

Introducing AmbuLink

Fraser Health Hackathon 2017

January 22, 2017

Team AmbuLink:

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- Addresses a number of BC Emergency Health Services strategic goals, such as improved inclusion of paramedics in the overall patient care process

Current state For Ambulance and Pre-hospital Care

- Inefficient processes
- Paper-based tools
- Minimal access to medical records



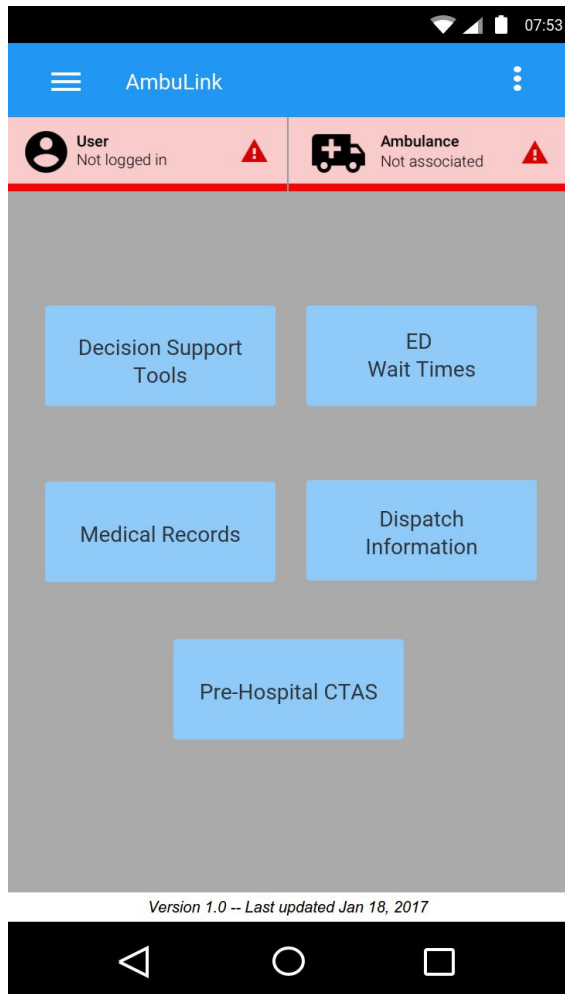
Ambulink Application

- Used by ambulance crews, air and terrestrial
- Practical blend of reliable, cost-effective, trusted technologies
- Platform-agnostic, portable to Android, iOS and other operating systems
- Utilizes cellular data network available throughout Canada
- Flexible and scalable



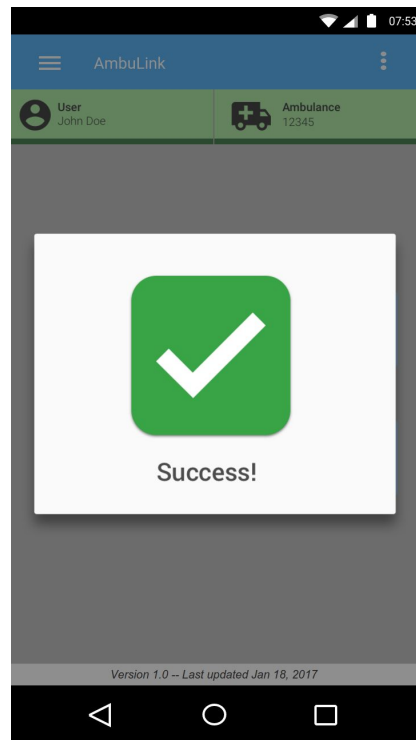
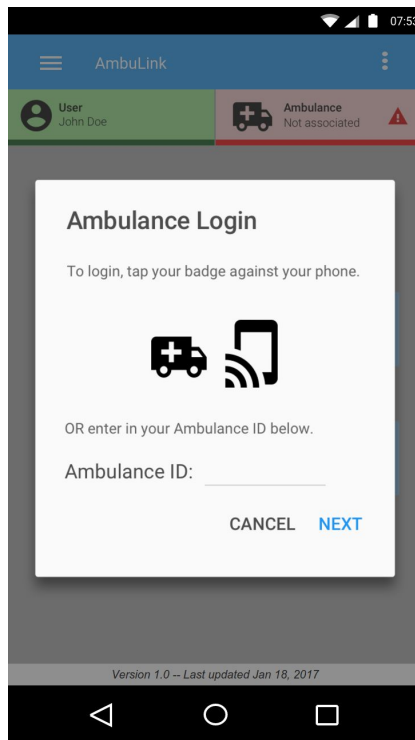
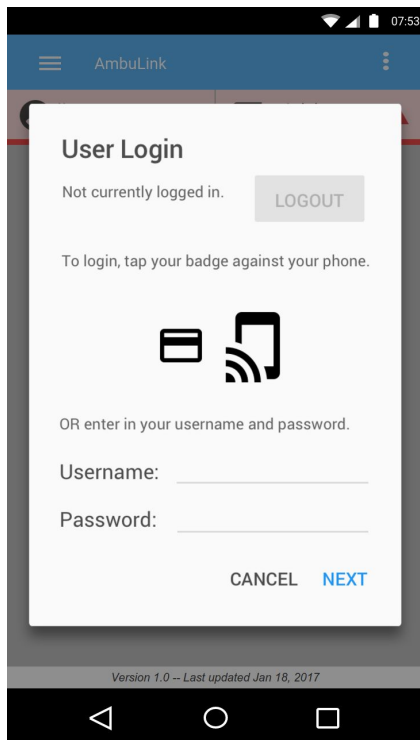
Goals:

- Provide a mechanism and tools to improve the role of paramedics in the overall care process
- Standardized processes for paramedics
- Improve patient outcomes by jumpstarting the care process
- Shifting focus from patient transport to patient-centred care
- Alignment with health systems



