SR 520 Real-time Ridesharing Pilot

Summary Report

June 2011

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1. EXECUTIVE SUMMARY

In May 2009 the Washington State Legislature directed the Washington State Department of Transportation (WSDOT) to conduct a Carpool Pilot Project on the SR 520 in King County. In 2010, WSDOT awarded a Carpool Pilot Project grant to Avego to develop and manage the pilot project via a competitive process. The aim of the pilot was to test the viability and feasibility of real-time ridesharing (carpooling without pre-arrangement) using GPS-enabled smart phones in a high volume commuter area; and by facilitating a micro-payment from riders to drivers based on miles traveled, the pilot further aimed to provide a sustainable pricing incentive for drivers to share their empty seats with passengers. The pilot was to be conducted on the SR 520 corridor, one of two east-west roadways across Lake Washington, which carries 115,000 vehicles (190,000 people) each day.

The pilot was originally intended to run from October 2010 until June 2011. However, as the timing of the pilot also coincided with the planned introduction of tolling on the 520 bridge, WSDOT requested that the pilot be extended until September 2011, thus enabling this external influence to be measured. In line with this, the Governor's 2011-2013 transportation budget requested that $120,000 of the original $400,000 grant be re-appropriated to the next fiscal year. However, the Legislature subsequently failed to include this re-appropriation request for $120,000 into 2011-2013 transportation budget. As a result, WSDOT's funding for the pilot ceased in June 2011. This summary report provides an overview of the pilot up to that point.

Participant Recruitment

The pilot commenced in September 2010 and was initially focused on engaging with stakeholders along the SR 520 corridor (employers, Transportation Management Associations and other Transportation Demand Management-interested parties) as well as planning for a full pilot launch in January 2011. It also focused on the roll-out of the Avego real-time ridesharing (RTR) application to a group of approximately 10 early adopters/users. The pilot was also branded as go520 at this time and a dedicated pilot web site, go520.org, was established.

In January 2011 the pilot was formally launched on the back of strong local and national public relations (PR) coverage. Coverage spanned local television, radio, web and print media including segments on local news stations and a piece in the Seattle Times; coverage also extended to The New York Times, Wired Magazine, CNET and TechCrunch.

This PR was backed up by direct outreach by local employers and TMA and TDM organizations. Recruitment areas included the University of Washington, Seattle Children's Hospital and the Microsoft campus.

By April 2011 recruitment targets of 250 drivers and 750 riders were all but achieved, with 962 drivers and riders having registered to participate in the pilot.

Approval Process

In addition to the pre-existing safety features within the Avego RTR system, the State, via WSDOT, required that pilot project participants (drivers and riders) be pre-screened to meet additional approval criteria and requirements. This included, for drivers; proof of specific levels of auto liability insurance coverage; copies of driver DOL abstracts to verify that minimum thresholds were met associated with accident and moving violations and minimum thresholds review of driver DOL abstract; copies of driver license records; as well as certification by the driver that he/she followed prescribed vehicle manufacturer preventative maintenance requirements to attest to the overall vehicle's roadworthiness. In order to have a background check performed, both drivers and riders had to provide their Social Security Number (SSN). Only after providing the required documentation and successfully completing the entire approval process were participants considered "approved participants" and able to actually partake in the pilot proper, as a driver or a rider.

Participants were generally reluctant to provide or obtain materials needed in order to complete the verification and approval process. Despite more than 960 people registering to participate in the pilot, less than 33 per cent of drivers and riders were prepared to provide their SSN and, of the pool of drivers who did provide SSN details, only a small fraction were prepared to provide a certificate of insurance to verify auto liability insurance coverage limits, driver record and vehicle roadworthiness certification. This empirical data, which suggested that the burden of providing this information was too heavy, was further borne out by focus groups, telephone discussions with individuals and exit surveys: participants made it clear that they were unwilling to provide SSN details; and to the extent that they did, the additional paper requirements for drivers (insurance, driver record) were too great a burden again.

Corridor Strategy

A corridor strategy was introduced to encourage the development of a critical mass[1] of drivers and riders along two pre-defined routes. In part this corridor strategy was necessitated by the approval process above: because the approval process caused such high levels of attrition, the project only had access to a very small number of approved drivers and riders. Thus, concentrating the service launch on no more than two initial routes made sense in the context of focusing marketing, approval and adoption activity both to achieve critical mass and to facilitate a useful pool of "approved" participants. The corridor strategy also made sense based on Avego's prior experience which showed that a corridor-based approach is the most effective way of building towards critical mass.

[1] Previous research conducted by U. Cal Berkley Transportation Center has shown that successful casual carpooling can only occur when riders are able to find rides for at least 3 out of 5, 60 per cent, of attempts to carpool on the fly. A lower match success rate creates a lack of reliability with significant participation attrition. It is this somewhat empirical finding that has been recognized as "critical mass."

Routes were thus identified by analyzing the density of participants along potential routes and determining which of these routes were optimal in terms of launching the Avego service. The selected routes were a westbound route from South Kirkland to Seattle Children's Hospital, passing the UW Medical Center and an eastbound route from Seattle to Redmond.

The first east-west corridor was scheduled to launch in late April, with the second west-east corridor due to launch in May. However, even with the focus on these two corridors, there was an insufficient number of approved drivers (per the State's pre-screening criteria) to establish any level of guaranteed service, as would be required to create critical mass. This, alongside the State's uncertainty (at that time) as to how the project would be funded post-June, resulted in a decision to postpone both launches.

Findings

Some of the key findings from the project were as follows, which are further explored below.

Area	Finding
Recruitment	• The main factor influencing participation was saving money or reducing transportation costs; it does not appear that RTR simply transfers people from transit to carpools - while there were some such participants, the majority were car commuters; • Impending tolls on SR-520 created a sense of urgency for individuals to arrange alternative commute options; • Despite the inherent difficulty of finding a way to get into people's conscious decision-making about their day to day life, the most effective way in the context of the behavior change contemplated by go520 is to communicate directly through trusted channels such as employers;
Approval Process	• For participation in RTR to scale – beyond several hundred or even several thousand users – then the screening requirements that were required by the State are not sustainable (economically or otherwise); • Potential participants responded positively to meet-up events: putting a face on Avego and the pilot removed much of the perceived uncertainty typically associated with RTR; • The long time lag between initial sign up and individuals actually becoming approved and able to use the system (as a result of the approval process) caused a loss of interest among potential participants as initial enthusiasm and momentum waned.
Critical Mass	• It is not possible to establish critical mass all at once. Conversely a corridor strategy approach appears to be the best way to build towards critical mass in discrete steps.

There was a strong, sustained interest in the go520 pilot and real-time ridesharing. Despite a low marketing spend the pilot was able to recruit over 960 riders and drivers who registered their interest in participating in the pilot. Conversion rates on the go520 website were upwards of eight per cent over the life of the project, suggesting high levels of interest from visitors to the website. While PR coverage helped drive general awareness of the pilot, the most successful recruitment tool was the direct promotion of the go520 pilot by local employers and TMA/TDM organizations, resulting in large spikes of registration activity. This use of trusted channels was more effective – and more cost effective – than broader PR activities.

The approval process was the area of most contention. It was clear that the project was required to adhere to strict driver and rider screening criteria; however, these criteria were also accurately predicted to result in significant user attrition/ dropouts. This was due to the fact that users were either unable or unwilling to comply with the State's screening requirements. It was equally clear that these screening requirements could not be sustained (either economically or otherwise) if RTR is to scale beyond current participation levels.

