



# Pace

problem | research | concepts

IPRO 321

## Social Network Analysis for the Pace Suburban Bus Stakeholders

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## Prefix

**Problem:** Retention is a significant issue for Pace, as retention has direct financial implications and as Pace is uncertain why it is losing passengers.

**Research:** We conducted 46 passenger interviews and 14 Pace bus operator interviews.

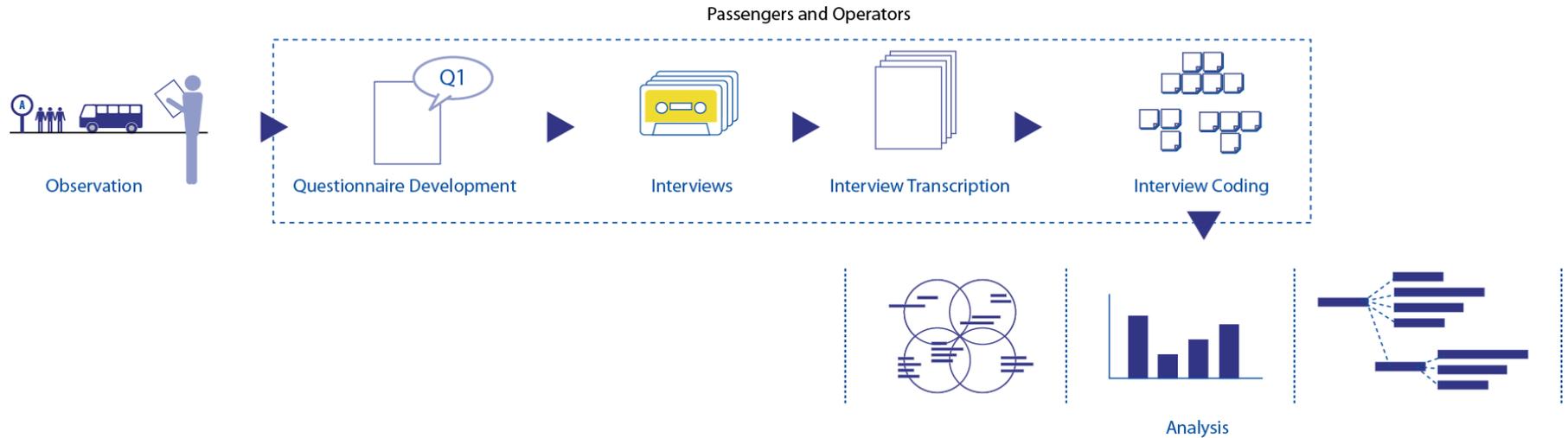
**Concepts:** We discovered three major areas where Pace can focus its strategic effort: Communication, Services, and Large System Concepts.

## Problem

Pace is a successful and forward-looking suburban Chicago bus company. Passenger retention is a significant issue with financial implications. Pace shared existing research with us which we extended and supplemented through additional research and analysis. Based on our research, we developed and modeled concepts that address retention. Our goal is to develop an integrated system that supports passengers and competes with cars — Pace's well established suburban competitor.

## Research

We conducted 46 passenger interviews and 14 Pace bus operator interviews. These interviews provide insights into passenger motivations, opportunities for service improvements, and the general attitudes of two primary stakeholders: passengers and operators.



## Research Methods

- Secondary research provided by Pace
- Passenger observation and photo-documentation
- 46 passenger interviews on routes 422 and 213
- 14 operator interviews

## **What can Pace do to improve their service?**

“The signs might not be big enough.”

“I don’t think I really understood where I could catch the bus...if I could use it as easily as the CTA.”

## **What’s good about the car?**

“You don’t have to abide by someone else’s schedule.”

## **What’s good about the bus?**

“You save gas and save money.”

“Maintenance on a car is kind of expensive.”

**What do passengers complain about?**

"Most passengers that I encounter generally complain about the bad service of the CTA. Overall, on the Pace service, most of the passengers enjoy the service and the on-time performance, especially."

**Do you think the current time schedule satisfies the passengers' needs?**

"They want to get off work early or they need to start earlier, and if they want to connect, they can't make their connections on certain routes, so they get confused."

**What would you like to improve on the route you currently drive?**

"I think they should shorten it a little bit because I think it's pretty far. It's kind of like driving from here to Gary, Indiana. I think they could probably just go part way and then have more buses come in different times and intervals."

