

**Paul Edgar**

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**From:** Paul Edgar [pauloedgar@qwest.net]  
**Sent:** Tuesday, March 21, 2006 9:53 AM  
**To:** Henry Hewitt; Harold A. Dengerink, Ph.D.; Rob DeGraff  
**Cc:** Rep. Deb Wallace; Rex Burkholder; Sam Adams; Marc Boldt  
**Subject:** I am going to speak to this at tomorrow's CRC Task Force Meeting (Please print this and have it in the packets for the members)

Paul,

Thank you for your efforts to bring a regional perspective and a sense of accountability to the congestion problems in the Portland area. I agree with nearly everything you are trying to accomplish and I appreciate your efforts to "keep the pressure" on the leaders of the Region. In my opinion, we are on the same side...and we want the same things for Portland / Vancouver. If we differ at all, it's in the matters of scope and timing. Let me explain:

**Scope:** I think our goal should be, not to fix one corridor between Portland and Vancouver, but to fix them all. I don't want to just widen I-205, or build a new Columbia River Crossing at I-5 or to build a new third bridge connecting the Ports and better serving the western communities...I want all three, and, looking to the twenty year future, the metropolitan area will need all three. So what we are trying to do is to pursue a strategy that will give us the best chance of getting all three.

**Timing:** The question is...How to do this, and in what order??? Should we try for the easier (and less expensive) widening of I-205 first? Maybe, but if so, that might reduce the perceived need for an improved I-5 corridor? Should we try for the third bridge first to improve the connection between the Ports with a new "freight" corridor? Maybe, but that might be seen as a substitute for widening I-205 and for improving the I-5 corridor.

So, what we seem to be settling on is trying to get the most difficult project (the I-5 corridor) underway first. If we can get that project started (and funded) and prove to the public and the legislature our ability to make a positive difference at the I-5 crossing...then, it is not such a great leap to build public support for the other two, and ...there is no question that both other projects can still stand on their own as necessary and cost effective. The fear is, if we do I-205 or the third bridge between the Ports first, than these projects will be used by some as an excuse to not support the I-5 improvements and we will further delay the replacement of these critical bridges.

I hope that you can accept (or at least not object to) this strategy. In fact, my real hope is that you will use your considerable influence to support and help us find a way to build all three of these needed projects.

Thank you again for your active support of improved transportation in the Portland / Vancouver area.

David O. Cox  
Division Administrator  
FHWA - Oregon Division  
503-399-5749

3/21/2006

**From:** Paul Edgar, **Subject:** Economic Development Research Group Study

After printing out and reading the full text of the "The Cost of Congestion to the Economy of the Portland Region" by the Economic Development Research Group at first I thought to myself "that it was about time that this information was made available" but then the real light came on. Why not let this group independently setup the criteria to evaluate; the solutions on the table now and in the future like the Columbia River Crossing (CRC) Project proposal so that a comparison could be made to it; like the widening of I-205 to 4-lanes in conjunction with the building of a freight specific Port-to-Port, Westside arterial like outlined in the Bi-State Industrial Corridor (BIC) proposal as a public/private partnership. The BIC proposal also includes replacing the Heavy Rail Bridge crossing the Columbia River with the ability to include on it a MAX/Light Rail Loop that would provide the infrastructure to connect into Vancouver.

David Evans and Associates is doing the pre-EIS efforts for this I-5 CRC project and they have had the blinders put on them to virtually only design, engineer and sell this one project. The current process, instructions and players pre-ordain an action without identifying if this is the best use of all recourses and dollars that can be invested into transportation in our region. It precludes any region/system wide solutions from evaluation. How can we have and achieve an effective public process and ROI with the current plan and instructions? Many people believe that we will not even be able to achieve an effective EIS with the current charter/RFP that exists for the CRC Task Force and project teams.

The comparative cost of these alternate projects to the public should be approximately about that same or a little less when it comes to widening of I-205 because so much of the bridges and overpass infrastructure already exists. All of the Right-of-Way necessary to accomplish this widening of I-205 to 4-lanes is currently owned. The (BIC) Port-to-Port Westside arterial could be accomplished/built in an earlier time frame with-in a public private partnership. The funding for BIC would come from the combinations of contributions from the Ports (Portland and Vancouver), Heavy Rail Entities (UP and BNSF), Tri-Met, PDC, ODOT, WSDOT, FED's, Metro, Multnomah County, Clark County, City of Portland, City of Vancouver, River Commerce Groups, Tolls and other public and private investors. The big issue is the comparative benefits to the economy of the Portland/Vancouver region.

The benefit and cost analysis should depict what the net results are of any recommendation in the Portland/Vancouver Region as transportation entities try to implement recommendations to satisfy "The Cost of Congestion to the Economy of the Portland (Vancouver) Region". Right now in front of us is a major train going down the track call the Columbia River Crossing Task Force that can obligate much of the next 20-years of transportation, transit, highway and road investments dollars in this region. This task force is tightly looking at only the replacement of the Interstate Bridges and very little more. It does not at this time even take steps to look at real economic and congestion relieving alternatives that may have the possibility of costing less and bringing in more benefits as suggested as needed by the "Economic Development Research Group". If the CRC Task Force is not given instruction to open their charter and tasks to include and identify all options to the east and west of the I-5 corridor it is wrong. A result would that we will be doing a significant disservice to all stakeholders. We must identify and evaluate all transportation options and investments to ensure that the cost of congestion to our region is eliminated or substantially reduced.