On the one hand the screening and approval process could be considered successful; of the 129 background checks that were submitted, nine were rejected for not meeting the pre-screening criteria. On the other hand it was not obvious whether the background checks provided the additional safety and security features that the State desired; the checks were point in time only and were imperfect with the potential for either false positives or false negatives. A final point of note was that the 6.9 per cent failure rate for the pilot was in line with the 6.5 per cent of population across the US as a whole who have felony records, i.e. the pilot neither attracted nor discouraged participation by those likely to fail background checks beyond the national average.

The approval process also raised questions of liability. By incorporating a screening process, participants were given the impression that the pilot was fully screened and therefore that there would be little or no risk of any personal security issues. However, even if a participant reached each of these standards during the approval process, this provided no guarantee that their qualification would remain valid throughout life of the pilot. The question that this poses for future State involvement is as follows. Which is better - an imperfect screening process with some contractual involvement by the State with potential liability issues – or a wholly hands-off approach from the State in terms of liability? It is notable that the equivalent Statewide static rideshare program, Rideshareonline, does not require any background or screening checks.

The project team, in order to obtain insight into the overall approval process, conducted two focus group sessions, one with people who had completed the approval process and the other with people who had dropped out somewhere along the process. The results of the focus groups were noteworthy. At surface level the findings were obvious: some people are comfortable sharing personal data and going through an approval process such as that used for go520, while others are not. However, other observations came through: those who were comfortable sharing data were also those individuals who were re-assured by the background check process, while those who were not prepared to share their personal data didn't value the background check process to the same extent. In the focus groups the perception of an identical process as being either intrusive and objectionable, or reasonable and reassuring, could not have been more pronounced. And, based on the empirical evidence from the go520 pilot, the latter group is the larger by far, suggesting that for the pilot to succeed on any meaningful scale, the screening process needs to be re-designed from scratch.

What might that screening process look like? There is a range of possibilities, from allowing drivers and riders to opt-in to closed affiliations or networks, to using previous employer background checks as a screening method, to facilitating a completely open system. It is likely that the open system is the only system that can truly scale, but the other options may provide stepping-stones along the way.

The following key comments were expressed by individuals in regard to their pending participation in the pilot :

- Impending tolls on the SR 520 created a sense of urgency for individuals to arrange alternative commute options. As the imminence of tolling faded[2], for some individuals , this urgency waned;
- Potential participants responded positively to meet-up events: putting a face on Avego, the pilot and meeting other potential participants was seen as a very positive step towards full participation;
- The extended lag between initial sign-up and individuals becoming approved participants, due to the extensive pre-screening approval criteria requirements and process caused a loss of interest. Many felt they were being placed in a holding pattern rather than actually having the opportunity to participate in the pilot proper.
- Monetary incentives used to compensate individuals for efforts expended during the approval process were received with varying levels of success. It was determined that if an individual was unwilling to provide their SSN, the monetary incentives utilized did not influence this decision.

Where to from here?

With the completion of the WSDOT-funded phase of the project, the pilot is entering a new phase without WSDOT's continued investment and participation. The focus of this next phase will be quite different compared to the WSDOT-funded phase. Specifically, background checks, minimum auto liability coverage limits, driver record and vehicle roadworthiness details will no longer be required for participating drivers. It will be an open system. A new version of the Avego application has been launched on the Windows Phone 7 (WP7) platform, and for the first time, drivers will be able to use the application on multiple platforms. Finally, the first corridor will now be launched in mid-July - initially a corridor from Capitol Hill to the Overlake Transit Center and beyond to Redmond, leveraging the several hundred Microsoft employees who have already signed up for the pilot. The major employers and TDM organizations along the corridor remain fully engaged in the project, and, with their help, there is an opportunity to establish a level of critical mass.

[2] Tolling had been originally planned for start-up in Spring 2011, as early as mid-March. As of this writing tolling implementation is planned for July, 2011.

Finally, it is worth re-iterating that WSDOT is the first Department of Transportation in the world to have embarked on a RTR pilot of this scale. Pilot programs create an environment to learn and adapt. In being a 'world-first' it is natural and normal, as with any pilot program, to make changes along the way to accommodate the realities discovered; this is the very reason that organizations run pilots. Therefore, while the go520 pilot has traveled a somewhat different path than originally envisaged, it is nonetheless a giant step towards establishing RTR as a viable commute alternative. Within this context the State and WSDOT played a valuable role during this first phase, helping to foster many strong relationships with TMAs and local employers and providing the project with a heightened level of credibility. As we continue to see the impact of high gas prices and the expected introduction of tolling on the SR 520 corridor, we look forward, with anticipation, to the next phase of this project.

2. BACKGROUND AND GOALS

2.1 BACKGROUND AND SCOPE

In May 2009 the Washington State Legislature directed the Washington State Department of Transportation (WSDOT) to conduct a Carpool Pilot Project on the SR 520 in King County. The Legislature provided $400,000 to fund the pilot in the 2009-2011 state transportation budget. In 2010, WSDOT awarded a Carpool Pilot Project grant to Avego to develop, implement and manage the pilot project. Avego, which operates similar programs around the world, received this grant through a competitive process. The aim of the pilot was to test the viability and feasibility of real-time ridesharing (carpooling without pre-arrangement) using GPS-enabled smart phones in a high volume commuter area. The pilot was to be conducted on the SR 520 corridor, one of two east-west roadways across Lake Washington, which carries 115,000 vehicles (190,000 people) each day.

In addition to Avego Corporation, the extended project team comprised Nelson Nygaard (NN) and the Washington State Transportation Center (TRAC). Avego was the prime contractor, with overall responsibility for the project as well as providing the underlying technology; Nelson Nygaard was responsible for the outreach activities while TRAC led the evaluation and monitoring activities.

The pilot was originally intended to run from October 2010 until June 2011. However, as the timing of the pilot was to coincide with and without tolling on the 520 bridge, delays associated with the introduction of tolling resulted in WSDOT developing a re-appropriation request to extend the pilot project for three additional months (July – September 2011) at an estimated cost of $120,000. This amount was reduced from the original $400,000 budgeted amount in the 2009-2011 biennium transportation budget. Subsequently, this left only $280,000 for the project through June, 2011. The Governor's 2011-2013 transportation budget requested that $120,000 of the original $400,000 grant be re-appropriated to the next biennium (2011-2013) . However, the Legislature failed to approve and include this re-appropriation request for $120,000 in its final adopted 2011-2013 transportation budget. As a result, WSDOT's available funding ($280,000) for the pilot was only sufficient to sustain the project through May 2011. This summary report provides an overview of the pilot up to that point.

2.2 ABOUT REAL-TIME RIDESHARING (RTR)

Real-time ridesharing is the process of matching drivers and riders in real time as they travel, so that users can rideshare whenever they want, from wherever they are, without pre-arrangement. For more information on Real-time ridesharing please see here.

2.3 PILOT GOALS

By enabling RTR using GPS-enabled smart phones, the pilot aimed to attract drive-alone commuters along the SR 520 corridor to carpooling, reduce parking demand on corporate campuses and encourage transit ridership, addressing the "last mile" problem for riders who may not live in close proximity to a transit stop. Further, by facilitating a micro-payment from riders to drivers based on miles traveled, the pilot aimed to provide a sustainable pricing incentive for drivers to share their empty seats with passengers. Ancillary goals were to reduce parking demand on corporate campuses and to encourage transit ridership, addressing the "last mile" problem for passengers who may not live in close proximity to a transit stop.

Questions which the pilot aimed to answer were:

- Could RTR provide a means of reducing traffic congestion, parking demand and fuel consumption by stimulating a modal shift to ridesharing?
- How would basing ridesharing incentives on Vehicle Miles Traveled (VMTs) change travel behavior?
- What is the value of using smartphones to facilitate real-time ridematching?
- What critical mass of participants is required to create a self-sustaining, flexible carpooling system?
- What trip types and schedules are most conducive to such a system?
- What are the social and behavioral influences on mode choice?