Example #1: Concepts

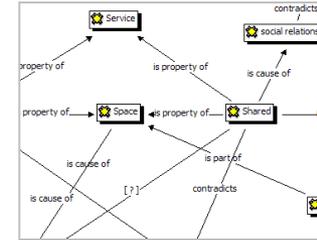
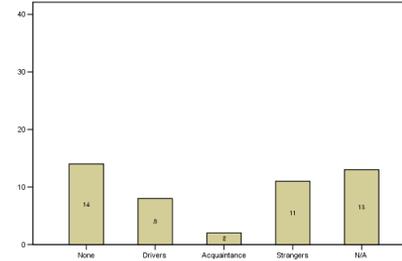
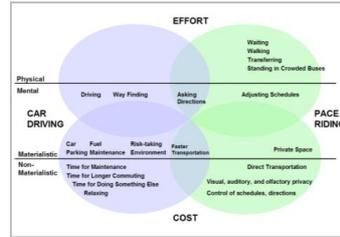
Where do you take it to? (Mobility) (Destination)  
Concept

Example #2: A property and its dimensions

(Connectivity- Bus to Bus | Bus to Train)  
Property Dimensions of the property

Example #3: A concept coded with a property and its dimensions

(Use of Pace Service: Frequency - Never | Rarely | Often | Frequently)  
Concept Property Dimensions of the property



## Analysis Methods

- Open/Axial Coding by Grounded Theory
- Concept Mapping
- Frequency Analysis
- Causal Network Diagram

