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It costs less to move less

Local Solution



Example Route

Routes to be planned.
Networks can managed people and cargo.

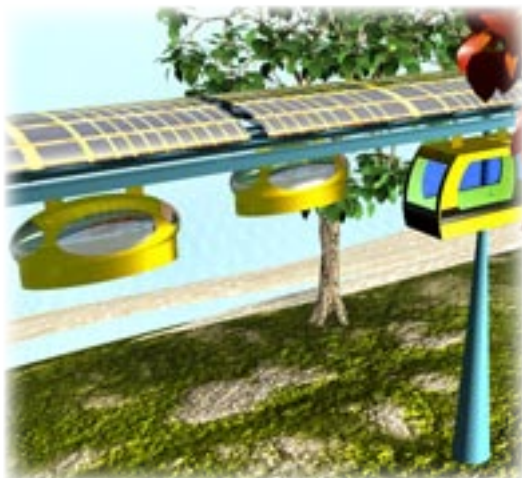
Foundation of JPods: *It Costs Less to Move Less*

Initial connections are for illustration only.

Routes must be planned for entrances, cargo, rider ship, security and other features.

Long term, the entire economic community can be networked.

Changing the parking pattern will enhance security and free real estate for development into revenue generating use of property.



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**It Costs Less to Move Less:
Profitable Business Enterprise**

Example: San Jose Business Case

Objective:

It costs less to move less. Instead of moving a ton to move a person, approach moving only the person at a great cost savings.

There is a profit in saving people time and money. Automating repetitive travel creates a Physical-Internet; tell the computer where you want to go and it takes you there.

Summary

Initial System Cost with Placement Fees	\$39,575,443
Number of Stations	8
Rail Path Length (mi)	5
Fare paying Vehicle Trips/day	6,500
Pretax Profits	\$14,334,966
Operating Cost per Paying Mile	\$0.13
Average Fare	\$6.40
Pre-Tax Profit as % of Initial Cost with Loading Station Placement Fees	36.2%

System Basics

Rail Path Length (mi)	5
Average trip length (mi.)	4
Fare paying Vehicle Trips/day	6,500
Deadhead Factor, Non-paying / Paying	33%
Vehicle Trips per day, paying + non-paying	8,667
Peak Hour Percentage	15%
Max trips per hour	1,300
Number of Stations	8
Number of Vehicles Required	293
Vehicles out for Maintenance, %	6%
Vehicles out for Maintenance	18
Average Speed, mph	20
Average Travel Time, minutes	12.00
Average Unloading + Loading Time, minutes	0.75
Average JPod Trip Cycle Time, minutes	12.75
Max trips per JPod per hour	4.7
Average Passenger Load	1.3

Fare Vehicle Miles traveled/day	26,000
Carbon Incentives, per day	\$83.57
Advertising and Service Revenues per day	\$1,040.00

Capital Costs

Initial System Cost	\$49,469,303
Initial System Cost less Placement Fees	\$39,575,443

Revenue Calculations

Fare per Vehicle Mile	\$1.60
Average Fare	\$6.40
Average daily fare receipts (\$)	\$41,600
Fare days per year	365
Operation & Maintenance Rate @ % capital	2%
Operation & Maintenance	\$989,386
Power duty (fraction time on)	25%
Average power use, each vehicle, kW	0.55
Average power use, all vehicles, kW	161
Annual power use, all vehicles, kW-hr	1,412,641
Annual Power Use of Stations, kW-hr	140,256
Annual Power Use of Switches, kW-hr	245,448
Annual Power Cost @ \$.15/kW-hr	\$269,752
Fare Receipts/year	\$15,184,000
Power and Operating Costs	\$1,259,138
Pre-Tax Profit	\$14,334,966
Pre-Tax Profit as % of Initial Cost with Loading Station Placement Fees	36.22%



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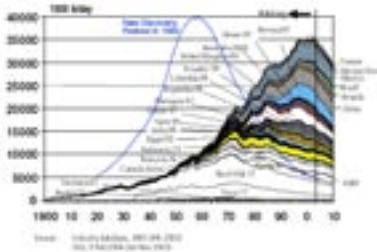
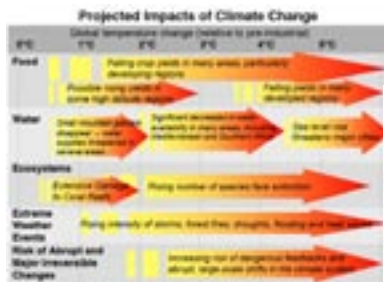
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Problem: Without substantial and immediate action Global Warming and Peak Oil (maximum rate of oil extraction) will cause economic and ecological collapse on the scale of the Great Depression and World Wars in the immediate future (Stern Review, British Treasury, Oct 30, 2006).



JPods patented, scalable and propriety networks implement ultra-light sustainable infrastructure for transporting people and cargo at low capital and operating costs.

It is projected that the world will spend \$16-25 trillion to compensate for Peak Oil and Global Warming; a transition from oil based economies to sustainable infrastructure. That is a big capital carrot.

The operating profits are equally impressive. Ultra-light JPods can be built, operated and maintained to chauffeur people and cargo in repetitive short distance travel at half automobile operating costs. A billion dollar a day profit potential.

Low operating costs will drive adoption of JPods. Global Warming and Peak Oil will force adoption because of their severe consequences.

Global warming will force stewardship. Stern's Review (British Treasury, Oct 30, 2006) calls for an immediate invest 1% of world GDP to contain Global Warming or suffer a 20% drop in world GDP

Peak Oil is the peak rate of extraction of oil and is happening or will happen within 26 years. After Peak Oil, oil prices will skyrocket. Oil extraction rate, economic activity and population carrying capacity will decline at 5-15% per year. We have not hit Peak Oil yet oil prices tripled in the last 6 years.

There is a time limit. At maximum full negative impact is less than 26 years; a very short time to re-tool our economies. The British Treasury report on Oct 30, 2006 states immediate action is required. To put this transition in perspective, has taken 37 years to build out the Internet to the current level of access; it will take longer to re-tool economies to operate with less oil and less negative environmental impact.

Solution: Energy use is locally managed by each of us. Local action can create clean, sustainable infrastructure. Repeated many times, local action solves global problems.

Facing an overwhelming problem take the ant approach to eating an elephant, small bites, lots of friends. Do not try to solve the world's problem. Solve someone's problem.

JPods' contribution is to provide personal mobility in highly repetitive travel at a savings of about 27 cents per passenger mile.

The Local Solution, Transition and Global Imperitive are outlined on the following pages.



The clock is ticking. Indicators of the size of the problem:

- Two wars to protect oil in the last 16 years.
- American tragedy funded by oil profits.
- Glacial retreat and storm severity.

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Parasitic Mass: Operating Costs



Cars: Moving a ton to move a person.



Light Rail:
Moving 3 tons to move a person.



The 450 pound JPod can move up to 4 people, non-stop from origin to destination.

Why consume energy and create congestion moving a ton (car) to move a person; or 3 tons (light rail) to move a person?

It costs less to move less, about 27 cents per passenger mile less. Americans drive about 4 billion passenger miles a day that can be automated by JPods.

"Beam me up Scotty" would be perfect use of energy, move only what you want to move. No Parasitic Mass. No cost to move or store a container.

We do not have the physics to "beam people." We have the engineering to move less.

Kinetic energy is the energy required to move a vehicle and person/cargo.

Parasitic Energy Consumption Factor (PEC) illustrates how much kinetic energy is wasted by different modes of transportation.

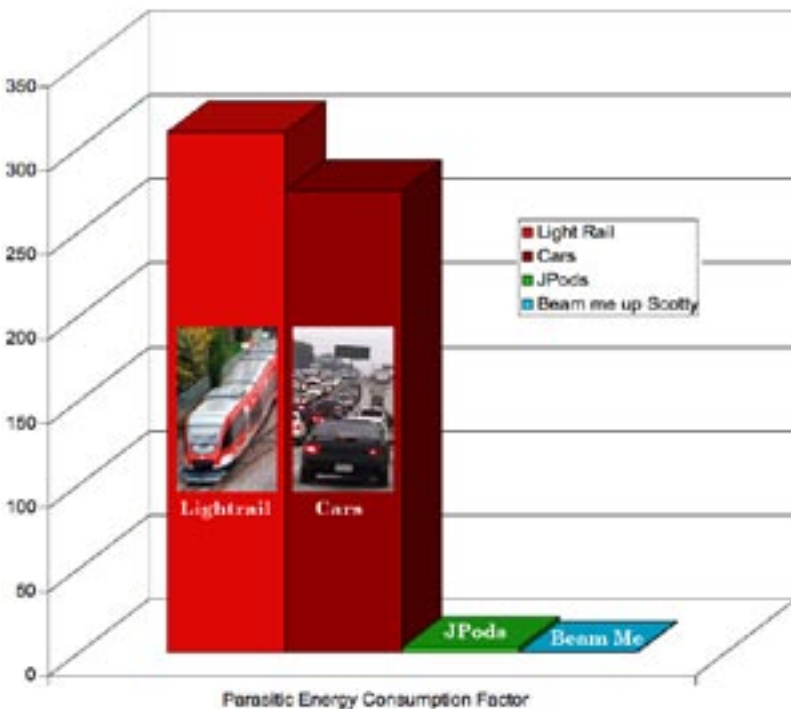
PEC is a ratio of the moving mass divided mass of the you want to move times the number of stop and goes; difference in energy time the number of times you have to use that energy.