Immediate steps must be taken by all parties to thrust the lack of "Freight Mobility" caused by congestion to the front of our area's priority list. We cannot continue to invest into feel good projects that suck up the majority of the transportation investment dollars that have little Return on Investment. We must change the mind-set of the public as to what is considered as politically correct. If the economic engine doses not spin, we will not have the needed family wage jobs and investments that create them. A major issue for all of the public servants is that we will not have the taxes/revenue come in that are needed to pay for the public services and public investments. This is a chicken or egg priority decision as to what comes first. I do not want to be Chicken Little but if we do not stop and/or change the direction of the CRC Task Force Train and transportation planning NO-ONE will have the dollars available to make reasonable decisions and investments to help solve this serious congestion problem and its subsequent cost that was identified in this report.

I want what this report suggests and that is that we can get a 2-dollar return for every 1-dollar invested. The current regional transportation plans do not currently provide this type of returns on our transportation investments. Something has to change.

Thanks, Paul O. Edgar

**Description of the BI-State Industrial Corridor  
for Placement in the Official Records of  
Columbia River Crossing**

**includes**

**Description of the Northwest Passage  
and  
Description of the West Arterial**

**March 22, 2006**

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Sharon Nasset  
Director, Economic Transportation Alliance

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## **BI-State Industrial Corridor (BIC)**

1. From highway 30, 124th to Oil Time Road in Oregon connects with existing arterials Marine Dr., N. Lombard St., Columbia Blvd. and North Portland Rd. to Vancouver Washington along the east side of the BNSF north alignment to perhaps Ridgefield Washington.
2. BIC is a freeway corridor and would have nine or more complete ramps as entrance and exit access with NO stop lights.
3. A complete ramp is north and south access (18 or more). This would be in addition to and with no change of Fruit Valley Rd. There are several existing arterials in Vancouver that currently connect with the BNSF rail line.

\*Due to grade issues the trenching of Mill Plain has been removed.

## **Columbia River Bridge (BIC)**

1. A high span bridge with 2 levels and no lift span.  
**The Lower Level** Consisting of 8 lanes with 4 in each direction. Truck friendly lanes thirteen feet wide with emergency lanes in the center and on the sides. This level is to be built to accommodate high wide and needs to remain at about a 2 percent grade.  
**The Top Level** Four lanes with 2 general purpose lanes in each direction general and an emergency lane on the side.  
Three lanes transit only, 1 as a future reversible lane and 2 lanes for transit. Two lane width for sidewalk, bike and viewing.
2. New rail tracks lift span bridge with 4 tracks(1 or 2 extra heavy for high speed and large loads.) Commuter rail to be established with the new additional capacity.
3. Remodel of the existing BNSF from a swing to a lift span, adding a second lift to line up with the current I-5 bridge.

### **North Portland Road**

North Portland Road to be upgraded to 4 lanes each in North/South direction. The upgrade from Marine Dr. to Columbia Blvd. As North Portland Rd. borders both Smith and Bybee lakes, this would provide both access and create a pedestrian friendly promenade.

## **Willamette River Bridge (BIC)**

1. A one level bridge with no lift span consisting of 5 lanes, 4 general purpose truck friendly lanes, thirteen feet wide with emergency lanes in the center and on the side.
2. To be built to accommodate high wide, it needs to remain at about a low percent (2%-3%) grade.
3. One center lane to be used as a future reversible lane.
4. Two lane width right of way for bicycle and pedestrian traffic on east side of bridge.
5. New lift span bridge with 4 sets of heavy rail tracks, one or more set being for high speed or every heavy rail.

## Northwest Passage Description

1. The Northwest Passage includes three bridges. First over the Columbia River, second the Columbia Slough, and third the Willamette River.
2. From Mill Plain in Vancouver (I-5) follows the BNSF line and uses as a viaduct “The Cut” to Highway 30. This is 7 lanes, one center lane for emergency and emergency lanes on the curb side. (center lane reversible making 3-3 or 3-4 lane combination)
3. The NW Passage **does not include a lift span bridge** over the Columbia River and uses on and off ramps **not stop lights** on the express way.
4. An access road to Swan Island makes a second road out, that does not access I-5, and connects with the major industrial area on one continuous corridor.
5. The NW Passage also adds heavy rail capacity of 4 new train tracks and a for freight and commuter rail.
6. Accommodation is made for bicycle and pedestrian traffic.

## West Arterial Description

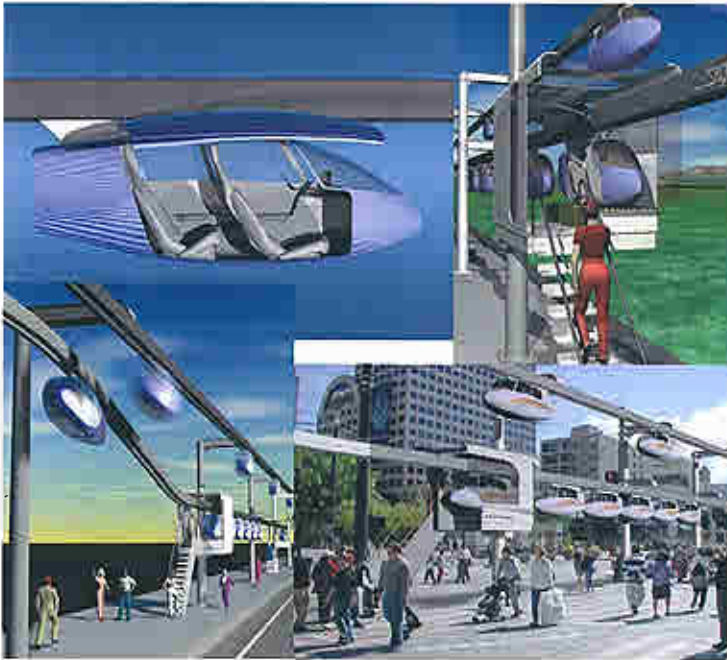
1. A four-lane **lift span bridge** with two northbound and two southbound lanes.
2. **Includes 5 to 7 stop lights** which bring the traffic to a full stop.
3. No addition of heavy rail or commuter rail in comparison summaries
4. No additional lanes for bike and pedestrians.

