



Department of
Civil & Environmental Engineering
Massachusetts Institute of Technology

Carnegie Mellon®
SILICON VALLEY

Real-Time Rides: The Smart Roadmap to Energy and Infrastructure Efficiency

*MIT/CMU Workshop Summary
April 16 – 17, 2009*

This report was written by Andrew Amey (MIT), Valerie Webb (MIT), John Attanucci (MIT) and Rabi Mishalani (Ohio State University).

Introduction

With emerging hardware and software developments in the provision of rideshare services, MIT's Real-Time Rides research team, in collaboration with a team from Carnegie Mellon Silicon Valley, organized a workshop at MIT to discuss potential future directions for ridesharing. The increasing prevalence of data connected and GPS-enabled mobile devices in combination with social networking systems such as Facebook and Twitter are providing unique opportunities to improve rideshare convenience. Workshop participants were drawn from various stakeholder groups who have important roles to play in the future of ridesharing including service providers, technology firms, government, and academia. The goals of the workshop included encouraging greater collaboration and information sharing among critical industry players, discussing roles for the academic community in knowledge building aimed at facilitating greater rideshare participation, and generally considering collaborative initiatives among the various players that could have a positive impact on the rideshare industry as a whole.

The workshop took place at MIT in Cambridge, Massachusetts on April 16th and 17th, 2009. The workshop was structured around topic-based sessions. The research team and select workshop attendees framed the topics in each session with short presentations. These presentations were followed by a structured discussion among all participants.

For each workshop session, this report provides a general description of the presentations given and more specific summaries of the group discussions that took place. To the degree possible, we have attempted to identify and emphasize the main themes that resonated throughout the sessions. We acknowledge that not all comments or questions brought up in the sessions are necessarily covered in this summary report. The report concludes by considering potential next steps that could be taken by stakeholders in the ridesharing industry.

A detailed agenda and list of workshop attendees are included at the end of this document. We also encourage everyone to visit our website at www.RealTimeRides.org for abstracts of the presentations, downloadable versions of the presentation materials, a database of rideshare service providers, and statistics & trends in ridesharing.

Major Workshop Themes

The two-day workshop covered a variety of topics, but four major ideas or themes emerged as critical to the success of ridesharing.

1. There is a strong belief that ridesharing is largely dominated by human behavior, preferences and perceptions as travelers make transportation choices. Technology can support rideshare adoption through, for example, added convenience and safety, but it is not sufficient for sustained improvement in rideshare participation. Service and cost characteristics, non-transport incentives and marketing efforts are viewed as critical to rideshare participation.
2. Additional data and better analysis of rideshare information is needed. This theme focused on the need to understand the size of the rideshare market and the behavior of individuals. Specific behavioral research includes understanding modifications in travel choices influenced by incentives, and responses to changes in variables such as the price of fuel. Some private rideshare providers have indicated a willingness to share their data; similar offers from public agencies would be desirable as well.
3. Many participants saw the integration of rideshare service information with other modal information as essential to improving rideshare participation. A true multi-modal system should give travelers better opportunities to participate in ridesharing.
4. The majority of workshop attendees saw some value in an open-source, common data standard for sharing rideshare data with some participants indicating an interest in working collaboratively its development. However, some participants expressed hesitation about a common standard, given that the technology-enabled rideshare market is still in its infancy. Some business models would rely much more heavily on the interchange of information between providers than others would. Ultimately, the importance of combining rideshare information with other modal information may be the most compelling reason for a common standard and rideshare provider collaboration.



(Photos: P. Minett)



Introducing the Workshop

John Attanucci from MIT welcomed the participants and asked everyone to introduce themselves. Mike Messner was introduced as the sponsor of the research project. The organizing team was introduced and included John Attanucci, Valerie Webb and Andrew Amey from MIT, Rabi Mishalani from Ohio State University, and Jim Morris from Carnegie Mellon Silicon Valley. The session moderators were also introduced and included John Attanucci, Jim Morris, Rabi Mishalani, Andrew Amey, Valerie Webb, and Eric Schreffler, an independent consultant specializing in Transportation Demand Management issues. Ground rules were provided for the sessions including a 15-minute presentation time limit and a request to hang onto questions until the end of all presentations in a session.

Mike Messner, a partner at Seminole Capital Partners and the research sponsor, gave a short presentation on differences in productivity improvements achieved in different transport sectors. Mr. Messner presented information showing large increases in seat utilization in the airline industry and freight car utilization in the railroad industry, yet personal vehicle occupancy has decreased steadily over the last 40 years. He showed that there are now more vehicles on the road in the US than licensed drivers. Ultimately, Mr. Messner believes there are huge potential savings that can be achieved through ridesharing and that the location-aware technologies can support this. He has suggested a rideshare trial in a medium-sized US city as a way of demonstrating the potential of the technology.

Setting the Stage: Past and Present Rideshare Markets

Presentations:

Andrew Amey and Valerie Webb, graduate students pursuing a Master's degree in Transportation at MIT, presented various statistics and trends on the level of rideshare participation and how it has changed over time. Trends were largely summarized at the national and metropolitan level based on government sources such as the US Census. The key points from interviews with providers conducted prior to the workshop were also discussed.