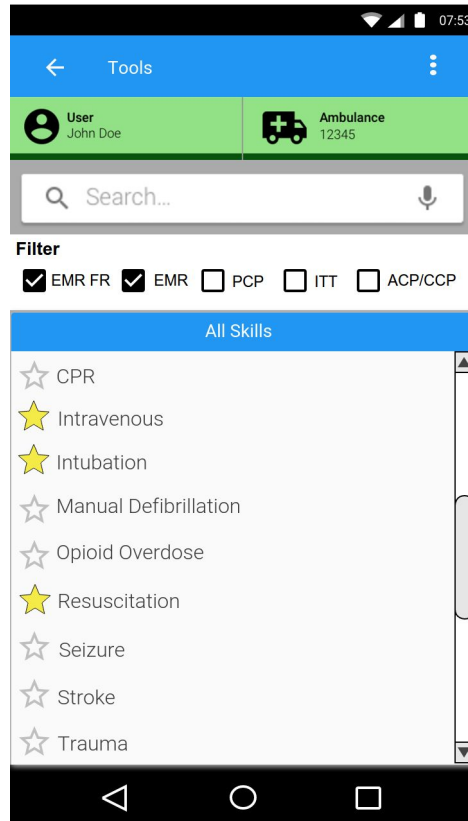
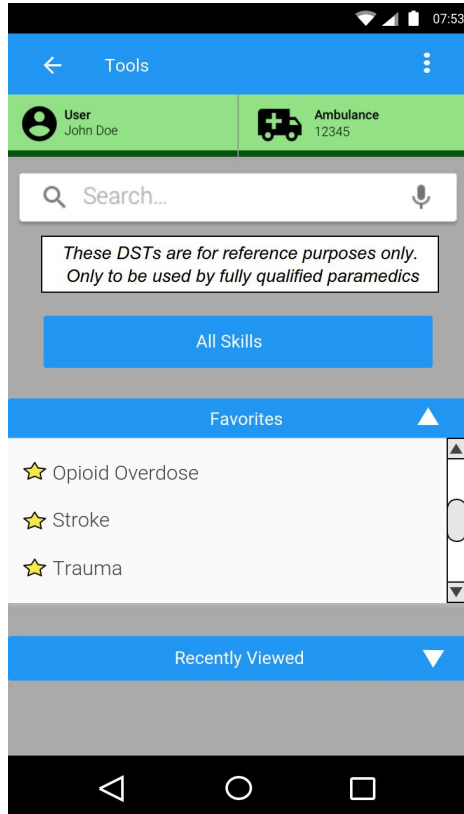
Patient-centered support tools for ambulance crews (both air and terrestrial)

- Best practice decision support tools
- Real-time driving and emergency dept wait times
- Medical records integration
- Real-time link to dispatch (E-Comm) and EDs
- Pre-hospital Canadian Triage Acuity Scale (CTAS) score calculator
 - Feeds emergency dept dashboards



Authentication and association is simple:

- Tap to log in via NFC
- Ambulance and User logins available



Decision Support Tools:

- Guided tools and workflows to assist paramedics
- Provides standard references for paramedics to view and use

07:53

← ED Wait Times

User
John Doe

Ambulance
12345

Please note that these wait times are only approximate and for the general ED.

| ▼ Hospital | ▼ ED Wait Times (HH:MM) | ▼ Estimated Drive Times (HH:MM) | |
|-------------------|-------------------------|---------------------------------|---|
| Surrey Memorial | 1:10 | 0:20 | ▲ |
| Royal Columbian | 0:35 | 0:25 | |
| Langley Memorial | 0:15 | 0:40 | |
| Vancouver General | 2:00 | 0:35 | ▼ |

Last updated: 15 minutes ago ↻



ED Wait Times:

- Wait times for all ED departments
- Includes drive times to each ED
- Includes all hospitals, regardless of HA



Medical Records

User John Doe

Ambulance 12345

Input Patient PHN:

CANCEL SUBMIT

This screenshot shows the 'Medical Records' screen of the Ambulink app. At the top, there is a blue header with a back arrow and the text 'Medical Records'. Below the header, there is a green bar with two sections: 'User John Doe' with a person icon and 'Ambulance 12345' with an ambulance icon. The main area is a light gray background with a white box containing the text 'Input Patient PHN:' and a text input field. Below the input field are two buttons: 'CANCEL' and 'SUBMIT'.

Medical Records

User John Doe

Ambulance 12345

PHN: 1112228 | Age 50 | Male
Richard Doe

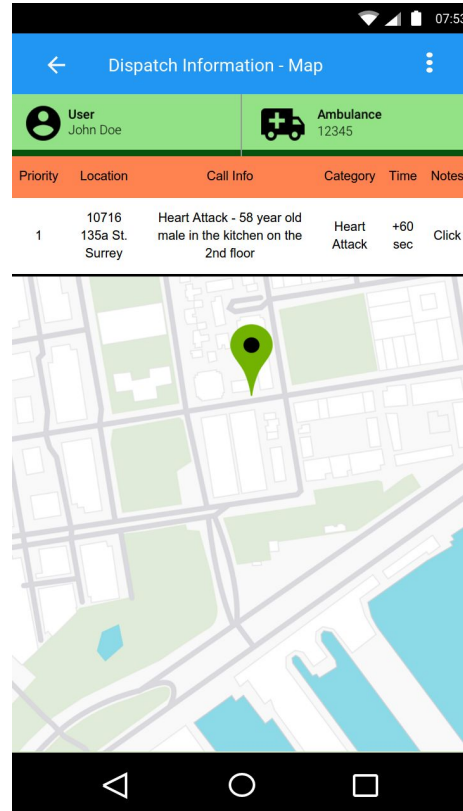
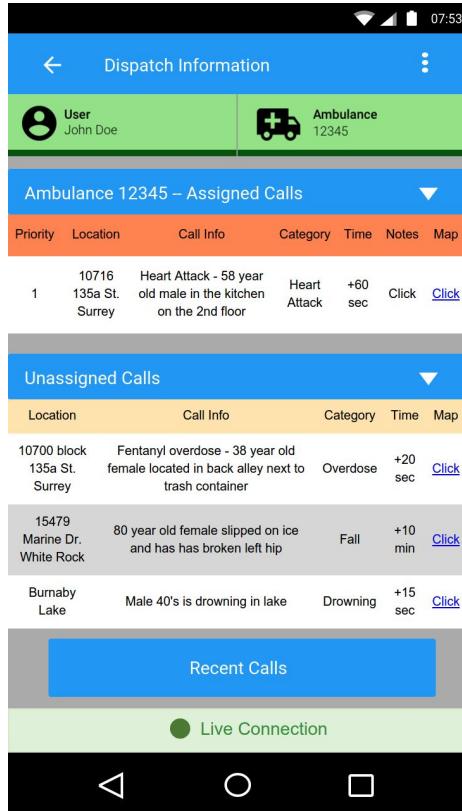
| Show: | Group By: | Sort By: |
|----------------------|-----------|-----------|
| All | Category | Name A-Z |
| Activity | | Count: 1 |
| Continuous Infusions | | Count: 7 |
| Laboratory | | Count: 45 |
| Medications | | Count: 19 |
| Nursing Orders | | Count: 1 |
| Special | | Count: 2 |
| Uncategorized | | Count: 13 |

