The Super Way: a PRT System

Preliminary Feasibility Analysis

SMSSV: Business Super Team
Christian Jorgensen & Stephanie Tucker
Alden StarCar: 1970’s

It’s been a journey...
78.5% of people use a car as their main mode of transportation.

Question:
“What mode [of transportation] do you presently use for most of your trip?”

Responses

- Walk
- Car
- No Response
- Other
- Shared Taxi
- Taxi
- Motorcycle
- Bicycle

0% 10% 20% 30% 40% 50% 60% 70% 80% 90% 100%

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[Transit Survey 2012]
59% of those travelers would **NOT** be willing to walk more than **5 MINUTES** to a transit stop.

**Question:**
“Pick the longest walking time acceptable to you at each end of the trip.”

**Responses**

- **No Response**
- **5 Minutes**
- **15 Minutes**
- **30 Minutes**
- **60 Minutes**

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[Transit Survey 2012]
59% of those travelers said that they would need to **ALWAYS** get a seat to use transit

**Question:**
“Would you always need to get a seat?”

**Responses**

<table>
<thead>
<tr>
<th></th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Not Always</td>
<td>40</td>
</tr>
<tr>
<td>Always</td>
<td>60</td>
</tr>
</tbody>
</table>
TRUE FUEL COSTS:
- $15.14 per gallon
- Accounts for:
  - Oil industry tax break
  - Corporate welfare handouts
  - Military action (Iraq)

INFRASTRUCTURE FOR CARS:
- Air and Water Pollution
- Societal Cost of Congestion
  - Stress
  - Illness
  - Time
  - Loss of opportunity
- Roads
- Parking

Source: The Progress Report

Source: www.treehugger.com

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What Commuters want:

Want a car substitute, not a bus substitute!
Research
Customers vs. End Users
SWOT Analysis #1

OPPORTUNITIES

- First-Mover Advantage
- Move from Fossil Fuels
  - Increase in fuel cost
  - Progressive increase in ridership
- Global Standards
- Early Adopters
- Connecting to Existing Infrastructure
- Job Creation

THREATS

- Barriers to Entry:
  - Standardized Technology
  - Securing Funding
- Local & Regional Zoning
- Consumer Acceptance
- Competitor’s Opposition
**STRENGTHS**

- Safety
- Scalability
- Modularity
- Renewable Energy
- Reduce Traffic Congestion
- Operating Costs

**WEAKNESSES**

- Land-Use Challenges
- Significant Infrastructure
- Behavioral Changes
- 1st mile/Last Mile
- Gap in Funding
Define the actual costs of current systems of transportation and find better solutions.
## Estimated Construction Costs per Mile

<table>
<thead>
<tr>
<th></th>
<th>SuperWay Podcar - Unidirectional</th>
<th>SuperWay Podcar - Bidirectional</th>
<th>ULTRA system</th>
<th>Vectus</th>
<th>Taxi 2000 SkyWeb Express</th>
<th>HiGH SPEED TRAIN</th>
<th>BART</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cost per Mile</td>
<td>$9 Million</td>
<td>$13.7 Million</td>
<td>$9 Million to 15 Million</td>
<td>$18 Million</td>
<td>$16 Million to $24 Million</td>
<td>$80.5 Million to $161 Million</td>
<td>$241 Million</td>
</tr>
</tbody>
</table>
### Estimated Startup Costs

<table>
<thead>
<tr>
<th></th>
<th>Airport System</th>
<th>Local Regional System</th>
<th>Wider Regional System</th>
<th>State-wide</th>
</tr>
</thead>
<tbody>
<tr>
<td># of Miles</td>
<td>Low: 6.5 Miles</td>
<td>Med: 60 Miles</td>
<td>High: 120 Miles</td>
<td>Low: 436 Miles</td>
</tr>
<tr>
<td>Est. Total Cost</td>
<td>Low: $58.5 M</td>
<td>Med: $89 M</td>
<td>High: $162.5 M</td>
<td>Low: $3B</td>
</tr>
</tbody>
</table>

|                        | Low: $9M       | Med: $13.7 M          | High: $25M            | Low: $9M   |
|                        | Low: $540 M    | Med: $840 M           | High: $1.5B           | Low: $3B   |
|                        | Low: $1.08B    | Med: $1.64B           | High: $3B             | Low: $3.92B |
|                        | Low: $1.5B     | Med: $3B              | High: $5.97B          | Low: $10.9B |

