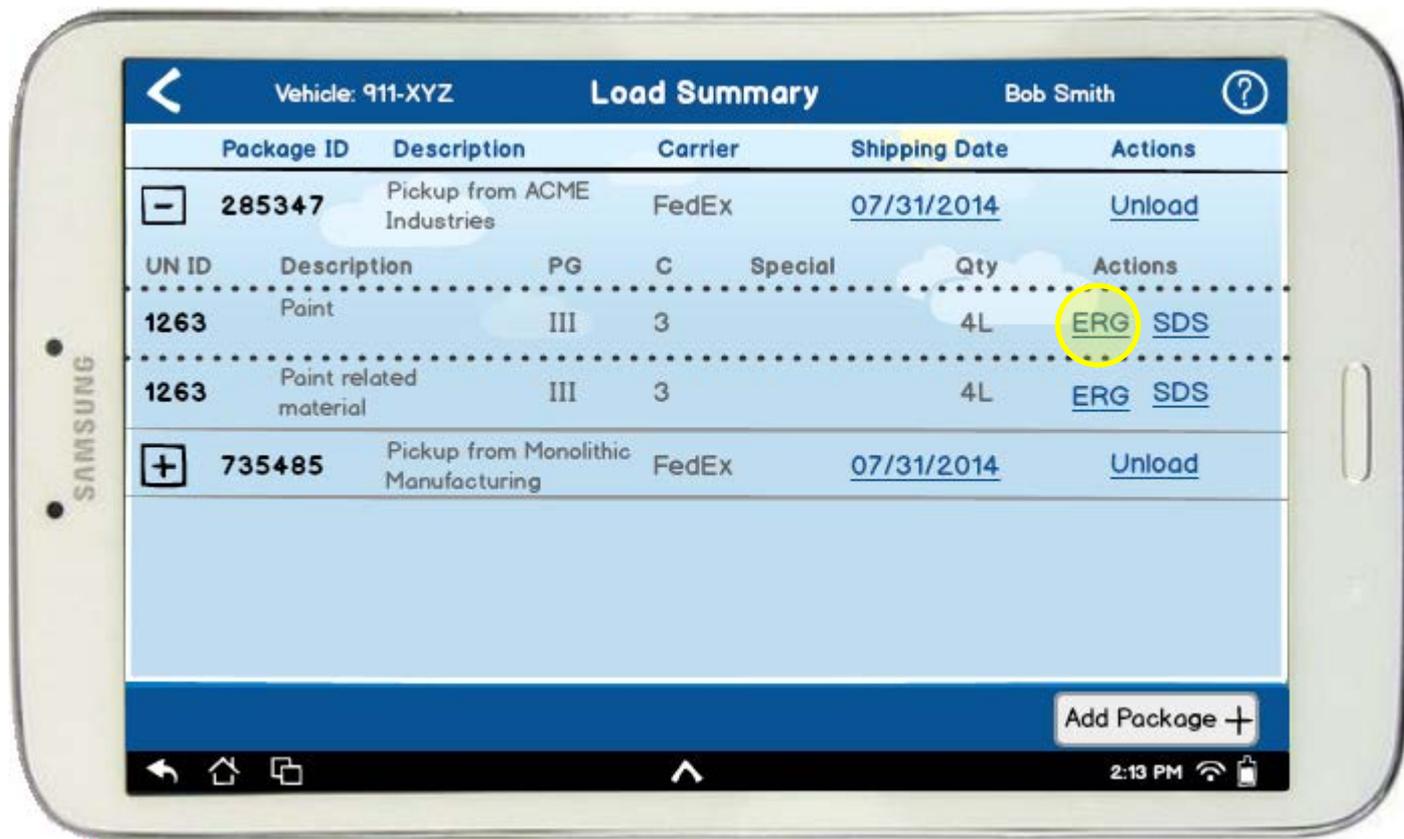


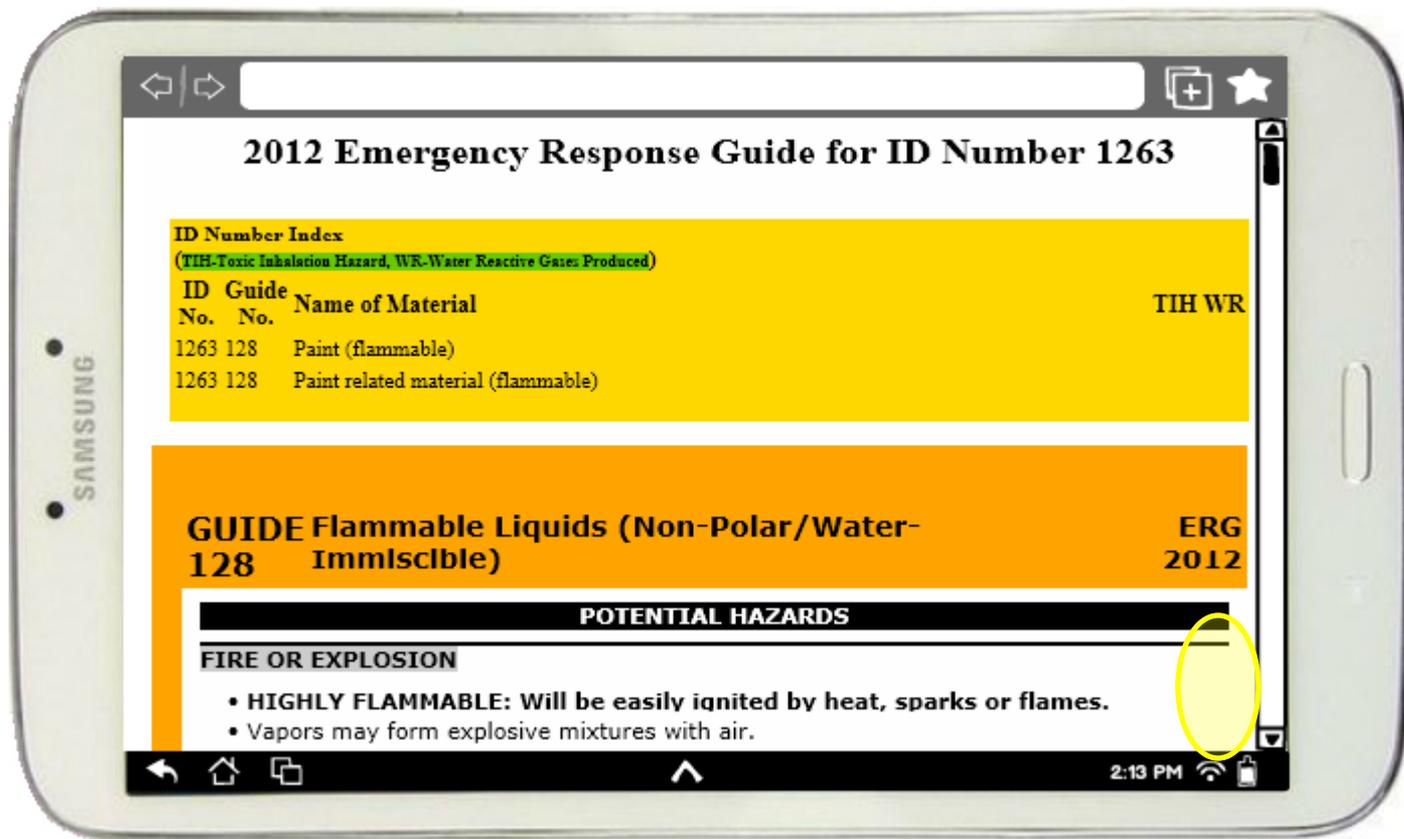


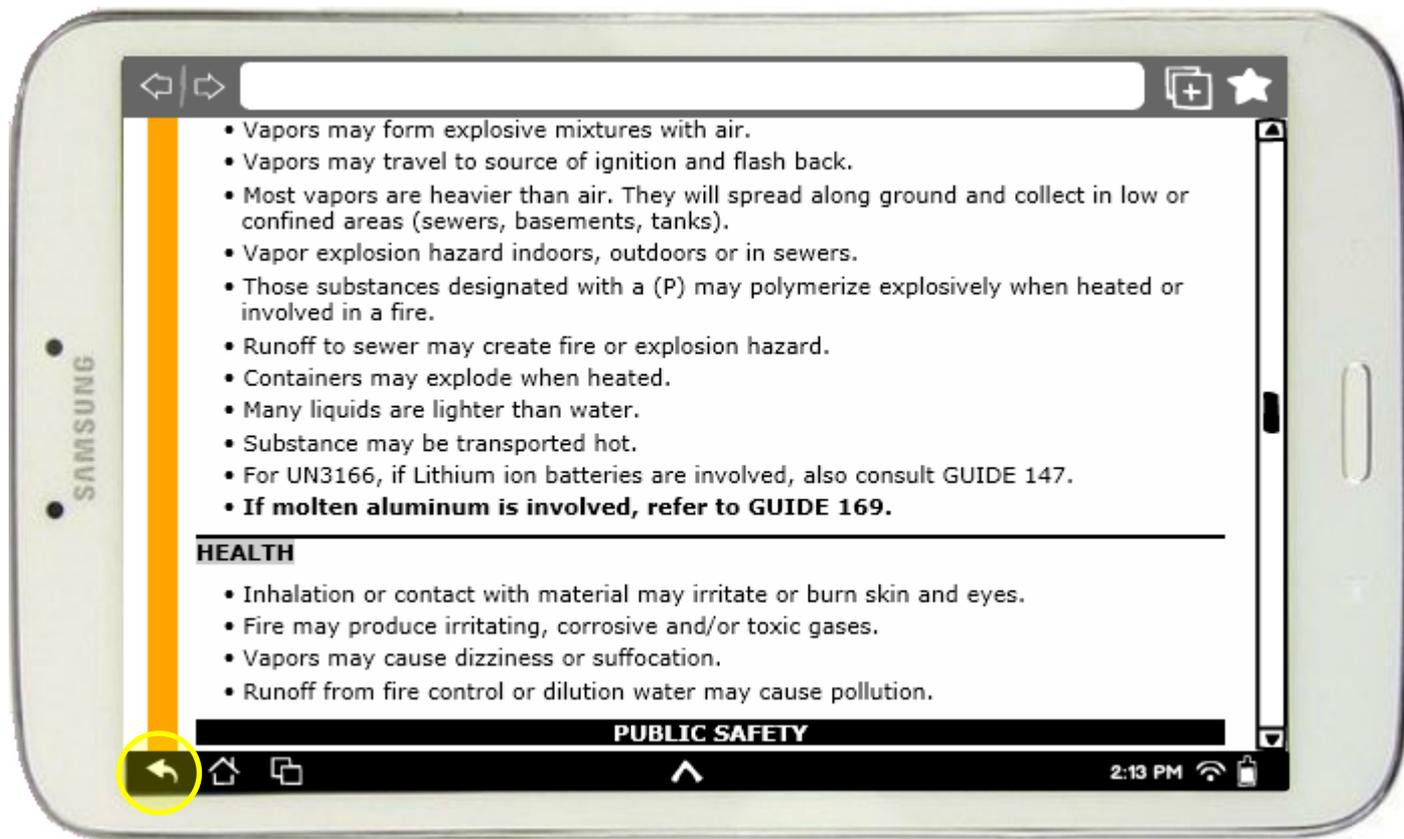


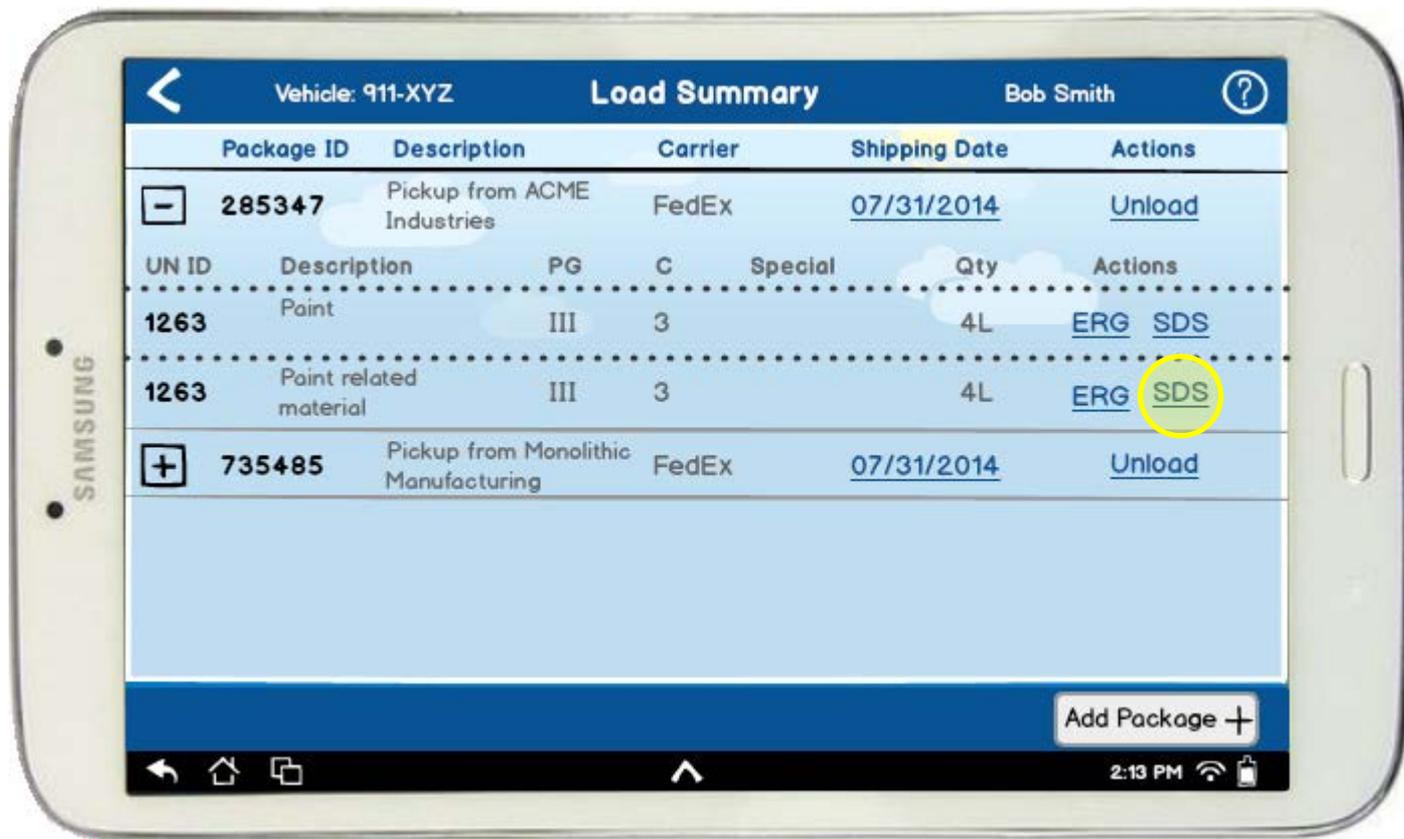