Medical records obtained from: Meditech, PLIS, Cerner
Last updated: Jan 22, 14:30

This screenshot shows the 'Medical Records' screen of the Ambulink app, displaying a list of medical record categories. At the top, there is a blue header with a back arrow and the text 'Medical Records'. Below the header, there is a green bar with two sections: 'User John Doe' with a person icon and 'Ambulance 12345' with an ambulance icon. Below the green bar, there is a white box containing the text 'PHN: 1112228 | Age 50 | Male' and 'Richard Doe'. Below this box is a table with three columns: 'Show:', 'Group By:', and 'Sort By:'. The table has a header row with 'All', 'Category', and 'Name A-Z'. Below the header row are seven rows of medical record categories, each with a dropdown arrow on the left and a count on the right. The categories are: Activity (Count: 1), Continuous Infusions (Count: 7), Laboratory (Count: 45), Medications (Count: 19), Nursing Orders (Count: 1), Special (Count: 2), and Uncategorized (Count: 13). At the bottom of the screen, there is a white box containing the text 'Medical records obtained from: Meditech, PLIS, Cerner' and 'Last updated: Jan 22, 14:30'.

Medical Records

- Unified Medical Records, pulled in from all interfaced systems (Meditech, Cerner, PLIS, PARIS, etc.)
- Ideally also include GP medical record systems.



Dispatch Information:

- Provides key dispatch information, such as specific location information.
- Links to map which can provide GPS directions

CTAS Scoring

User: John Doe | Ambulance: 12345

Departure CTAS ▼

| ▼ Step | ▼ Action | ▼ CTAS Score |
|--------|----------------------|--------------|
| 1 | Quick Look | N/A |
| 2 | Presenting Complaint | N/A |
| 3 | 1st Order Modifier | ✎ |
| 4 | 2nd Order Modifier | ✎ |

SEND

CTAS Scoring

User: John Doe | Ambulance: 12345

Departure CTAS ▼

| Level of Distress | O ₂ Saturation | CTAS Level |
|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------|
| Severe: Fatigue from excessive work of breathing, cyanosis, single-word speech, unable to speak, upper airway obstruction, lethargic or confused | <90% | 1 |
| Moderate: Increased work of breathing, speaking phrases or clipped sentences, significant or worsening stridor but the airway protected. | <92% | 2 |
| Mild/Moderate: Dyspnea, tachypnea, shortness of breath on exertion, no obvious increased work of breathing, able to speak in sentences, stridor without any obvious airway obstruction | 92-94% | 3 |
| None | ≥94% | 4, 5 |

1st Order Modifier - Respiratory Distress
Please select level of distress

SEND

CTAS Scoring

User: John Doe | Ambulance: 12345

Departure CTAS ▼

| ▼ Step | ▼ Action | ▼ CTAS Score |
|--------|----------------------|--------------|
| 1 | Quick Look | N/A |
| 2 | Presenting Complaint | N/A |
| 3 | 1st Order Modifier | 2 ✕ |
| 4 | 2nd Order Modifier | Not Needed |

SEND

CTAS Scoring

User: John Doe | Ambulance: 12345

Departure CTAS ▼

Select ED and CTAS Score

SMH ▼

CTAS ▲

Arrival CTAS = 1

Departure CTAS = 2

CANCEL SEND

SEND

Canadian Triage Acuity Scale (CTAS):

- Ability to input Arrival and Departure CTAS scores (along with any additional scores)
- Built-in 1st and 2nd order modifiers
- Ability to select ED and CTAS score

Royal Columbian Hospital

Triage Acuity Status

Sunday Jan 22, 2017 6:19AM

Ambu/link

Triage

| Patient Names | Gender | Age | Priority | Date | Time | Status |
|-----------------|--------|-----|----------|------------|-------------|---------|
| Unknown Male | M | 20? | 1 | 2017-01-22 | 3:05 AM | Arrived |
| Smith, Lois | F | 78 | 3 | 2017-01-22 | 3:18 AM | Arrived |
| Unknown Female | F | 30? | 2 | 2017-01-22 | 4:35 AM | Arrived |
| Kitson, Bryan | M | 72 | 5 | 2017-01-22 | 6:20 AM | Amb543 |
| Johnson, Donald | M | 69 | 1 | 2017-01-22 | ETA 6:22 AM | Amb629 |
| Jones, Maria | F | 45 | 1 | 2017-01-22 | ETA 6:45 AM | Air-3 |
| Hardy, John | M | 28 | 4 | 2017-01-22 | ETA 7:05 AM | Amb548 |

Ambu/link

Receiving Emergency Department Dashboard



Data required for Ambulink:

- ED Wait Times
- Medical Records Interface
- Decision Support Trees
- CTAS Scoring modifiers

Challenges Moving Forward:

