Flexible Automobile Sharing Transit
F.A.S.T.

People commuting to work are just plain tired of spending hours waiting for traffic to clear. Gasoline is a main producer of hydrocarbons, carbon monoxide, and oxides of nitrogen, all contributing to depletion of the ozone layer and forthcoming catastrophic climate changes.

The data are appalling. Over 120 billion gallons of gasoline* are consumed yearly in the US by automobiles, with an estimated two-thirds by commuters driving over two trillion miles*. Removal of one out of two cars during commuting hours would reduce congestion by over 50% and national pollution by some 25%. In the US, which consumes 40% of the world's petroleum, global reduction of pollutants would be in the order of 10%, a significant improvement.

Bumper to bumper driving to go to and from work wastes manpower while contributing to dysfunctional human behavior due to noise, fumes, stress and frustration. Reducing half of the commuter traffic would save $60 billion a year in gasoline, $200 billion in automobile and road wear, and $175 billion in man-hours wasted in clogged traffic. Health benefits would amount to hundreds of billions of dollars *.

People use private automobiles to commute for identifiable reasons:

- Convenience of door-to-door transportation – choosing the time and place of departure as well as the time and place for initiating the commute trip back home
- Speedy transportation - recognizing that public transport can never be as fast or convenient as door-to-door automobile transportation
- Comfortable travel - commuter is seated in a vehicle with temperature and noise under control, irrespective of weather conditions
- A readily available means of transport to go from the main place of work to alternate places during and after working hours

The temptation to overcome the problems associated with individual automobiles through the use of mass transit ignores the paramount advantages of the automobile and condemns such attempt to failures.

If mass transit sometimes enjoys a moneyed political base and a popular constituency from well-meaning authoritarians, it is for the following reasons:

- Construction of mass transit benefits no one except politicians who are placed in office by the interests they serve.
- A political constituency can be assembled to promote mass transit based upon the unaccountable benefits to be made by its constructor.
- Any commuter using mass transit is assumed to be one automobile less on the road, enticing all commuters to politically support it, whether they intend or not to use it.

One fundamental pitfall of mass transit is to inevitably attract high-density habitat along its track, frustrating access for the pre-existing suburban population. While it has been observed ten years after creation of a mass transit that sponsorship exceeds capacity, this phenomena is due to the rapid increase of high density housing along its track. The lack of attendance in the early years connotes the lack of interest from the public it was intended to serve.

In absence of an attractive alternative, roadways are used to their maximum capacity because, in spite of congestion, the automobile remains the most efficient means of transportation. A postulate can be proposed that commuters use their automobiles proportionally to the number of commuters using a public transport.

The proposed solution to solve the massive traffic problem may be derived from application of statistical laws – should they demonstrate that, at any given time, a constant and random number of commuters conform to pre-set parameters, when singular observation cannot predict the behavior of one commuter.

Present attempts to relieve pollution and road congestion tend to work at cross currents, or against economic development.

- Converting automobile fuel combustion engines to electricity may only displace the source of pollution
- Replacing combustion engine automobiles by electric automobiles does not solve the problem of road congestion
- Satellite-fed programs directing drivers to alternate itineraries sustain the same pollution and may only give the appearance of faster traffic. Like communicating water filled vases, traffic flows to its lowest level.

Commuters object to mass transit for one or all of the following drawbacks:

- Time spent walking between home and public transportation
- Time spent walking between the public transportation and the workplace
- Waiting for public transportation
- Lack of comfort during transportation
- Bad weather conditions while walking to and from public transportation

Investment cost of fixed public transport can never be paid back with revenues from commuters. The cost of creating one commuter seat on the Bay Area Rapid Transit (BART) was over $100,000 in today's dollar. The debt service and amortization alone cost $30 per seat and per working day. If five commuters occupy one seat on average per working day, the investment cost is $6.00 per commuter trip. To the infrastructure investment cost must be added another $5.00 for maintenance, repair, electricity, and personnel. Each commuter trip is a direct loss, not counting other losses*.

In addition to obvious pecuniary and convenience shortcomings, public transport creates long term problems working against its solution:

- Rail mass transit generates giant and unstoppable land speculations along its track resulting in low-cost multiple housing and higher rental dwellings density. In turn, this condition foments

overcrowding and anti-social behavior, later leading to migration of family homes away from the rail transit.

- Buses must serve a broad area and operate at a loss, or serve narrow corridors and be unpalatable to users: too crowded, too distant from home and work.

- Noise and vibration from rail transports deteriorate quality of neighboring habitat, pushing homeowners further away in search of tranquility.

STRUCTURE OF FAST

FAST provides the means for **instant ridesharing on demand**. It is motivated by market driven incentives. Drivers derive personal gain from driving other commuters to work. Riders are not committed to a fixed system, as in carpooling. They use FAST to save money.

In order for drivers to drive vehicles affiliated with FAST, and benefit from fare paying riders, drivers meet certain conditions:

- Vehicle meets a standard for maintenance, comfort, and cleanliness. Vehicle can be either owned by driver or leased from FAST by driver
- Vehicle is equipped by FAST with appropriate electronic and wireless equipment for instant communication
- Vehicle driver has a clean record with regard to penal background, car accident or traffic violations
- Driver must report code of conduct violations by passengers

In order for riders to board a FAST vehicle, they also meet certain conditions:

- Passenger have a clean penal background
- Passenger receive an identifying badge and a code number to be used when calling for a ride
- Subscriber receives a map where every area is identified by co-ordinates, using zip code identification
- Passenger provides FAST with co-ordinates as to origin and destination of their normal daily commute
- Passenger chooses to have a fixed place and time of departure or, if they so elect, to vary the place or time of departure.