The project advisory committee, comprising SR 520 stakeholders (employers, Transportation Management Associations, Transportation Demand Management organizations, WSDOT and Avego representatives), identified the following goals including specific questions to be answered by the pilot project:

Goal Type	Description
Overall	Is casual carpooling possible? Does it have a real application in the market? Will the pilot continue to evolve post the WSDOT involvement? Will people want to keep using it after the initial pilot period? Is the program sustainable without State incentives? How will participants react to the concept? Can the pilot build towards critical mass?
External Influences	What impact will the introduction of tolling on the SR 520 have on people's propensity to participate in real-time share?
Employer	Will the pilot result in higher numbers of people who carpool to major employer campuses such as Microsoft?
Verification	Will the system provide an opportunity to move away from the 'cheating'

	mentality on commute trip logging from carpoolers? Will the system provide a method to verify and track trips?
Safety and Security	Will the system provide a safe and environmentally friendly alternative to SOV travel?
Quantitative	Recruit 250 drivers and 750 riders to participate in the pilot. Target reduction of up to 30,000 trip reductions (5,000 trips per month) over the duration of the pilot.

Figure 1: Project Goals

3. PILOT APPROACH AND METHODOLOGY

Avego employs a standard Pilot Process, based on a stage-gate approach which has five stages. Progress to the next stage in the process is reliant on achieving the objectives of the previous stage. The figure below describes the stages in the process.

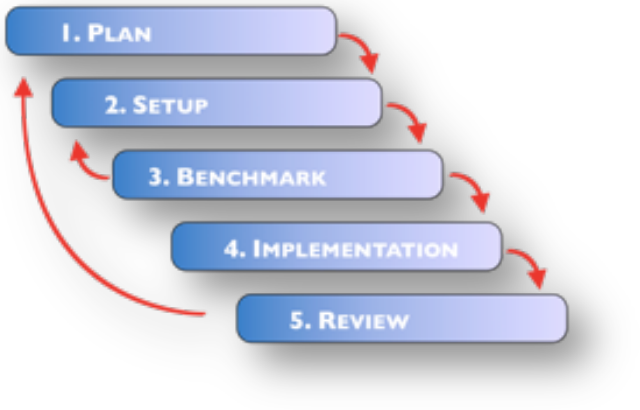

Figure 2: Avego Pilot Process

This process was adhered to throughout the life of this pilot and the following schematic and table illustrates the specific activities carried out during each individual phase.

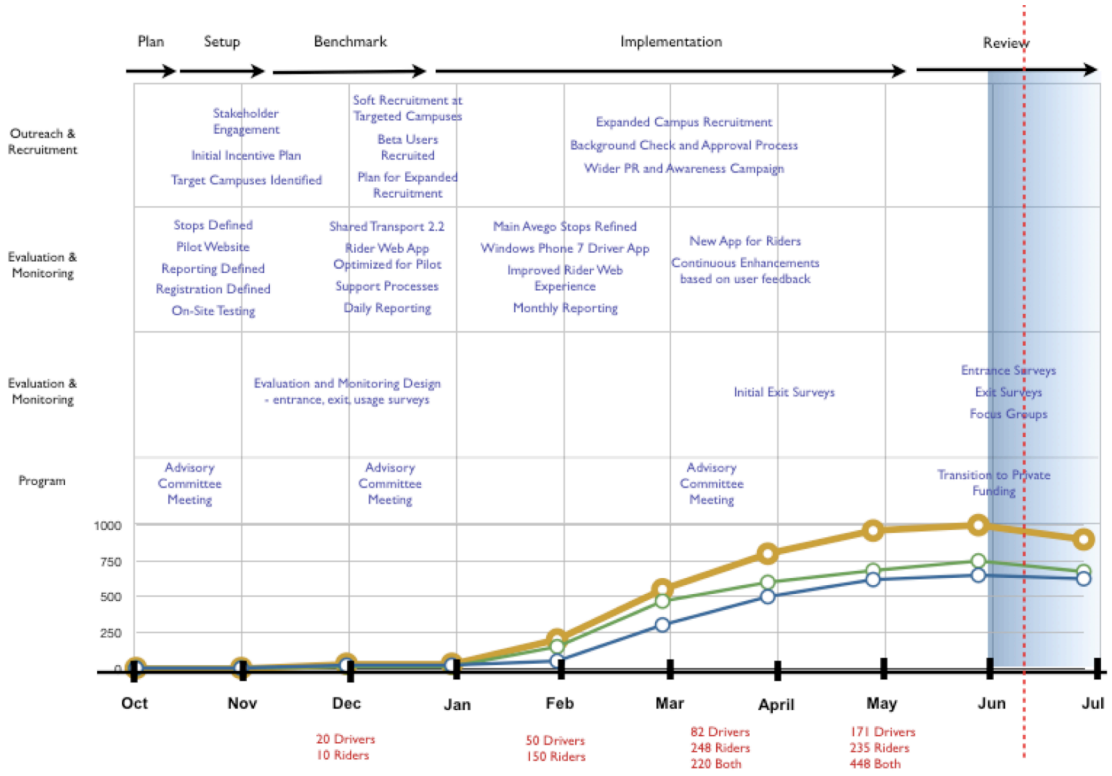

Figure 3: Project Timeline and Major Milestones

Dates	Stage	Summary of Activities
September-October 2010	Plan	Pilot plan drafted Team roles defined Communications plan agreed
November 2010	Setup	Avego full-time presence in Seattle established Incentive, communication and outreach plans and selection procedure developed and initial Avego stop locations identified Setup of pilot reporting process and pilot website, www.go520.org
December 2010	Benchmark	Initial group of beta drivers and riders recruited Pilot plans reviewed and updated based on feedback Plan agreed for expanded recruitment in January
January-April 2011	Implementation	Media coverage/ PR campaign to formally launch the pilot Recruitment of a wider group of drivers and riders from targeted employer and campus locations; as well as recruitment of other commuters along the SR 520. Participation in Good To Go! events and transportation fairs/ campus events Implementation of approval and background check process. Selection of launch “corridors”
May 2011	Review	Evaluation activities, via exit surveys and via focus groups. Transition of pilot from a WSDOT funded to a privately/ Avego funded pilot Creation of this summary report

Figure 4: Overview of Project Stages

4. MAIN PROJECT ACTIVITIES – WHAT WE DID

The following section describes in more detail the tasks that were carried out in each phase. Some activities were implemented primarily in one phase (e.g. Incentive Design and Defining Stop Locations occurred mainly in the Setup Phase), but were frequently re-evaluated and were revisited at the end of each phase to ensure new points of learning were incorporated. Other activities such as Outreach and Recruitment, Approval, Technology Development and Evaluation and Monitoring spanned all or multiple phases as ongoing activities.

4.1 OUTREACH AND RECRUITMENT

September through December 2010

Recruitment of the first pool of drivers and riders for the beta group began on November 1st 2010. During this phase a focus was initially placed on identifying drivers who carried out a commute along a longer stretch of the SR- 520 with the intention of accommodating the largest possible pool of riders. Riders who were familiar with the recruited drivers were targeted first as it was predicted that this method of recruitment would decrease barriers to riders altering their behavior as a level of trust already existed between the rider and driver. This rider group was monitored to determine the effectiveness of rider incentives, the recruitment process, ride-matching, reporting, etc. In accordance with the Avego pilot process, these elements were each evaluated before proceeding to the Implementation Phase 1, and slight alterations were made to optimize the effect.