- Interface with all discrete Medical Record systems, from all HAs, and all systems (including GP systems)
- Obtaining and processing all the data from different HAs



Long Term:

- Since this application is platform agnostic and has the ability to interface with downstream systems, there is potential to interface with any system
- Can be customized with organizational specific tools and functions

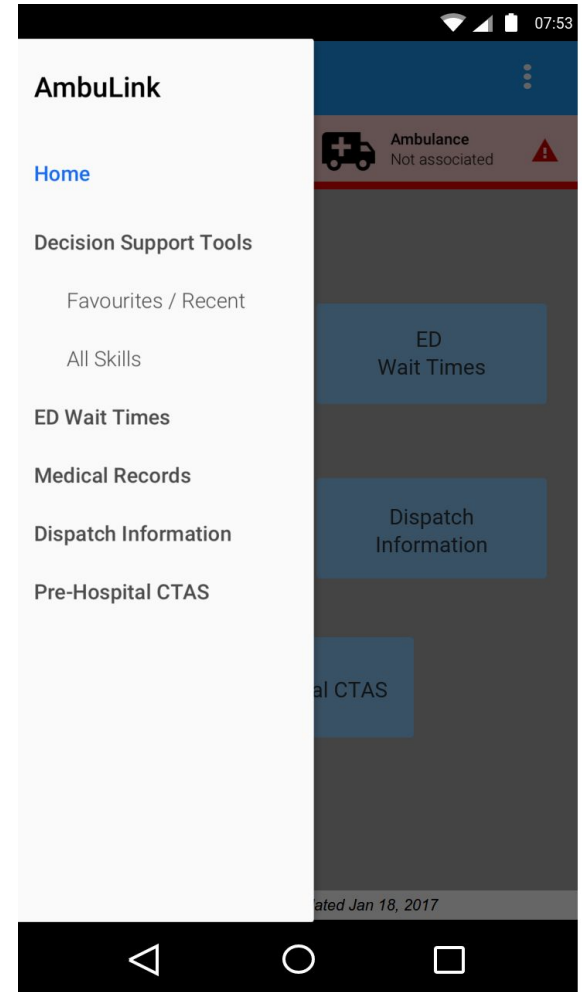
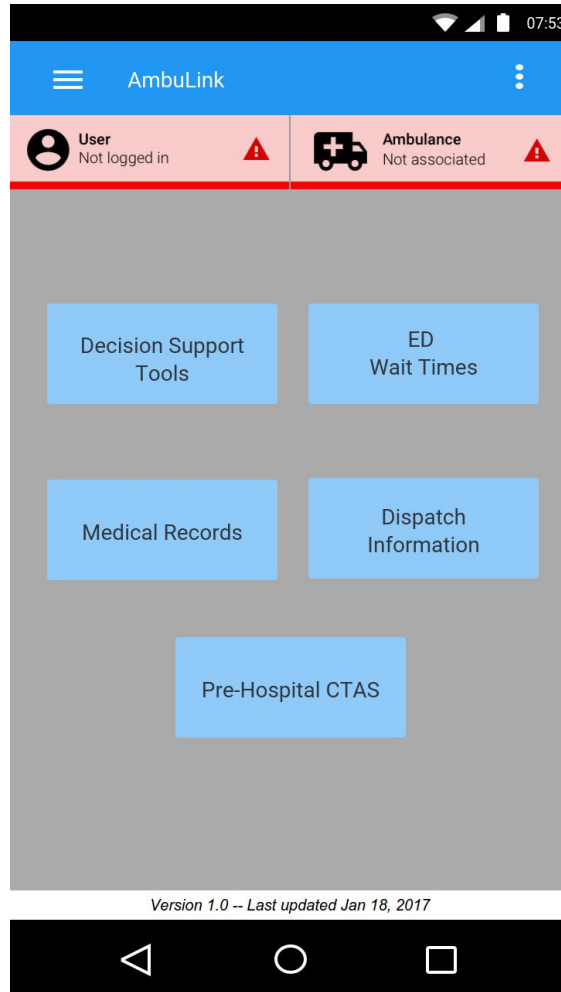