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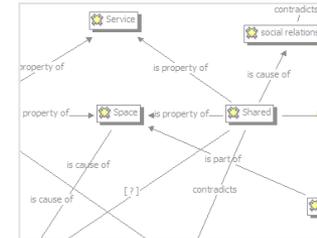
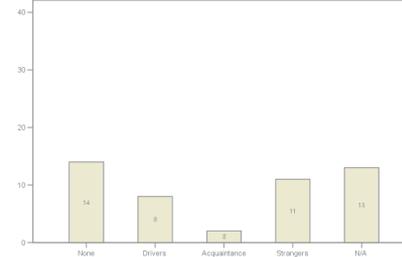
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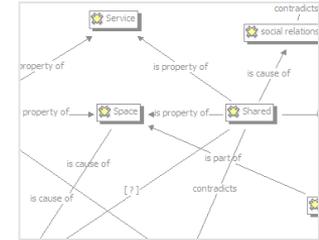
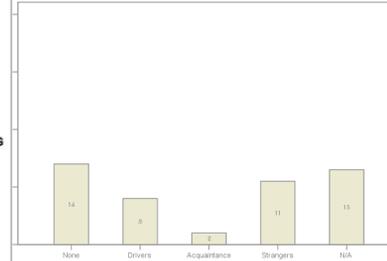
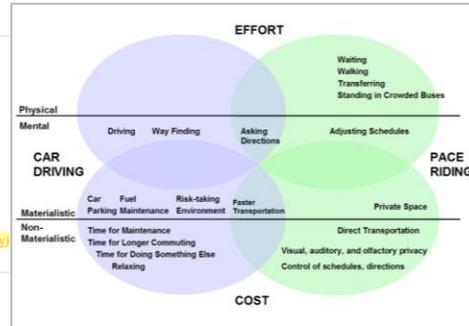
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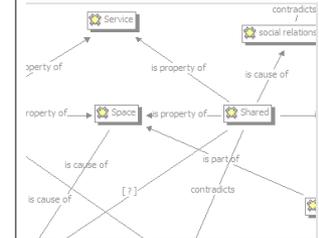
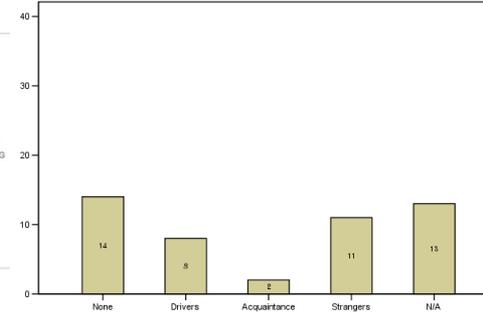