A soft approach was taken to Outreach and PR at this time, incorporating the following activities:

- A presence was established in Seattle and meetings were held with relevant stakeholders;
- Awareness was raised through the establishment and monitoring of a Facebook and Twitter presence;
- Creation and launch of the pilot website www.go520.org to enable users to search for rides and view information about recent activity along the corridor;
- Completion of a Communications plan, Press Pack and other marketing collateral.

January through April 2011

This period saw the formal pilot launch on the back of strong local and national PR coverage. Seattle area coverage spanned TV, radio, web and print and included two-minute segments on both KING5-TV and KOMO-TV as well as front-page coverage on the Seattle Times. Other coverage highlights included features in The New York Times,

Wired Magazine, CNET and TechCrunch. Traffic from Facebook, Twitter and Google were directed to the www.go520.org website.

Recruitment of the remaining (non-beta) drivers and riders who regularly commute on the SR 520 began by focusing on specific business campuses. The focal areas were the University of Washington, Seattle Children's Hospital and Microsoft. Following direct employer email outreach a considerable spike in activity and subsequent sign-ups were noted on the go520 website identifying this method of recruitment as particularly effective. In addition to emails, Avego began attending multiple "Good to Go!" tolling road shows at main employment centers in January. A go520 presence resulted in a number of sign-ups and increased website activity in the period following each event. Monthly newsletters were also introduced to maintain the continued interest of those who had already signed up in December 2010 and continued for the duration of the pilot.

As the project moved through March and April, marketing activities were aimed at attracting a broader audience. These activities included the submission of blog entries and short articles to various media outlets and using social media including Twitter, Facebook, LinkedIn and meetup.com. These activities were undertaken to create a community among members, to facilitate communication, ensure their continued interest and minimize dropouts. Employer outreach was also continued and was particularly successful at Microsoft with more than 35 per cent of total participants originating at the campus. Activities at "Good to Go!" tolling events continued but were reduced in April as the major employers and employer sites had been covered at earlier events.

Throughout this phase a broad range of other stakeholders and employers along the corridor were targeted to recruit go520 participants, including City of Redmond, CSDOT, Expedia, Seattle Biomed, Vulcan, Systems Biology, Nintendo, ATT, Google and Fred Hutchinson Cancer Research Center (FHCRC), Greater Redmond TMA and Transmanage. Each of these organizations provided significant help and support in terms of helping to recruit participants.

Meetup.com events also proved to be valuable with the first event attracting over 30 potential users, including 10 new sign-ups. It is worth noting that many riders and drivers were encouraged by this event to submit outstanding documentation in their approval process as an element of trust was added by meeting Avego employees in person, something regarded extremely highly when being asked to submit both an SSN and date of birth.

By the end of April, 'top-of-the-funnel' individuals who had registered their intent to participate in the pilot project totaled 962. Moreover, conversion rates from visitors to the go520 website continued to be strong, tracking at 8.2 per cent, approximately five percentage points above the generally accepted website conversion rate of two or three per cent.

4.2 APPROVAL PROCESS

At the outset of the pilot the following minimum criteria were stipulated by WSDOT as preconditions to participation for riders and drivers:

Driver Minimum Criteria	Rider Minimum Criteria
Drivers must be 21 years of age.	Riders cannot have been convicted of a criminal offense, including but not limited to a sexual offence and/or an offence related to violence, which includes but is not limited to assault, and/or bodily harm.)
Drivers cannot have been convicted of a criminal offense including but not limited to a sexual offense and/or a violence related offense, which includes but is not limited to assault and/or bodily harm.	
Drivers must possess a valid Washington State driver's license.	
Drivers cannot have had an insurance company ever refuse, cancel, refuse to renew, or give notice of termination to cancel or refuse any automobile insurance.	
Drivers shall be required to have personal automobile liability coverage in an amount not less than three hundred thousand dollars ($300,000.00) per accident.	
Drivers shall provide a copy of the certificate of insurance for such personal automobile liability coverage during the pre-screening process.	
Drivers cannot have had more than one driving violation or citation (except for parking citations) within the past three years.	
Drivers cannot have had a "reckless" moving violation or DUI conviction.	
Drivers cannot have had their driver's license privilege suspended, revoked or refused.	
Drivers cannot have had an at-fault accident within the past three years.	
Drivers must confirm that they have followed prescribed auto manufacturer preventative and maintenance standards for the vehicle(s) they plan to use in the pilot.	

Figure 5: WSDOT Approval Criteria – Drivers and Riders

These pre-screening and approval minimums were required by WSDOT in addition to the pre-existing safety features within the Avego RTR system. Throughout the project, from early meetings with stakeholders, right through the set-up, benchmark and implementation phase it was evident that these pre-screening requirements (which obliged participants to provide both their SSN and date of birth) would be a major impediment to successful recruitment of the targeted number of approved riders and drivers.

As State involvement in the project began to wind down in May, these issues remained unchanged. Less than 30 per cent of individuals who had registered to participate in the pilot (both riders and drivers) had provided SSN details as required to become approved participants. Additionally, less than one per cent of individuals who had registered to participate in the pilot as drivers had fully completed the driver approval process. That the driver attrition was quite so high is not surprising; as can be seen from the above table, the approval process for drivers was decidedly more burdensome than that for riders.

Despite the barriers to entry that were created by the pre-screening approval and verification process above, the background check process was not without value: as of the end of May, nine people had failed the background check process for various reasons.

As a result, it could be surmised that the background check requirement for all potential participants served its purpose, i.e. identifying and filtering out individuals who had previous criminal convictions, thus potentially improving the safety of the system for the remaining participants. But, notwithstanding this outcome, it was not clear whether the background checks, in fact, provided the additional safety and security features that the State desired: since the checks were point in time only they provided no guarantee that a participant would continue to meet the State pre-screening criteria; they were imperfect, with the potential for either false positives or false negatives. Finally, of note was that the 6.9 per cent failure rate for the pilot was in line with the 6.5 per cent of population across the US as a whole who have felony records, i.e. the pilot neither attracted nor discouraged participation by those likely to fail background checks beyond the national norm.

Attempts to overcome barriers

As it was foreseen that obtaining this level of personal information from participants would be difficult, numerous methods were tested to discern which would obtain the highest results. The pool of participants was split into groups and a variation of post, fax, email, phone calls and using both long and short versions of the request for details were tested. However, it was determined that the method used to request this information made little difference. Participants were simply unwilling to provide all elements required for approval as a driver in the pilot. This is despite the fact that up to 250 reminder phone calls were made each week to follow-up with registered potential participants, combined with regular reminder emails.

During telephone outreach many participants informed Avego and Nelson Nygaard staff that they were unwilling to provide details which could be used for identity fraud (SSN and DOB). With this in mind Avego organized events where they could meet with participants and help them with the approval process personally. In the period following the first event in mid-April increased traffic of documentation submissions was noted, indicating that meeting Avego staff as well as other parties face-to-face introduced a perceived element of 'trust' and was influential in the approval process.

4.3 TECHNOLOGY

Technology design, user experience and continuous improvement are of paramount importance to Avego; throughout the pilot field testing was carried out by staff in Seattle, small beta groups were used to test the application before releasing it to the wider community and users were encouraged to provide feedback on their experience. The following section provides an overview of the main technology releases and updates carried out during each pilot phase.