Q and A

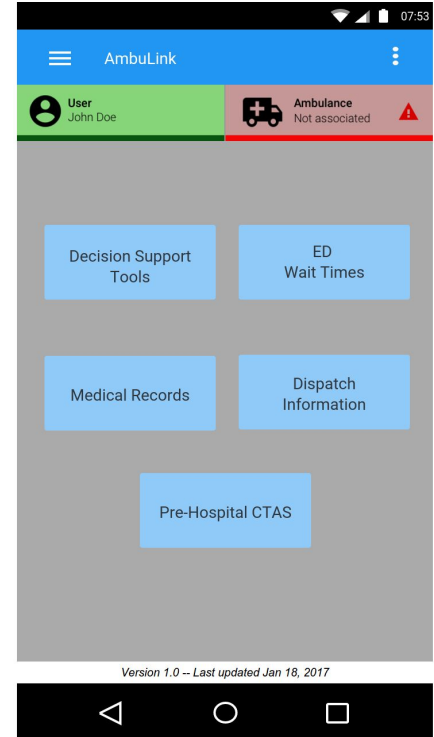
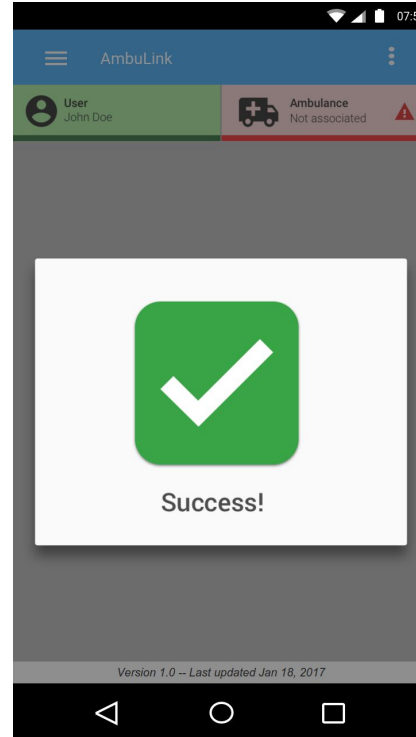
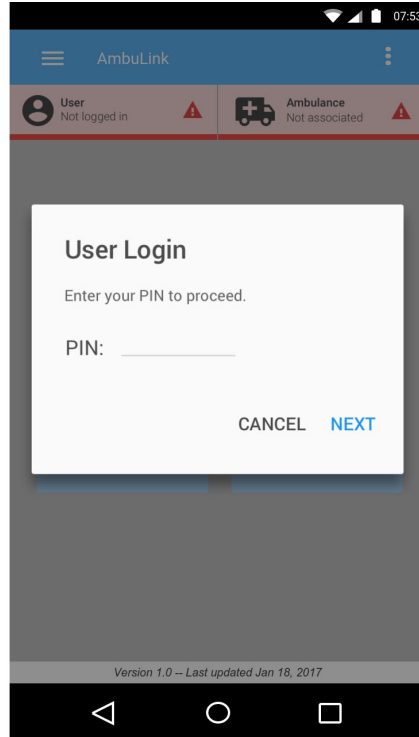
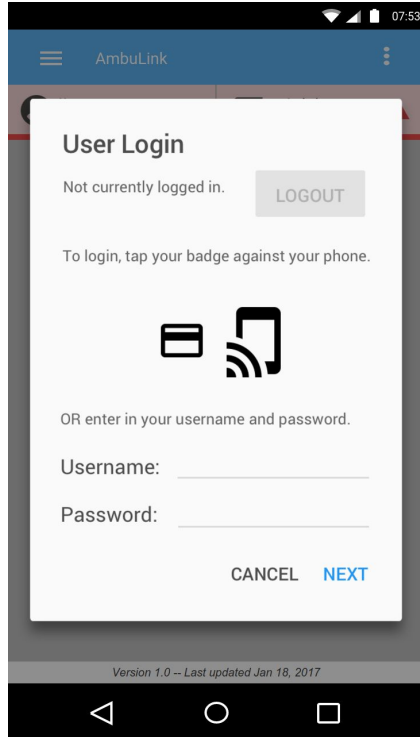


Appendix - Prototype Screenshots

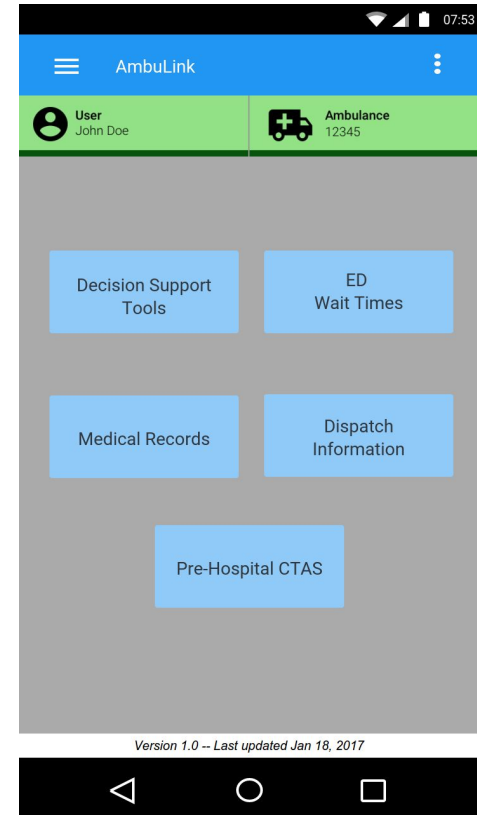
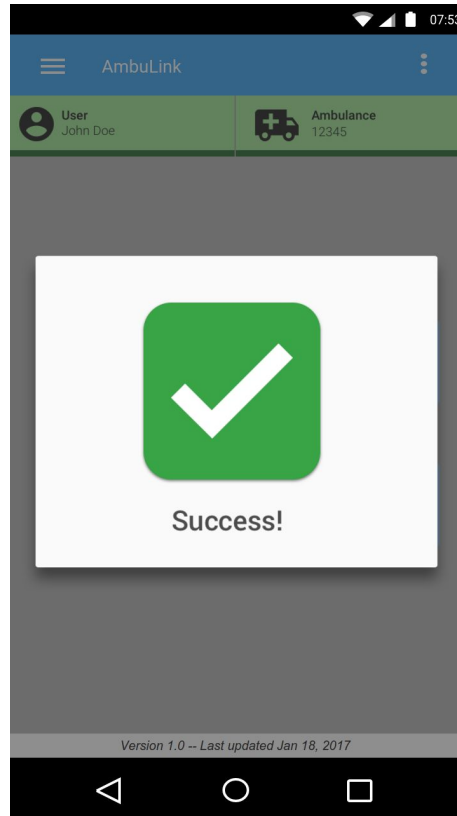
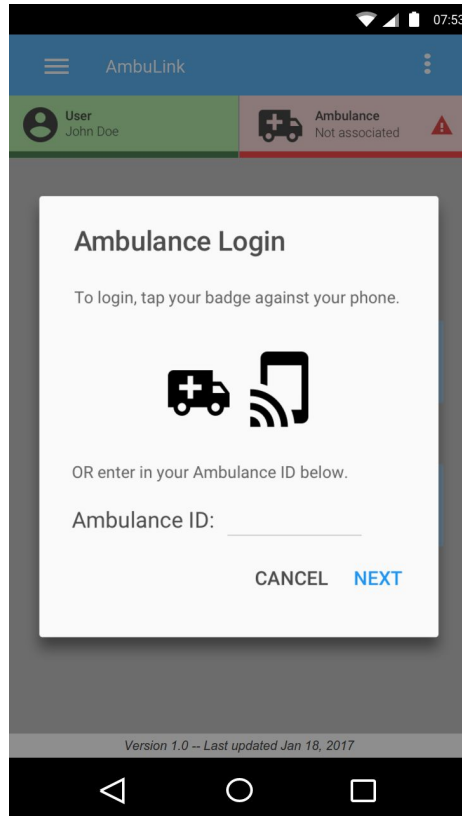
Home Screen