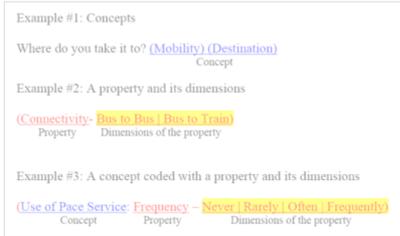
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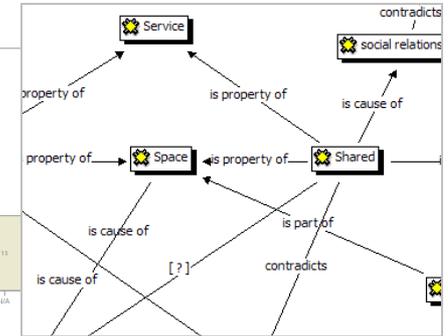
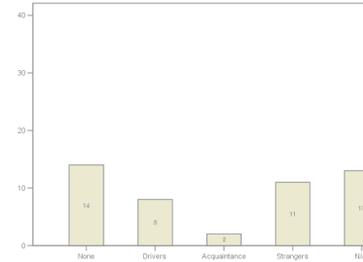
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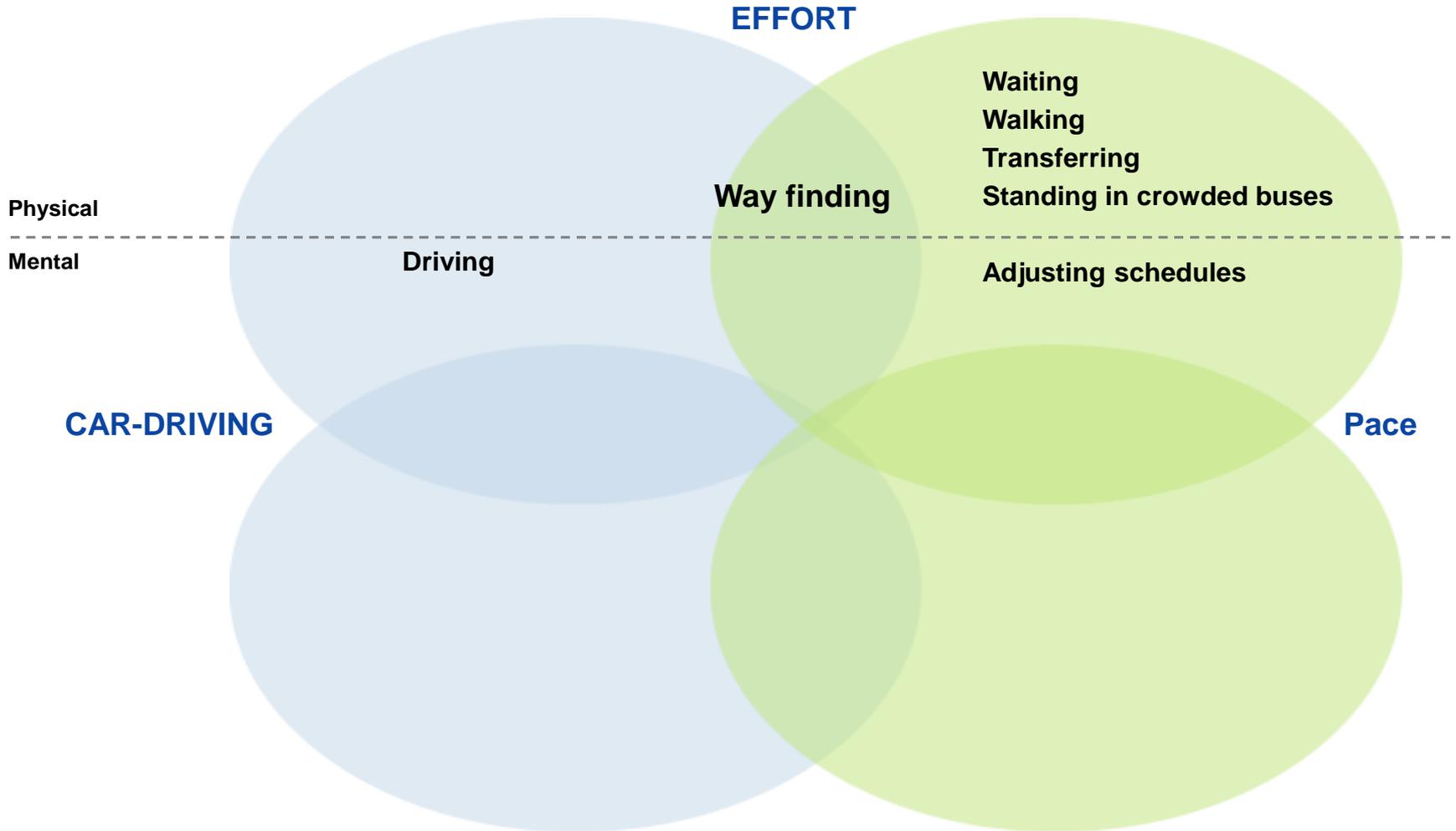
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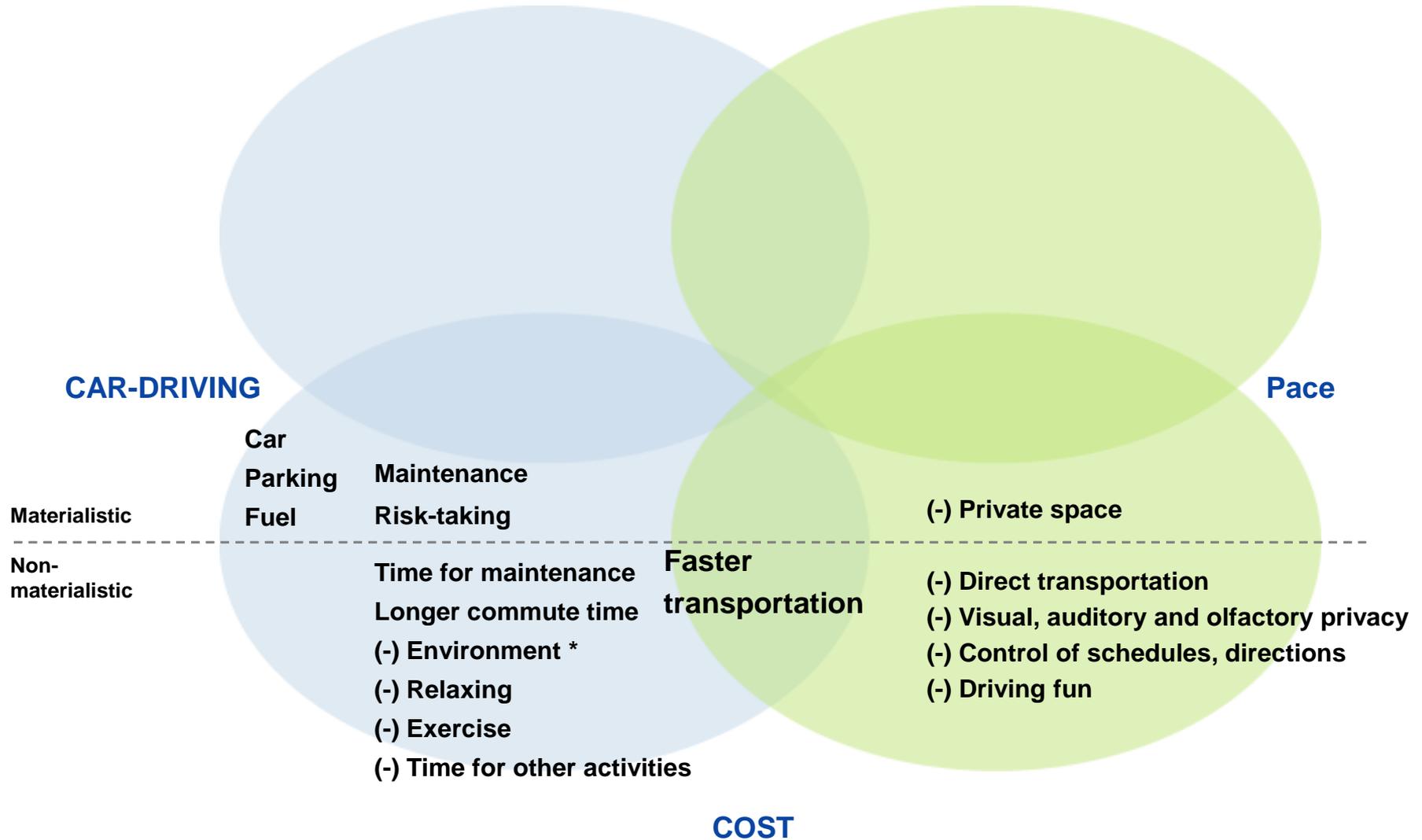
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# Car-Pace Experience Comparison