October – November 2010

- go520 site setup and launched
- Approval application set up (enables automatic creation of an Avego account once the pilot coordinator selects "approve")
- Definition of Avego stops throughout Washington
- Release of Avego Driver V2.1 (iPhone)
- New mobile web user interface for riders, optimized for iPhone

December 2010 – January 2011

- Release of Avego Driver v2.1.1
- Rider web application optimized for Android devices
- Tool for graphically representing all the routes entered by go520 applicants

February – March 2011

- Support for closed communities (e.g. go520 community)
- Main Avego stops refined to reflect the 'corridor strategy'
- Support for SMS bookings with a dedicated shortcode number

April – May 2011

- Release of Avego Driver v2.2
- Release of Avego Driver v1.0 on Windows Phone 7
- Updates to notifications, user preferences, web UI

Planned for June 2011

- New go520 website, separated from State involvement
- Release of Avego Driver v2.3
- Support for walk-up ridership
- New mobile web UI
- SMS bookings setup for Seattle-Microsoft corridor

4.4 EVALUATION AND MONITORING

The Washington State Transportation Center (TRAC) was contracted to perform the evaluation of the go520 pilot project which was intended to analyze and summarize the trip-making activities of project participants, in addition to providing insight into their travel behavior, how that behavior was influenced by pilot project information and incentives, and how that behavior reflected the potential for ongoing operation of an RTR system. It was agreed that TRAC would execute eight separate surveys to determine:

- What trip types are most conducive to RTR
- What motivates people to use RTR
- How participants changed travel behavior as a result of the availability of RTR
- What modes were previously used for trips made via RTR
- Whether dynamic carpooling increased trips or caused a mode shift
- Whether the price of a ride or money received as a driver altered behavior
- Whether participants believed that dynamic carpooling saved or increased their travel times
- The effectiveness of the hardware/software

  (For further detail see APPENDIX F)

These surveys were designed and agreed upon in early 2011.

4.5 INCENTIVES

Incentives were introduced for a number of reasons:

- To encourage drive-alone drivers to break from their normal commute habits and test an alternative rideshare mode as a rider or driver.
- To accelerate the process of reaching critical mass of both riders and drivers, which is a prerequisite of successful real-time ridematching

The initial incentive program was set at $30 for riders and drivers respectively with drivers earning incentives for picking up 20 riders along the route each month and similarly riders being incentivized to undertake 20 rides per month.

This incentive program was tweaked at the end of the beta phase, at which point it was agreed that drivers would be provided with a $30 gas card per month for completing 20 or more drives while offering their spare seats to at least one rider (no incentive was received for the first 14 drives, from the 15th drive $15 was earned and calculated pro rata to a maximum of $30). Drivers also retained Avego credits earned by offering their seat(s) to riders.

It was agreed that riders should receive $30 of non-refundable Avego credits, which equates to approximately ten free Avego journeys (12 miles each) per month. Furthermore, Avego offered a guaranteed ride home service to any rider who used the system for their morning commute.

4.6 STOP LOCATIONS

Avego stop locations technically do not require any physical installation, they are known to the system by their locations which subsequently notifies drivers and riders. Avego staff considered many factors in the selection and identification of potential stop locations on the chosen corridors, including:

- Safe and secure waiting places as rider pick-up points
- Safe and easily accessible driver stop locations
- Density of riders in close proximity to stop and pick-up locations as well as locations served with good bus service which riders could potential use as a back-up

Locations which fulfilled these criteria included “3 minute stop zones” in Seattle, gas stations, Park & Rides, on-street parking in suburban areas and supermarkets.

Figure 6: Sample Avego Stop Location

The destinations chosen (indicated in green in the image below) are major employer campuses in Capitol Hill, downtown Bellevue, Microsoft and downtown Redmond.

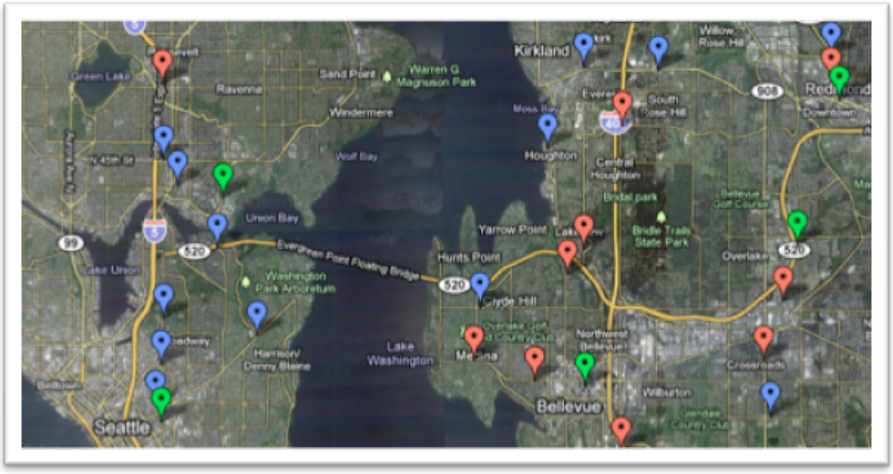

Figure 7: Major stops and destinations

4.7 DEFINING TARGET CORRIDORS

A “corridor strategy” was introduced to encourage the development of a critical mass of drivers and riders along two pre-defined routes. These were identified by analyzing the density of potential participants along major routes and determining which of these routes were transit backbones where direct public transit was not easily accessible. The following diagram shows the density of individuals who registered to participate in the pilot in the greater Seattle area.

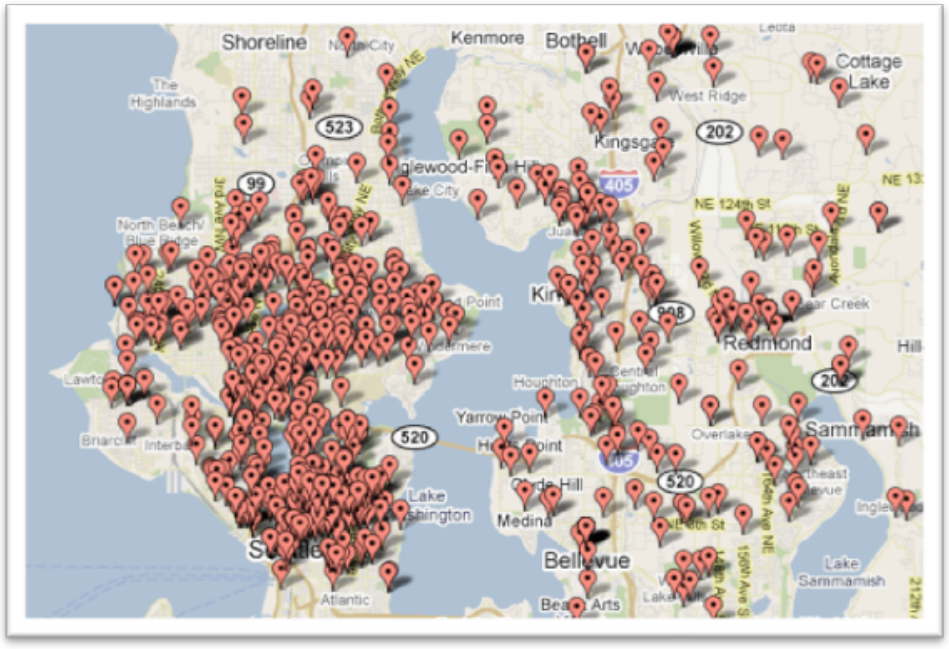

Figure 8: go520 Registered (pre-screened) Participant Dispersion

From this analysis the following routes were identified:

Corridor 1: Westbound from the South Kirkland Park & Ride to UW Medical Center, Husky Stadium and on to Seattle Children's Hospital