Dr. Jim Morris, the Dean of Carnegie Mellon Silicon Valley, laid out a number of current and previous attempts at ridesharing, emphasizing the difficulty in creating a business model that works. He focused on the importance of the probability of finding a ride match and provided a hypothetical example from the Bay Area. He mentioned that even in a corridor that is relatively constrained and has high traffic volumes such as US101, there are still issues related to critical mass. He emphasized that a transfer point significantly improved the likelihood of finding a rideshare match, but reduced the overall convenience of ridesharing. Through the Bay Area example, Dr. Morris suggested that there is a “tipping point” of matching probability; once a service reaches a certain number of users (i.e.: critical mass), the probability of finding a match reaches a level at which the service becomes reliable, efficient, and sustainable.

Topic #1: Historical Ridesharing Trends and Market Potential

Presentations:

Mr. Eric Schreffler gave a brief history of Transportation Demand Management policies in the US. He also recommended caution in the development of real-time ridematching services and urged providers not to overstate the benefits of such systems; he has seen a number of systems miss predicted targets and has seen other systems fail entirely thus curtailing any emerging momentum for supporting and enhancing ridesharing. The presentation outlined some common ridesharing myths as well as barriers that would need to be overcome to significantly improve rideshare participation.

Mr. Rick Steele of NuRide made the assertion that technology is not the primary problem facing the ridesharing industry. When gas prices rose in the summer of 2008, so did the number of people registering with NuRide, suggesting that the right financial incentives could make ridesharing a more desirable mode. He believes that the fundamental rideshare issue is one of database turnover; both successful and unsuccessful ridesharers eventually leave the database unless they have an incentive to stay.

Dr. Paul Resnick, a professor from the University of Michigan, described two unique approaches to building a rideshare market. The “fast launch” approach was the one he thought would have the most success. It involves a major marketing scheme and program subsidization for a period of time until the program reaches critical mass. The question is how long it takes to reach a critical level of demand and whether the investment can be justified. Dr. Resnick suggested that, although it can be difficult, having a realistic estimate of demand is key when starting any rideshare service. One way to improve the accuracy of demand estimation is to use GPS-enabled devices to create a digital trip diary for travelers. By doing so, common travel patterns could be discerned and personalized scenarios of other mode options that are available could be suggested to the traveler at the time of their various trips.

Topic #1 Discussion:

Following the presentations, there was much discussion on the institutional nuances of ridesharing. When freight rail car utilization and airline seat utilization were improved, an institution “wins” in both cases through lower asset investment costs. Individuals for the most part already own their vehicles, making the benefits of sharing a ride marginal for the driver. There was discussion on how the next Federal Surface Transportation bill could be an opportunity for a few small successes for ridesharing, including the possibility for one or more small pilot programs or alternatively, direct tax-benefits for people that choose to rideshare.

Dr. Resnick’s presentation brought up some suggestions on ways to collect data prior to starting a ridesharing service. GPS-enabled cell phones could be an effective way to collect trip data. The phone would track where and when the person traveled and could even be linked to their calendar to infer trip purpose. Once a ridesharing program is in place, this information could be used to inform people of their travel behavior and provide them with information on alternative modes of travel. Making people aware of their options is the first step in getting them to change

their habits. As a further benefit, these technological data collection efforts may lead to higher quality travel information due to the elimination of self-reported travel survey responses.

A question was posed as to why carpool mode share went down after the drop-off in gasoline prices in late 2008, while transit mode share remained relatively high. One of the issues could have been that the rideshare data presented was registrations or requests for rides, rather than actual rides taken. While substantially more ride requests may have been made during the period of high gasoline prices, the actual number of rides taken is unknown. It was also suggested that transit might be perceived as a more reliable and predictable form of transportation when compared to ridesharing, hence the continued high ridership.

In response to Mr. Steele's presentation, there was some discussion on the importance of incentives to develop and sustain an active ridesharing market. Service providers are offering incentives in different ways. Some distribute rewards to carpoolers directly, some allow affiliated organizations to offer rewards, while others have direct financial benefits for the driver in the form of passenger payments.

Topic #2: Behavioral and Attitudinal Characteristics of Travelers - Role of Incentives and How to Overcome Safety & Security Concerns

Presentations:

Dr. Susan Squires, from Trinity College Dublin, presented research from her "Ride-along" in-car study where she examined activities and behaviors that take place in vehicles. The study revealed that perceptions of the interior and exterior of a vehicle are very different. External features of a vehicle are a statement of personal identity for others to see, whereas the interior space is viewed as personal space that is reserved for private activities. One of Dr. Squires' conclusions from the study was that overcoming the perception of the "vehicle as private space" is a major challenge to be addressed when encouraging ridesharing. Within the privacy context, separate issues to consider include appropriate etiquette and behavior when riding in someone else's vehicle and a method of evaluating the character of the person who you are letting into your vehicle.