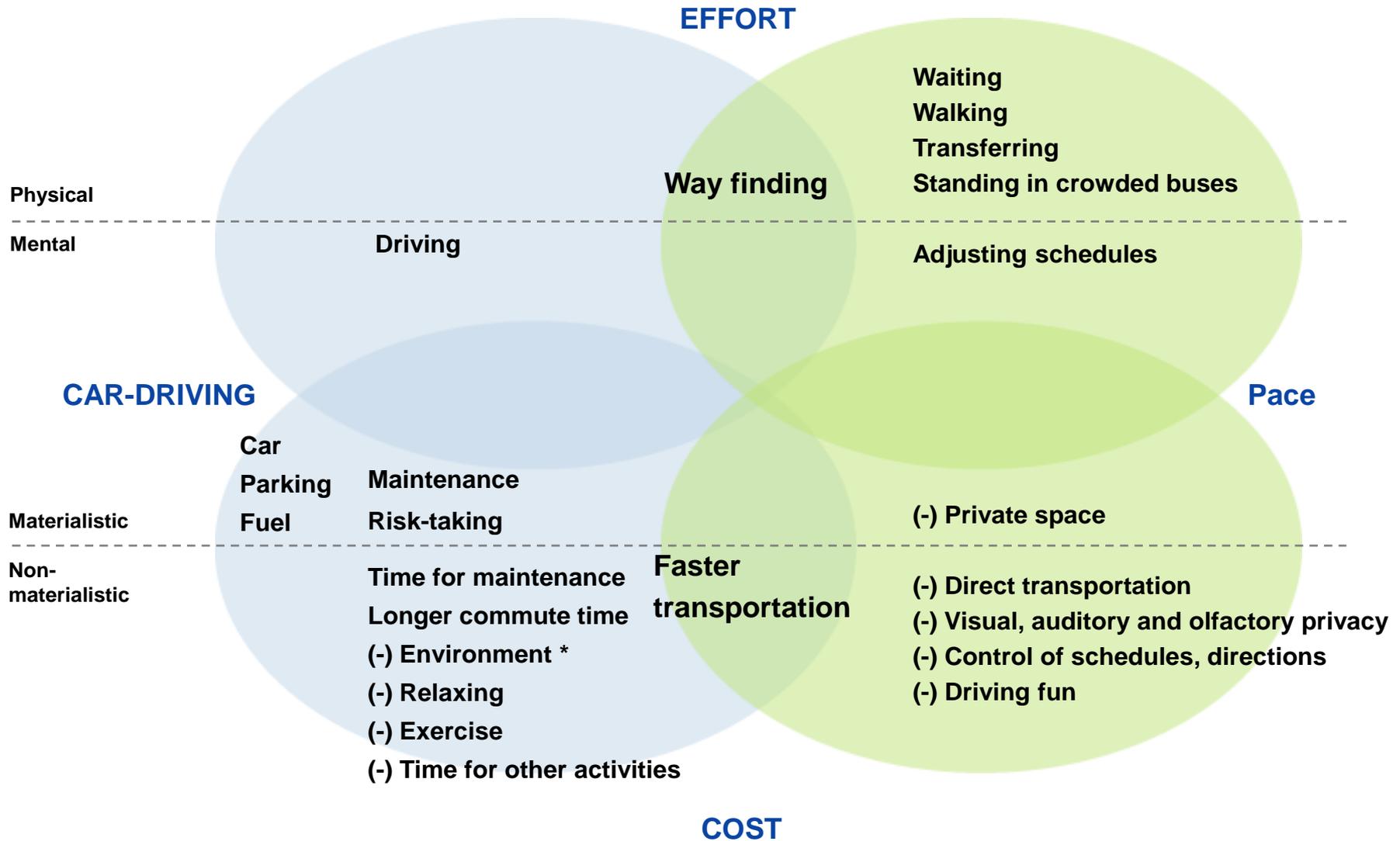


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## Concepts

We discovered three major areas where Pace can focus its strategic effort: Communication, Services, and Large System Concepts.

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## Concepts

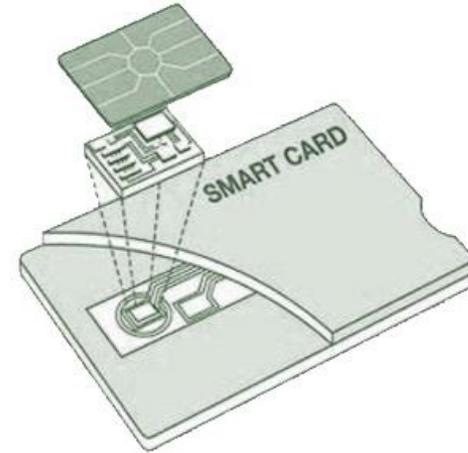
Communication

Passengers were confused by Pace communication, brand and visibility.



## Kiosks at Major Transfer Points

- Provide RFID enabled smart cards that remember passenger route preferences and double as transit cards
- Provide for passengers with disabilities
- Provide trip planners
- Provide schedules and maps
- Emphasize landmarks and events on relevant routes
- Provide on-the-spot printing



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Monday 1 Home / Bus / Train / Your Stop

Bus Line & Direction	10:00am	10:05am	10:10am	10:15am	10:20am	10:25am	10:30am	10:35am	10:40am
10:00am	2:06	2:08	2:10	2:12	2:14	2:16	2:18	2:20	2:22
10:05am	2:30	2:32	2:34	2:36	2:38	2:40	2:42	2:44	2:46
10:10am	3:00	3:02	3:04	3:06	3:08	3:10	3:12	3:14	3:16
10:15am	3:30	3:32	3:34	3:36	3:38	3:40	3:42	3:44	3:46
10:20am	4:00	4:02	4:04	4:06	4:08	4:10	4:12	4:14	4:16
10:25am	4:30	4:32	4:34	4:36	4:38	4:40	4:42	4:44	4:46
10:30am	5:00	5:02	5:04	5:06	5:08	5:10	5:12	5:14	5:16
10:35am	5:30	5:32	5:34	5:36	5:38	5:40	5:42	5:44	5:46
10:40am	6:00	6:02	6:04	6:06	6:08	6:10	6:12	6:14	6:16
10:45am	6:30	6:32	6:34	6:36	6:38	6:40	6:42	6:44	6:46
10:50am	7:00	7:02	7:04	7:06	7:08	7:10	7:12	7:14	7:16
10:55am	7:30	7:32	7:34	7:36	7:38	7:40	7:42	7:44	7:46
11:00am	8:00	8:02	8:04	8:06	8:08	8:10	8:12	8:14	8:16
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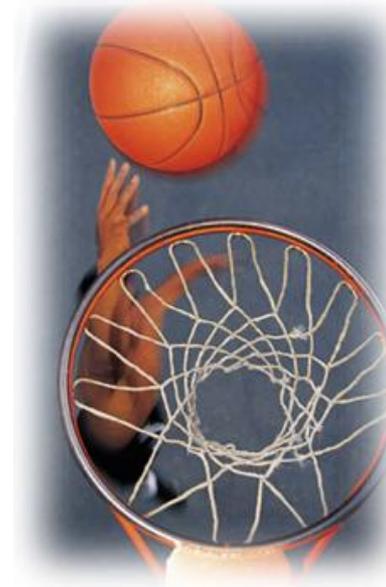
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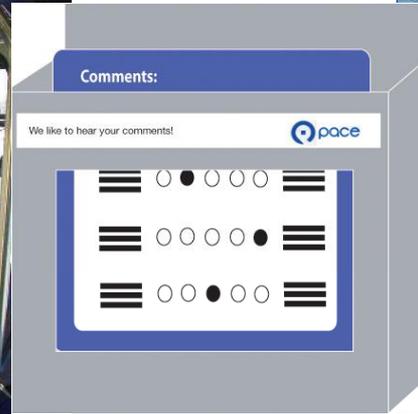