\*The NW Passage was not modeled by the BI-State I-5 Trade & Transportation Partnership.

\*The Western Arterial was a version of NW Passage.

## What is SkyTran?

- ◆ Transportation system developed by UniModal™.
- ◆ Uses a network of elevated guideways.
- ◆ Small, computer-controlled, magnetically-levitated vehicles.
- ◆ Transit is point-to-point, non-stop.
- ◆ On-demand vehicles waiting at every boarding portal.



## Key Features:

- ◆ Speed: Vehicles travel up to 100 mph.
- ◆ Cost: The lowest cost transportation mode to install and operate. 1/10th the cost of light rail.
- ◆ Capacity: One guideway has the same capacity as a 3-lane freeway.
- ◆ Energy & Pollution : Vehicles use clean electricity and get the equivalent of 200 miles per gallon.
- ◆ Maintenance: Magnetic levitation eliminates wheels, thus greatly reducing maintenance costs.
- ◆ Environment: Noiseless, visually unobtrusive lightweight vehicles and guideways blend into the city.
- ◆ Safety: Elevated guideways eliminate surface traffic collisions. Driverless, automated vehicles use computers, sensors and radar collision avoidance systems to merge and navigate.

## Advantages Over Roads

- ◆ Congestion-free reliability
- ◆ Faster transit
- ◆ Cleaner energy
- ◆ No parking required
- ◆ Minimal land use required
- ◆ Significantly lower cost to build
- ◆ Significantly lower cost to operate

## SkyTran for the Columbia River

- ◆ SkyTran can provide an effective extension to the MAX into Vancouver.

- ◆ SkyTran guideway can be attached to the existing bridge.
- ◆ SkyTran addresses the issue of commuter traffic, which is the primary cause of congestion.

## Phase 1

SkyTran link between 7th Street Transit Center and Expo Center MAX Station, with stop in Jantzen Beach

- ◆ 2-minute travel time from Vancouver to Expo Center.
- ◆ Estimated cost for research, development and installation: \$90 million.
- ◆ Project Duration: 4 years.

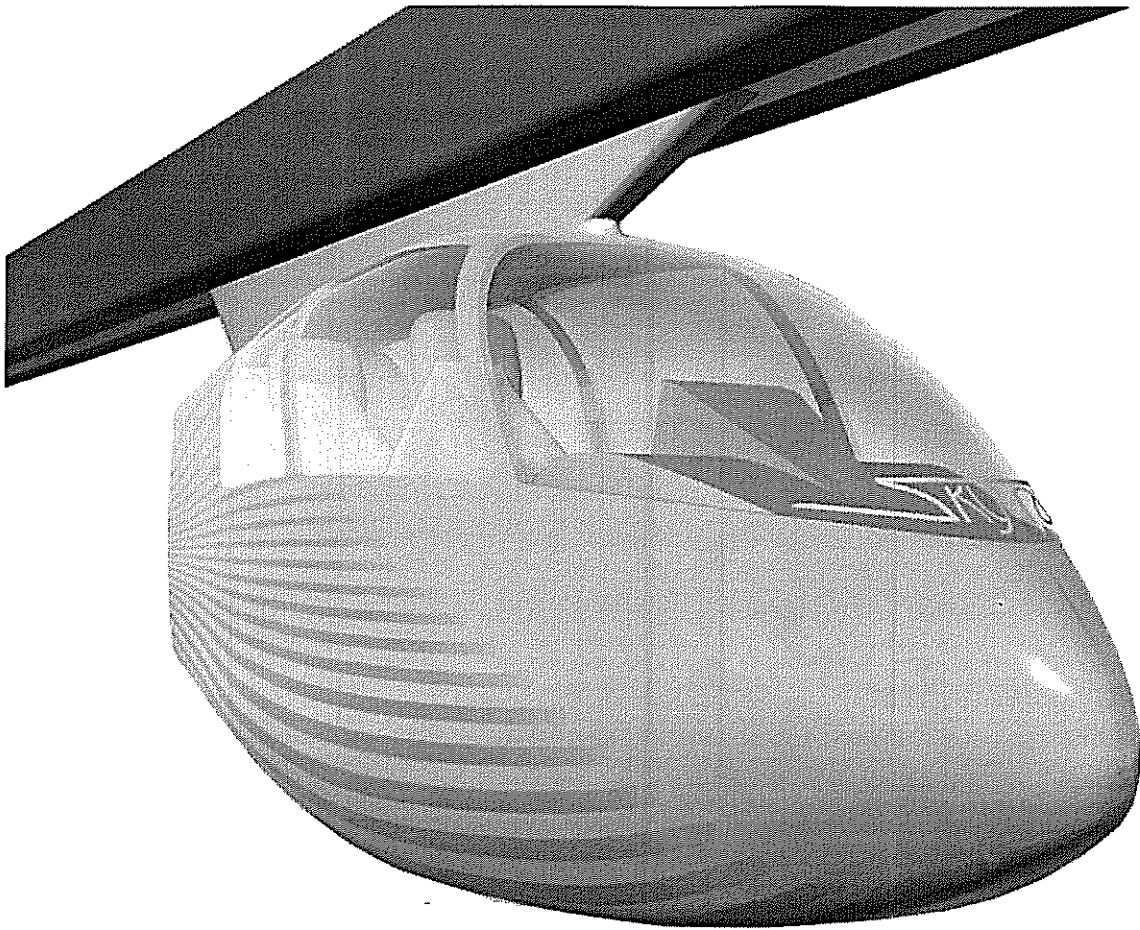


## Phase 2

SkyTran feeders covering SW Vancouver, providing direct access to Jantzen Beach and the MAX.