Dr. Ted Selker, a professor from Carnegie Mellon Silicon Valley, believes that ridesharing is a form of socialization; a method of connecting with a specific affinity group, a way of bridging different social groups or networks of people, and of creating social value. Ultimately, he encouraged participants to ask themselves how one could best create social value through ridesharing. Rather than beg for rideshare participants, we should be encouraging people to share social experiences through ridesharing.

Kursat Ozenc, a PhD student at Carnegie Mellon University, has been doing research on factors influencing personal travel, and trying to understand rideshare behavior specifically. He sees the historical decrease in ridesharing as a failure to provide incentives for collective transportation, with the results manifested as a broken infrastructure system and urban sprawl. He conducted a survey of nine rideshare families in Pittsburgh. Some of the insights that have come from the research thus far are:

- People absolutely hate waiting (for the bus, for rideshares, etc.),

- People have complex schedules, meaning travel flexibility and mode choices are critical, and
- Ridesharers react to a combination of convenience, cost and personal factors; flexibility in personal commute is the primary factor, second is cost (both in fuel costs and time), and third is personal preferences.

Topic #2 Discussion:

The discussion began with differing opinions on how people view the interior space of a vehicle. While many believed Dr. Squires finding that the interior of a vehicle is private space, several people wondered if different people view vehicle space differently? Dr. Squires provided the “Living Room” metaphor to describe how the people in her study viewed the vehicle interior, but did acknowledge that this might be a ‘suburban’ view of the vehicle. Another participant thought that urban dwellers might view the privacy of their vehicle less strongly, because urban dwellings are smaller and space is often shared with roommates and visitors. They thought the “coffee house” metaphor, whereby people setup a private space in a shared setting, might describe urban dwellers.

Understanding the behavior of the slugging population may shed light on perceptions of vehicle space, as they have a substantial set of etiquette to make the experience predictable. Some believed that the etiquette was not widely liked in the slugging community and sometimes violated (e.g.: “slug buddies” that fall back in the line to ride with someone they like). Some saw slug lines as a social activity, a low-risk opportunity to meet new people, which might suggest that the interior of a vehicle is more like ‘shared space’.

This idea of ‘shared space’ led to a question about whether there was an opportunity to change the focus on ridesharing from one of transportation to one of social interaction. Hitchhiking used to be a largely social activity, not based nearly as much on timely travel. In some respects, finding a rideshare match is not much different from finding a friend on Facebook or a partner on Match.com or other dating sites. Both of these activities start with an online relationship that eventually extends into the physical world.

Addressing Dr. Selker’s question about how best to create value while commuting, a suggestion was made that commute time could be much more productive in a rideshare vehicle if internet access was available. With the ability to do work, catch up on news, etc., one could begin to make an improved productivity argument for ridesharing.

A question of the cultural and social differences between Americans and other Western nations was posed. Why do so many Americans carpool? Some speculated that it’s a function of lower transit availability, while another participant suggested that there is a stronger culture of walking in other Western countries. Is there a need for a stronger government role in ridesharing? When ridesharing was high during WWII and the 1970 Oil Crises, the government appealed to commuters to share rides as an act of patriotism, would that sort of message still have traction today?

The question of data availability was brought up. There was some belief that ‘use’ data were somewhat prevalent, but that corresponding socioeconomic data were less prevalent and more

research was needed in the field. One of the main questions posed was whether there is a way to distinguish between convenience and cost preferences among ridesharers? Avego said that they have some geographic data on where people are traveling. NuRide has some information on demographics and user response to incentives. Zipcar, while a different market, likely has a combination of location and demographic information. There was also a suggestion that the large automakers may be a resource, as they have a long history of consumer market research.

Topic #3: Role of Different Levels of Government in Support of Ridesharing

Presentations:

Mr. Allen Greenberg, from the Federal Highway Administration, spoke on how the federal government can contribute to creating a sustainable, dynamic rideshare market. The benefits ridesharing provides, such as reduced VMT and congestion, align with the goals of the federal government and, therefore, it makes sense that they show some interest in supporting rideshare initiatives. However, he pointed out that there are many challenges to overcome before ridesharing becomes a competitive travel option and suggested some innovative ideas that may encourage shifts to ridesharing.

Ms. Kay Carson, from MassRides, the State of Massachusetts ridematching service overseen by the Massachusetts Executive Office of Transportation, spoke on the evolution of the MassRides service over time. She described the current service offering, an online-based ridematching system focused on traditional as well as dynamic ridesharing for all trip purposes. MassRides conducted a survey of service providers who were members of the Association for Commuter Transportation (ACT). Some of the key findings included evidence that users are attracted to systems that are easy to use, and that providers are having trouble gaining enough users to reach critical mass. Massachusetts is using the results of the survey to choose a matching system that is most effective for their needs.

Topic #3 Discussion:

The discussion during this session focused mainly on brainstorming ways by which the government could provide support to the ridesharing industry. The participants agreed that the federal subsidies provided to transit and cycling modes should also apply to rideshare participants. There are already Commuter Tax Benefit programs in place that subsidize vanpools and telecommuting; it seems logical to include ridesharing in these benefit programs. The logistical and verification problems of this change were recognized but thought to be barriers that could be overcome. Further detailed discussion of specific incentives from government included sanctioned free parking for high-occupancy vehicles while single-occupancy vehicles would pay full price, and a major ridesharing demonstration project. The demonstration project could take place in one or more cities around the US, most likely underserved by transit, to determine what the most effective ways are to get people to share rides.