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System Design Options

PRIMARY CORRIDOR  GRID MATRIX
Need a **Hardware Reference Platform (HRP)**
Unkowns #1

- 1\textsuperscript{st} time implementation of technologies
  - Propulsion
  - Switching
  - Software
  - Car Design
  - Station Design
  - Power Sources
  - Other
Unknowns #2

1\textsuperscript{st} time implementation of building and deploying:

- Manufacturing Issues
- Regulations
- Public Reaction
- Availability of Funding
- Viable Business Model
- System Safety
- System Reliability
- Natural Disasters
- Manmade Disasters
- Other
Will consumers be willing to switch?

- Cost
- Comfort
- Safety
- Convenience
- Availability
- Speed
- Reliability
- Flexibility
- First Mile, Last Mile
- Other
# Mode of Transportation

<table>
<thead>
<tr>
<th></th>
<th>PRT</th>
<th>Car</th>
<th>Automated Cars</th>
<th>Bus</th>
<th>Train</th>
<th>Light Rail</th>
<th>Electric Scooter</th>
<th>Bicycle</th>
<th>Walk</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Point-to-Point</strong></td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>E?</td>
<td>E?</td>
<td>E?</td>
</tr>
<tr>
<td><strong>Wait-time</strong></td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>E?</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td><strong>Travel-Time</strong></td>
<td>A</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td><strong>Private</strong></td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>E</td>
<td>E?</td>
<td>E?</td>
</tr>
<tr>
<td><strong>Comfortable</strong></td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>D</td>
<td>D?</td>
</tr>
<tr>
<td><strong>Clean</strong></td>
<td>A</td>
<td>A</td>
<td>A</td>
<td>D</td>
<td>D</td>
<td>D</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td><strong>Safe</strong></td>
<td>A</td>
<td>D</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>D</td>
<td>E?</td>
<td>E?</td>
</tr>
<tr>
<td><strong>Automated</strong></td>
<td>A</td>
<td>E</td>
<td>A</td>
<td>E</td>
<td>E</td>
<td>A</td>
<td>E</td>
<td>E</td>
<td>E</td>
</tr>
<tr>
<td><strong>Transportation of Goods</strong></td>
<td>E</td>
<td>A</td>
<td>A</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>D</td>
<td>D</td>
</tr>
<tr>
<td><strong>Low Cost to End User</strong></td>
<td>E</td>
<td>D</td>
<td>D</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>D</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td><strong>Cost of Implementation to Customer</strong></td>
<td>E</td>
<td>E?</td>
<td>E?</td>
<td>E?</td>
<td>D</td>
<td>D</td>
<td>A</td>
<td>A</td>
<td>A</td>
</tr>
<tr>
<td><strong>Environmental Consciousness</strong></td>
<td>A</td>
<td>D</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>E</td>
<td>A</td>
<td>A</td>
<td>A</td>
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</tbody>
</table>

**Key:**
- A = Advantage
- D = Disadvantage
- E = Even

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Fall 2012 Goals

- Define Product/Service, Customer & Market
- Identify Differentiators & Market Position
- Perform Feasibility Analyses
- Preliminary Financial Projections & Analyses
- Propose & Evaluate Business Cases

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# Spring 2013 Goals

<table>
<thead>
<tr>
<th>Business Case(s)</th>
<th>Financial Plan</th>
<th>Marketing Plan</th>
<th>Business Model</th>
<th>Business Plan</th>
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</thead>
</table>

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Pull from feasibility document
First-mover advantage
Move from fossil fuels
Safety
Congestion
Consumer Expectations
Zoning & Acceptance
Scalability
Modularity
Global standardization
Land-use
Funding Models
Likely early adopters
Integration into existing Infrastructure
Management Team

- Dr. Burford Furman
- Students

- Advisors and Mentors
  - Ron Swenson
  - Dr. Basu
  - Dr. Musgrave
  - Professor Andra
Questions?....Thank you!