A Mobile Platform for TICO
Ride Sharing

Nhan Chiang, Garrett Dodge,
Ted Hamilton, Sung-Hyuck Lee

Digital Innovations, MIT Media Lab
Jose gets picked up by his ride share.

Ride Sharing Identification
Jose

Ride Sharing Identification
Pedro
Jose and Pedro drive past one of the system’s towers
They arrive at the plant for work. Jose is a top worker.
Jose has to leave work early to pick up his son.
Jose arrives with Maria at the school.
• Jose rides to work everyday with his friend Pedro. The two met through the Costa Rica Ride Share system. Before the Ride Share system Jose lived too far away from the plant to be able to work there. Now he rides to work most days with Pedro.

• Jose is one of the top workers at the plant. Before the system his boss always had trouble finding the best employees.

• Today he needs to leave early to go to pick up his son. For only a few cents a mile, Jose can get wherever he needs to go.

• The system enables him to text message in his required route and finds him a ride quickly.
System Details

- Jose sets up his account online at work. He funds his account for the week and schedules his rides. Monday to Friday at 9 AM he needs a ride to work.
- The system sends ID information to his phone.
- When Pedro picks him up he authenticates using his Bluetooth phone. This way the systems knows to charge his account for the ride.
- Jose needs to leave work early. He texts in “cancel next ride” to cancel his existing ride home. He then texts “find ride from work to 10 memorial drive at 3 PM”
- He leaves the building and goes down to the Ride Share station. He checks in at the station using his card. If there multiple riders his order is determined by when he gets to the ride share station.
- When an available car comes into the area the system broadcasts a message. Jose then goes to the station to meet the ride.
RideSharing Tools

• RideBook
  – A web-based driver-rider matching system
  – Reservation function
  – Event Notification function
  – An infrastructure way (Internet)

• RideFinder
  – Standalone application on mobile devices to find drivers or riders in local area.
  – Communication functions (voice, text, personal broadcasting)
  – Event Navigator function (GPS + WiFi)
  – Emergency Ride
  – A hybrid way (infra + ad-hoc/mesh)
Who’s my best driver/rider?

Rider

<table>
<thead>
<tr>
<th>1st Driver</th>
<th>2nd Driver</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rider Sharing Identification Jose</td>
<td>Rider Sharing Identification Pedro</td>
</tr>
<tr>
<td>Rider Sharing Identification Maria</td>
<td></td>
</tr>
</tbody>
</table>

1st trip
- Time: 9 am – 11 am
- Destination: San Jose city hall
- Cost: $5

2nd trip
- Time: 3 pm – 5 pm
- Destination: kindergarten
- Cost: $7
RideBook: Matching & Reservation

Choose your best driver/rider

- **Rider**
  - Ride Sharing Identification Jose

- **Time:** 8:00 am
- **Pick-up:** Here
- **Destination:** Enter Destination…
- **Event:** Enter your events
- **Who:** My Network

Click for map
RideBook:
Event Notification

Who’s my best driver/ rider?

Rider
- Ride Sharing Identification: Jose

1st Driver
- Ride Sharing Identification: Pedro
  - Time: 9 am – 11 am
  - Destination: San Jose city hall
  - Cost: $5

2nd Driver
- Ride Sharing Identification: Maria
  - Time: 3 pm – 5 pm
  - Destination: Playtogether kindergarten
  - Cost: $7

Your rider is Pedro and Maria. Please refer to his info on RideBook
RideFinder

MIT Media Lab

Digital Innovations
RideFinder:
ID Transaction & Accounting

Request for Ride Sharing

A trusted rider has requested a pick-up at:
Calle San Tomás 42, San José at 17h00

This trip is worth $0.80 to you

Accept  Ignore
RideFinder: Finding Users at Station
RideFinder:
Ad-hoc negotiation at Station