Overall, there was general consensus on the need for some form of long-term government support and funding for ridesharing. There is a wide range of societal benefits generated when more people share rides, suggesting a role for government in promoting the mode. Lack of

constituency is a major hurdle for ridesharing; there needs to be a group that collectively lobbies the government for rideshare funding and support.

A concern was raised about the government's previous efforts at developing custom, proprietary systems. It was suggested that rather than spending money on closed systems, government agencies support the numerous existing services in the market. It was believed that government development of custom systems led to a more fractured rideshare market (one more separate system for travelers to choose from). One suggested alternative was to bid regional rideshare systems out to private providers and let them compete for the right to operate the regional system for a period of time. A second alternative was to work on a common data structure that would allow multiple systems to share information on rides provided and rides requested. This second option requires public agencies to be involved in the development and adoption of the common data structure. A more detailed discussion on common data structures was covered under Topic #6.

Service Provider Presentations:

Rideshare service providers were asked to give short presentations and demonstrations of their services. Six providers gave demonstrations.

Avego:

Avego is a division of Mapflow. They consider themselves a technology company at their core. The impetus for Avego was a realization that empty seats are a huge opportunity for improved efficiency, not only in vehicles but also in buses and vanpools. The demonstration video highlighted some of the safety features included in the service. Avego was asked whether they believed taxi regulators would challenge their payment language. They explained that by using "shared expense" as their language choice, they avoid any regulatory hurdles.

iCarpool:

iCarpool has been in existence for approximately one year. They are a technology firm first and foremost. They have around 50 clients including a new contract with WSDOT to improve the Washington State rideshare system. Their service allows one-time or recurring trips. Ride matches can be made through the web and through the use of SMS messages. Their system supports various types of report generation for different clients.

Carticipate:

Carticipate was founded in May 2008. They have a new user interface for their iPhone application and a new software application on Facebook. They have been working on additional social layers beyond Facebook including Twitter, employer-specific layers and women-only groups.

NuRide:

NuRide provides incentives in the form of discounts at local retailers to participants that rideshare, cycle, walk or telecommute. The system can accommodate one-time or recurring trips. It also includes a reporting system that can generate various reports for different users or

purposes (e.g.: environmental and financial). They have found that constant communication with riders builds trust and encourages ongoing use.

Trip Convergence:

Note that this presentation was added at the last minute to the end of Topic 4, however since it focused on demonstrating Trip Convergence's technology concept, we felt it was more appropriate to include it in this section.

Trip Convergence is proposing a casual carpooling system that consists of new hubs where real-time ridematching will take place. At these hubs, riders and drivers form carpools in an ad hoc manner, based on their specific destinations. Each traveler will have a biometric membership card that will read automatically as the vehicle leaves the facility. This allows for tracking not only of carpool vehicles but also of individual riders. These cards will be linked to carpooling accounts through which ride credits or incentives will be exchanged between the riders and the driver.

Zimride:

Zimride works with universities and employers to create custom rideshare services. They also offer ridematching online to the general public. They have an online version and a Facebook application. They feel the Facebook application has been a very successful strategy for them.

Topic #4: Role of Technology Firms in Supporting Wider Rideshare Participation & Providing Multi-Modal Travel Information

Presentations:

In this session, representatives from both IBM and Nokia discussed ways their organizations could help enhance the provision of rideshare services.

Mr. Rizwan Khaliq, from IBM's Intelligent Transportation System division, presented specific ITS technologies that IBM has been developing and employing around the world, including traffic congestion prediction and congestion pricing. ITS systems could allow drivers to see what sitting in traffic is really costing them, and he suggested that having this information might encourage more people to rideshare. This could have a particularly positive impact on ridesharing in the presence of high-occupancy lanes.

Mr. Damien Balsan from Nokia gave a presentation on how the company is using Near-Field Communications (NFC) technology to expand their services. NFC is currently being used in four main application cases and they expect the technology to be mainstream in around three years. Mr. Balsan saw many ways for NFC to integrate with ridesharing. It can be used to make payments on a peer-to-peer level as well as to reward drivers in other ways, such as allowing a user to redeem coupons or other discount offers.

Topic #4 Discussion:

The innovations being developed by these companies led the discussion to focus on how to get more relevant technology companies involved in the ridesharing market. It was mentioned that in

order to get these companies interested, there has to be a clear revenue stream and until this can be shown, it will be hard to get any significant investment of their time.

There was a detailed discussion on how an application such as Google Transit might be applied to ridesharing. A data specification similar to the Google Transit Feed Specification (GTFS) for ridesharing seems logical given the number of agencies that have abandoned trip planners in favor of Google's transit information. However, a similar data specification for ridesharing would present many challenges that public transportation avoids. First, the data would be dynamic and constantly in need of updates as compared to the static schedule data being used for the transit feed. Second, transit agency data comes from a single source whereas each rideshare posting would come from a different individual. This may lead to data consistency problems. Further discussion on how a data specification could work for ridesharing is discussed under Topic #6.