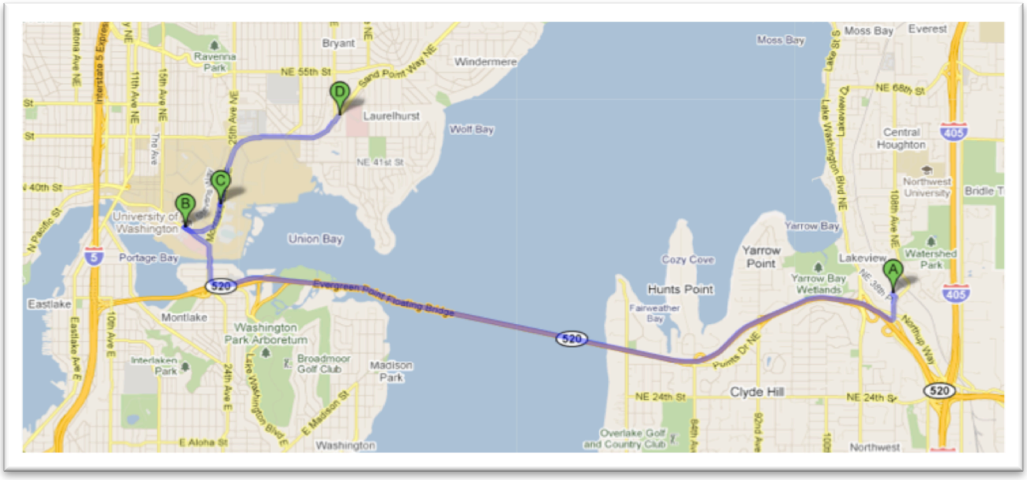

Figure 9: Corridor 1: South Kirkland to Seattle Children's Hospital

Corridor 2: Eastbound from Seattle to Overlake and Microsoft.

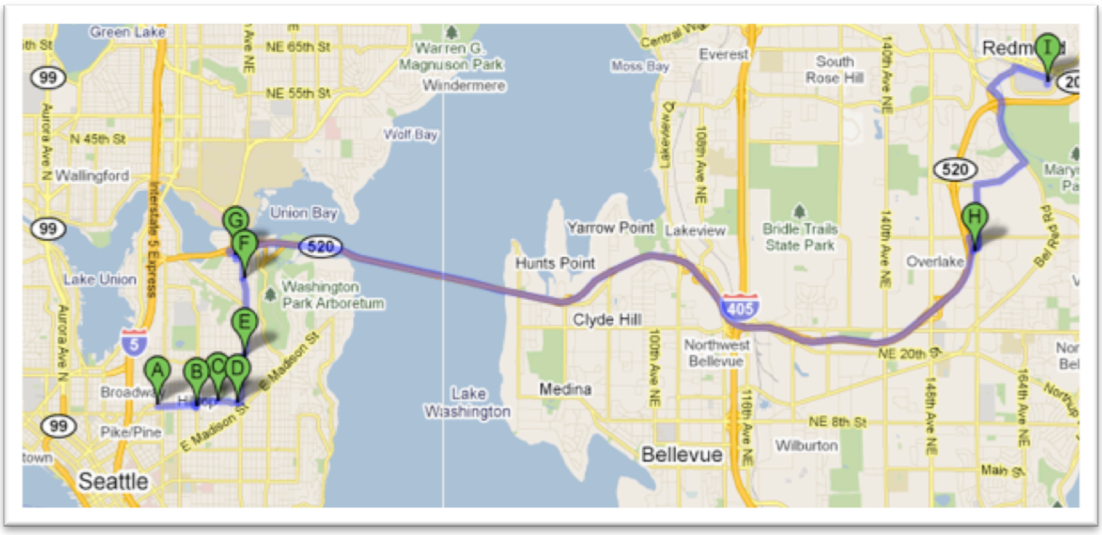

Figure 10: Corridor 2: Seattle to Overlake and Redmond.

The initial focus was placed on Corridor 1 in order to allow time for the release of the Windows Phone 7 (WP7) application before launching Corridor 2. This process involved field testing, filtering pilot participants into corridors and hosting meet-up events specifically targeted at users who were part of this corridor.

4.8 CORRIDOR LAUNCH

The launch of Corridor 1 was scheduled for mid-April. In anticipation of this launch, Avego undertook activities to increase awareness and boost participation on this route. These included meet-up events and a demonstration morning at the South Kirkland Park & Ride to target morning commuters and introduce them to the Avego system. However, based on the low number of approved drivers, and the uncertainty surrounding future extended State funding of the pilot through September 2011, the launch of the Corridor was deferred. For the same reasons, the launch of Corridor 2 was also pushed back.

Figure 11: Meetup Event

5. OUTCOMES AND LESSONS LEARNED

5.1 KEY OUTCOMES

Type	Description	Outcome
Overall	Is casual carpooling possible? Does it have a real application in the market? Will the pilot continue to evolve post the WSDOT involvement? • Will people want to keep using it after the initial pilot period? • Is the program sustainable without State incentives? How will participants react to the concept? Can the pilot build towards critical mass?	Although the success of casual carpooling across the 520 remains to be determined, the strong and sustained interest demonstrated by the local TDM community and approximately 1,000 commuters is a clear indicator of casual carpooling's market potential and the role it can play as an additional commute alternative. The continued support of TDM representatives from the Advisory Committee combined with the high volume of interest exhibited by Microsoft employees who registered to participate in the pilot project point to future RTR opportunities without WA state involvement and associated participant pre-screening requirements.
External Influence	What impact will the introduction of tolling on the SR 520 have on people's propensity to participate in real-time share?	Although tolling on SR 520 has not yet started, the introduction of tolling, when it commences, is expected to divert more drive-alone drivers towards other commute options, including casual carpooling.
Employer	Will the pilot result in higher numbers of people who carpool to major employer campuses such as Microsoft?	Remains to be determined.
Verification	Will the system provide an opportunity to move away from the 'cheating' mentality on commute trip logging from carpoolers? Will the system provide a method to verify and track trips?	Remains to be determined.
Safety and Security	Will the system provide a safe and environmentally friendly alternative to SOV travel?	Although the background check process undoubtedly provided comfort to a subset of the overall pilot population, this was a minority. A far greater subset opted out of participating, either implicitly or explicitly as a result of the pre-screening and approval process.

Type	Description	Outcome
Quantitative	1,000 (250 drivers and 750 riders) pilot project participants Target of up to 30,000 trip reductions (5,000 trips per month) over the duration of the pilot	962 individuals were recruited and signed-up as potential pilot project participants, though were not eligible to partake in the pilot until they had successfully completed the pre-screening and approval process. 142 individuals who initially signed-up to participate dropped out or actively unsubscribed. Due to the low level of approved drivers the pilot service was never launched, the trip reduction target has not been met, and, more importantly, there has been no real measure of progress against this target. Therefore, the achievability of this target remains unproven with no additional data points to prove or disprove this number.

Figure 12: Key Pilot Outcomes

5.2 EVALUATION AND MONITORING

As outlined at Section 4.4 the majority of the surveys and focus groups which formed part of the evaluation design were intended to measure the behavior of participants who had either actively used the Avego system to share a ride across the SR 520 or who had unsuccessfully attempted to do so.

However, given the low number of approved drivers and the decision to defer the launch of the first two corridors, the evaluation activities were adjusted to reflect the actual project outcomes as at May 2011. The following evaluation activities were undertaken.

5.2.1 ENTRANCE SURVEY

This survey was originally intended to provide baseline information which would identify changes in travel behavior and perception of travel caused by the dynamic carpooling system. The survey was optional and the invitation was sent only to those who had completed the approval process to at least rider status. It intended to gather demographic information, current cross-lake trip making behavior, expectations for and concerns about the project and motivation for participating in the project. Of the 94 participants who received the survey, a total of 27 (or 29 per cent) provided the required information. The following results were received from multiple-choice questions:

- 31 per cent of respondents had heard of go520 in a news story and the same percentage received information of the project from an employer email; eight per cent had learned about the pilot from a social networking website.

