

MOBILITY IN TODAY'S ECONOMY:

HOW WIRELESS NETWORKING INFRASTRUCTURE CAN HALT VALUE DESTRUCTION FOR TRAVELERS AND FOR CORPORATIONS DEPENDENT UPON COMMERCIAL AVIATION

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In today's economy, competitive conditions stress organizational agility, relationships, knowledge integration, information and speed. These favor mobility – of executives, engineers, customers, suppliers, and specialist teams. Commercial airlines, the aviation system, and the broader air travel industry are essential contributors to the mobility process.

With companies facing a need to compete in today's economy, what is the likely impact of an increasingly unkind air travel experience on competition, profits and shareholder value? Unintended "reverse" value transfer between the airlines and the aviation system, and business travelers, has been accelerating. Through various mechanisms a crumbling aviation system saps productivity, increases business costs and impacts relationships, transferring value from business travelers (and their companies) in ways completely unintended. The case for value destruction is real and growing.

This paper identifies critical issues at the core of value destruction in the aviation industry today, and makes a compelling case for wireless data services to restore the balance. Wireless networking infrastructure can:

- ◆ Halt value destruction for travelers and for corporations dependent upon commercial air transport for mobility;
- ◆ Improve the door to door travel experience, with greater travel predictability and travel efficiency, reducing job stress;
- ◆ Create new revenue opportunities for travel service providers; and

- ◆ Serve the public good, providing essential information content, as a public service to business and leisure travelers.

High-performance wireless networking infrastructure for travelers (WINIT) can become a driving force in re-shaping the aviation system. It may be the only affordable solution available for traveler use this decade.

HOW IMPORTANT IS BUSINESS TRAVEL TO BUSINESS?

Air transportation is widely acknowledged as a tool of commerce and trade, contributing enormously to the economic growth and prosperity of the world. As globalization of the world's economies continues, dependency of business upon commercial airlines, the aviation system and travel service providers increases.

Many non-aviation industries now depend upon the sector's cargo, express mail, and passenger services to compete. Furthermore, many companies have a unique dependency upon air transportation, owing to it their growth and vitality.¹

It is also a known fact that countries having a strong air transportation system tend to out-strip the performance of other nations. Some countries are more dependent than others on

¹ Consider perishable goods producers in South and Central America who in winter months supply much of North America with fresh farm produce, and even fresh cut flowers, daily. International tourism is another example of such dependency.

air transportation, and the U.S. is a case in point. An efficient airline and air cargo industry has fueled America's economy, whose GDP has grown by 3% annually since 1991, and has improved productivity by 3% annually since 1995. For example, a Wilbur Smith Associates impact study² stated that commercial air transportation had contributed \$104 billion directly and \$693 billion in total to the U.S. economy in 1991 alone.

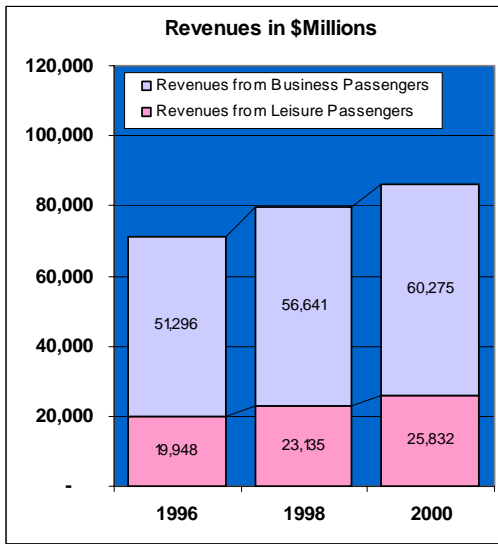


Figure 1 - U.S. Commercial Airline Passenger Revenue: Leisure and Business Travelers (Sources: Air Transport Association, USDOT and Andersen)

In 2001 the U.S. figures may be double the 1991 estimates - perhaps some \$1.4 trillion in direct and indirect contribution. This means that commercial air transport is very important to business, influencing some 15% of the U.S. economy's \$8 trillion in anticipated output in 2001.

In today's economy, most companies (and workers) have found that to be competitive, they must become the very best at what they do. In an increasingly networked economy, buyers of goods and services have many more ways of sourcing services and supplies, and of comparing supplier cost, efficiency, risk and value. This has driven the need for specialization at multiple business levels, and to extreme

² The Economic Impact of Civil Aviation on the U.S. Economy, Wilbur Smith Associates, 1993 (Double check stats.)

forms of knowledge mobility³ to compete successfully.