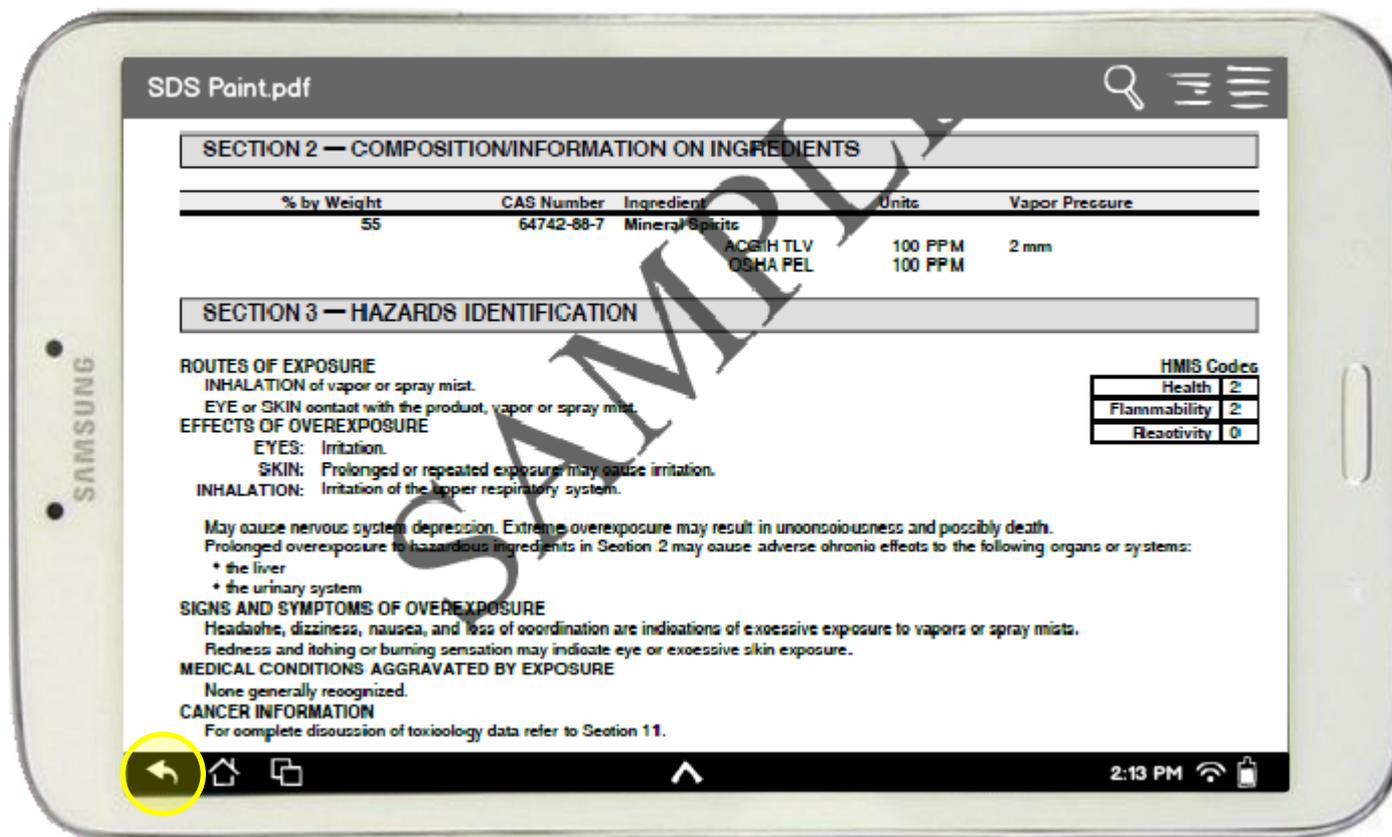


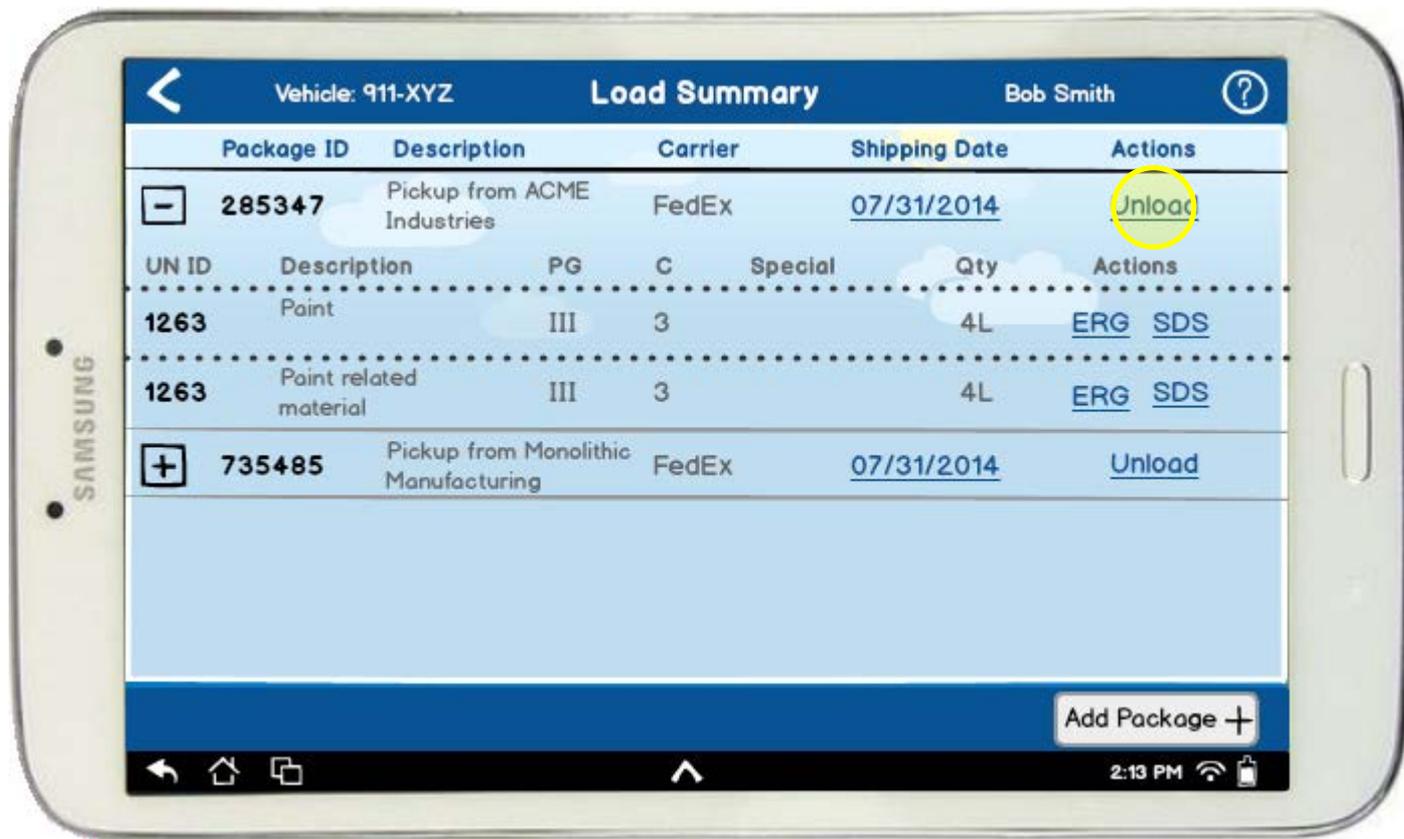


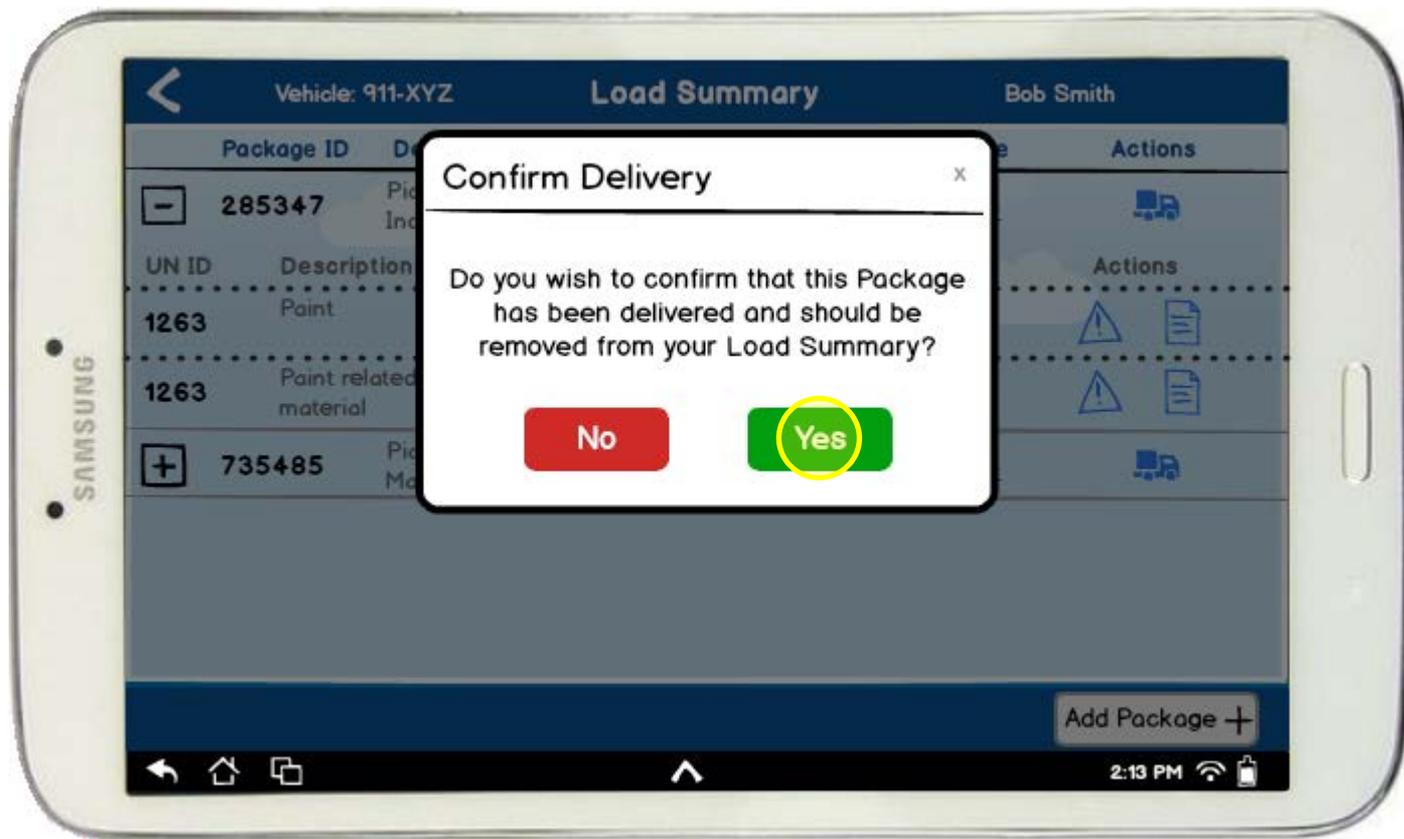