- The main factor influencing participation was saving money or reducing transportation costs (74 per cent), decreasing commute time and interest in RTR technology each attracted 51 per cent of respondents' attention, while environmental concerns were the next most influential factor. Meeting new people was not a factor of significance.
- The male to female split was 41per cent to 59 per cent.
- The most common age bracket was 31-40 yrs.
- Average household income was marked as "more than $100,000" by 67 per cent of respondents.

(See Appendix C for a detailed report)

5.2.2 EXIT SURVEY

In March, April, and May 2011 go520 staff emailed a survey to people who initially expressed interest in the go520 RTR pilot project but who then elected to drop out by not completing the registration process. The purpose of the survey was to gather information about how people heard of go520, reasons for not completing the registration process, commute patterns and motivating factors for signing up with go520. It consisted of seven questions and was designed to take only a few minutes to complete. The survey was sent to 127 people and there were 33 responses, giving a response rate of 26 per cent. The most notable points were:

- Not wanting to provide a social security number was the reason for 49 per cent of respondents not completing registration
- 58 per cent of respondents learned about go520 through an email from their employer or a commuter organization and nine per cent from the newspaper, radio or television.
- 52 per cent currently commute by car and 12 per cent carpool.
- The opportunity to save time was the most influential factor in 58 per cent of participants' decision to participate; while the opportunity to save money was the most influential factor for 42 per cent. The majority of respondents stated that the chance to test new technology and the opportunity to get to know other commuters were not important.

(See Appendix B for a detailed report)

5.2.3 FOCUS GROUPS

Two focus groups were carried out at the conclusion of the state-funded phase of the go520 pilot. The first was comprised of participants who had elected to drop out of the

pilot and the second of those who had completed the approval process. For more detailed results from these focus groups, see Appendix E.

Focus Group of those who elected to drop out of the pilot

This focus group investigated participants' motivation behind electing to drop out of the pilot. Specifically, it focused on 'thresholds' and 'tipping points' where people felt the process was too intrusive, cumbersome or simply not worth the effort. The key findings were:

- The impending toll on SR 520 created a sense of urgency for individuals to arrange alternative commute options. As the imminence of tolling faded, some participants let the application process slide or found other options.
- Revealing social security information to a third party was unacceptable. None of the participants got beyond this point in the approval process. Dropping the social security information requirement was essential.
- Providing driver license data is more acceptable than social security data and all participants were amenable to an employer's background check as a screening tool
- The underlying concept of real-time ridesharing remained favorable

Focus Group of participants who completed the approval process

The purpose of this focus group was to learn how participants who had been screened and approved had experienced the process and what suggestions they may have for improvements.

- The application and approval process was easy and reasonable. Participants felt the background check instilled a sense of confidence and increased safety for participants.
- Participants described themselves as 'trusting', liking carpools and the go520 concept.
- The impending introduction of tolls on the Evergreen Point Bridge coupled with possible cutbacks of King County Metro bus service provided motivation for participants to sign-up for go520.

A comparison of the results from the two focus groups suggests that the pilot attracted two groups of people: those who are comfortable sharing private data (approved focus group) and those who are not (dropout focus group and those who have not submitted any personal information).

Based on participant reactions to requests for personal information during the go520 pilot, the former group is the larger by far. The perception of the same process as being either intrusive and objectionable or reasonable and reassuring could not have been more pronounced.

5.3 LOCAL COMMUNITY AND TDM COMMUNITY INTEREST

Once the pilot was launched to the wider community in early January 2010, interest spiked rapidly reflecting a broad community interest in the concept of Real-time Ridesharing as an alternative commuting method with the potential to provide a greener travel option and to reduce the pending financial impact of the toll. By the end of February individual sign-ups had grown from 30 to 550 and 7,600 visits had been logged on the go520 website. Somewhat surprisingly, this level of interest did not wane over the life of the pilot and at the end of April, as the outreach activity wound down, 962 people had registered their interest in the project with an 8 per cent conversion rate from the go520 website.

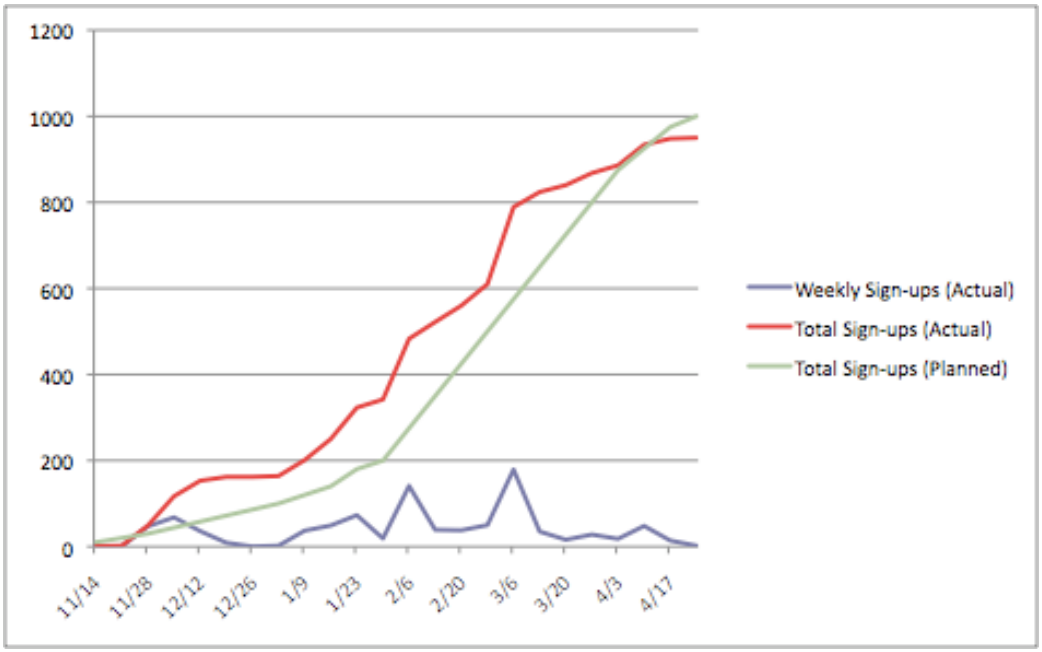

Figure 13: Sign-ups measured across the pilot lifespan

Further to this, the go520 pilot has generated substantial and sustained interest among the TDM community in the Seattle area. The significant number of Microsoft employees who registered to participate in the pilot in Seattle and the support of Microsoft Transportation Services and the City of Redmond creates a strong basis for a transition into a privately funded RTR project following the wind-down of the state funded pilot.

5.4 APPROVAL PROCESS

This pilot has provided many points of learning for future real-time ridesharing projects.

- Initial high interest levels were curbed by requests for personal information and action. The amount of information required of participants simply did not equate with the value they would receive from the service, despite incentives.
- The extremely long time lag between an individual's initial sign-up and completing the entire pre-approval screening process caused a loss of interest among registrants who felt they were being placed in a holding pattern rather than actually having the opportunity to participate in the pilot proper.
- The approval process raised questions of liability. By incorporating a pre-screening process, participants were given the impression that the pilot was fully screened and therefore that there would be little or no risk of any personal security issues. However, even if an individual met each of the prescribed standards required to become an approved participant, this provided no guarantee that their qualification would remain valid throughout the life of the pilot. In addition, as the background checks run were a "Super Search" and the "WA-King County" Search, criminal activities which occurred in another state but which wouldn't appear at national level would not have been caught within the search net. Similarly, a number of the specific background checks were on the basis of name only. Thus there was potential for both false positives and false negatives in the background check process. The question that this poses for future State involvement is as follows: which is better, an imperfect screening process with some contractual involvement by the State with potential liability issues, or a wholly hands-off approach from the State in terms of liability?

In summary, any system which is based on the viral spread and adoption of technology, including RTR, will be severely impeded by rigid approval processes which are overly burdensome on applicants and which create a time-lag between sign-up and system use.

