

SF to Silicon Valley Instant Ridesharing with San Bruno Hub

Steve Raney, Cities21, Feb 19, 2009

Summary: A hub-based instant ridesharing system is proposed for the SF-based workers of major Silicon Valley employers. This system would replace most of the current uncoordinated private commuter bus systems serving these workers. A San Bruno hub serves as a transfer point, increasing carpool matching probabilities.

With traditional carpools, members are selected and then the carpool proceeds most weekdays for months without change. With dynamic ridesharing (DRS), one-time carpools are arranged within 3 days of the trip. With new GPS cellphone technology (Apple iPhone & Google Android T-Mobile phones), "instant ridesharing" (IRS) is enabled, where one-time rides are arranged within minutes of the start of the trip. With IRS, a person may carpool every day, but with the flexibility of a different departure time and group of people each day. IRS can handle schedule variations in a manner that makes transportation routine and hassle-free. IRS works best when back-up public transportation is available.

About 10% of US commuters carpool, but 80% of these are "fampools," carpools where members all live in the same home. The increased flexibility provided by instant ridesharing creates the opportunity to entice a very significant number of single occupancy vehicle commuters into carpooling. Every minute, there is a "river of empty seats" created by cars driving down the road. The idea of filling up empty seats to reduce traffic and CO2 emissions is somewhat obvious. In 2008 alone, seven organizations independently "invented" some variation of DRS/IRS.

While the DRS concept of filling empty seats is obvious, successful implementation is not obvious. 15 past DRS pilot attempts have failed. Goose Networks is one of many such examples. Goose won a \$111,000 Washington State Department of Transportation Trip Reduction Performance Program grant. Goose delivered 322 rides over 2 years, at a cost of \$345 per ride. In the San Francisco Bay Area, RideNow could only register 12 out of 3,000 West Oakland Station BART commuters, so recruiting failed, causing a pilot to be cancelled. IRS serves as an improvement to DRS, utilizing new GPS smartphones, text messaging, internet sites and social networking to improve the user travel experience.

IRS/DRS software offerings include: Avego (see: http://www.youtube.com/watch?v=PgTNK85bG_k), ZimRide, Goose Networks, Carticipate, Piggyback, and Google RideFinder.

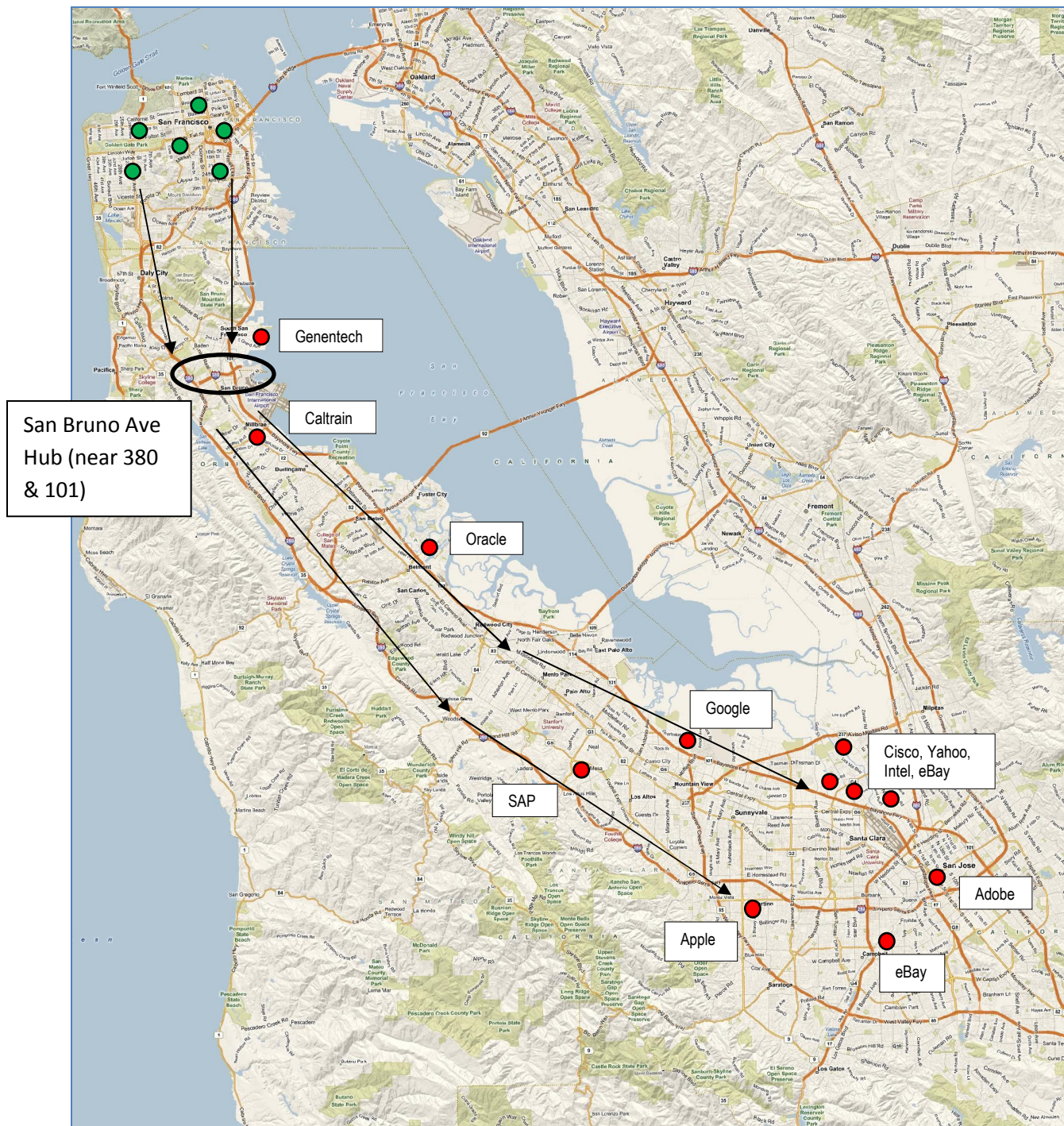
The benefit or utility of travel is a function of {travel time, travel cost, travel experience [hassle, stress, comfort, entertainment value], parking hassle, parking cost, reliability.} When the utility of solo commuting is less than the utility of carpooling, carpooling thrives. For SF Bay Bridge "casual carpooling," commuters save 15 minutes of time and a \$5 bridge toll. Washington DC slug-lines also feature higher utility for carpooling versus driving alone. Casual carpooling represents the "perfect storm" for carpool utility advantage, but there are very, very few places where carpooling utility is even close to solo commuting utility. Financial incentives can close the utility gap between carpooling/IRS and solo commuting.