- ◆ Estimated cost: \$100 million.
- ◆ SkyTran expects to be able to fund phase 2 privately - no tax money required.
- ◆ All that is required is permission to build along public right of way.



**Faster, Safer...Smarter.**



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## SkyTran™ Personal Maglev Transporter™



**On UniModal's SkyTran™, you travel the city using a network of elevated guideways on which small, computer controlled, magnetically levitated vehicles provide you with point-to-point, non-stop, on-demand transit service.**

### THE SKYTRAN EXPERIENCE

You board a 2 passenger vehicle from one of many small, conveniently located stops throughout the city. After entering your destination, you experience a mild acceleration as your vehicle leaves the offline stop and merges onto the main guideway joining the elevated network of vehicles moving 100 mph to their specific destinations without any stoppage or interruption.

**SkyTran behaves like an automatic car...but faster. There's no traffic lights, no traffic jams, and it works with greater capacity, safety, energy efficiency and far better economy.**

### KEY ADVANTAGES...

**Speed:** Vehicles travel 100 mph in the city and 150 mph between cities.

**Cost:** The lowest cost transportation mode to install and operate. 10 times less than light rail.

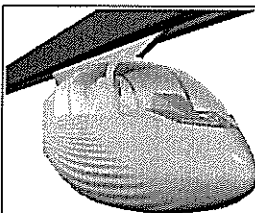
**Capacity:** One guideway has the same capacity as a 3 lane freeway.

**Energy & Pollution :** Vehicles use clean electricity and get the equivalent of 200 miles per gallon.

**Maintenance:** Magnetic levitation eliminates wheels, thus greatly reducing maintenance costs.

**Environment:** Noiseless, visually unobtrusive lightweight vehicles and guideways blend into the city.

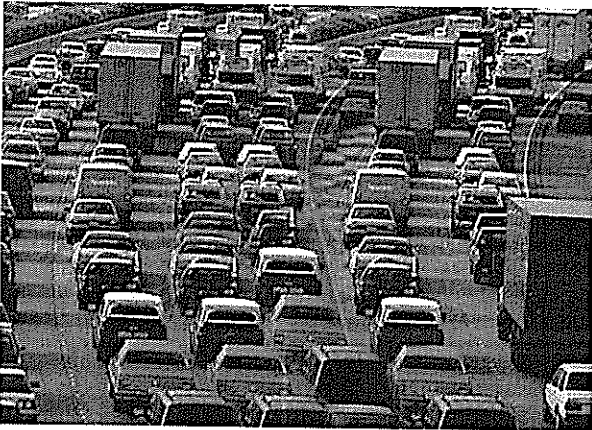
**Safety:** Elevated guideways eliminate surface traffic collisions. Driverless, automated vehicles use computers, sensors and radar collision avoidance systems to merge and navigate.



***SkyTran™ delivers public transit users the convenience of a car without the need for government subsidies to build and operate the system.***

## Background

From Gridlock To Personal Freedom



**Problem:** The public overwhelmingly rejects light rail, monorails, buses, and car pool lanes as a solution to automobile gridlock.

**Analysis:** Despite the reality of gridlock, the perceived convenience of cars outweighs the inflexibility that light rail, buses, and car pool lanes impose on personal transit.

**Solution:** A transportation option that allows personal point-to-point non-stop convenience like cars but at higher speeds and volumes and with less energy and pollution.

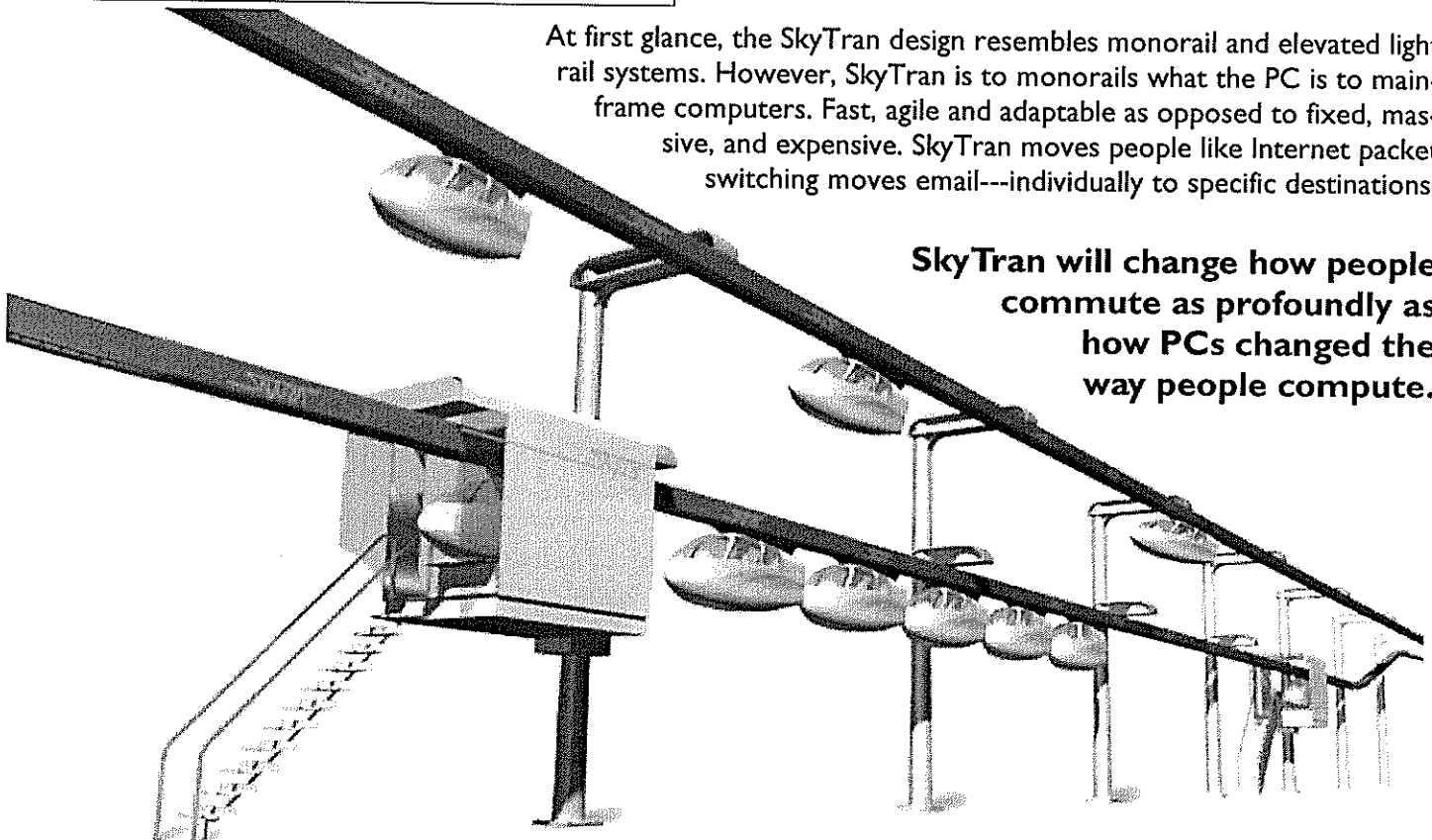
**Q:** Is the problem too many cars?