PEC for light rail is about 310:
6,000 pounds of vehicle divided by 200 pounds per passenger times 10 stops.

PEC for cars is about 275:
2,000 pounds of vehicle divided by 200 pounds per person (1.08 people per car in rush hour) times 25 stops.

PEC for JPods is about 3.25:
450 pounds of vehicle divided by 200 pounds per person (assumed at 1) times 1 stop.

PEC for "Beam me up" is 1.



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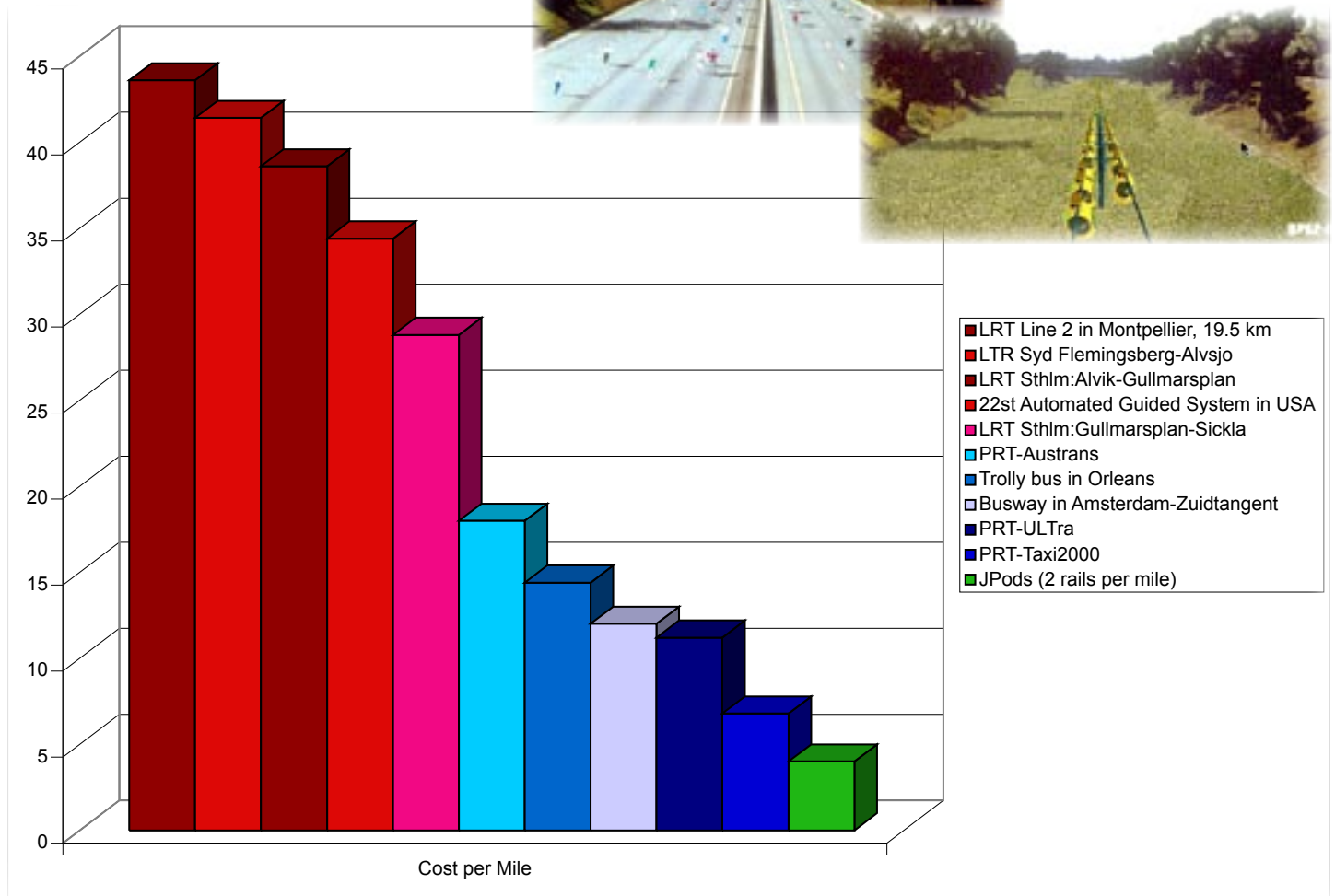
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Parasitic Mass: Capital Costs

It costs a lot less to move less. It also cost less capital to build infrastructure that moves less.



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Parasitic Mass: Rolling Costs

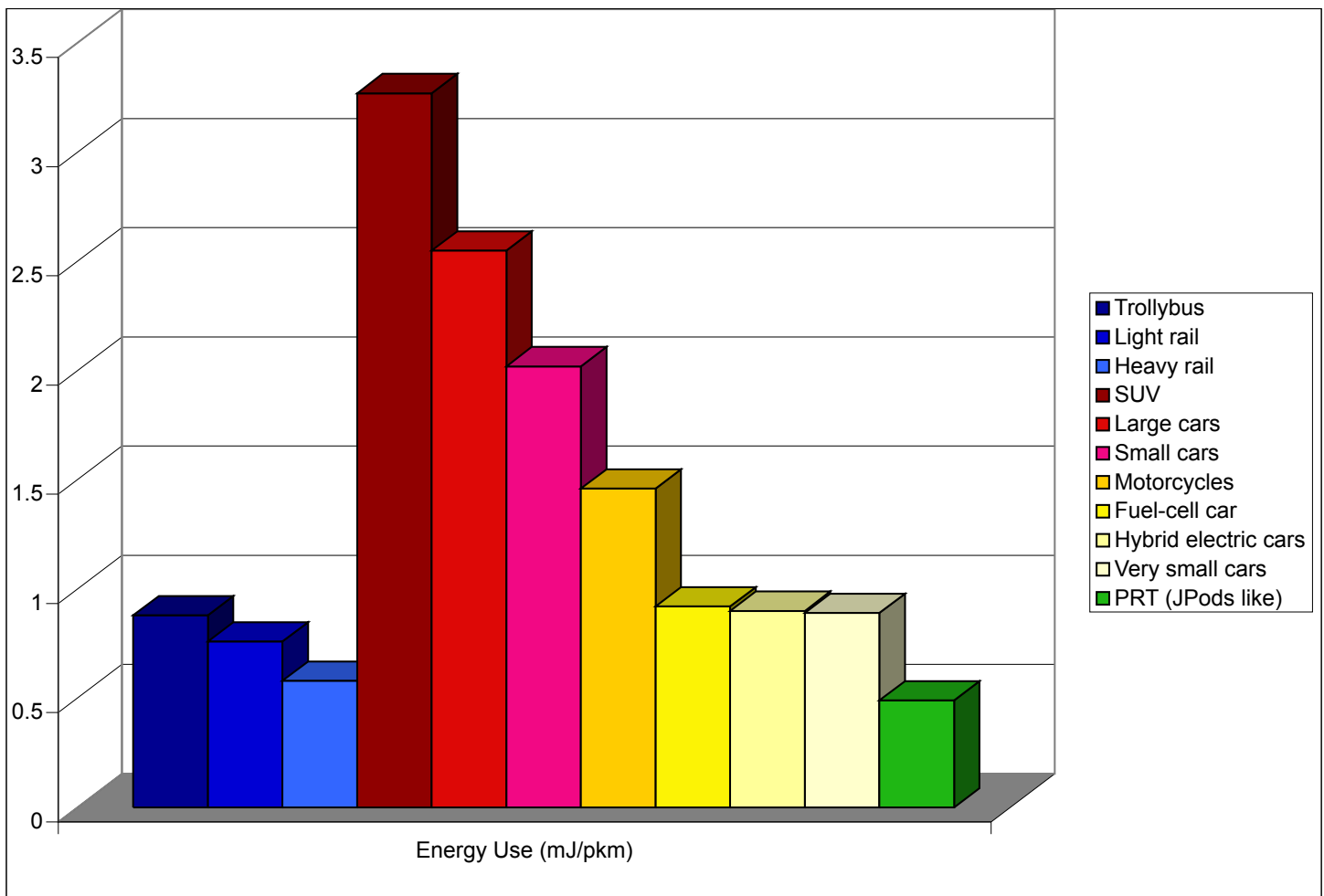
Pollution indicates wasteful use of a resource.