Proposed IRS Variation: Two-stage ridesharing with a San Bruno Hub

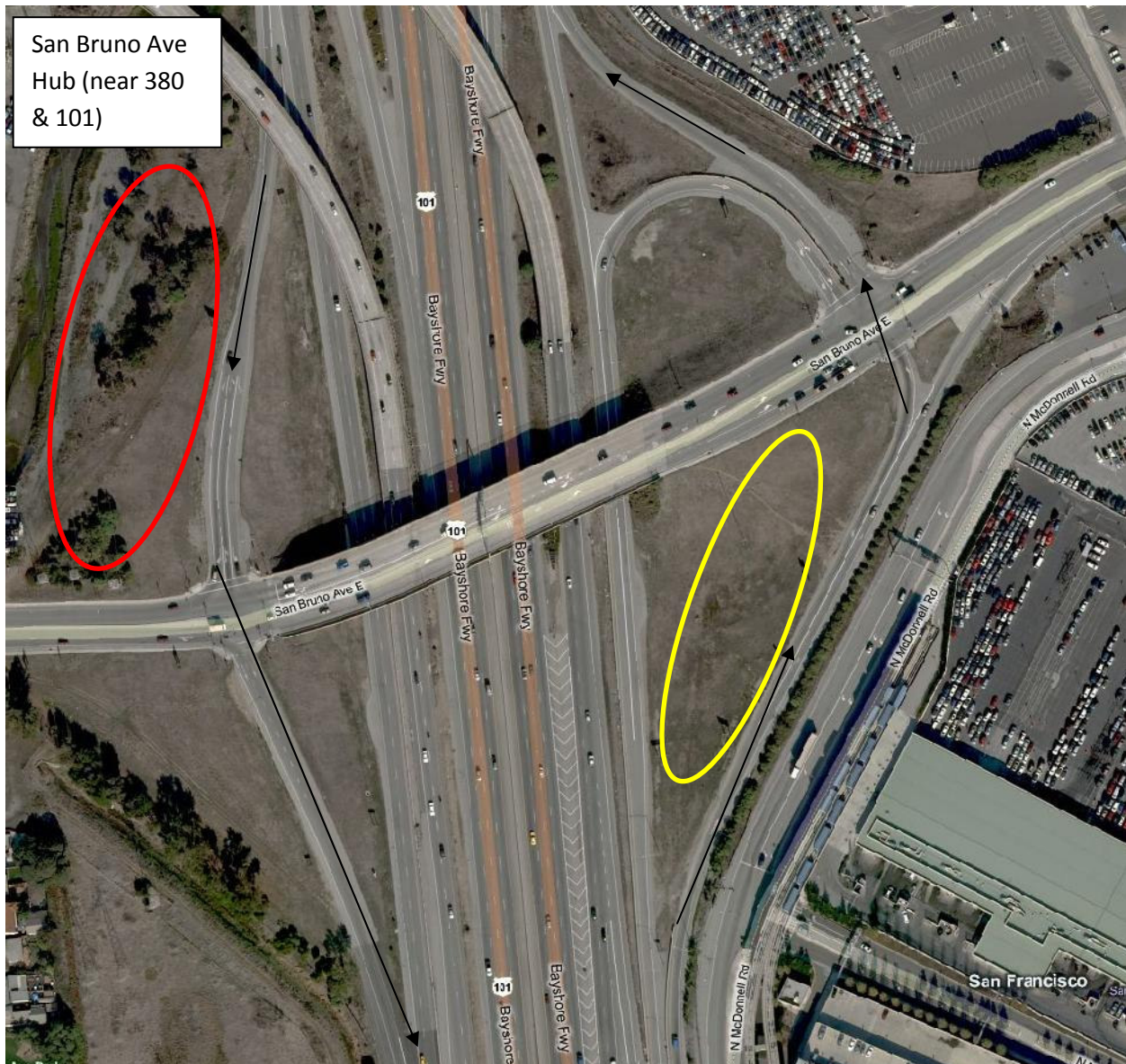
Tech workers who reside in SF and work for different large companies will participate in the scheme. For the first stage of the morning commute, these tech workers will travel to a San Bruno "hub." Some will be drivers and some will be riders who are picked up by drivers in their SF neighborhood. For the second stage, riders will switch cars to be driven to their work destination. A concept called "Hoverport" (<http://www.hoverport.org/>) shares some of the ideas in this hub-based IRS concept.