## LED Displays

- Provide time and location information on the bus:  
Time, Date, Location, Stop, Landmark
- Provide more time-specific information at stations:  
Time, Date, Arrivals, Departures
- Don't scroll messages —  
it makes them harder to read

## Advertising

- Sell ad space on Pace:  
Ceiling panels, Seat Covers, Shelters,  
TV, Print Materials, Website
- Advertise Pace in diverse media:  
Newspaper, TV, Radio, Web,  
Locations on the route



## Feedback Box

- Provide double-sided feedback cards to gather passenger comments
- Enter participating passengers in lottery for free ride tickets and local business coupons

## Placement

- On the bus
- At bus stops
- At kiosks



## Smart Route Names

- Clarify and disambiguate (renumbering 210 to 210a and 210b)
- Use more descriptive names (renaming 422 to 422 Sinclair)

## On-Bus Map

- Provide touch-screen electronic overview map of bus routes posted behind the operator's seat

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## Concepts

### Services

Several service improvements and enhancements can keep current passengers happy and attract new passengers. These ideas are lighthearted, build community, enhance Pace's brand identity and emphasize passenger experience.



## Fortune Cookie

- Place by the back door of the bus
- Provide several unique fortunes
- Offer free rides or local business coupons printed on the back of each fortune

## Thousandth Passenger

- Award a Pace branded tote bag, hat or t-shirt to every thousandth passenger to board the bus



## Coupons

- Offer “ten rides - one free” promotions
- Provide coupons for free merchandise and services from local businesses

## Fare Discounts

- Offer half-off fares on rides during holidays and Pace anniversaries
- Host “Fun Fair” events with games for children and information about Pace for adults

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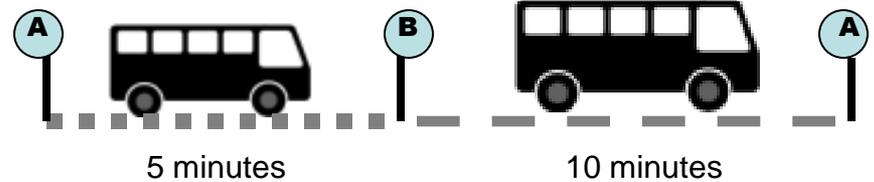
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## Weekend Service



# Services

## Varying Size and Frequency



## Extended Routes and Schedules

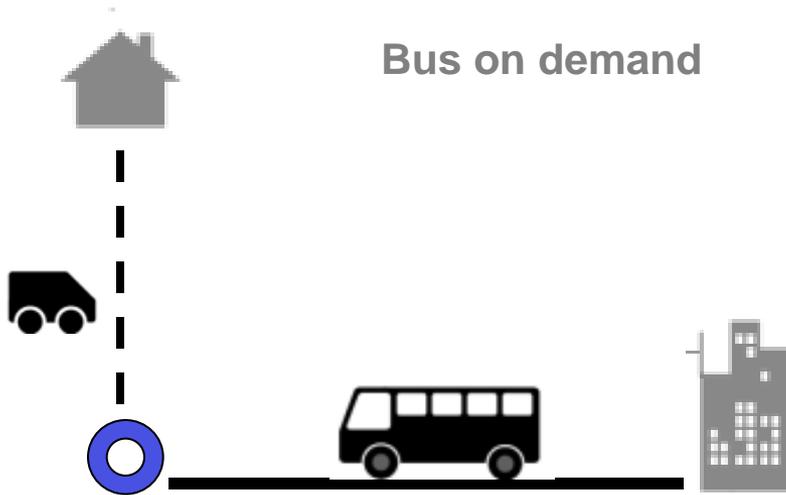
- Offer service on weekends and at later hours to accommodate passenger needs
- Offer additional services on an experimental basis to determine which extended times are best

## Varying Bus Sizes and Frequency

- Research frequency of route use
- Use smaller buses or less frequent bus service during sparsely used routes and times
- Run smaller buses more frequently during rush hours