If you use only what you need, there would be no residue.

In repetitive travel we consume energy and create congestion moving a ton to move a person; approaching moving only the person preempts waste and costs.

Using less energy produces less pollution, fewer Green House Gases. JPods can effectively move people with a 5 hp engine versus 120 to 300 hp required for a car.

It costs less to move less. There is a profit in lowering costs by preempting waste.



mJ = mega Joules (unit of energy)
pkm = passenger kilometer traveled

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Parasitic Mass: Maintenance Costs



It Costs MORE to move MORE!!!

Maintenance costs increase roughly by the 4th power.

"These recent estimates of the attributable road wear cost all suggest that the fourth power law-based equivalent standard axle load (ESAL) road use variable can be used for attributing the road wear costs."

<http://scitation.aip.org/getabs/servlet/GetabsServlet?prog=normal&id=JTPEDI000128000002000103000001&idtype=cvips&gifs=yes>

Pavement Preservation

"Summary: Pavement wear is of interest because rough pavement affects the cost of travel. These costs include vehicle operating costs, delay, and crash or accident costs. The life of a pavement is determined by a number of factors: vehicle loading (axle loads, tire pressure and GVW), traffic volume and mix, environment, sub-grade condition, initial pavement design, initial construction practices, maintenance and pavement age."

<http://wwwcf.fhwa.dot.gov/reports/tswstudy/TSWmodel.htm>

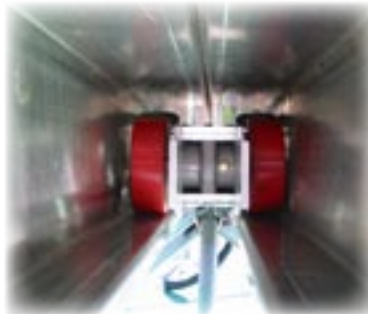
	Vehicle, Parasitic Mass	Cargo Mass	Total	Axels	Maintenance Wear Factor
JPods	350	200	550	2	1
Car	2,000	200	2,200	2	256
CargoPods	500	1,200	1,700	2	91
Pickup	3,200	1,350	4,550	2	4,684
Freight Truck	40,000	40,000	80,000	7	2,982,888

JPods have radically less maintenance requirements:

1. JPods and CargoPods are Ultra-light, much lower Maintenance Wear Factors.
2. Rails are much more durable than road surfaces.
3. JPods travel "in-doors", inside the protection of the rail. They travel protected from most of the causes of road hazards and accidents.

JPods have been designed to operate between +/- 50 Centigrade, +122/-57 Fahrenheit.

Rails are designed to survive 90 mph sustained winds and equivalent snow loads of 50 psf.



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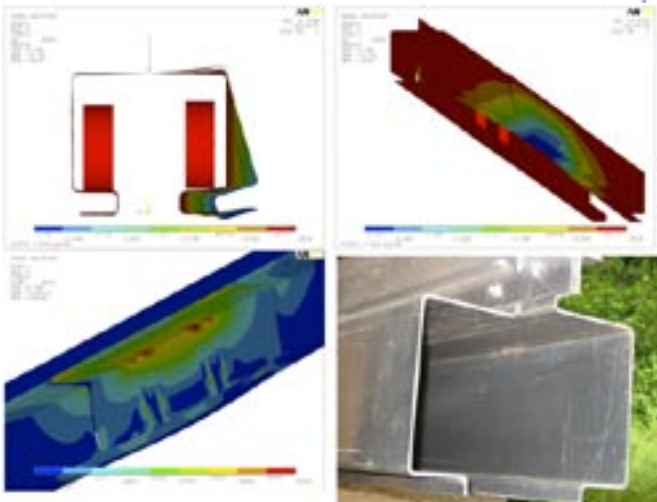
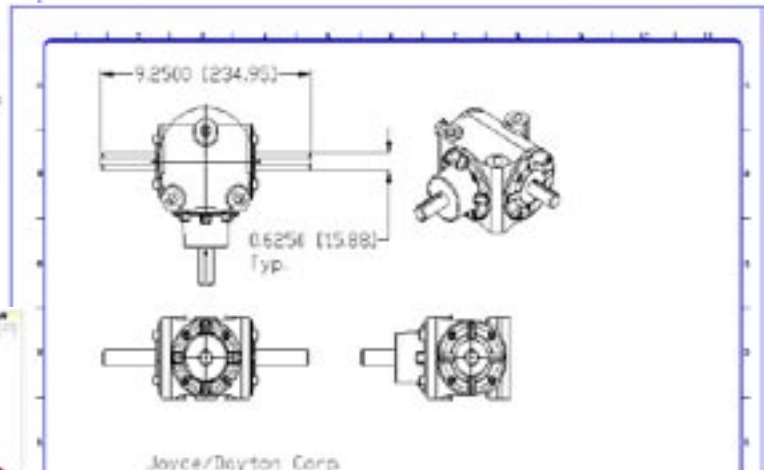
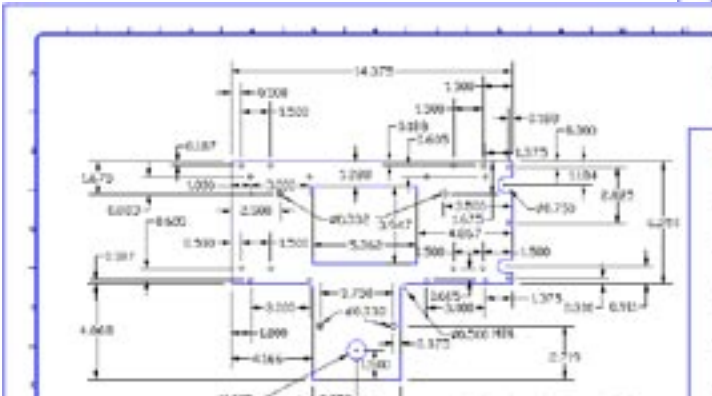
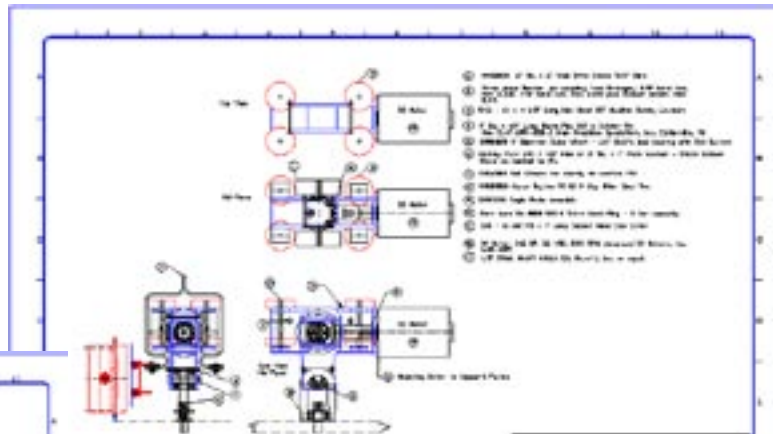


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Process: *Patented Concepts Become Reality*



The Wright Brothers did not start by inventing a 747. They implemented a concept that became a process.

JPods implements the concept that it "costs less to move less." There will be a running process to develop, deploy and profit by expanding that concept into a sustainable future.

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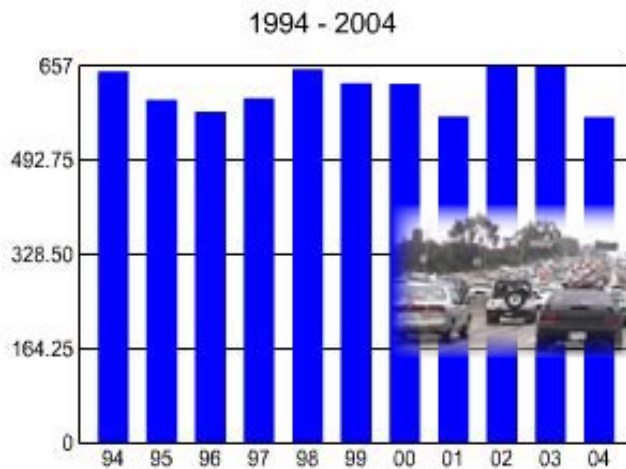
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Safety: **9,000 Times Safer**



Auto Deaths in Minnesota
11.12 per 100k
557 deaths in 2004
Economic cost \$3.065 billion

Cars are not very safe.



There are technologies with much greater safety.

Wuppertal, Germany, Suspended Train
105 years
1.5 billion passengers
4 deaths



Roller coaster (9,000 times safer than cars):
One death per 90 million
34 deaths in last 26 years (most from suicidal or intentionally unsafe behavior).