**A:** No. The real problem is how to quickly move small human payloads everywhere. Time to rethink using two ton machines to move 170 pound people.

**The SkyTran Solution.** SkyTran's unique design integrates key technical advances in engineering, automation, and propulsion and transforms them into a 21st century transportation solution that eliminates traffic gridlock and congestion.

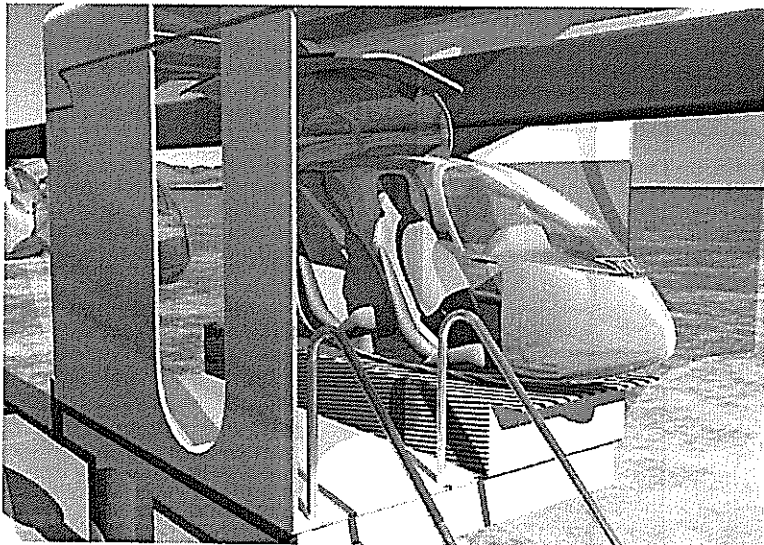
At first glance, the SkyTran design resembles monorail and elevated light rail systems. However, SkyTran is to monorails what the PC is to main-frame computers. Fast, agile and adaptable as opposed to fixed, massive, and expensive. SkyTran moves people like Internet packet switching moves email---individually to specific destinations.

**SkyTran will change how people commute as profoundly as how PCs changed the way people compute.**



## SkyTran Features

Safety, Convenience & Speed



**Easy & Convenient.** SkyTran is on-demand. There's no waiting, fixed routes or timetables. It's just like using your automobile. You board a waiting vehicle at the head of a queue at one of many city-wide off-line stops. The destination is either selected via display menu or voice activation. Payment is by credit card or a RFID device similar to a Mobil SpeedPass. Each vehicle has air conditioning, audio entertainment and vehicle-to-vehicle communication.

**Fully Automated.** Before departure occurs sensors determine the dynamic position of all on-coming SkyTran vehicles on the high speed guideway. At a precise calculated moment the off-line vehicle accelerates and merges safely with mainline traffic. A high reliability, high-speed, non-

mechanical switch provides the transition onto the non-stop guideway. Once on-line you don't stop until you reach your destination. Then, the vehicle is switched off-line again. The rider exits and the vehicle joins the queue awaiting another rider to enter the vehicle, input a destination, and depart. In a fully developed system you are never more than a quarter mile from a stop to get on or off.



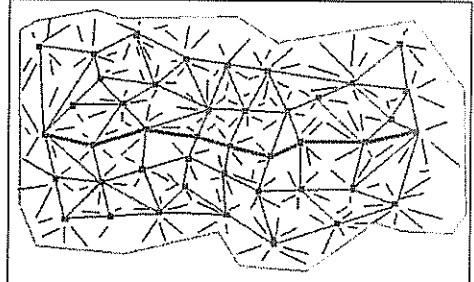
**Fast:** SkyTran utilizes line capacity more efficiently than light rail by moving the vehicles in a continuous stream. Every part of the line is continuously utilized network as opposed to light rail, where each line segment is utilized only for a few seconds when the train passes over it and then repeatedly sits idle at each station. When compared to the highway infrastructure, a SkyTran guideway has the same capacity as three lanes of freeway traffic.