Frequent business travelers are often these extreme specialists, and over time the airline industry has had its bread buttered by this group. Figure 1 highlights the fact that over two thirds of airline revenue are derived from travelers at work.

The Crisis in Commercial Air Travel

If completely unconstrained, global airline passenger industry growth would remain strong (see figure 2). In the United States experts forecast that more than one billion passengers could fly in the year 2012, up from 620 million passengers in 2000.⁴ Of these, approximately 1 in 3 will be working travelers -- that is people, often specialists, sales people and executives - on business travel.

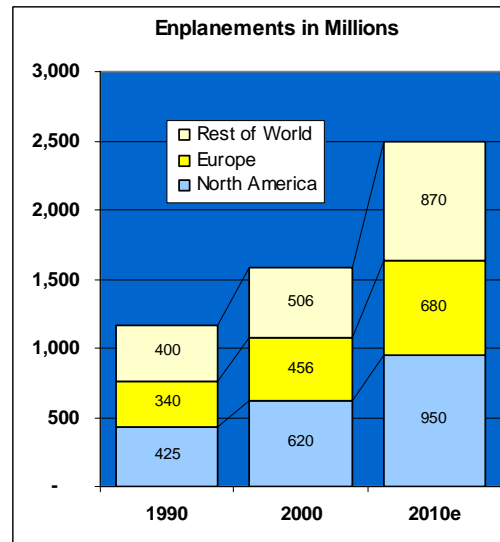


Figure 2 - Forecasts of Airline Passenger Growth in Selected Regions and Globally (Sources: IATA, Airbus Industrie, Andersen)

³ Case Study: In today's economy, consulting companies such as Andersen find the advantages of scale are highly dependent upon professional mobility to efficiently support our clients. Specialist teams are constantly being assembled and deployed around regions of the world to ensure the best skills are being applied.

⁴ Source: Estimates provided by U.S. Federal Aviation Administration, 2000.

But there is a looming crisis in aviation that may make this industry forecast contestable. Consider these facts:

- ◆ Despite governments' repeated efforts, much of the world's air traffic control system remains antiquated and unable to satisfy the demands and needs of airlines or the economy. The aging air traffic systems of the most congested areas of the world are incapable of handling any increases in volume. The difficulty in upgrading the ATC system is universally recognized: there is little to show for efforts over the last twenty years in the U.S. Quoting Norman Y. Mineta, U.S. Secretary of Transportation today and former head of the U.S. National Civil Aviation Review Commission⁵ "...our nation's aviation system will succumb to gridlock. Delays will skyrocket while we reminisce about the "reliable" flight schedules of the past. This current course will impair our domestic economy, reduce our standing in the global marketplace, and result in a long term deterioration of aviation safety."
- ◆ In the U.S., Over 450,000 airline delays were reported in 2000, an increase of 47% over 1998 and an all-time U.S. record.⁶ The Air Transport Association also believes that the ATC system is approaching gridlock (Figure 3).

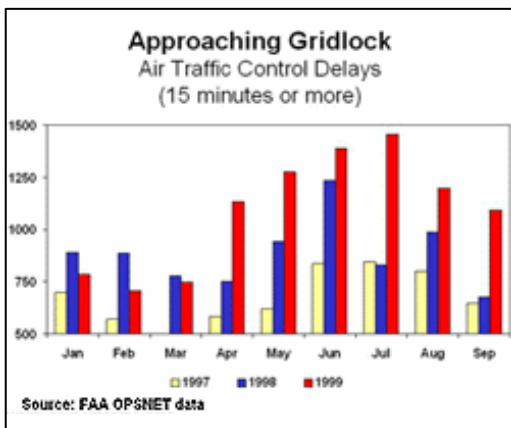


Figure 3 – ATC Delays in U.S. over past three years.

⁵ Norman Y. Mineta, Chief, *Avoiding Aviation Gridlock And Reducing The Accident Rate*, U.S. National Civil Aviation Review Commission, December 1997.

⁶ Source: U.S. Federal Aviation Administration, 2000.

- ◆ Scheduled flight times in the U.S. have increased over the past 10 years on 75% of all routes, according to the DOT Office of the Inspector General.⁷ An increase of 3.3% since 1995 on average flights has added some 445 thousand flight hours in 2000, or 40 million business traveler hours.
- ◆ Hub airport infrastructure is at a breaking point. The busiest airports are increasingly capacity constrained and present an imminent barrier to continued growth and prosperity of their local economies. Most airports are constrained in their ability to expand runway and terminal capacity.⁸ Critics point out that it takes over 10 years to get environmental reviews approved, a critical step in airport expansion.