Destination: City Hall

Stop order
1. INCAE
2. Park
3. Market
4. City Hall

Rider List
Blueman
Driver
City Hall

Rider List
Jose
Pedro
Andrea
Josepina
RideFinder: Tracking Location

GPS

Local Location server

GPS + WiFi

Location: Media Lab
6:17:01
**Scenarios**

**RS event navigator**
- RS Events (7 people)

**Community server**
- Broadcasting user

**RS station or stop**
- RS transaction at the departure (Check In)
- RS transaction at the destination (Check Out)

**GSM Networks**
- Your rider, Sandy arrived at the station!

**Wi-Fi Networks**
- I’m an ad-hoc rider…
Ride Request: SMS

Rider makes request

SMS to: TicoRide
From Calle San Tomás 42, San José, 17h00 Today
To Avenida Florida 207, Alajuela

Appropriate drivers receive request

SMS from: TicoRide
A trusted rider has requested a ride from Calle San Tomás 42 to Avenida Florida 207, Alajuela at 17h00 today.

Respond to this SMS to accept this request.
Ride Confirmation: SMS

Rider receives confirmation

SMS From TicoRide (1/2)
Confirmed Pick-up between 17h00 and 17h15

at Calle San Tomás 42, San José

going to Avenida Florida 207, Alajuela

SMS From TicoRide (2/2)
Driver: Paulo Wanchope
Vehicle: Mustang (red)

License Plate: H3DD7
Security code: R83FG

Single Rider Price:
$0.05/km for 20 km = $1.00
Ride Confirmation: SMS

Driver receives confirmation

SMS from TicoRide
Thank you for accepting a TicoRide Request.

Security code: R83FG

You will be credited $0.04/km for a total of $0.80.
Ride Request: Phone App

Rider makes request

Time: 17:00
Pick-up: Here
Destination: Enter Destination...
Click for map
Who: My Network

Drivers receive request

A trusted rider has requested a pick-up at:
Calle San Tomás 42, San José at 17h00
This trip is worth $0.80 to you.
Accept  Ignore
Ride Request: Phone App

Rider receives confirmation

Congratulations! Your request has been accepted. You will be picked up between 17:00 and 17:15.

Security number: G25HH

Driver receives confirmation

Thank you! To receive information, directions and update, please go to MyTicoRide.

Security number: G25HH
Sample Rate Table

Assuming the cost of driving is 50 CRC per KM:

<table>
<thead>
<tr>
<th># of Riders</th>
<th>Driver credited (per KM)</th>
<th>Rider pays (per KM)</th>
<th>TCCR gets (per KM)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>20</td>
<td>40</td>
<td>20</td>
</tr>
<tr>
<td>2</td>
<td>30</td>
<td>30</td>
<td>30</td>
</tr>
<tr>
<td>3</td>
<td>40</td>
<td>25</td>
<td>35</td>
</tr>
</tbody>
</table>
Flow Charts - RideBook

1. Login RideBook with Ride Identification No.
2. Show users’ history
3. Recommend Rider/Driver
4. Found Rider/Driver?
   - Yes: Make a Reservation
   - No: Searching/Matching Driver/Rider

5. No: RideFinder
6. Yes: Notify driver or Rider of the reservation Info
7. Get Ride Sharing No. (RS ID + Reservation Info)
8. Rideshare Event Tracking

RideFinder
Flow Charts - RideFinder
(Reservation Mode)

1. Run RideFinder

2. Driver/Rider arrives?
   - Yes
     - Certificate Driver/Rider (Bluetooth/WiFi ad-hoc mode)
     - Mobile device to Server: Event tracking (Check In)
     - Finish: Transaction for (Check Out)
     - Mobile device to Server: Event tracking (Check Out)
   - No
     - Notify driver/rider of Arrivals (SMS)

3. New Driver/Rider?
   - Yes
     - Reservation Mode
   - No
     - End RideFinder

4. RideBook
Flow Charts-RideFinder
(Ad-hoc mode)

- Run RideFinder
  - Start RideViewer
    - Find Riders/Drivers
      - Check Destination
        - More than one?
          - Yes
            - Create RideShare community
          - No
            - Negotiation
              - Agreement
            - Reservation Mode
              - RideBook