**Energy Efficient :** Gliding on no-contact, friction-free maglev bearings, the light plastic composite two-passenger vehicles add to energy efficiency by reducing wind resistance and drag through their aerodynamic

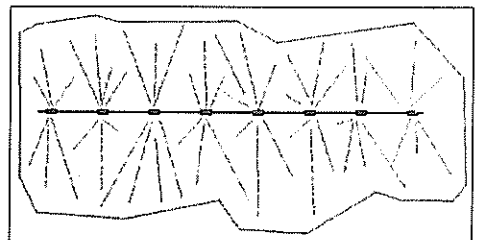
design. This attention to vehicle shape and size allows for their suspension on narrow, lightweight, visually unobtrusive aerial guideways supported by standard utility poles with a very small right-of-way footprint.

**Safe:** There are no intersections where pedestrians or surface vehicles can collide with SkyTran because the system is elevated and the vehicles themselves run in only one direction eliminating the threat of vehicle collisions. The guideway's patented design "captures" the maglev-motor assembly in such a way that makes vehicle derailments impossible. Computer controlled collision-avoidance radar and guideway sensors update thousands of times per second to maintain proper position and speed with other vehicles.

### SKYTRAN 3D NETWORK



SkyTran is laid out across a city in an elevated 3-D network configuration (above). You can get from any one point in the city to any another by a variety of different routes. And getting to any stop is only a short walk. In contrast, typical light rail design (below) serves an extremely limited number of stops, leaving most of the city without service.



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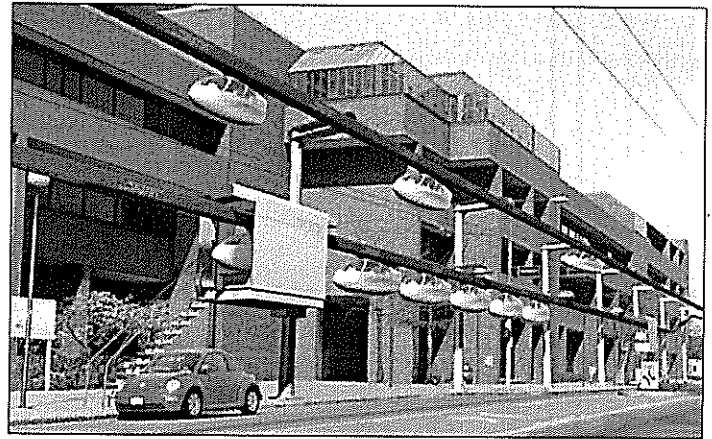
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## Design Philosophy

Mass Transit Transformed Into Personal Transit

SkyTran uses off-the-shelf parts and civil engineering principles already proven in monorail and light rail systems. The paradigm shift is in how we design mass transit with those parts and principles. Instead of defining the *mass* as a few large groups of people moving in extremely heavy vehicles with multiple stops to a small number of destinations, SkyTran moves many tiny clusters of people (1 or 2) non-stop anywhere in a large network of destinations in an extremely light vehicle.

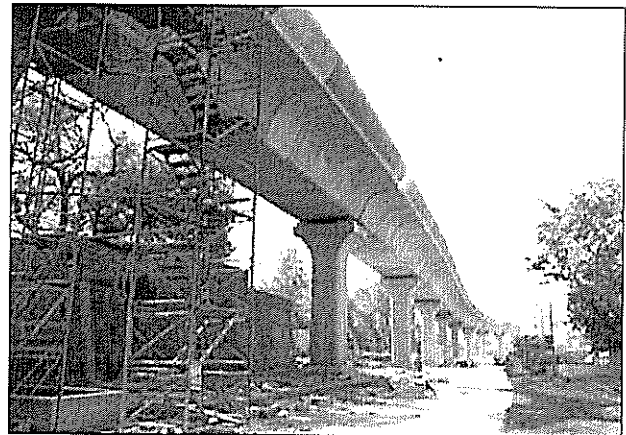
In contrast to a monorail's expensive, massive and visually intrusive support columns and trusses, the SkyTran design is so lightweight and agile that it can be suspended over residential sidewalks, attached to building exteriors, and even routed directly to gates at airport terminals or through shopping malls.



### David vs. Goliath

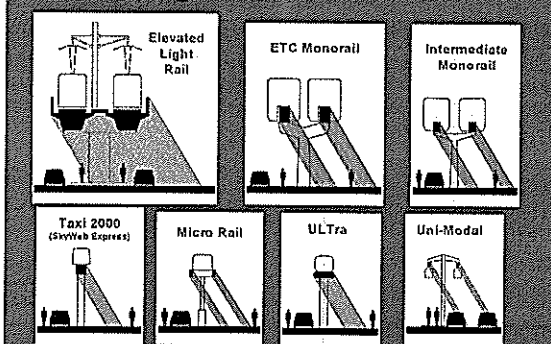


**SKYTRAN:** Lightweight, inexpensive, quick to install, and blends seamlessly into the urban landscape. Requires minimal right-of-ways.



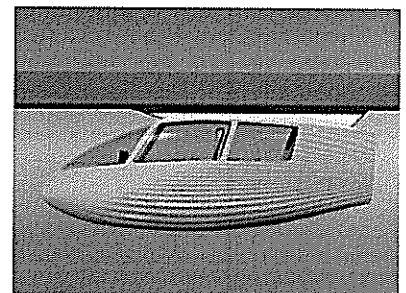
**LIGHT RAIL:** Heavy concrete work, extremely expensive, difficult to install, and visually unappealing. Requires extensive right-of-ways.