There is critical mass for this SF tech worker commute, as evidenced by the more than 40 employer buses {Google, Apple, eBay, Genentech, etc} that ply SF neighborhoods, picking up 30+ workers per bus. SF has recently complained about these large buses plying narrow SF streets.

MTC's long term transportation plan will expand the South Bay HOV network, making this scheme more time-competitive with solo-commuting. Where traffic is bad, HOV lanes typically save commuters 1 minute for each mile of highway commute, IE HOV lanes move at 60 mph and non-HOV lanes move at 30 mph. For this 30 to 40 mile commute to Silicon Valley, congestion is expected to continue to grow.



- Resident SF drivers living in green circles pick up resident riders in their neighborhood, then drive to the hub
- At hub, riders transfer to cars/buses going to their red circle {Genentech, Yahoo, Adobe, Cisco, Intel, Google, SAP, Apple, eBay, Oracle, Caltrain Millbrae Baby Bullet}
- Supplementary bus service may be integrated, utilizing the hub to shorten bus trip distance.
- The more employees/companies that participate, the shorter the wait.
- The hub shown is one promising option. Millbrae Caltrain/BART also shows promise. Tanforan Park at El Camino Real and Highway 380 has some potential as a hub. The Highway 380 area is advantageous because of quick access to/from Highways 280 and 101.



San Bruno Avenue Hub

In the morning, drivers pull off 101 Southbound and pull over into the very large red oval west of Highway 101. This oval will be “improved” (paving, drainage, signage, rain shelters, traffic slowing on the frontage road via signage & speed bumps). Within this oval, there are marked collecting areas for each of the destinations. A driver will often pull into the hub, discharge riders, pickup riders, and then depart for the destination within two minutes. In some cases where no other drivers are waiting for the destination and a rider in another vehicle is on route to the hub, the driver may choose to wait for that rider. Financial incentives will compensate the driver for waiting. From 101, access to this oval is immediate. Once a pickup has been made, getting back onto 101 is immediate. Once a pickup has been made, getting back onto 380 to access 280 is very quick, requiring 3 left turns and 2 stop lights.

At the hub, riders will be dropped off at the driver’s destination collection location. Once the riders are dropped off, they will walk to their designated collection area.

At the end of the morning commute period, around 10AM, there is the possibility of riders being stranded at the hub. This stranding can be eliminated by:

- Paying a few employees extra to wait before they leave to ensure that rides are available right at the end of the morning commute period.