JPods, Suspended vehicles using roller coaster mechanics and computer control to preempt driver errors:
Slow, low G-Force roller coaster mechanics combined with automated computer control.

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Capacity: Just-in-Time

Benefits of shifting from Mass Production to Just-in-Time can be gained by shifting from Mass Transit to Personal Automated Mobility.

Manufacturers experienced great productivity gains moving from Mass Production (focus on the capital asset) to Just-in-Time (focus on the quality, continuous flow and value of the process).

Here is a typical impact on a company in the early 1990's when they shifted from Mass Production to Just-in-time continuous flow ((Womack, Jones, 1996)

	Batch & Queue/1991	Flow/1995
Development time for a new product family	3-4 years	1 year
Employee hours per machine	160	80
Manufacturing space per machine	100 square feet	55 square feet
Delivered defects per machine	8.0	0.8
Production throughput time	16 weeks	14 hours to 5 days
Product delivery lead time	4-20 weeks	1-4 weeks

Forty-eight U.S. companies using Just-In-Time work teams report (Waldo, 1991):

- 35% reduction in cycle time
- 24% reduction in late deliveries
- 30% reduction in hours/unit,
- 33% reduction in work-in-progress inventories
- 58% reduction in scrap rates
- 71% reduction in customer complaints
- 39% reduction in floor space required

Reference: Applying Lessons from Lean Production Theory to Transit Planning by Dunning and Richert.

Comparison of seats per hour

	Seats	Frequency	Seats per hour
Bus	50	5 mins	600
Light Rail	200	10 mins	1200
JPods, Ultra and other PRT	4	3 secs	4800
Automobiles	4	1-6 secs	4800

Being ultra-light and on-demand, JPods service is available 24 x 7. Capacity is 100% available 100% of the time. Buses and trains have limited capacity often and zero capacity much of the night.

Time is money. People waiting at a bus stop or waiting for a train are spending money.

There is a profit in saving people time and money.

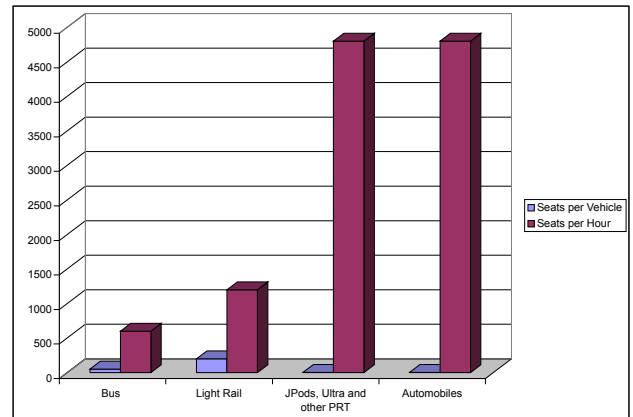
For some it is counter-intuitive that small vehicles can move more people, in less time, than large vehicles. Yet 97% of trips in the US are by small vehicle, cars.

In a packed train or bus we see a lot of people moving at one time. But most of the time the right-of-way is empty, no one is moving. Tracks stand empty as people waste time waiting for the next train.

With JPods, as with automobiles, there is no waiting at a station for a scheduled departure. When you arrive at a station you get in a waiting JPod and leave for your destination. The right-of-way is used on-demand.

This streaming of resource to need on-demand has far greater carrying capability than batching people together.

Cars are the right answer; they are just the wrong mass and randomness of behavior for highly repetitive, congested travel. JPods have the capacity of cars without the mass and accidents.



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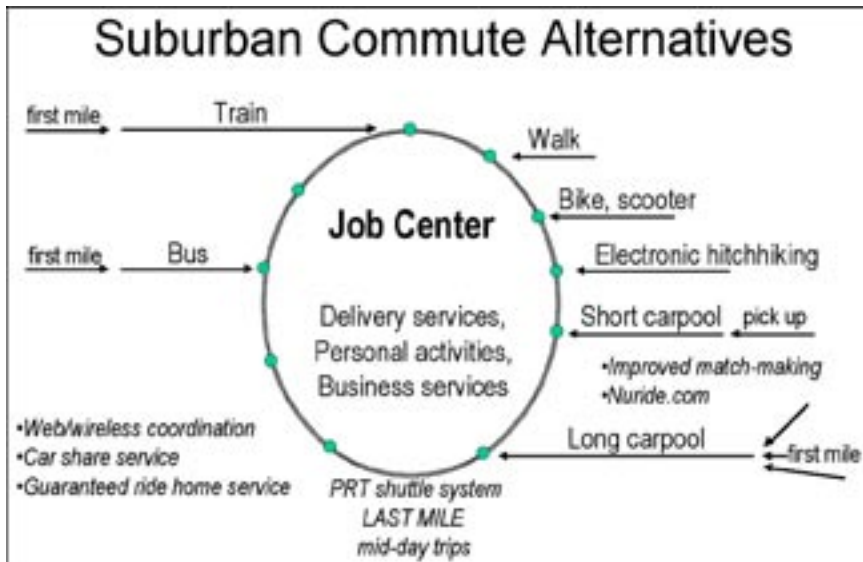


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Collaboration: **Multimodal Synergy**



The circulatory, 24 x 7 nature of JPods expands the value of other modes of transportation:

- Buses
- Trains
- Bikes
- Carpools
- etc....

The more nodes in a network the easier it is to access, the lower the cost to access, the greater the benefit to the users. JPods helps connect train stations to airports, bus stops the train stations.

JPods are on-demand so connections between modes of transportation are made at the users schedule; delays caused by not catching a connection begin to diminish. As with automobiles, travel flows based on the need of the traveler.

Cities21 has made a number of studies on creating a synergy between modes of transportation. They can be contacted at www.cities21.org.

Graphic to the left is from Cites21.

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Congestion: **Loss of 43 Hours/Worker/Year**



The significant problems we face. cannot be solved at the same level of thinking we were at when we created them.
Albert Einstein

Congestion costs the average worker 43 hours per year; a work-week per year drained from the person and economy.

This drain equates to a 2% tax on working people that benefits no one. In cities like LA or New York the cost is double.



Commuting to work by bus takes about twice as long as by car. Delays are a tax on time.



JPods provide the personal mobility of a car without the requirement to park or operate it.

As cars only operate where there are roads, JPods will only operate where there are rails (or roads when combined with a carrier).

JPods can be both private and public.

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Green Space Recovery: **Real Estate Redevelopment**



By some estimates, up to 52% of urban real estate is consumed supporting cars.

Considerable amounts of land can be redeveloped into usable and green space.



JPods can be deployed to recover green space.

This presents an affordable way to redevelop properties.



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Building Conflicts: **Winter and Road Construction**



A standard joke in northern climates is there are two seasons, winter and road construction.



JPods do not operate in the same plane as current congestion.

Being ultra-light JPods can be constructed without substantial disruption to the existing traffic pattern and at a rate of miles per day per installation team.

As private enterprise where construction time consumes profit, JPods will minimize construction time.

In modern times, government contractors may take 4 years to build 10 miles of light rail. That is because we decide it should take so long, not because it does. On April 28, 1869 a crew from the Central Pacific laid 10 miles of heavy rail between sunrise and sunset. CP was privately financed.

As we get our deployment techniques well honed, JPods should be able to deploy rail, knitting a city together at an amazing rate.

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It Costs Less to Move Less: Energy Opportunities



Moving a ton to move a person requires high density power sources.

Moving massive vehicles requires high density power sources.

Parasitic Mass requires far more power to move than is required to move the people in the vehicles.



"I'd put my money on the sun and solar energy. What a source of power! I hope we don't have to wait 'til oil and coal run out before we tackle that."

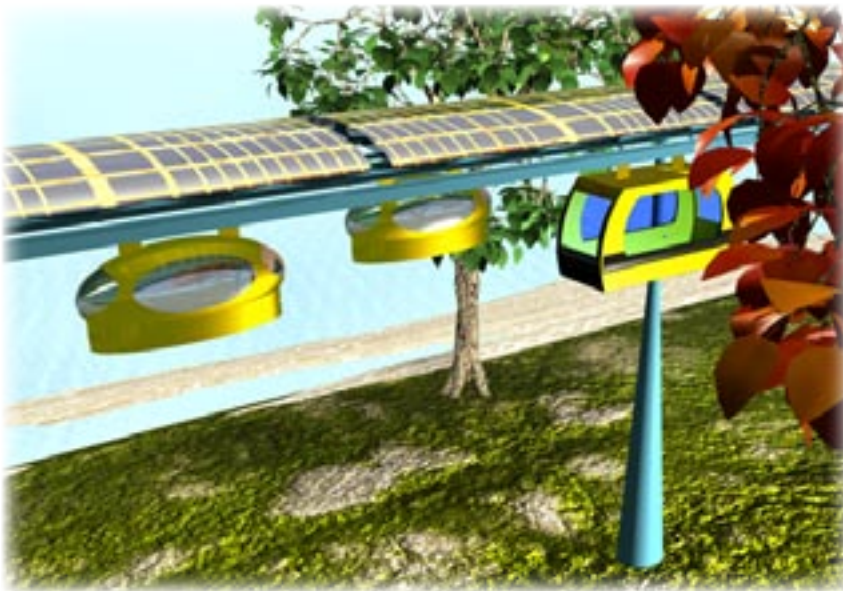
Thomas Edison, 1847-1931

Driving Parasitic Mass towards zero makes low density power sources, such as solar and wind, more viable.