#### Scale Comparison of Visual Pollution



#### Light vs. Shadow

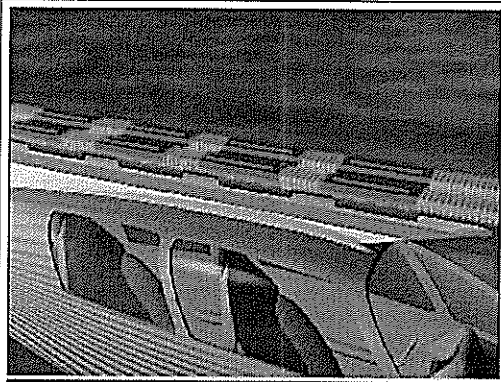
Compared to other elevated forms of transit, the Unimodal design casts the smallest shadow on the urban landscape. Note the dramatic difference between the three current monorail and light rail designs and Unimodal. Even among other personal transit designs, Unimodal's SkyTran is the least visual obtrusive. The key is a philosophy that incorporates aerodynamic and lightweight design as its guiding principle.



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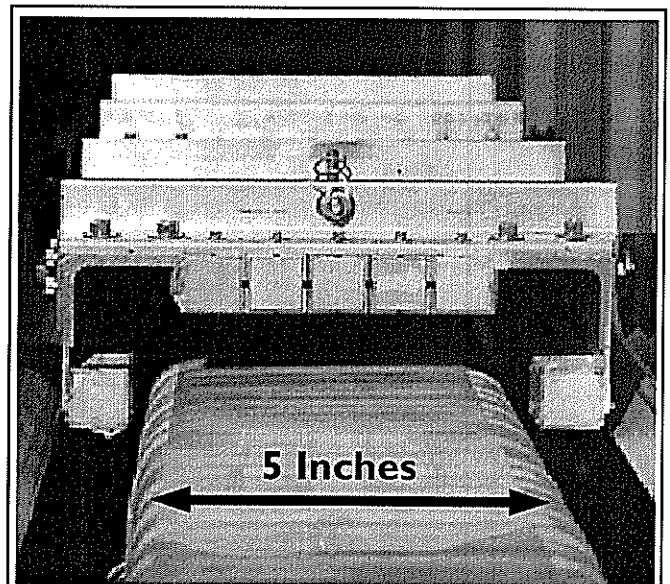
## Maglev Technology The "Wheel" of the 21st Century



SkyTran's PRT vehicle design is the first ever proposed that eliminates the use of wheels and mechanical rotary bearings. This revolutionary approach is possible by incorporating magnetic levitation (maglev) as a non-contact, no-friction bearing system that slashes costly maintenance because there are no moving parts to fail. Propelled by a linear motor, the vehicle requires no active electrical input for the magnets to levitate down the guideway at speeds of up to 150 mph. Energy efficiency is equivalent to a 200 mpg auto.

SkyTran uses a revolutionary maglev technology that stably rides an induced magnetic wave without requiring active electrical input to levitate. Unlike conventional active electrical input systems like the German Transrapid and Japanese HSST technologies, SkyTran's breakthrough approach allows for the design of elegant and compact linear motor/magnetic bearing suspension devices without the complex feedback systems and auxiliary power supplies required by conventional maglev.

The magnetic bearings being developed for use in SkyTran use high performance permanent magnet materials combined with embedded conductive elements to provide an unprecedented combination of performance, safety, durability and economy. This approach is passively stable both laterally and vertically by improving upon the basic principle of electrodynamic suspension, producing lift from forward motion but also producing lateral centering forces to keep vehicles stable and on track without active control or unwanted vertical planar components that would hinder merging or diverging. And while in motion the vehicles are rigidly and precisely fixed in the vertical dimension by powerful repulsive magnetic forces and can carry wide ranging loads without requiring adjustment. These features allow the design of guideways that employ passive and fail-safe merge/diverge high speed switching operated solely by solid state devices on the vehicles—a technical achievement impossible to implement with conventional maglev designs. These proprietary switching methods are key to SkyTran's vehicle design. This arrangement allows for reduced guideway structural requirements and allows the safe use of under hanging vehicles which bank naturally in response to turning forces, providing greatly improved passenger comfort, higher cornering speeds, switching speeds and reduced torsion on guideway support structure.



**This photograph of an actual test of the first generation proprietary maglev technology used in SkyTran successfully demonstrated sustained, stable levitation and the feasibility of the compact bearing and guideway concept.**

In the event of a catastrophic power loss, vehicles continue to levitate while gliding gently down to a low speed before settling onto the track surface unlike conventional maglev designs. The complete lack of moving parts in both guideways and vehicles along with non-contact, friction-free vehicle motion ensures the highest level of reliability with extremely low maintenance requirements. Tightly integrated propulsion is by either linear synchronous or linear induction motors, or both depending on the application. High force and power capabilities enable rapid acceleration and steep grade climbing. Regenerative braking capability like that used in hybrid automotive vehicles improves overall system efficiency.



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## SkyTran In Review

### Specifications & Benefits

**CONVENIENCE:** SkyTran is on-demand—no fixed routes or timetables. It's just like your automobile. Vehicles are waiting for you whenever you need one and they take you straight to your destination without wasting time stopping at each and every station. A passenger keys in a desired destination address into a terminal at the originating portal.

**EASE OF USE:** No need to drive, vehicles are automatic. More affordable and safer than driving, much faster than auto, bus or light-rail.

**VEHICLE CAPACITY:** SkyTran vehicles can accommodate up to 2 people or 1 person with a luggage capacity equal to airline travel. Vehicle designs can accommodate special ADA needs.

**SYSTEM CAPACITY:** A single guideway is equivalent to 3 lanes of freeway traffic running at peak capacity. Anytime maximum capacity for a single guideway is 14,400 passengers per hour. SkyTran carries passengers in a continuous stream on a non-stop mainline unlike light rail which carries passengers in bursts where everyone stops at every station on the route. A stopping SkyTran vehicle does not cause other vehicles to stop, the vehicle branches off from the mainline and decelerates at an off-line line stop where passengers disembark.