5.5 INCENTIVES

Throughout the life of the project many different variations of incentive were experimented with. As previously documented, incentives were introduced to encourage drivers and riders to break from their normal commute habits and to accelerate the process of reaching critical mass of both riders and drivers. These were distributed in the form of Gas Cards and Avego Credits. These were received with varying levels of success and it was determined that if a participant was unwilling to provide their SSN, the monetary incentives experimented with did not influence this decision. This was reflected in the results from the exit surveys which showed that 58 per cent of those surveyed indicated the 'opportunity to save time' on their commute as the most influential factor in their decision to participate, whereas 42 per cent indicated 'the opportunity to save money' as their most influential factor.

5.6 MARKETING, OUTREACH AND PR

Many channels and media were used in order to maximize awareness of and interest in the go520 pilot. As shown below, when measured in terms of sign-ups, each of these outreach events and PR campaigns were effective, but that the outreach conducted through Microsoft was by far the most successful. To date, over 300 Microsoft employees have registered their interest in the program representing 35 per cent of total sign-ups. From this we draw the conclusion that strategies to maximize participation in RTR pilots such as this should involve strong employer support, and ideally incorporate an element of joint marketing.

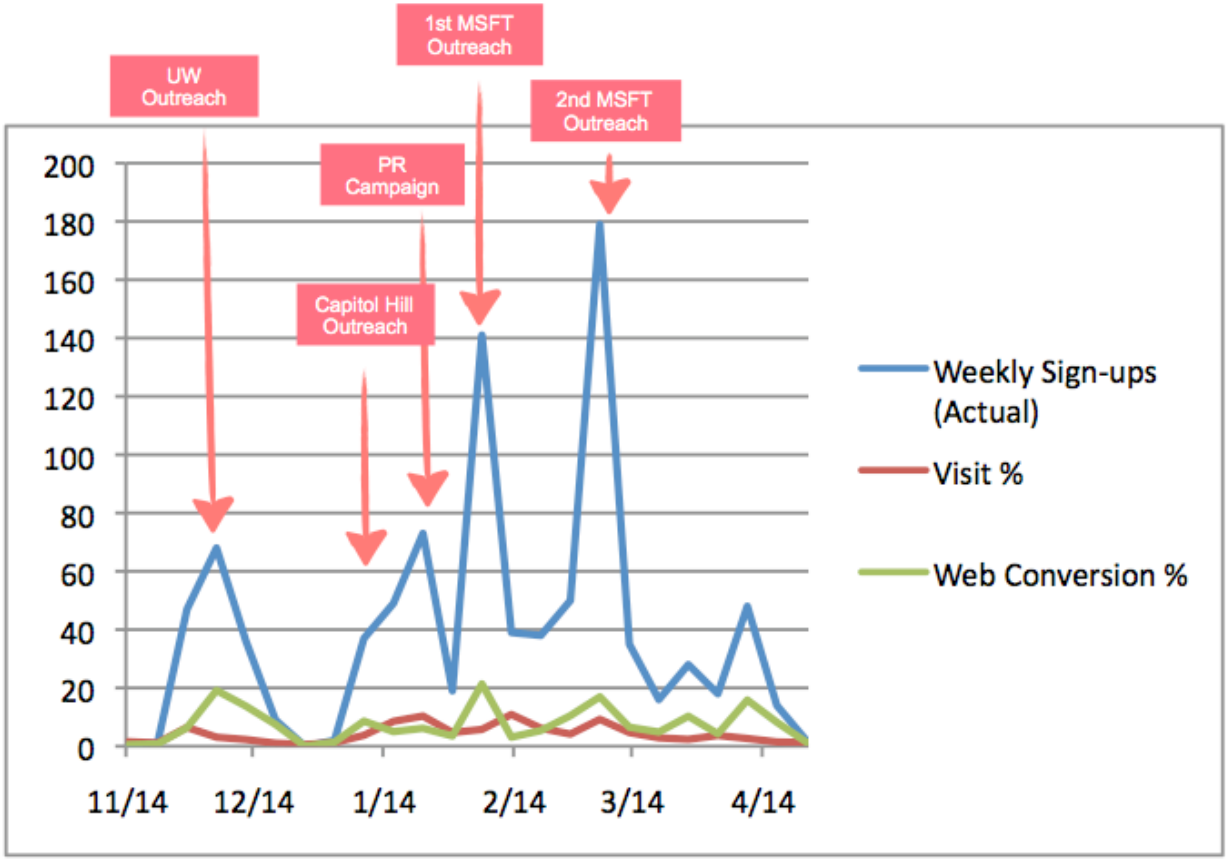

Figure 14: Weekly sign-ups associated with PR and outreach campaigns

Other successful marketing and outreach activities included:

- Meetup events: increased the “trust factor” thereby reducing barriers to participants submitting documentation for approval. The personal aspect at these events which, in the words of once participant “put a face on Avego”, was particularly important for this target group.

- Traditional Public Relations Campaign: this campaign had a more indirect influence on the sign-up rate as it raised broader public awareness of the pilot and provided extra credibility but had limited influence beyond this.
- Email and telephone contact: kept participants informed of events and that personal help was available to them if they required any assistance in the approval stage.

Activities which were noted as being less successful:

- Demonstration Mornings: Although the concept of demonstrations was welcomed by participants, multiple factors contributed to this event under-performing in comparison to others. Firstly, the location of the demonstration at the South Kirkland Park and Ride was close to an excellent bus service. Secondly, the time of day was not conducive to conversation as people have set morning routines and were unwilling to take time to discuss the pilot. Finally, the weather played against this event as people generally remained in the cars until their bus arrived, leaving no time to converse with the Avego employees present.
- University of Washington (UW) and employer on-campus events: These events were determined to be of limited success. The audience was generally a random selection of 'passers by' for whom go520 may or may not have been of interest. While these events did increase general awareness of the go520 project and resulted in a number of sign-ups, the approach was not sufficiently targeted.
- "Good to Go!" tolling events: When go520 carried out outreach alongside the tolling events, many people confused the two and approached go520 for tolling tags. While this did attract attention from otherwise disinterested parties, the impact on sign-ups was minimal.

6. WHERE TO FROM HERE? SUSTAINABLE REAL-TIME RIDESHARING

At the time of writing Avego has just launched an Avego Driver app for the Windows Phone 7 (WP7) platform and is continuing into the next phase of the project without the financial backing of WSDOT. Approximately 1,000 people have registered their interest in the project to-date, over 300 of which live in Seattle and commute to the Microsoft Overlake area. This strong pool of commuters located along one corridor, combined with the release of the WP7 application in June, have ensured sustained momentum in the project. Continued support from the local TDM community, in particular Microsoft and the City of Redmond, and commitments from employers for assistance in direct employer email outreach, will no doubt be significant factors in the success of this next phase.

The relationship with WSDOT during this first phase fostered many strong relationships with TMAs and local employers and provided the project with a heightened level of credibility. It is worth noting that WSDOT is the first Department of Transportation in the world to embark on an RTR pilot of this scale. Although the lack of budget approval to continue the project post June 2011 was inopportune, this first phase of the pilot has created a platform for the further development of the RTR concept through the many points of learning in areas of technology, marketing, incentives and importantly, the approval process. As growth of the RTR project independent of WSDOT funding was always a goal, Avego remains fully aligned with that original intent and achieving many of the outcomes as originally set out.

We look forward, with anticipation, to the next phase of this world-first project.

7. APPENDICES

Appendix A: Evaluation Survey Design

Appendix B: Exit Survey Document

Appendix C: Entrance Survey Results

Appendix D: Communications Plan

Appendix E: Focus Group Feedback

Appendix F: TRAC Scope of Work