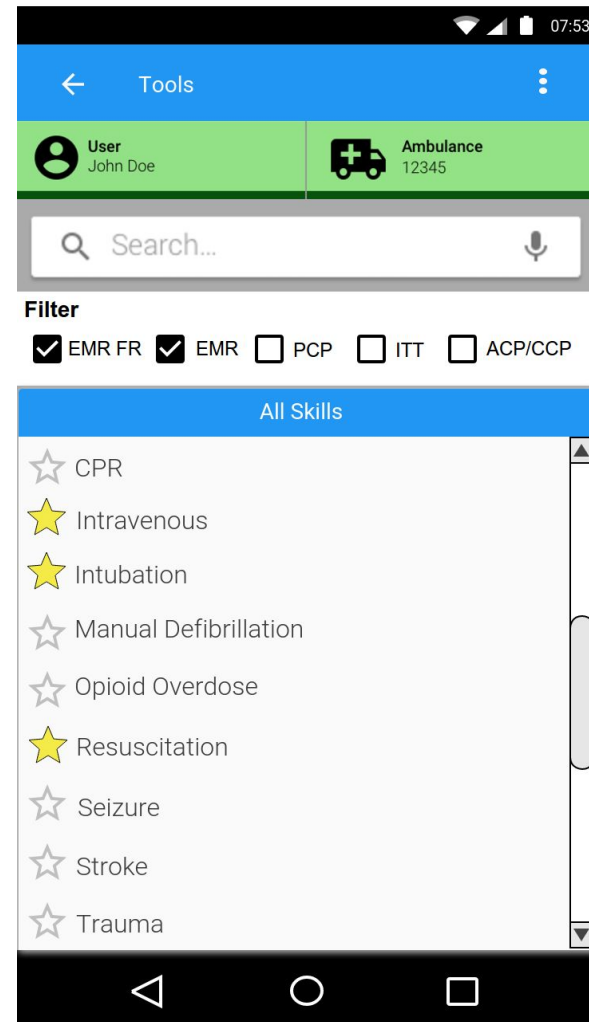
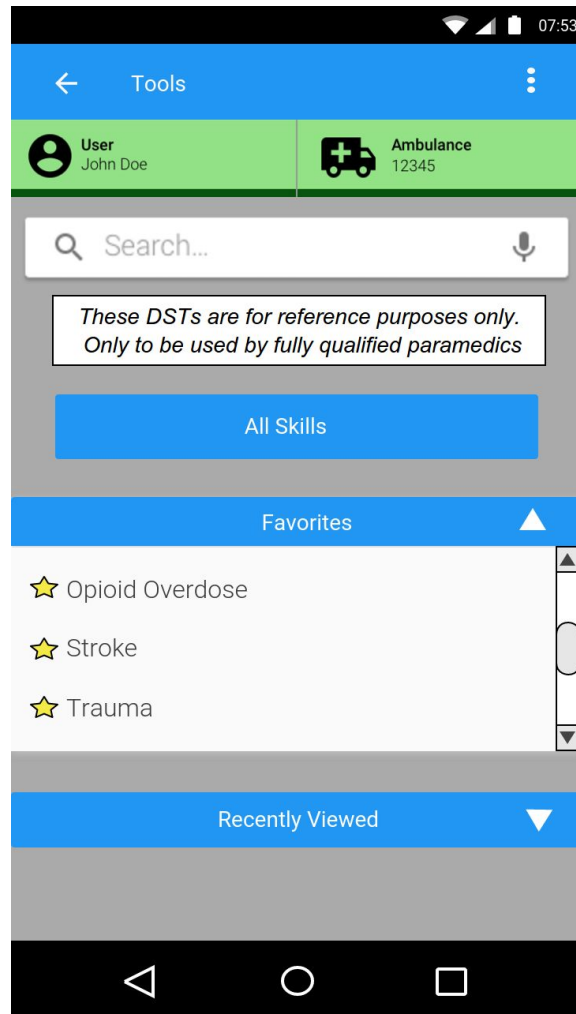
User Login