Topic #5: Role of Employers, Universities & Other Institutions in Support of Ridesharing

Presentation:

Mr. Charlie Crissman, representing Goose Networks, presented the company's different approaches to ridesharing over the last three and half years. Their first iteration was a technology-based service created for Microsoft employees living in Seattle trying to commute to Redmond. Match rates were around 40% with more requests than offers. Usage was 2.5 times higher on rainy days. Participants would use SMS to request a ride on the way to the bus stop, if they received a match they would rideshare otherwise they would take the bus. The second approach was a service called Goose Express that tried to expand the technology-based service first tried at Microsoft. Goose tried to engage larger employers without much luck. A substantial amount of marketing was needed and the technology proved overwhelming for non-technology savvy users. The third and current application is commute management services for employers. The firm provides multi-modal information including ridesharing, and customized tracking and reporting services. Services are aimed at organizations with environmental tracking or parking concerns. Goose readily acknowledges that rewards and incentives are critical to encourage participation.

Mr. Crissman believes broad public systems required large *quantities* of data whereas "closed loop" employer-based programs focus more heavily on high *quality* data. For broad public systems, reaching critical mass is a very expensive process (at the outset, revenue per passenger is low while costs to acquire a passenger are high). He believes that employer-based approaches make it much easier to overcome the spatial, temporal, and social issues related to ridesharing. Companies view it as a commute management service for their employees and pitch it as an employment benefit. Finally, Mr. Crissman noted that the success of rideshare services would take time to catch on and register in the mind of commuters, somewhat like recycling.

Topic #5 Discussion:

The discussion focused largely on whether it would be possible to encourage employers in the same geographic area to work together and provide combined rideshare services for their employees. Most participants felt it would depend somewhat on the business model and the

employers involved. There was also some question as to whether employers generally would be willing to do this. Some thought the issue of incentives would become too complicated (e.g.: subsidizing a rideshare parking space where one employee is from one firm and one employee is from another firm, how are costs shared?) and for competitive reasons (employees at competing firms may talk to one-and-other about competing projects).

Topic #6: Value and Opportunities for a Common Database Feed among Providers

Presentations:

Mr. Carl Gorringer, a software developer working for 511.org in the San Francisco Bay Area, gave a presentation on a data feed concept he is already developing called OpenTrip. This open standard would allow for the querying of multiple rideshare databases simultaneously and could be easily extendable for future needs. The feed requires a minimal number of data elements (origin, destination and time of trip) making it easier for providers to update their systems, but requiring more effort on the part of the participant looking for a rideshare match. Carl encouraged all workshop participants to join the Google Group he started dedicated to OpenTrip/TripML.

Mr. Harvey Appelbe of Avego gave a follow-on presentation on how to extend open protocols to allow for information exchange with other travel mode data. Avego is developing a programming interface that would allow a user to access information on a variety of modes from a variety of companies (from buses, shuttles, and taxis to ridesharing service providers) in one unique request. Mr. Appelbe mentioned that in order for this type of interface to be effective, it requires participation from many service providers. He also indicated that Avego is willing to take a lead role in integrating information from different modes.

Topic #6 Discussion:

In the discussion that followed, there was a general willingness among service providers to contribute to the development of the data feed. There seemed to be a consensus that this is a task that should be handled by the service providers themselves since they have the best sense of the data requirements for rideshare matching. There were some reservations that the discussion of a shared data structure was premature and might limit innovation since there hasn't been an overly successful service provided thus far. As an alternative, it was suggested that small pilot projects could serve as learning tools prior to the development of a common data feed. Some suggested additions to the feed could include social characteristics and driver and rider evaluation features; however, the specifics of how to include this information would need to be discussed further. A few service providers mentioned other application programming interfaces (APIs) that they thought would be worthwhile considering.

Topic #7: Innovative Models for Rideshare Service Provision

Presentations:

Mr. Matt Malloy from Zipcar and Mr. John Zimmer from Zimride discussed their recently announced plan to offer ridesharing services to those customers using Zipcar. Stanford

University will be the first test market. Both firms share a similar target market (e.g.: car-less individuals and university students). One of the hopes is to encourage greater multi-modal thinking. Challenges associated with the rollout include brand and product confusion (Zipcar vs. Zimride and carshare vs. rideshare), and whether people are willing to consider this type of travel choice mix or change. Actual implementation is still being determined. Currently Zipcar clients can choose to check a box offering to post their ride on Zimride when they register for the vehicle. There is no real sense of the type of trips that are likely to be taken. Cost sharing is informal at this point; there is no automatic calculation of costs for the passenger.

A question was asked about how Zipcar and Zimride came together. Zimride approached Zipcar, because of the overlap in their markets. They shared similar mentalities when considering the hierarchy of costs for budget conscious travelers (i.e.: starting with an attempt to share a ride with a friend, followed by sharing a ride on Zimride if the former is unsuccessful, then considering renting a Zipcar and share a ride in the absence of a Zimride ride, and finally renting a Zipcar and driving alone if all else fails).