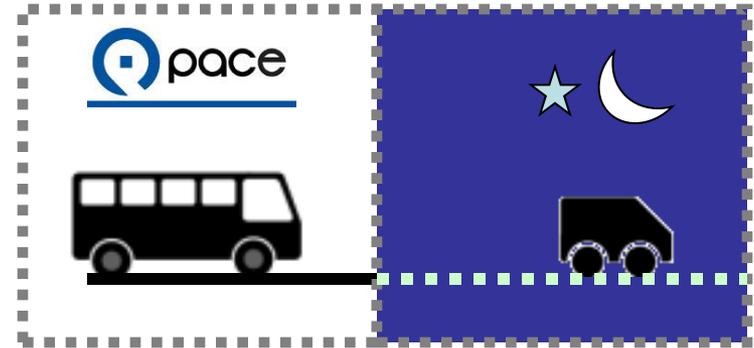
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# Services

## Night Service



## Bus on Demand

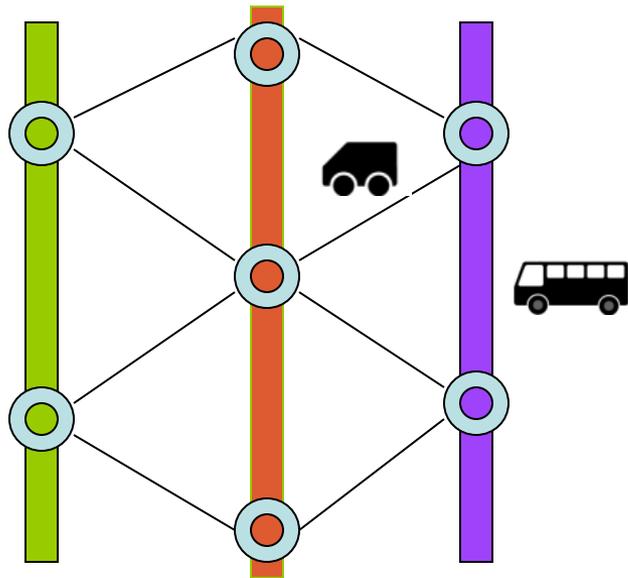
- Provide door to door bus service (may be infeasible for heavily used routes)

## Night Service

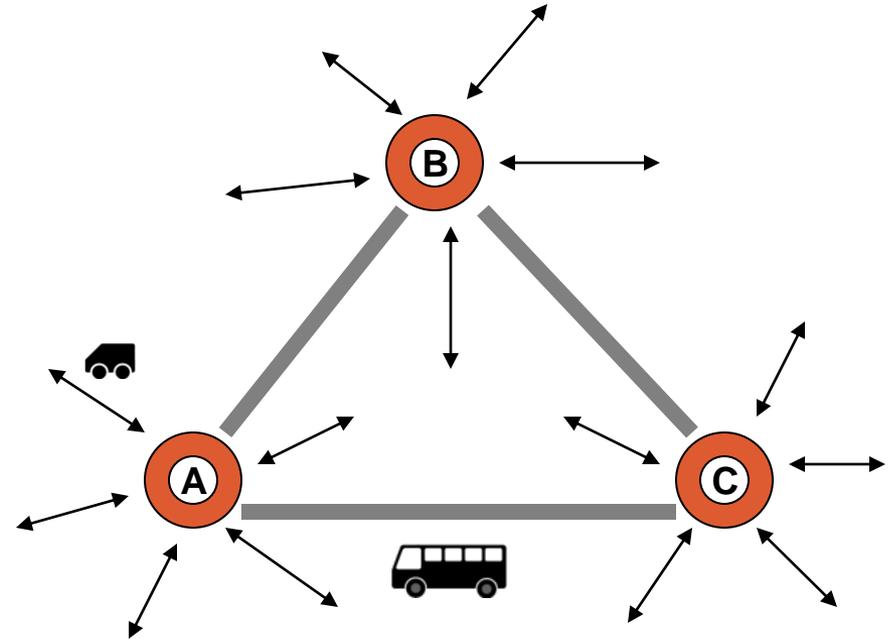
- Offer personalized service at night
- Discourage night car driving by introducing friendly night services that ensure safe commutes

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# Services



## Zig-Zag Connectors

- Combine routes traveling in the same general direction during night hours
- Allow passengers to call dispatch when they need pickup
- Allow operators to vary the route depending on specific passenger needs

## Hub and Spoke System

- Create a hub and spoke system
- Operate buses only on certain trunk routes during night hours
- Send vans from the hubs to passengers' specific locations and destinations