OPERATIVE MODEL FOR A FAST VEHICLE DRIVER

- FAST driver has met pre-qualification. A tag on the windshield identifies car.
- Automobiles are owned either by a car manufacturer, an independent company, the county, or state, and are then co-leased to individuals. Privately owned automobiles may also qualify.
- Driver calls the central system to voice his/her code number and time of departure

- Computer informs driver of the probability of finding passengers along his/her route based on historical and current data
- Based upon favorable probability, driver decides to drive his/her car to work and to pick-up passengers along the way
- When probability of finding passengers is low, driver may opt to be a passenger.

Each driver, upon joining the system, is registered in the computer according to place of departure and place of destination. Nine-digit zip codes identify the two places. When a driver calls FAST system to announce the time of departure, the program already knows the road location where the car is likely to be at any given time. Road location is estimated in reference to fixed markers on the itinerary, to be reached when driving at a given speed. These markers are exit ramps from the freeway or main roadways. An alternative is a satellite tracking system monitoring the position of every FAST car.

When a call is received at the FAST central computer, the software program immediately analyzes all qualified drivers in progress toward the caller. It then alerts the most qualified for the pick-up. Incentives are offered to motivate drivers to pick-up passengers outside usual parameters.

OPERATIVE MODEL FOR A FAST PASSENGER

- A passenger (and subscriber to FAST) calls a toll-free number, minutes before the contemplated time of departure from home
- Passenger voices personal code number and 9 digit zip code of destination
- Central computer searches for a vehicle heading near passenger destination and passing within minutes less than 2 miles from passenger location
- Computer identifies adequate vehicles and by priority instructs one vehicle driver of the pick-up
- Vehicle driver accepts or rejects to pick-up the passenger. When first-called driver declines pick-up, next appropriate driver is notified
- Central system informs driver via both on-board map and voice instructions of best route to pick-up passenger and to later resume route to destination
- Passengers electing to subscribe to a permanent time and place of departure and to a permanent time and place of return commute have a preferred mileage rate.

REVENUES

Riders pay FAST monthly according to the number of miles they were driven. To insure a maximum of flexibility and efficiency in the system, the mileage cost varies according to given factors:

- Riders with a constant place and time of departure pay less
- Riders with a constant place and time for the return trip pay less
- Riders traveling outside standard commute hours pay more
- Riders distant from main roads to town pay more
- Riders /calling/ one hour or more before time of departure pay less

From FAST, a driver receives a monthly mileage payment for each passenger driven according to factors intended to increase flexibility and dependability. In principle, the revenue received by FAST driver from the passengers is sufficient to fully reimburse lease, fuel and parking costs, provided driver takes on average 2.5 riders per trip. FAST revenue is a percentage of the fee-per-mile paid by passengers.

Based on a cost for the vehicle driver of 50 cents per mile (with city parking,) a rider paying 20 cents a mile pays $10 for a 25-mile distance round-trip, about $2,000 a year. The same commuter using his own car pays $20 daily when parking is included, or $4,000 annually. Three riders cover cost of transportation, leaving 5 cents for FAST.

TRANSFER STATIONS

The system may need transfer stations near the city in order for a rider involved in a long commute to reach his destination in the least amount of time.

THEORETICAL STUDY OF THE SYSTEM

The geographic area where the system is to be studied should be the same where it will be operated for the first time. Public acceptance will depend a great deal on reliability, which will be subservient to the theoretical research.

The study will consist of a virtual model. Polling tens of thousands of residents in a geographical area will provide the coordinates of their commutes and their preference in participating in the system.

A choice study area for the project is the San Francisco North Bay or the San Francisco Peninsula. Both areas are spread along a narrow corridor. The North Bay may have the advantage of a more homogeneous population; the toll bridge may offer an incentive to using the system.

FUNDING

Technical Infrastructure

Funding for this segment of FAST pertains to the development of the software programs necessary to execute prompt and reliable delivery of information between drivers and passengers, as well as the administration of payments and receipts.

It is expected that large venture capital firms in Silicon Valley will satisfactorily handle the funding of the technical infrastructure with a public offering. Given a modicum of legitimacy derived from a serious study, the venture does not appear less promising than many other well-funded ventures. In addition, its public appeal is too overwhelming to be ignored.

Automobiles and Equipment

Initial funding of the purchase or lease of thousands of FAST vehicles from car and equipment manufacturers represents an entry into an enormous potential market.

It is highly probable that large automobiles manufacturers will compete to be the provider of FAST vehicles, especially if justified incentives are properly associated. Typically, the automobile manufacturer would agree to provide at its own risk the number of cars necessary to launch the system, in exchange for a percentage in the ownership of FAST.

WORLD WIDE SALES

With a gross estimate of one trillion commuter miles to be driven under FAST in the US, a fee of 5 cents per mile driven would bring in $50 billion in revenue nationwide to the owners of the system.

Unlike mass transit systems, which wear down in time, the FAST system can only become better as experience is accumulated. Its largest cost is in its development. Maintenance is not foreseen to be significant. The system can be licensed to virtually any large metropolis of our globe for considerable licensing fees.

POLITICAL OUTLOOK

Unless taxpayers are asked to fund the project, little opposition is expected from a political viewpoint. The public is tired of traffic congestion and pollution. Political careers may be likely to ride with the implementation of the system. Federal political support may be necessary to override local interests. The legitimate interest of existing organizations catering to the commuting trade may have to be compensated.

Opposition may come from proponents of rapid transit. The projected cost of $2 billion to extend the BART system to Silicon Valley has already gathered a strong political base.

The fact of existence is that our cities were built around the use of private automobiles. Mass transit will have to wait for cities that are designed around public transportation

**Statistical numbers were extrapolated from various sources and are intended only to produce an idea of scale.*

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