Mounting evidence such as this is not good news. With companies facing a need to compete in today's economy, what is the likely impact of an increasingly unkind air transportation system on competition, profits and shareholder value?

MOBILITY AND VALUE DESTRUCTION

Here is how value is unintentionally transferred between business travelers (and their employers) and the commercial air transport industry serving them:

- ◆ A typical frequent business traveler flying from one of the 25 busiest U.S. airports can expect to lose one or more hours of productive work or personal time on the average trip compared with 10 years ago.⁹ Airport infrastructure has grown in size and complexity. Airline network schedules are designed to route travelers in a way that minimizes provider costs, and not in a way that optimizes business traveler productivity.

⁷ U.S. House Aviation Subcommittee testimony, September, 2000.

⁸ Statement of Edward A. Merlis, Senior Vice President Legislative and International Affairs Air Transport Association of America Before the Senate Aviation Subcommittee hearing on Aviation Delay Prevention March 29, 2001.

⁹ Sources: U.S. Department of Transportation, Office of the Inspector General. Report Number CR-2000-122, USBTS, and Andersen travel productivity studies.

- ◆ Consider the additional time business travelers must invest today in renting an automobile. At several well known airports, an additional 35 minutes of traveler time is called for, and involves busing individuals from curbside, baggage in tow, on a wild ride to a centralized, multi-story facility. A frequent business traveler may lose between 30 and 70 hours of productive time each year just for the privilege of renting a car at one of these magnificent facilities.

- ◆ Airline business class and walk-up fares have increased and are not being offset by a similar improvement in traveler productivity.¹⁰

- ◆ Case Study - Andersen: We have one of the largest travel schedules of any company. Between one and three thousand of our people head to airports on any given work-day around the world. A U.S. city pair frequented by our consultants, Chicago-New York, demands that 2 out of 3 travelers make the trip the evening before, because of the unpredictability of morning flights to or from hub airports in these cities. To place this in perspective, a two hour meeting often puts our people on the road for approximately 26 hours, at a cost of millions of dollars in additional hotel stays, per diems and lost productivity for *this one city pair*.

All these examples represent unintended value transfer between the travel industry and its customers. Value destruction is real. Worried companies are anxiously studying its effects.

¹⁰ Ramstack, Tom, "Airlines are Almost Certain to Raise Fares," mentioned increases of 28% year over year, The Washington Times, November 30, 2000; "Airfare Sticker Shock: Study Shows Rising Commercial Airline Fares Put Private Jets Within Reach of Business Travelers" PR Newswire March 27, 2001, Harrell Associates studied published full-coach and first-class fares for 925 domestic airline routes in January 2000 and January 2001, encompassing 43 airports in 37 U.S. markets. The study showed an average full-coach fare increase of 16 percent and first-class increase of 22 percent in one year;

SOLUTIONS

Solutions to the value transfer dilemma can come from the travel industry itself, or from business travelers and their employers. While solutions to the problem are plentiful (see Figure 4), most will be penalizing to business travelers, requiring years of effort, and tens of billions of dollars of investment.

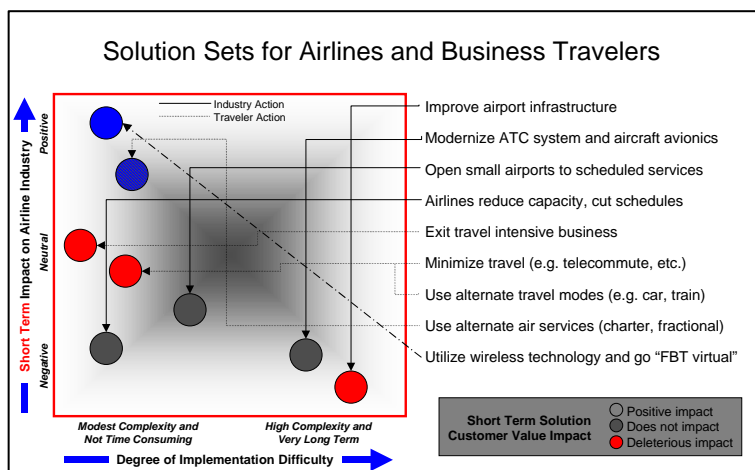


Figure 4 - Solutions to the Value Transfer Dilemma for Airlines, Business Travelers and Employers

Travel and Aviation Industry Solutions

For example, improving hub airport infrastructure in the U.S. will require new terminals, runways and/or gates, with an estimated cost of over \$200 billion over the next 20 years.¹¹ The time it takes to walk from curb side to the gate area has increased dramatically in the past decade. A walk of a mile or more is now routine at many airports in the U.S. Large terminals require passenger channeling to designated central security areas, in an effort to minimize security costs. This adds tremendously to walking distances, often without the aid of baggage carts.