Putting solar collectors on JPod rails to provide environmental protection can provide about 720 kw per mile; enough to power JPods moving 32 feet apart.

Wind and solar are highly distributed power sources. JPods transportation networks are distributed power users. By combining solar energy capture with JPods power can be captured and used where it is generated. It takes about 4 feet of solar panels per running foot of single rail to self-power a network.

There is not so much a shortage of energy as a collection and distribution problem.



Ultra-light JPods make low density power sources viable.

JPods networks become vast collector arrays. Someday networks may equal the area required for current power demands (yellow on map).



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Equality: Opportunity Equates to Personal Mobility

Personal mobility equates to economic, educational and social opportunity.

The personal mobility of a car:

- without oil
- regardless of age
 - young
 - old
- regardless of wealth
- regardless of ability to drive
- without congestion

Oct 20, 2006, George Russell Weller was convicted of killing 10 people in a Santa Monica, CA market. The 89 year old man believed he was stepping on the brake when he press the accelerater and drove his car injuring 70 people, killing 10.

Society has a responsibility to provide personal mobility to the elderly without them risking becoming criminals.

From the Effective Practices Collection, Corporation for National & Community Service:

Abstract

According to the 1990 US Census, thirty percent of New Hampshire residents who are living in poverty and looking for work do not own vehicles. This does not only affect the economic futures of families; businesses, too, are negatively impacted when employees are unable to get to work on time, or at all, due to chronic vehicle breakdowns and the lack of access to public transportation.

Action

The mission of Wheels to Work (W2) is to promote self-reliance and the development of a productive workforce in New Hampshire by providing low-income workers who lack reliable transportation with dependable cars at affordable terms.

Context

Of 33 companies (representing 3,344 workers) who responded to a survey by the Greater Seacoast Transportation Task Force:

- * *Fifty-four percent said that transportation was often or sometimes a factor in their ability to hire new employees;*
- * *Forty-five percent said that the lack of transportation resulted in excessive lateness, absenteeism and job loss among their employees.*

Source: http://www.seacoastonline.com/2000news/9_10biz.htm

Outcome

Wheels to Work has been able to deliver vehicles to over 40 low-income New Hampshire families.

Evidence

Wheels to Work conducted a survey in May of 2001 and maintains regular contact with all the participants on the road. Over 85 percent of W2 participants have maintained employment and all but one have continued to make an effort on keeping the loan current by making payments to the loan institution.

http://nationalserviceresources.org/epicenter/practices/index.php?ep_action=view&ep_id=648

Segregation based on Limited Personal Mobility

African Americans have the lowest car ownership of all racial and ethnic groups in the country, the researchers say, with 19 percent living in homes in which no one owns a car. That compares to 4.6 percent of whites in homes with no car, 13.7 percent of Latinos, and 9.6 percent of the remaining groups combined.

http://www.berkeley.edu/news/media/releases/2006/03/23_carownership.

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Parasitic Mass: **Emergency Deployment**



In disasters and emergencies heavy infrastructure is often damaged or constrained by congestion.

Even rescue can be very stressful. The need to be rescued is disproportionately placed on the poor and elderly, people who lack personal mobility.



Ultra-light JPods can be quickly repaired.

Ultra-light Rescue-Rail can be temporarily deployed to bridge damaged heavy infrastructure and to expand existing JPods networks.



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Why Install JPods Networks: **Reasons to Implement**

1. It costs less to move less. Currently we use energy, pay for infrastructure and create congestion, moving a ton to move a person.
 - Ultra-light JPods approach moving only the person.
 - a. Infrastructure costs are a fraction of heavy infrastructure.
 - b. There is a profit of 27 cents per passenger mile on a potential 4 billion passenger miles per day.
2. Reduce Congestion. Congestion costs every worker a work-week per year. JPods operate in a different plane than current congestion. Ultra-light nature allows capacity expansion within the same right of way. Computer control adjusts to conflicts far in advance of the event.
 - Streaming resource to need on-demand applies to people and cargo. Pallets can move without a truck moving.
3. Economic Opportunity. In a Vermont program, 85% of unemployed people who were subsidized with a car got jobs and retained employment. JPods provide the same personal mobility as a car.
4. Mobility without segregation. Everyone in the first 16 years of their lives and many the last 16 years of their lives people lose their personal mobility when they do not have the capacity to drive or own a car. JPods provides personal mobility regardless of age, ability or capacity to own and operated a car.
5. Visual Impact. Visual impact is both a problem and benefit. JPods will have a visual impact. JPods will have a more adaptable visual presence than highways and elevated railroads.
6. Expand energy options. Moving a ton to move a person requires high density fuel. Low density power sources like solar are not practical.
 - Ultra-light JPods make low density power sources practical. Solar panels mounted on JPod rails can generate 720 kw per mile, enough to power 180 JPods, but only 3 automobiles
7. Security
 - a. Personal. You do not have to share a ride with strangers. Risks faced by subway and bus riders and drivers are not a problem for JPod riders. JPod riders do not have to wait at a station reducing the risks of being mugged.
 - b. Public. JPods, unlike trains and airports are low valued terrorist targets. JPods can be checked at their load point and cannot be modified without detection in travel. Dispersing the congestion at airports and other high value targets will aid security.
 - c. War. When we are independent of foreign oil we will not have to defend against oil profit funded terrorism or foreign deployment of troops.
8. Rescue-Rail and disaster relief. JPods can quickly be deployed over broken heavy infrastructure to re-establish logistical and medical support.
9. Economic durability (cheap secure oil is gone)
 - a. Peak Oil. The era of cheap securely available oil is over. Every \$10 per barrel increase depresses GDP by .5%. Oil shortages and stoppages are likely. Several airlines run on the verge of bankruptcy in part because of unstable fuel prices.
 - b. We do not directly produce green house gases. Britain released a report they would take immediate action to legislate carbon reduction targets and move Europe toward a goal of reducing carbon emissions by 30 percent by 2020 and 60 percent by 2050.
10. Service. JPods provide the service of a chauffeured car. Areas with a high density of shuttles can substantially improve service and cut costs.
11. Land use. JPods require very little land and can return to green space a lot of land currently paved. In many cases, as JPod rails are installed, bike paths and walking areas can be added to otherwise pedestrian hostile routes.
12. Noise. JPods are very quiet.
13. Cost Effective. JPods generate profits and revenues instead of requiring subsidies to be built and operated.
14. Scalable. JPods networks can start very small NS BE expanded based on economic viability.
15. Durable. Unlike roads that stop with snow, JPods operate inside a protected rail. Unlike roads that develop potholes, ultra-light vehicles and stronger materials preserve the resource.

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Transition

Keep it Simple: Path to Market

Solve someone's problem.

Begin with small networks that have limited scope and solve a specific problem with a well defined return on investment.



From a specific solution to a specific problem, expand in the economic community that shares the initial problem.

Replicate the success across similar economic communities with specific emphasis on airports, hospital complexes, business parks, college campuses and military bases.



Linking multiple economic community networks into wide area networks.

This follows the successful pattern of other computer and infrastructure networks.



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Example Route

Routes to be planned.
Networks can managed people and cargo.

Transition

Studies: **Personal Rapid Transit is a Solution**



Students at Carleton University experiencing driving a JPod with a computer network. Smiles are typical.

For 50 years technology to revolutionize transportation has been gestating; technologies, materials, safety practices, etc... have progressed far beyond barriers of regulated opportunities. The crisis of Global Warming and Peak Oil will shred those barriers. There will be a "green rush" to harvest profits by implement what has been long studied:

European Union

Contract No. GMA2/2001/52046-S07.13187

PRT is the personalisation of public transport, the first public transport system which can really attract car users and which can cover its operating cost and even capital cost at a wider market penetration. PRT complements existing public transport networks. PRT is characterised through attractive transport services and high safety. A first fully operational system is urgently needed to demonstrate all capabilities and to alleviate some remaining critical issues. An active role of all key actors from city level up to the EU level is required to facilitate legislation, regulation and financial support.

The Swedish Agency for Innovation Systems Report VR 2001:3

Over 80 % of all motorized trips in Sweden are made by car. Car traffic in cities continues to grow at a rate of about 2 % annually. Road networks in large cities are congested already. Transit ridership is declining at about the same rate - 2 % annually.