## Concepts

### Large System Concepts

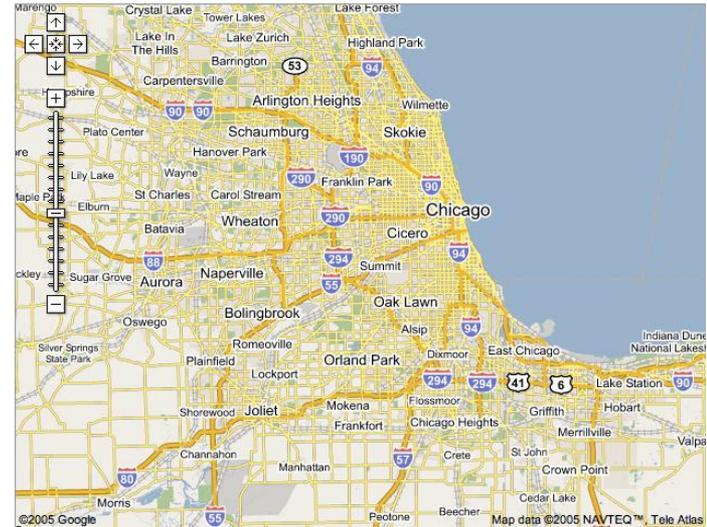
Adjustments to the larger transportation system can provide the Pace bus system with significant advantages over cars.

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# Large System Concepts

QuickTime™ and a  
TIFF (Uncompressed) decompressor  
are needed to see this picture.



## Bus-Only Lane

- Build lanes exclusively for buses to improve bus services for passengers
- Operate buses on direct routes that are attractive and faster for passengers

## Other Benefits Include

**Connectivity** - Faster and better connections to other transit routes

**Accessibility** - Faster travel times and better connections

**Efficiency** - Simplified routes with fewer stops

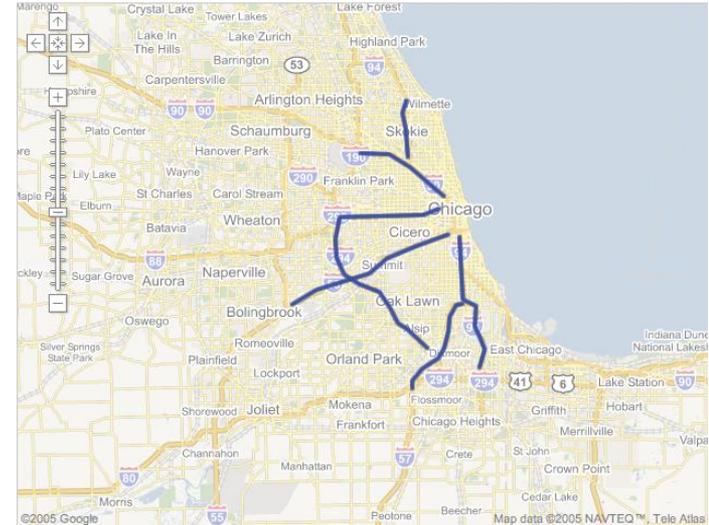
**Aesthetics** - Landscape and urban design features designed to complement the transit features

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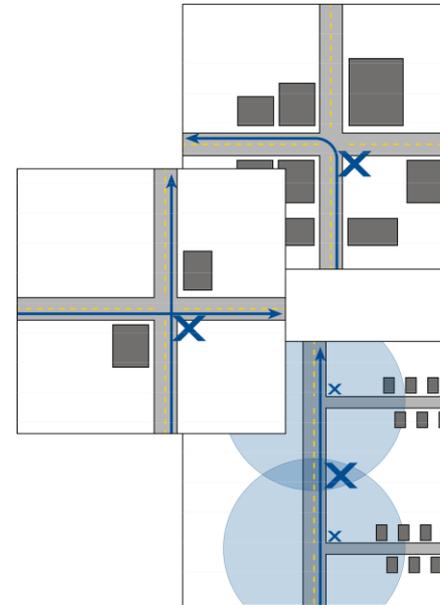
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## Shelters

- Shelters reinforce Pace's presence
- Shelters exist, but not in sufficient numbers, and not with a coherent identity
- Shelters would provide a service that is in high demand among Pace passengers

## Strategic Implementation

- Tie-in with major community points within town centers
- Locate at major intersections, especially where transfer points between two or more Pace routes exist
- Provide at least one sheltered stop within walking distance of major residential areas



## Explore New Opportunities

- Integrate shelters with local businesses that would offer shelter space in exchange for the chance to provide other services
- Partner with school districts to plan locations of shelters based on population distribution

## Design Competitions

- Sponsor shelter design competitions, and implement the winning designs in the originating communities, strengthening Pace's ties with these communities, as well as the identities of the communities themselves

## Concepts

Communication

Services

Large System Concepts

These concepts enhance Pace's structure of communication, integration with community and expansion of service.

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## Research Analysis Concepts

This process provides Pace with the means to gain the competitive edge to hold on to current passengers and increase future ridership.

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## Thanks

Thanks to Pace for providing an interesting and challenging problem for this workshop

And to

Odette Samuelson for being the liaison between Pace and IIT

Tatiana Jane for sharing Pace research documents

Will Heelen for assisting us with operator interviews

## Team Members

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Nivedita Basu

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Rinku Gajera

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Griva Patel

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Hannah Schubert

Papinya Thongsomjit

Douglas VanderMolen

## Questions and Answers

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