**SPEED:** 100 miles per hour cruise speed non-stop in a city, 150 miles per hour non-stop between cities.

**SAFETY:** Elevated guideways insure there is no possibility of collisions with cars, trucks, pedestrians, children, animals or road debris. SkyTran vehicles move on a single guideway going only one direction—there is no risk of head-on collisions. Computers and sensors monitor vehicle spacing and speed for collision avoidance and each vehicle is enabled with safe high-g emergency braking. Compared to auto travel, there are no intersections where accidents can occur (75% of auto accidents happen at intersections), no dangerous passing or arbitrary lane changing. SkyTran is all-weather and unlike cars cannot slide out of control in rain, ice or snow. SkyTran can safely stop 10 times faster than a car. Derailments are impossible as the motor/maglev vehicle assembly is physically "captured" by the guideway.

**COST:** Under \$10 million per installed mile including vehicles.

**ENERGY EFFICIENCY:** Each electric powered vehicle gets the equivalent of 200 miles per gallon. This is achieved by using no-contact, no-friction magnetic levitation bearings, a light weight, aerodynamic vehicle profile and regenerative braking technologies.

**MAINTENANCE:** A SkyTran vehicle has a mechanically simple, solid state design. Maglev means there's one moving part—the vehicle hovering down the guideway. There are no wheels, bearings, hydraulics, pistons, valves, tires, or linkages to fail resulting in very low maintenance.

**ENVIRONMENTAL IMPACT:** SkyTran has minimal environmental impact. Because there are no wheels, the vehicles travel almost silently and without vibration. Compared to an equivalent capacity three lane highway or a lower capacity light rail system, SkyTran has minimum visual impact.

**LAND USE:** Of all transportation options, SkyTran has the least intrusive right-of-way requirements. No expensive, destructive right-of-way acquisitions required, just easements on existing sidewalks. The installation footprint is only as large as the size necessary for the placement of standard utility poles that support the guideway.

**INSTALLATION:** No heavy digging, disruption or relocation of utilities and roads for installation. SkyTran's lightweight design enables installation on sidewalks, attachment to buildings, routing through shopping mall interiors even direct access to gates at airports.

**ACCESSIBILITY:** A mature 3-D network of SkyTran stops in a city would enable easy access to the system requiring a short walk. Stops are spaced approximately 1/8 to 1/4 mile apart. SkyTran has no large "stations" like those used with light rail. SkyTran is accessed by way of small portals or "stops" like a bus stop, that are conveniently sited through neighborhoods, cities and regions. The system can be accessed inside office buildings, hotels, malls, schools and airports.

**PERSONAL CHOICE:** SkyTran passengers always have the option to veto a particular vehicle due to sanitation or other issues.

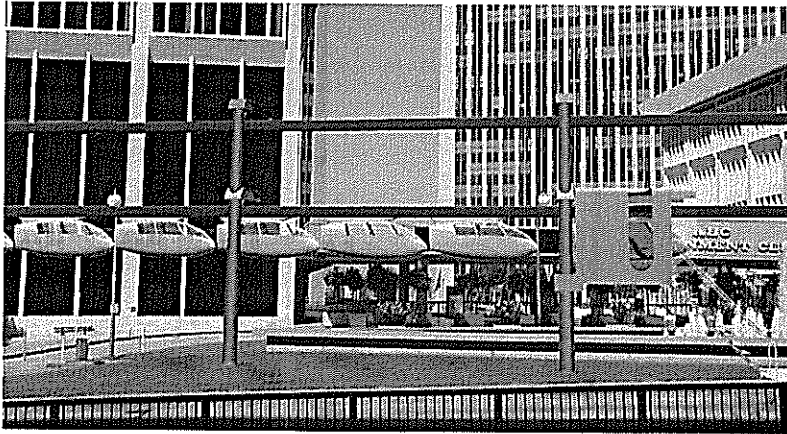
**SECURITY:** The whole idea of SkyTran is to empower the passenger to have the personal freedom to select time of departure and destination. You never have to share your vehicle with anyone. Should problems arise, the system is programmed to divert a vehicle for immediate emergency intervention. SkyTran provides privacy, safety and personal freedom.

**COMFORT:** Vehicles are air conditioned and have entertainment and vehicle-to-vehicle communication options. In normal operations vehicles never accelerate/ decelerate at more than 1/2 g—well within human body comfort zone.

# *unimodal*

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## Unimodal, Inc.



UniModal is incorporated in the state of Montana whose principal stockholder is inventor, Douglas Malewicki.

UniModal owns key enabling technologies of the Skytran system. Mr. Malewicki is also the president and chief scientist at AeroVisions Inc., a company dedicated to the development, promotion and commercialization of aerospace related products. Some of his transportation accomplishments are: Guinness World record setting California Comuter vehicle that achieved 157 mpg at free-

way speeds, and the world's fastest electric car, the White Lightning, clocked at 248 mph. Additional transportation firsts include the F-18 Jet Bike, an afterburning, jet powered motorcycle, the RB-2000 Personal Rocket Belt and Evel Knievel's canyon jumping, rocket powered X-1 Skycycle.

Mr. Malewicki's AeroVision is a qualified DARPA (Defense Advanced Research Project Agency, a US Defense agency) technology contractor. He recently worked on development of morphing wing UAV aircraft with DARPA. Mr. Malewicki has his Master's degree from Stanford University in Aeronautics and Astronautics. He also served as Senior Technical Specialist in Advanced Composites Manufacturing for Northrop on the B-2 project.

During his long and successful career working for key government and business organizations, Mr. Malewicki has specialized in low-cost design innovation, aerodynamics, engineering structural analysis, automation consulting, and vehicle performance analysis. He has authored numerous technical papers, books, and articles, including a cover feature story for *Scientific American*. He is often called upon by leading scientists for his insight and work as well as by the media for commentary on cutting-edge thinking and technology.

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