- Paying employees extra to drop riders off at work locations differing from the drivers work location.
- Bus service (making stops at multiple employers)
- Bus service to Millbrae Caltrain, followed by a Caltrain trip, and followed by taxi service from Caltrain to the work site. Caltrain stations often place riders within two miles of their workplace, with the longest distance being four miles.
- Use of a carsharing vehicle

To minimize waiting time, 10 drivers and 10 riders per hour per work destination should flow through the San Bruno hub. The critical mass required to make hub-based instant ridesharing work is substantial, but the existing private bus networks carry more people than this. In addition, there are many more “SF resident SV worker” commuters who do not use the private bus network.

It is expected that the task of writing software to coordinate “stranding elimination,” such as automated dispatch and payment of taxis, will be straightforward. Current IRS software must be enhanced to support hub-based transfers.

There is also the possibility of riders being stranded in SF, without pickup. This can typically be eliminated by having a) riders commute via transit, b) riders work at home (telecommute), c) riders drive to work directly.

In the evening, drivers pull off from northbound 101 and stop in the yellow oval east of Highway 101. Within this oval, there are collection areas for each of the SF home destinations. Access to 101 and 380 is easy.

The human factors design of the Hub’s ovals is important to ensure safety and high throughput of cars and riders. It would be ideal to design highways from scratch to support “hub-based instant ridesharing,” but it is possible to squeeze in a hub in the unused space by highway access roads. Neither of the ovals is flat, both have grade.

Evening stranding at the hub may be eliminated in a similar manner. A cab ride from the San Bruno hub to a rider’s home will generally be less than 8 miles.

There is also the possibility of riders being stranded at work, without pickup that would take them to the San Bruno hub. This can typically be eliminated by:

- paying a few employees extra to wait before they leave to ensure that rides are available right at the end of the evening commute period.
- paying drivers extra to pickup riders at different Silicon Valley locations
- having riders commute home via transit
- having riders access a carshare vehicle to drive home
- having riders stay overnight at an employee apartment.

Technology makes it much easier to track potential strandeers and notify these riders of when the last car home is leaving. It is now much more possible to coordinate these edge cases than in the past.

Somewhat convoluted red hub AM access from 280 is depicted below:



Evening access from 280N to the yellow hub requires crossing over to 101N at some point. Taking 280N to 380 requires back tracking on 101S to Millbrae to access 101N, or requires backtracking on McDonnell Rd to SFO to access 1010N.

Incentives

It is expensive to operate private employer buses from SF to Silicon Valley. The cost may be in excess of \$40 per private-bus-riding employee per day. Annual private bus operating costs are roughly \$140,000 per year. Hence, it is expected that employers will be willing to subsidize hub-based instant ridesharing by \$10 or more per worker per day.

An example incentive scheme:

- Pay each driver \$1 each time they run the IRS application on their GPS phone (once in the AM, once in the PM). Pay each driver \$2 per rider picked up in SF or at work. Pay each driver \$2 per rider picked up at the hub. Pay each driver \$3 for each 5 minute wait they endure at the hub (waiting for additional riders to arrive).
- Pay each rider \$1 each time they turn on the IRS application on their GPS phone. Pay each rider \$2 each time they accept a ride (at home, at the hub, at work). Pay each rider \$8 when they have to suffer through a stranding experience.
- Employers pay the IRS software vendor \$4 per day for each rider served.

The Human Resources Department Objection

Employers typically frown on the idea of carpooling between employees of competing companies because workers may “network” and then switch companies . Hence there may be a strong objection to this scheme. “There is NO WAY that my company would allow ridesharing with other firms.” The challenge with IRS is achieving critical mass, and employer cooperation will be necessary to achieve sufficient membership for this scheme to work.

Humanity faces many difficult problems. Some believe that people must collaborate more to address these problems. Web 2.0 applications such as IRS provide the opportunity to collaborate without management overhead, making it easy to organize a few minutes per day of good-deed-doing in millions of people. Successful IRS will pave the way for new forms of human collaboration to address other difficult problems. Human Resources personnel must embrace collaboration with competitors to bring about the greater good of meeting AB32 climate protection 2020 goals.

Next Steps

- Two or more employers should indicate interest in the concept.
- From there, an initial negotiation with Caltrans, MTC, and San Bruno about the San Bruno hub is important. The right-of-way must be granted.
- Given the right incentives, a well-funded IRS vendor, such as Avego (\$12M in committed VC) might be willing to undertake the asphalt/rain-shelter improvements at the San Bruno hub, in exchange for an exclusive arrangement.