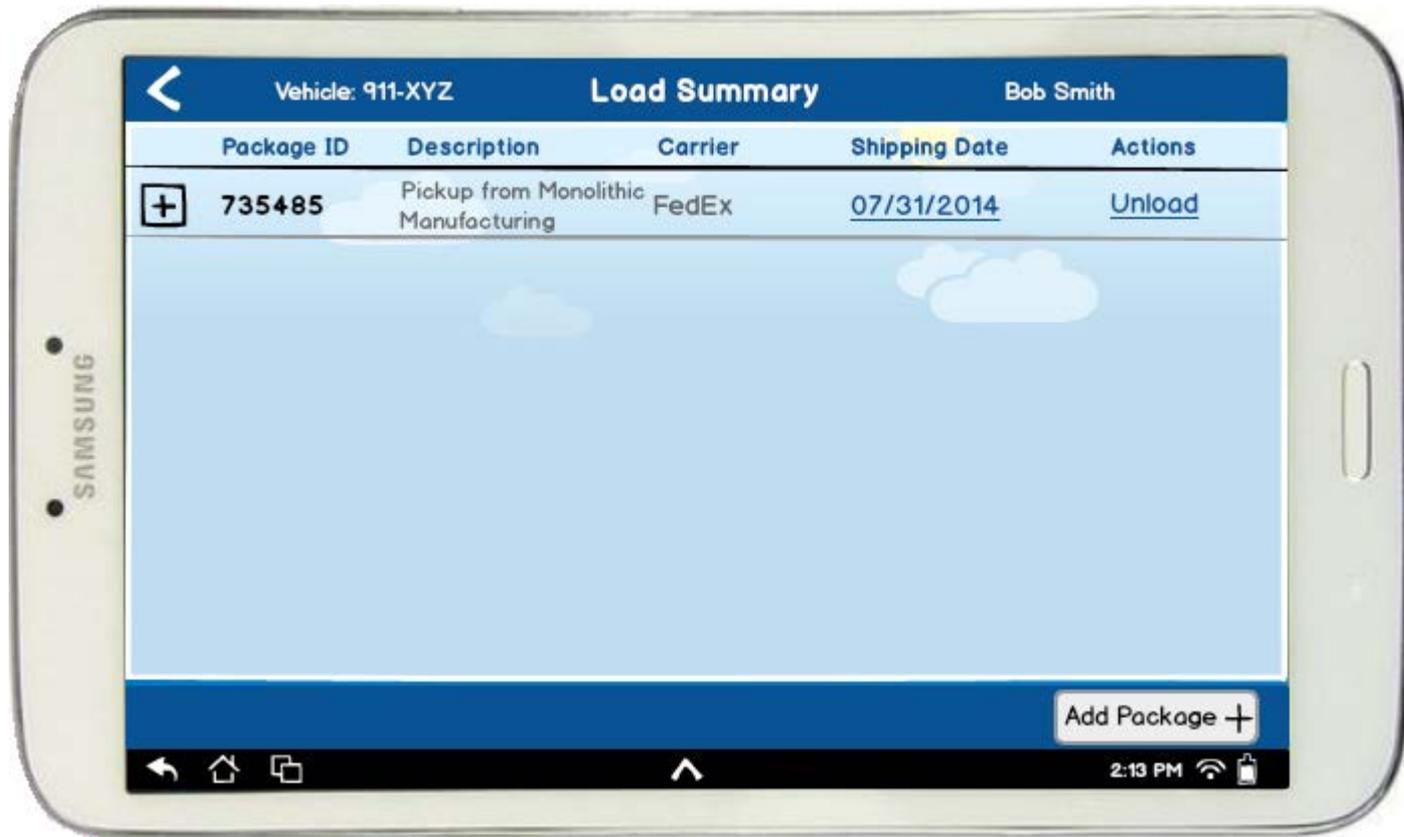












Future Considerations

- Use GPS coordinates to identify the vehicle
- All information could be cached to be accessed offline
- Security related issues / concerns
 - Providing access to appropriate persons / systems
 - ▣ Registered Users
 - ▣ Two Factor Authentication
 - ▣ Carrier Credentialing
- Fusion Centers (e.g., IAFC) may host solution
- May retrieve additional information from 3rd parties

Next Steps

- Progressive Proof of Concepts
 - Conducted in different geographic areas (including a rural area)
 - Stay open to additional participants
 - Research – Faculty and Students
- Present data to PHMSA to support rulemaking to authorize electronic shipping papers technologies
- Promote the use of technology to enhance the safe and efficient transport of hazardous materials

Contact Information

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