The efforts made so far on the improvement of public transport have been inadequate. Most of those travelling by transit today have no other alternative. They lack a driving license or access to a car.

Personal Rapid Transit (PRT) is characterized

- Small driverless vehicles (3-5 seats)
- Off-line stations
- Vehicle waiting for passengers
- Departure when a passenger is ready
- Direct non-stop trips
- Quickest route to destination
- Opportunities for development by Swedish industry

Visit www.jpods.com/studies.html for links to these and a vast number of other reports, demonstration projects and other studies.



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The Correct Model: Circulatory System for Cities

Small networks will expand.
First computer network connected a
computer to a printer.

JPods first small networks will grow
into the Physical-Internet™.

Nature provides good examples.

Delivery systems in nature stream resource to need
on-demand. As demands change, streams adjusts
to the priorities.

Packet size matters:

The 20 trillion red blood cells in your body need
to be small so they can pick-up and deliver on-
demand. If your red cells had a hundred times their
carrying capacity but were 5 times their size, you
would be dead.

A city or town is not much different than a body.
Resources must stream to need. Waste must
stream away.

We have implemented streaming infrastructures
in water and sewers. Few would tolerate getting
water delivered periodically or waiting a week to
have waste and urine removed.

US transportation developed mimic the flow in
nature. When there is no traffic cars are amazingly
valuable at getting people where they need to be.
It is why they command a 97% market share in the
US and an 80% market share in Europe.

Packet size matters:

Experience defined the correct size packet for mov-
ing people: a horse, cart, chariot, buggy and auto-
mobile; a packet size of 1 to 4 people.

Cars are the right answer, 1 to 4 people; cars are
just the wrong mass and randomness of behavior
for areas with higher human density. Just as you
would die if your red cells were 5 times their size,
our cities choke with congestion when we move a
ton to move a person.

JPods are about a fifth the mass of a car with about
the same interior and load carrying capacity.



Building a circulatory network
for cities and towns.

On-demand:
Resource streams to need.
Waste streams to disposal.

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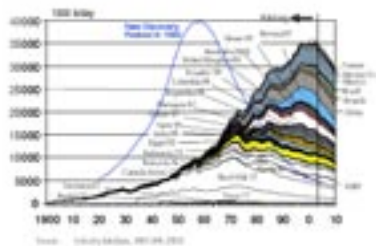
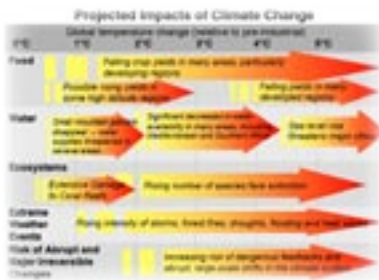
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Politics: Leadership

Action is required in advance of the coming consequences of Global Warming and Peak Oil.



2005, British Airport Authority invested in and released a contract to build PRT at Heathrow.

Oct 30, 2006 the British Treasury issued the Sterns Report calling on an immediate investment of 1% of world GDP to re-tool for sustainable infrastructure.

Fresno, CA, Nov 2006 voters approved \$36 million to build PRT.

President of the United States of America, George Bush

“America is addicted to oil, The best way to break this addiction is through technology.”

President of Minneapolis City Council, Barbara Johnson:

Computerized transit networks or “Physical Internet” will increase personal mobility for our school kids, the economically challenged, our senior citizens, the disabled community and those stuck in rush-hour(s) traffic. It will give more people greater access to the facilities that makes Minneapolis a great city. And in the long run, besides being energy and ecologically efficient, a new job market will be created that enhances the attractiveness of living and working within our city.

As a City Council Member of our state’s largest city, I firmly believe that strong leadership in a public/private alliance can quickly implement break through technologies such as yours. Our community can ill afford to wait for another war or another natural disaster to take action. Minneapolis will step up as a leader and support technologies that keeps our air cleaner, our streets less cluttered and creates long-term jobs.

Vice Chair, Hennepin County Commissioners, Mark Stenglein

JPods approach to the energy and transportation needs of our community is one whose time has come. Computerized networks can automate repetitive travel...

I appreciate that your networks do not limit mobility when someone is too young, too old, too poor, or incapacitated to operate a car.... The scale of these networks indicates millions of jobs may be created, revitalizing our infrastructure while shifting trade balances.

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Transition

Resolutions: **Repeated Local Action is the Global Solution**

Draft City Resolutions: November 1, 2006

Global Warming:

Whereas being a good steward of natural resources is vital to long term ecological and economic stability; and
Whereas Carbon Dioxide levels are at twice their pre-Industrial Revolution levels; and
Whereas the Stern Report (October 30, 2006, issued by the British Government) estimates:
- the cost of Global Warming will consume about 20% of GDP
- Global Warming can be mitigated by an investment of 1% of GDP; and
Whereas The Clean Air Act of 1970 supports the concept that being responsible stewards of natural resources improves profits:

Be it resolved that a taxing authority will be formed and charged with the task of taxing sources of congestion, waste, air and water pollution, and;
Be it resolved that all new public capital expenditures will be reviewed for their Global Warming burden, and;
Be it resolved that city leaders will encourage business leaders to act in advance of taxing policies to mitigate business impact on Global Warming.

Transportation is Essential

Whereas transporting goods and services is essential to the economy; and
Whereas automating sewer, water, electrical and communications infrastructure networks resulted in improved standards of living and economic opportunity;

Be it resolved that innovations for computerized control and automating transportation of goods and people will be granted non-exclusive rights-of-way access commensurate with their potential or proven value in implementing sustainable infrastructure.

Oil Addiction

Whereas profits from foreign oil dependency funded the terrorist attack on the United States on 9/11/2001; and
Whereas US troops are deployed in foreign lands, in harms way, protecting access to foreign oil; and
Whereas political instability and open hostility in some oil producing nations is a threat to the United States economy; and
Whereas oil is a limited resource, discovery of new oil deposits peaked in 1964 and extraction, has peaked or will peak within 26 years; and
Whereas the tripling of crude oil prices between 2000 and 2006 adds hardships to the economy; and
Whereas the Oil Embargo of 1973 caused economic dislocation and provides an indication of hardships coming due to future oil shortages; and
Whereas it will take 30 to 50 years to re-tool the economy to eliminate foreign oil dependency;

Be it resolved that all new capital expenditures will be reviewed for their contribution to becoming independent of foreign oil, and;
Be it resolved that city agencies must document the duration required to approve or disapprove sustainable infrastructure requests.

Safety

Whereas automobile accidents in Minnesota kill about 11 users per 100,000 population; and
Whereas automobile accidents cause further injuries and emotional and financial hardships; and
Whereas the cost of car accidents in Minnesota exceeds \$3 billion annually;

Be it resolved that alternative transport mechanisms that might be safer will be granted non-exclusive rights-of-ways access commensurate with their potential or proven value in improving safety.

Personal Mobility

Whereas personal mobility is essential to economic, social and educational opportu-

nity; and
Whereas automobiles account for about 97% of trips;

Be it resolved that innovations for providing personal mobility will be granted non-exclusive rights-of-way access commensurate with their potential or proven value in implementing sustainable infrastructure.

Funding

Whereas benefiting from innovation is a characteristic of private sector: and
Whereas public funds are limited;
Whereas the building of the Transcontinental Railroads and the Internet are good examples of radically expanding infrastructure with private capital;

Be it resolved that Innovation should be funded by the private sector: and
Be it resolved that all subsidies for transportation should be publicized so true value can be assessed; and
Be it resolved subsidies should be eliminated to the extent practical so innovation competes on a level playing field with existing transportation resources.

Encouraging Sources of Innovations

Whereas current infrastructure is responsible for oil dependency and contributes to Global Warming;
Whereas innovation to create new infrastructure is needed;
Whereas innovation often comes from entrepreneurs and small businesses that do not have extensive resources;

Be it resolved that city agencies must justify delays in granting innovations the opportunity to aid in building sustainable infrastructure, and;
Be it resolved that the city will establish an ombudsman program for reducing administrative delays in achieving sustainable infrastructure, and;
Be it resolved that the city will deregulate to the extent practical to improve the environment for innovation flourish, and;
Be it resolved that the city will establish an incentive program to help propagate those innovations that result in achieving public policy objectives in the amount of one-third the estimated cost savings of the innovation.

Jobs

Where as other cities, states, nations share the need to build sustainable infrastructure; and
Whereas exporting innovations will create jobs and businesses;

Be it resolved that city agencies will publicize successes and promote innovations that provide sustainable infrastructure, and;
Be it resolved that the city will collaborate with existing export agencies to encourage the export of sustainable infrastructure technologies.