Mr. Amol Brahme from iCarpool described several unsuccessful approaches to rideshare service provision that iCarpool has experimented with and what their current service offering includes. They began with a fee-based, user subscription service but found very little interest. They then created a Facebook application, but found there was little revenue potential. Their third and current offering is to provide services to employers and regional public agencies. Finding organizations that are strongly committed to ridesharing is critical. Their service includes customized reporting features for different groups. iCarpool believes that inter-modality is critical, as most other modes of transport have existing infrastructure and marketing in place that ridesharing can take advantage of. For example, transit has existing buses and trains that are already in use and run on published schedules. In the event that a person cannot find a rideshare or does not feel like ridesharing on a given day, alternatives modes of travel could be suggested. By combining ridesharing with existing vanpools in Seattle, iCarpool believes they are already approaching a critical mass of shared vehicles on the road.

Mr. Paul Minett from Trip Convergence described his organization's idea to mimic the success of the slug lines in Washington DC and San Francisco by creating locations where drivers and passengers can self-organize into rideshares. The service is a combination of infrastructure and biometric identification technology. The service has the obvious strength of accurately determining vehicle occupancy and thereby allowing for the distribution of benefits or incentives directly to ridesharers based on level of participation. This approach is also unique in that while most other service offerings have focused exclusively on investments in technology, the Trip Convergence solution is a combination of investment in infrastructure and technology. The company is looking to fund six trials in different locations to see if certain environments are more conducive to self-organizing rideshares than others.

Mr. Rob Content represents Community Solutions, a research and advocacy group proposing community-based solutions to Peak Oil and climate change. The organization took the position of "cheerleader" at the workshop, encouraging participants to move forward quickly with rideshare services. Given lags in fleet turnover and land use changes, the slow rate of vehicle efficiency improvements and the slow adoption of alternative energy sources, transportation

solutions that work with the current system are essential. Specifically, mode choice changes are needed to reduce the demand for personal vehicle energy consumption. Mr. Content briefly presented the case of Cuba after the fall of the Soviet Union, where changes in travel choices took place in reaction to significant energy shocks.

Topic #7 Discussion:

The topic began with a lengthy discussion about the type and availability of different forms of rideshare data. Many felt it was hard to propose rideshare solutions without an understanding of traveler behavioral responses and an understanding of the relative size of the rideshare market. There was a general belief that the availability of local behavioral data from public sources related to travel choice in the US has fallen off somewhat and that reliance on the Census has increased. Changes in Census data collection methods are very difficult to achieve. Several rideshare providers suggested they would be willing to share some data for further analysis if someone was willing to take on the task of processing and analyzing it. Some felt that behavioral responses to fuel price volatility would be particularly useful information to have.

It was emphasized that while mode choice change is important, we should also be considering the equity issues of who specifically is changing modes. Do different policies encourage changes from different groups of travelers?

There were several questions and a related discussion about the ability to effectively segment the rideshare market. Are there certain people or types of trip that are better suited to real-time ridesharing, (e.g.: single rides vs. recurring trips)? Do different rideshare segments respond to different packages of incentives? The answers to these questions are likely to depend on a variety of demographic and socioeconomic factors that would only be uncovered through additional research.

Potential Next Steps:

After some consideration of the common interests expressed at the workshop, three areas of further action are suggested. All three of these topics were discussed at varying levels of detail at the end of the second day of the workshop:

1. Research on Market Size, Travel Behavior: Further research on the potential size of the rideshare market, a better understanding of behavior responses to different incentives and service characteristics, and an understanding of mode choice decisions are all essential. This is perhaps the most pressing action item. Further research will require multiple types of information from a variety of sources. Both academia and rideshare service providers are well suited to take on this task. This requires a willingness on the part of public and private rideshare service providers to share information with the academic community.
2. Development of a Common Data Standard: The development of a common data standard for exchanging rideshare information among providers and for integration with additional modal information is an important task. Open standards for data interchange are very much recommended. Capacity to work on this standard and the technical “know-how” is concentrated in the private sector and, as such, they should continue to lead the effort. Academia may have some role in encouraging participation and collaboration on a common standard among private and public sector rideshare providers. One mechanism that may strongly encourage development of a common standard would be a pilot, demonstration project involving multiple providers and their systems.
3. Design a Rideshare Demonstration Project: The design of a US-based demonstration project using advanced rideshare technologies is a long-term endeavor, but an important step towards proving the potential of technology-enabled ridesharing. This task would require seeking out funding sources for such a trial, spending a significant level of effort on the pre- and post- project evaluation procedures, and including well thought out performance metrics. Consideration of the importance of different stakeholders involved is needed, as is how incentives should be structured to generate the desired changes in behavior.