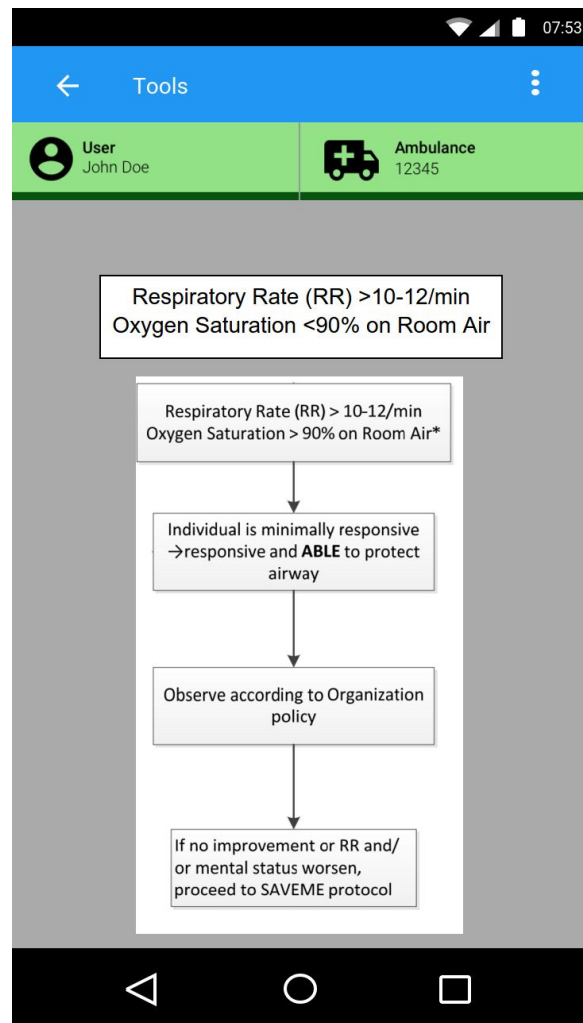
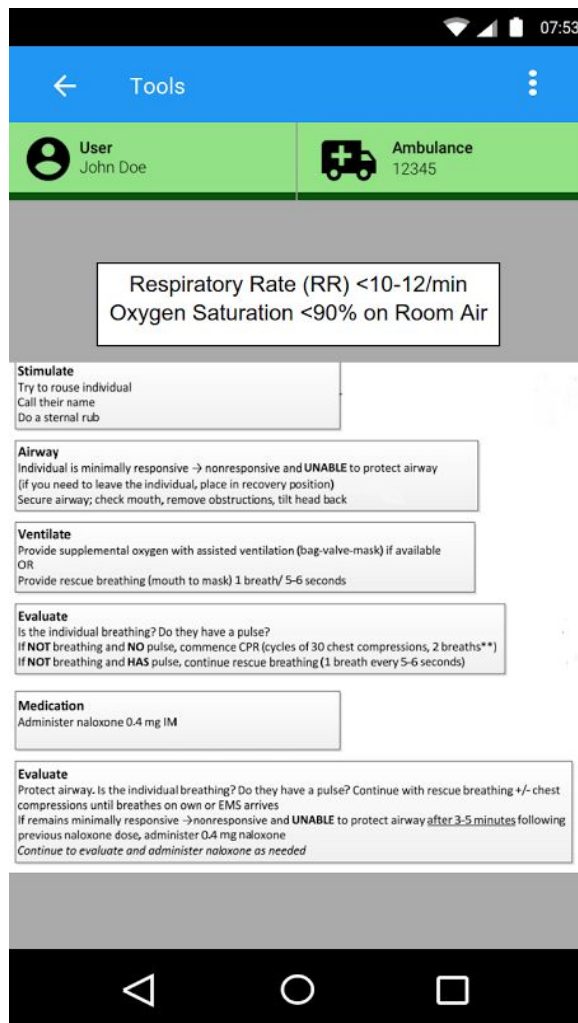
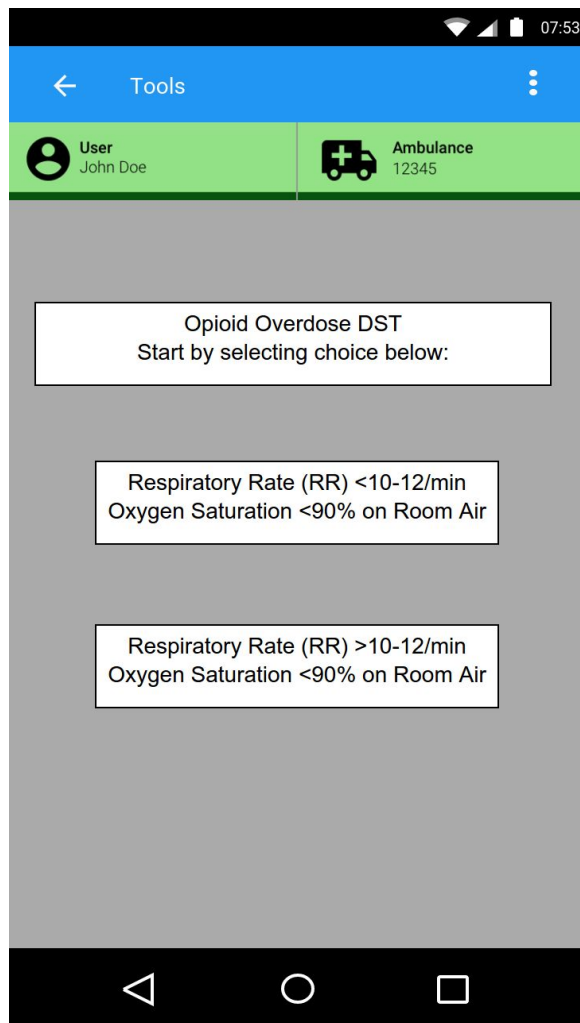


Ambulance Login



Decision Support Tools





07:53

←

Tools

User

John Doe

Ambulance

12345

Prehospital Stroke Assessment Tool P.1

Age over 45 years

☐

No prior history of seizure disorder

☐

New onset of neurologic symptoms in last 24 hours

☒

Patient was ambulatory at baseline (prior to event)

☐

Blood glucose between 60 and 400

☐

07:53

←

Tools

User

John Doe

Ambulance

12345

Prehospital Stroke Assessment Tool P.2

| | Normal | Right | Left |
|------------------------|--------------------------|--------------------------------------------------------------------------------|--------------------------------------------------------------------------------|
| Facial smile / grimace | <input type="checkbox"/> | <input type="checkbox"/> Droop | <input type="checkbox"/> Droop |
| Grip: | <input type="checkbox"/> | <input type="checkbox"/> Weak Grip <input type="checkbox"/> No Grip | <input type="checkbox"/> Weak Grip <input type="checkbox"/> No Grip |
| Arm weakness: | <input type="checkbox"/> | <input type="checkbox"/> Drifts Down <input type="checkbox"/> Falls Rapidly | <input type="checkbox"/> Drifts Down <input type="checkbox"/> Falls Rapidly |

ED Wait Times

07:53

← ED Wait Times

User
John Doe

Ambulance
12345

Please note that these wait times are only approximate and for the general ED.

| ▼ Hospital | ▼ ED Wait Times (HH:MM) | ▼ Estimated Drive Times (HH:MM) |
|-------------------|-------------------------|---------------------------------|
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| Langley Memorial | 0:15 | 0:40 |
| Vancouver General | 2:00 | 0:35 |

Last updated: 15 minutes ago ↺

Medical Records

The screenshot shows the 'Medical Records' app interface. At the top, there's a blue header bar with a back arrow, the title 'Medical Records', and a menu icon. Below this is a green bar with two sections: 'User John Doe' with a person icon and 'Ambulance 12345' with an ambulance icon. The main area is a light gray background with a white rectangular form. Inside the form, it says 'Input Patient PHN:' followed by a text input field. At the bottom right of the form are two buttons: 'CANCEL' and 'SUBMIT'. The bottom of the screen shows the Android navigation bar.