Disruption Mitigation

Whereas the shift from foreign oil dependency to sustainable infrastructure will be disruptive; and
Whereas an estimated 1.4 million new jobs will be created and an undefined number of jobs will be lost and transformed;

Be it resolved that the city will allocate the one-third of estimated cost savings of innovations to fund job and educational retraining for those workers displaced by the transition to sustainable infrastructure, and;
Be it resolved the city will examine and collaborate with other governments to implement a windfall tax for mobility users to aid in retraining displaced workers and creating incentive programs to propagate innovations, and;

Be it resolved the city will collaborate with other government agencies to allow workers to change jobs with minimal risk to health and supporting benefits.

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Global Imperative

Cause for Action: Global Warming

Stern Review, British Treasury

Above all, reducing the risks of climate change requires collective action. It requires co-operation between countries, through international frameworks that support the achievement of shared goals. It requires a partnership between the public and private sector, working with civil society and with individuals. It is still possible to avoid the worst impacts of climate change; but it requires strong and urgent collective action. Delay would be costly and dangerous.

You can only pee in the well so long before the water tastes bad.

Stewardship counts.

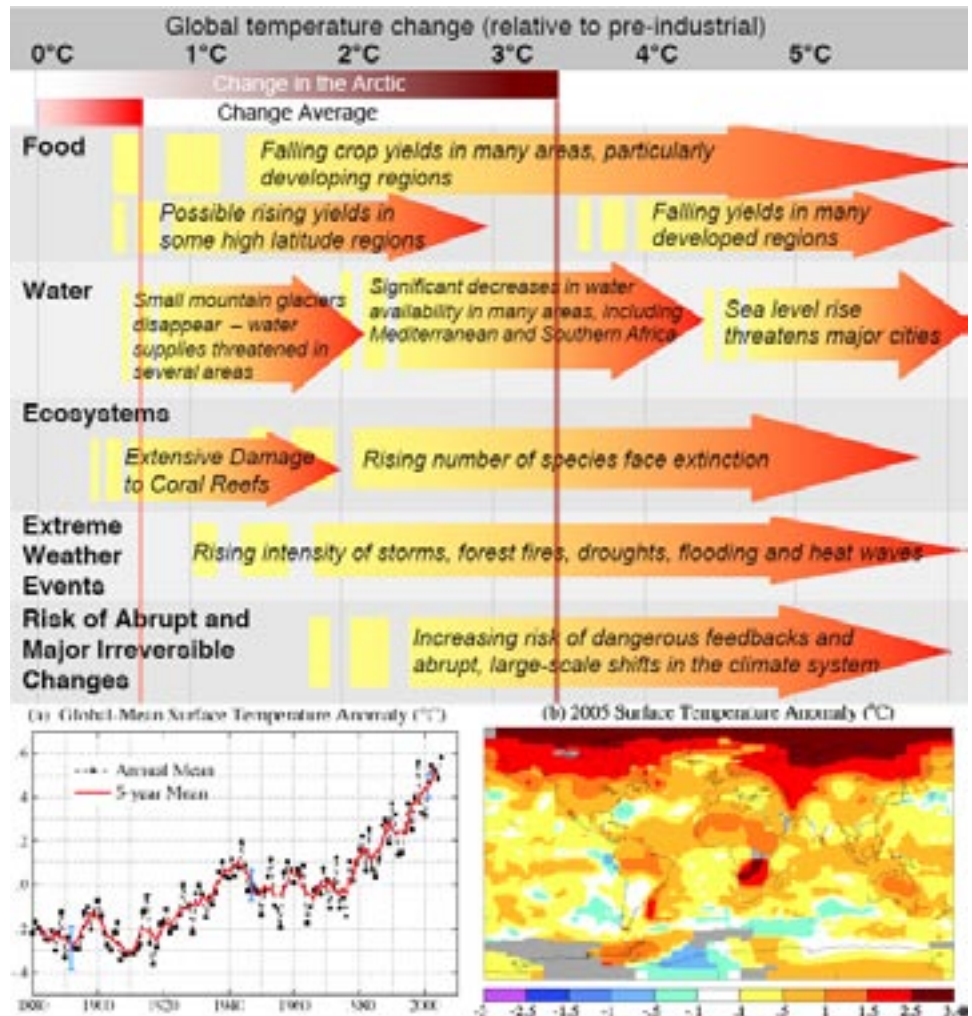
JPods preempts 1.5 pounds of CO2 per passenger mile automated.

The Stern Report for the British Government estimates that if 1% of world GDP is not invested immediately in sustainable infrastructure to contain Green House Gases (GHG) the world will suffer a loss of 20% of GDP.

The expectation is that the hardship for failing to act in time will be similar to the Great Depression and World Wars. For example:

- 200 million people will be displaced.
- many coastal cities will be flooded.

http://www.hm-treasury.gov.uk/independent_reviews/stern_review_economics_climate_change/sternreview_index.cfm



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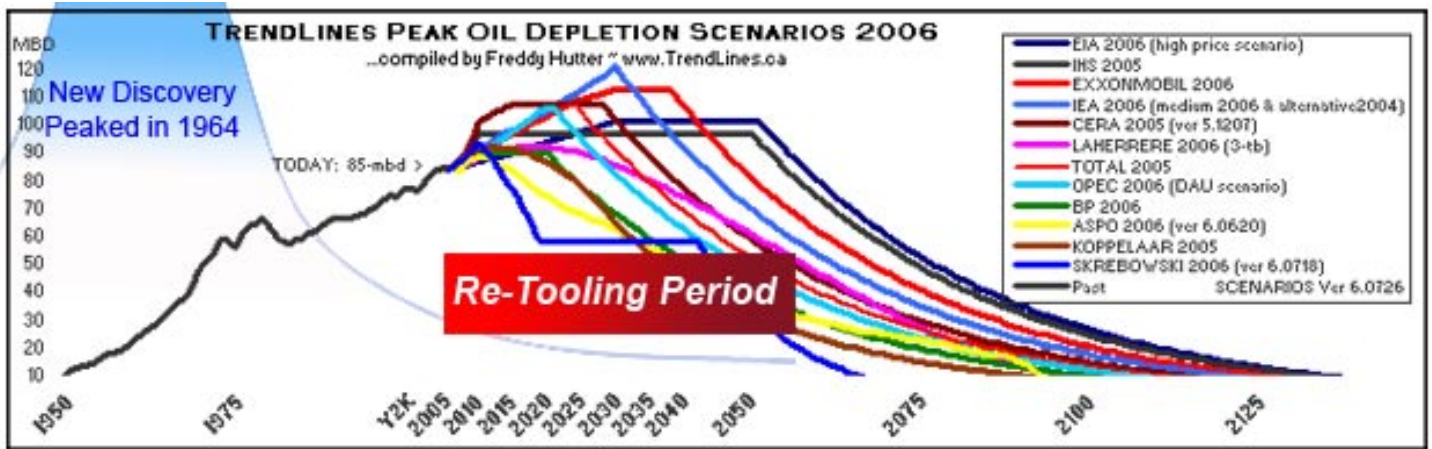


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Global Imperative

Cause for Action: **Peak Oil**



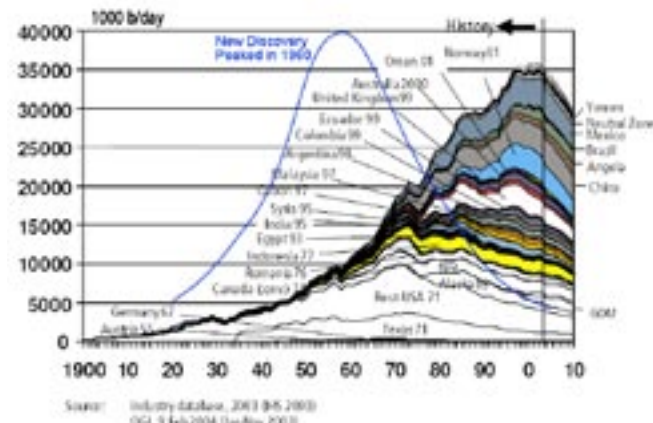
Cheap Oil is the life-blood of our economy. But the era of cheap oil is gone forever. Our economy is coasting on the momentum of that past era. A critical mass of action before 2010, while we have that momentum will be simple, affordable and critical.

Demand is overtaking supply as the populations and economies of China and India grow and modernize. Storms or politics could disrupt supplies any time. Worse, Peak Oil is most likely in 2011; 54 of the 65 largest oil-producing countries have peaked and oil production is now in decline.

Oil prices tripled between 2000 and 2006 strongly indicator that demand is pushing against supply and/or oil has peaked and availability will soon begin a relentless decline.

It takes years to re-tool infrastructure. It has taken 37 years to build out the Internet to the current level of access. It will take longer to re-tool transportation networks to be independent of oil.

At JPods we estimate we must deploy 5,000 miles of rail to create the critical mass needed to sustain a stable economy before the oil crisis of 2010.