Real-Time Rides: The Smart Roadmap to Energy and Infrastructure Efficiency

MIT/CMU Workshop Agenda

Thursday, April 16, 2009

9:30 – 10:00 am: [Spofford Room, Building #1, Room #236 (1-236)]

Registration/Continental Breakfast provided by the MIT Real-Time Rides Research Team

10:00 – 10:30 am: [Building #3, Room #343 (3-343)]

Introduction: John Attanucci (MIT) and Michael Messner (Seminole Capital Partners)

- Introduction of Organizers
- Introduction of Participants
- Workshop Charge and Goals

10:30 – 11:00 am: [Building #3, Room #343 (3-343)]

Setting the Stage: Past and Present Rideshare Markets

- 10:30 – 10:45 am: (Andrew Amey and Valerie Webb, MIT) – Statistics and Historical Trends
- 10:45 – 11:00 am: (Jim Morris, CMU West) – RideFriends: More Rides, Fewer Cars

11:00 am – 12:30 pm: [Building #3, Room #343 (3-343)]

Topic 1: Historical Ridesharing Trends and Market Potential

[Moderated By Jim Morris]

- 11:00 – 11:15 am: (Eric Schreffler, Consultant) – Real-time Ridesharing: A Historic, Heuristic and sometimes Hysterical Perspective
- 11:15 – 11:30 am: (Rick Steele, NuRide) – Maintaining Ridesharing During an Economic Downturn
- 11:30 – 11:45 am: (Paul Resnick, University of Michigan) – Assessing Demand Before There's a Service
- 11:45 – 12:30 pm: Feedback and Discussion on Topic 1

12:30 – 1:45 pm: [Spofford Room, Building #1, Room #236 (1-236)]

Lunch Provided by the MIT Real-Time Rides Research Team, Walk to MIT Faculty Club

1:45 – 3:15 pm: [MIT Faculty Club, Building E52, 6th Floor]

Topic 2: Behavioral and Attitudinal Characteristics of Travelers - Role of Incentives and How to Overcome Safety & Security Concerns

[Moderated by Rabi Mishalani]

- 1:45 – 2:00 pm: (Susan Squires, Trinity College) – Perceptions of the Private Vehicle in the US: Public Identity vs. Private Space
- 2:00 – 2:15 pm: (Ted Selker, CMU West) - Incentives and Improvements in Lifestyle with Ridesharing
- 2:15 – 2:30 pm: (Kursat Ozenc, CMU) – Saferide: Alternative Ways of Commuting
- 2:30 – 3:15 pm: Feedback and Discussion on Topic 2

3:15 – 4:15 pm: [MIT Faculty Club, Building E52, 6th Floor]

Topic 3: Role of Different Levels of Government in Support of Ridesharing.

[Moderated by John Attanucci]

- 3:15 – 3:30 pm: (Allen Greenberg, FHWA) - Lessons Learned about Real-time Ridesharing and Governmental Considerations for Future Support
- 3:30 – 3:45 pm: (Kay Carson, MassRides) Massachusetts: A Statewide Approach to Ride-Sharing
- 3:45 – 4:15 pm: Feedback and Discussion on Topic 3

4:15 – 6:00 pm: [MIT Faculty Club, Building E52, 6th Floor]

Service Provider Presentations on history of their company, interest in ridesharing, demonstration of their product, and vision of the future

[Moderated by Valerie Webb]

6:00 – 6:45 pm: [MIT Faculty Club, Building E52, 6th Floor]

First Day Wrap-up & Pre-Dinner Drinks

6:45 pm: [MIT Faculty Club, Building E52, 6th Floor]

Dinner at the MIT Faculty Club provided by the Real-Time Rides Research Team

Friday, April 17, 2009

8:00 – 8:30 am: [Spofford Room, Building #1, Room #236 (1-236)]

Continental Breakfast provided by the MIT Real-Time Rides Research Team

8:30 – 10:00 am: [Building #3, Room #343 (3-343)]

Topic 4: Role of Technology Firms in Supporting Wider Rideshare Participation & Providing Multi-Modal Travel Information

[Moderated by Jim Morris]

- 8:30 – 8:45 am: (Damien Balsan, Nokia) – Using NFC Phones to Find, Confirm, and Pay for Rides
- 8:45 – 9:00 am: (Rizwan Khaliq, IBM) – IBM Traffic Prediction and the Provision Traveler Information
- 9:00 – 10:00 am: Feedback and Discussion on Topic 4

10:00 – 10:45 am: [Building #3, Room #343 (3-343)]

Topic 5: Role of Employers, Universities & Other Institutions in Support of Ridesharing

[Moderated by Eric Schreffler]

- 10:00 – 10:15 am: (Charlie Crissman, Goose Networks) – Tradeoffs Between Broad Public Programs and Smaller Closed-Loop Programs
- 10:15 – 10:45 am: Feedback and Discussion on Topic 5

10:45 am – 12:00 pm: [Building #3, Room #343 (3-343)]

Topic 6: Value and Opportunities for a Common Database Feed among Providers

[Moderated by Andrew Amey]

- 10:45 – 11:00 am: (Carl Gorringer, 511.org) - OpenTrip: An Open Protocol for the Interchange of Travel Information Among Rideshare Providers
- 11:00 – 11:15 am: (Harvey Appelbe, Avego) – Extending and Applying Open Protocols to Allow Dynamic Travel to Interoperate
- 11:15 – 12:00 pm: Feedback and Discussion on Topic 6