The screenshot shows the 'Medical Records' app interface for a specific patient. At the top, there's a blue header bar with a back arrow, the title 'Medical Records', and a menu icon. Below this is a green bar with two sections: 'User John Doe' with a person icon and 'Ambulance 12345' with an ambulance icon. Below the green bar, the patient's information is displayed: 'PHN: 1112228 | Age 50 | Male' and 'Richard Doe'. Below this is a table with three columns: 'Show:', 'Group By:', and 'Sort By:'. The 'Show:' column has a dropdown menu with 'All' selected. The 'Group By:' column has a dropdown menu with 'Category' selected. The 'Sort By:' column has a dropdown menu with 'Name A-Z' selected. The table lists the following categories and counts:

| Show: | Group By: | Sort By: | |
|----------------------|-----------|-----------|--|
| All | Category | Name A-Z | |
| Activity | | Count: 1 | |
| Continuous Infusions | | Count: 7 | |
| Laboratory | | Count: 45 | |
| Medications | | Count: 19 | |
| Nursing Orders | | Count: 1 | |
| Special | | Count: 2 | |
| Uncategorized | | Count: 13 | |

At the bottom of the screen, there's a footer bar with the text: 'Medical records obtained from: Meditech, PLIS, Cerner' and 'Last updated: Jan 22, 14:30'. The bottom of the screen shows the Android navigation bar.

Dispatch

←

Dispatch Information

⋮

User

John Doe

Ambulance

12345

Ambulance 12345 – Assigned Calls

▼

| Priority | Location | Call Info | Category | Time | Notes | Map |
|----------|-----------------------------|-----------------------------------------------------------------------|-----------------|------------|-------|-----------------------|
| 1 | 10716 135a St. Surrey | Heart Attack - 58 year old male in the kitchen on the 2nd floor | Heart Attack | +60 sec | Click | Click |

Unassigned Calls

▼

| Location | Call Info | Category | Time | Map |
|-----------------------------------|--------------------------------------------------------------------------------------------|----------|------------|-----------------------|
| 10700 block 135a St. Surrey | Fentanyl overdose - 38 year old female located in back alley next to trash container | Overdose | +20 sec | Click |
| 15479 Marine Dr. White Rock | 80 year old female slipped on ice and has has broken left hip | Fall | +10 min | Click |
| Burnaby Lake | Male 40's is drowning in lake | Drowning | +15 sec | Click |

Recent Calls

Live Connection

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Dispatch Information - Map

⋮

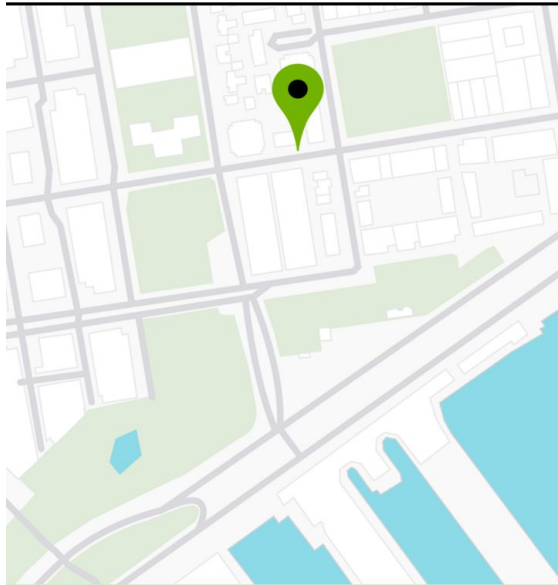
User

John Doe

Ambulance

12345

| Priority | Location | Call Info | Category | Time | Notes |
|----------|-----------------------------|-----------------------------------------------------------------------|-----------------|------------|-------|
| 1 | 10716 135a St. Surrey | Heart Attack - 58 year old male in the kitchen on the 2nd floor | Heart Attack | +60 sec | Click |



⏮

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Pre-Hospital CTAS

CTAS Scoring

User John Doe Ambulance 12345

| Level of Distress | O ₂ Saturation | CTAS Level |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------------------|------------|
| Severe: Fatigue from excessive work of breathing, cyanosis, single-word speech, unable to speak, upper airway obstruction, lethargic or confused | <90% | 1 |
| Moderate: Increased work of breathing, speaking phrases or clipped sentences, significant or worsening stridor but the airway protected. | <92% | 2 |
| Mild/Moderate: Dyspnea, tachypnea, shortness of breath on exertion, no obvious increased work of breathing, able to speak in sentences, stridor without any obvious airway obstruction | 92-94% | 3 |
| None | ≥94% | 4,5 |

1st Order Modifier - Respiratory Distress
Please select level of distress

SEND

CTAS Scoring

User John Doe Ambulance 12345

Select ED and CTAS Score

Select ED ...

Select CTAS ...

CTAS Scoring

User John Doe Ambulance 12345

Select ED and CTAS Score

SMH

CTAS

Arrival CTAS = 1

Departure CTAS = 2

CTAS Scoring

User John Doe Ambulance 12345

Arrival CTAS

Departure CTAS

| Step | Action | CTAS Score |
|------|----------------------|------------|
| 1 | Quick Look | N/A |
| 2 | Presenting Complaint | N/A |
| 3 | 1st Order Modifier | 2 |
| 4 | 2nd Order Modifier | Not Needed |

SEND

CTAS Scoring

User John Doe Ambulance 12345

Arrival CTAS

CTAS Score

Quick Look 1

Presenting Complaint Departure N/A

Apply 1st Order Modifier N/A

Apply 2nd Order Modifier N/A

SEND