Adding the history of each oil field yields a repeating history of discovery, extraction, peak and decline.

ABC's webcast on Peak Oil: http://abc.net.au/4corners/special_ed/20060710/



Background: **Economy**

Changing America's Economic Lifeblood from Oil to Ingenuity

Cheap Oil is Gone Forever

Based upon the presumption that secure access to cheap oil will always be available, America's economy, our jobs, shifted over the last 70 years from self-reliance into dependence. The myth of cheap secure oil is gone forever. Politics, decreasing supply and/or expanding demand will erratically push oil prices more and more unstable.

Demand is overtaking supply as the populations and economies of China and India grow and modernize. Storms or politics could disrupt supplies any time. Worse, Peak Oil is most likely in 2011; 54 of the 65 largest oil-producing countries have peaked and oil production is now in decline. The tripling of oil prices between 2000 and 2006 is a strong indicator that demand is pushing against supply and/or oil has peaked and availability will soon begin a relentless decline.

Regardless of cause, increase demand or supply shortage, the age of cheap oil is gone forever and our economy is coasting on the last momentum of the cheap oil era:

- www.gao.gov search for "07-283" GAO report on Peak Oil
- http://abc.net.au/4corners/special_ed/s/20060710/ Web cast documentary.

We have 2 years, maybe 3, to accept that cheap oil is gone. It is time to channel the current momentum in our economy from dependence on cheap oil to innovation and invent a better future.

There is plenty of room to adjust. For example about 4 billion of the 8 billion miles Americans drive every day are highly repetitive. Yet we use energy and create congestion moving a ton to move a person. There are alternatives to rush hours. An example, PRT saves 90%-95% of the energy used by cars and trains, eliminates the congestion and saves 27 cents and 1 pound of CO2 per passenger mile. If we act while there is momentum in our current economy, ingenuity can preempt waste. Harvesting profits can fund the shift.

Up-Side-Down Pyramid

An Up-Side-Down Pyramid model of the economy illustrates how each of us scrambles to find a niche and make a living. We live by adding more value than we consume. Allowing individual ingenuity to profit from changing circumstance and encouraging everyone to leverage their talents to reinforce innovation creates a dynamic economy. As schooling fish churn (synchronized motion), as each individual adjusts to societal pressure changes. The entire school shifts as if guided by a single mind. A free economy transforms as individuals adjust to new values and react to costs.

The same model indicates that if our economy is rigid, if individuals are delayed in acting, churn stops. The entire economy becomes brittle. When impacted by change, the entire structure collapses. The 10 worst famines of the 20th Century happened when social structure collapsed leaving people without trust or transport; most resulted from government policies (<http://www>.

alertnet.org/thefacts/reliefresources/112687887354.htm).

Nature of an Economy

The economy is a confederation of upside-down pyramids.

Natural resources

- Life depends on nature; clean air, clean water, sun light, earth, ecological building blocks from which we fabricate our living, our social and economic structures.

Individuals

- The economy is a confederation of working individuals who profit by adding more value than the cost to compete.
- Each individual is an upside-down pyramid:
 - The base, resources consumed to compete.
 - Our outstretched arms are the value we add. How far they extend depends on our will and ability to trust, transact, and transport that added value.
- Power is the will and ability to act applied to achieving an objective (Clausewitz). At a fundamental level, self-interest supplies the components of "will and ability". Individual self-interests, jobs, power the economy.



Industries and Communities

- Self-interest dictates cooperation and collaboration. My interests are best served by focusing my time and resources through my strongest talents. I rely on the talents of others to grow food, mine mineral, have babies, manufacture goods, protect us and other needs and wants of our physical and social nature.
- Individuals form alliances, communities, industries, and nations so they can specialize to amplifying individual value added while driving down the cost to compete.
- As with individuals, the profit of these structural institutions is the value they create minus the resources consumed to compete for their existence.
- These institutions are powered by their members; held together by abilities to trust, transact, and transport.



Churn

The economy is constantly churning, adapting. Individuals and institutions scramble to sustain their base, exploit their talents and build relationships that amplify their efforts and resources. Driven by the will and ability to win we Transact, Transport and Trust, knitting our economy into being:

- Trust: Risking that someone else will deliver value more than harm is essential; giving terms in a contract, investing in stock. Trust expands slowly with good experience, evaporates with bad. Strong self-confidence, self-reliance and shared objectives expand trust.
- Transact: Specialization requires trading resources with others to cover all needs and wants.

Background: **Economy**

Transport: Resources must flow to need. Just as your body needs a circulation system to stream resources to need and waste to disposal, the life of a complex economy depends on transport.

Changing the Life Blood of our Economy

We are experienced with Churn. Microcomputers and the Internet did not just happen. First, individuals like Bill Gates and Steve Jobs, defined and pursued opportunity. With expanding clarity of the opportunity more and more individuals pooled resources and ingenuity combining talents into companies and industries. Another thread of ingenuity, networks, leverage this value and again, talents combined and opportunities were pursued. Looking from the outside this commercialization must have looked a school of fish churning to take advantage of each opportunity, individuals moving nearly in unison. Close up, it was wildly individualistic, yet guided by a systems engineering framework and wise policy. The system engineering came from voluntary standards. These guides were not rigid, but displaceable by new innovations. Policy wisdom came from FCC efforts to serve a greater good. Communications network rights of way were given priority over local jurisdictions. Ingenuity attempting to serve the common good gained dominance over fear of change,

We can reduce oil consumption by 3-7% per year. There is at least a 27 cent per passenger mile profit in changing from moving a ton to move a person towards moving just the person in highly repetitive travel. There are many techniques and technologies that can be used to harvest this profit from the 8 billion miles Americans drive every day. Ingenuity based "Green Rush" can follow the successful pattern of computers and information networks.

Transportation Policy Should Mirror Communications Policy

Do you believe gas prices will fall? Will there never be another oil embargo like 1973? Does our oil addiction encourage and fund terrorists? Is oil supply infinite and there is no Peak Oil? Is there no consequence for polluting? Is Global Warming a myth? Oil supply does not have to stop to start a depression, there just has to be not quite enough oil. Fear initiates hoarding, hoarding amplifies speculation, national self-interests slow exporting to protect future internal needs, etc....

Despite the immediate and severe consequences from many threats, the current transportation policy is brittle. We spend billions on more roads to make us more addicted to oil, more on buses and trains that account for only 3% of use. More of what is not working will continue to not work. The changes the government is directing are variations on the theme of what is not working. How will bio-fuels solve congestion?

According to the GAO Report 07-283, alternative fuels such as hydrogen, bio-fuels and others will only compensate for 4% of current oil use by 2015. In 2 to 3 years harsh consequences of Peak Oil will appear. Yet brittle transportation policy offers no solution. Does the downward spiral to economic collapse start when gas is \$4.75, \$5.25, \$6.50? A transportation failure will collapse the entire economy. If it remains rigid, the best result will

be massive unemployment. The worst will be a shredding of our entire social fabric.

Unlike communications policy, current transportation policy blocks ingenuity and adaptation. Only approved technologies can be tried, only technologies in use are approved. Unlike the wealth, jobs and profits generated by communications policy, transportation policy is an infinite loop of ever decreasing ingenuity. Increasing congestion is a good measure of loop. There are few entrepreneurs and small businesses. Government subsidized transit authorities and think tanks are locked in that same loop. RITA's (Research and Innovative Technology Administration) entire budget is restricted to current modes of transportation. With ticket costs exceeding price, subsidized tickets force transit authorities to spend more effort on their next subsidy than on innovating more value at lower costs for the customers. They are not questioned about profits or service. There are no incentives for patents, or getting public transit to have the speed and convenience of private autos? Projects stagnate, dragging on for years, adding to costs but not to value. It is no wonder that public transportation commands a tiny 3% of transportation market share. It is nothing like the Internet where everything is tailored to respond faster, better, and be more valuable service at ever-lower cost to the customer.

Transportation policy has not always been brittle. On April 28, 1869 a crew from the Central Pacific built 10 miles of rail between sunrise and sunset. Risking private capital, the Transcontinental Railroads were built from the same motivation that expanded the Internet. Individual ingenuity and its commercialization were encouraged. The Wright Brothers, a couple of bicycle mechanics, with only the money they could scrape together, invented flight. Henry Ford was one of very many scrambling in an unregulated free market to build affordable cars. There was churn, entrepreneurs invented new modes and personal mobility increased. Companies, jobs and industries emerged to reinforce ingenuity for a share of the profits.

Empowering

We can change the lifeblood of our economy from oil to ingenuity. It is that way in communications. It was that way with transportation. Open rights of way to innovation. Ingenuity will flourish or fail based on the value created minus the cost to compete. It will be chaotic but our economy can adapt and shift, churn as the strength of the many leverage innovations of a few, creating new jobs, new companies, new industries.

Contact

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March 31, 2007