12:00 – 1:00 pm: [Spofford Room, Building #1, Room #236 (1-236)]

Lunch Provided by the MIT Real-Time Rides Research Team

1:00 – 3:00 pm: [Building #3, Room #343 (3-343)]

Topic 7: Innovative Models for Rideshare Service Provision

[Moderated by Eric Schreffler]

- 1:00 – 1:15 pm: (John Zimmer and Matt Malloy, Zimride and Zipcar) – Joint carshare-rideshare concept
- 1:15 – 1:30 pm: (Amol Brahme, iCarpool) - Integration of Real-Time Ridematching with Traditional Carpool and Vanpool
- 1:30– 1:45 pm: (Paul Minett, Trip Convergence) - Casual Carpooling as a Model for Real-Time Ridesharing
- 1:45 – 2:00 pm: (Rob Content, Community Solutions) - The Smart Jitney: Rapid, Realistic Transportation Reinvention
- 2:00 – 3:00 pm: Feedback and Discussion on Topic 7

3:00 – 3:30 pm: [Building #3, Room #343 (3-343)]

Workshop Summary and Follow-up Actions: John Attanucci, Rabi Mishalani, & Jim Morris



Real-Time Rides: The Smart Roadmap to Energy and Infrastructure Efficiency

MIT/CMU Workshop Attendees

Name	Organization	E-mail
Rideshare Providers with Existing Service		
Mr. Harvey Appelbe	Avego by Mapflow	harvey.appelbe@mapflow.com
Mr. Jason Conley	Avego by Mapflow	jason.conley@avego.com
Mr. Steffen Frost	Carticipate	frost@carticipate.com
Mr. Darius Roberts	Carticipate	
Mr. Ross Edgar	CommuterConnections	redgar@mwcoq.org
Mr. Stephen Finafrock	CommuterConnections	sfinafrock@mwcoq.org
Mr. Roy Russell	GoLoco	roy@goloco.org
Mr. Charlie Crissman	Goose Networks	charlie@goosenetworks.com
Mr. Amol Brahme	iCarpool - Representing RideShare Online	amol@icarpool.com
Ms. Kay Carson	MassRides	kay.carson@state.ma.us
Mr. Leon Papadopoulos	MassRides	leon.papadopoulos@state.ma.us
Mr. Rick Steele	NuRide	rsteele@nuride.com
Mr. John Zimmer	Zimride	john@zimride.com
Organizations that Enable Ridesharing		
Mr. Rizwan Khaliq	IBM	rizkhaliq@us.ibm.com
Mr. Damien Balsan	Nokia	damien.balsan@nokia.com
Mr. Matt Malloy	Zipcar	matt@zipcar.com
Academic / Public Agency Representatives		
Mr. Carl Gorringer	511.org Rideshare	carl@gotalift.com
Dr. Ted Selker	CMU Silicon Valley, Associate Director Mobility Research	ted.selker@west.cmu.edu

Mr. Kursat Ozenc	Carnegie Mellon, School of Design	kursat@cmu.edu
Mr. Allen Greenberg	FHWA Congestion Management and Pricing Team	Allen.Greenberg@dot.gov
Dr. Susan Squires	Technology Research for Independent Living Centre, Trinity College Dublin	Susan.Squires@acelere.net
Ms. Kristin Lovejoy	UC Davis, Institute of Transportation Studies	kelovejoy@ucdavis.edu
Dr. Paul Resnick	University of Michigan, School of Information	presnick@umich.edu
Other Representatives		
Ms. Marianne Tyrrell	British Consulate-General, Science and Innovation Team	mariannetyrrell@gmail.com
Ms. Neelangi Gunasekera	British Consulate-General, Science and Innovation Team	neelangi.gunasekera@fconet.fco.gov.uk
Mr. Jim Gascoigne	Charles River Transportation Management Association	jim@charlesrivertma.org
Mr. Rob Content	Community Solutions	rob@communitysolution.org
Mr. David Grennan	Independent Consultant	edavidgrennan@gmail.com
Mr. Larry Brutti	MIT Parking Office	lrbritti@mit.edu
Mr. Mike Messner	Seminole Capital	mmessner@seminolecapital.com
M. Antoine Averseng	Trade Office - Embassy of France	antoine.averseng@missioneco.org
Mr. Eric Schreffler	Transportation Consultant (ESTC) & Chair, TRB Policy Section	estc@san.rr.com
Mr. Paul Minett	Trip Convergence Ltd	paulminett@tripconvergence.co.nz
Ms. Holly Parker	Yale University, Director of Sustainable Transportation	holly.parker@yale.edu
MIT/CMU Rideshare Research Teams		
Dr. Jim Morris	Carnegie Mellon Silicon Valley	jim.morris@west.cmu.edu
Mr. John Attanucci	MIT Rideshare Research	jattan@mit.edu
Dr. Rabi Mishalani	The Ohio State University	mishalani@mit.edu
Andrew Amey	MIT Rideshare Research	amamey@mit.edu
Valerie Webb	MIT Rideshare Research	vwebb@mit.edu