It has been suggested by air traffic controllers and their unions that airlines should cut their schedules and increase fares during peak business travel hours to suppress demand, restoring balance at peak travel times. Of course this would improve travel time predictability and restore schedule reliance, but would reduce

¹¹ Source: The Economic Impact of U.S. Airports, ACI, 1998

choice and mobility for businesses, while adding to the travel costs of many.

Business Traveler and Employer Solutions

Very few companies have developed strategies to mitigate the adverse impacts of today’s commercial air transport environment. But companies such as Intel, Hewlett Packard, General Electric, DaimlerChrysler and Procter & Gamble are removing key employees from the commercial air transportation system in increasing numbers in an effort to improve mobility and cut costs. They are operating their own private flight departments to do this.

Companies can also exit travel intensive businesses, or just cut travel (e.g. more teleconferencing, telecommuting, etc.). They can also require employees to use alternate travel modes (e.g. car, train, bus). Current competitive conditions reward knowledge integration, relationships, organizational agility, information, and speed. So are mobility constraints realistic or even wise choices?

Business aviation is exploding, and has become the fastest growing segment of the aviation industry. Charter and fractional services are booming, with good reason. A new Andersen study “Business aircraft in today’s economy” reported that between the years 1992 to 1999, the use of company-operated aircraft by S&P 500 companies may have helped distinguish successful companies from their peers.¹²

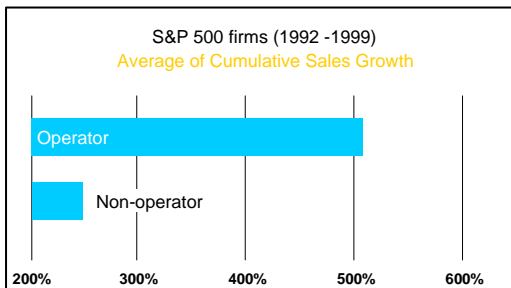


Figure 5 - Business Aircraft Operators and Non-Operators of S&P 500 Average of Cumulative Sales Growth Between 1992 and 1999.

Among our S&P 500 sample groups from 1992 through 1999, we found that business aircraft

¹² Dyment, Michael J. “Business Aviation in today’s economy: A Shareholder Value Perspective” Andersen, White Paper Series, Spring 2001

operators earned 141% more in cumulative shareholder returns than did non-operators. Examining key shareholder value drivers such as year over year sales growth (see Figure 5) operators again demonstrated superior results.

Numerous studies¹³ have shown that customer relationship management and customer satisfaction affect shareholder value. Many companies in the U.S. are using their business aircraft to maximize this benefit with remarkable results. Our analysis found that the operators also achieved sales growth nearly double that of non-operators. However, even with these powerful findings, business aviation will remain outside the reach of many companies.

Better and More Timely Information – Going “Virtual”

Therefore we must revisit the commercial air transport mode and find solutions that are cost effective, practical to implement, and fair to business travelers. These solutions need to halt value destruction for today’s mobile companies, and the millions of frequent business travelers they feed into the commercial air transport system. This entails moving from paper schedules and the old way of doing things, to going “virtual.”

WIRELESS NETWORKING INFRASTRUCTURE FOR TRAVELERS - HIGH SPEED DATA OVERLAY FOR THE AVIATION SYSTEM

The most plausible solution, in our view, is to reengineer business travel to fit a “Just in Time” approach. Wireless communications offer increased mobility and flexibility. When productivity-enhancing travel information is available and has “content-in-context,” busi-

¹³ Andersen, in partnership with research firm DYG, Inc., conducted a survey of senior corporate executives to determine which types of relationships they considered to be most essential to business success, to identify which assets and relationships are most consistently managed, and to discover what assets and relationships they choose to measure to gauge performance. In late 2000, DYG, Inc. interviewed nearly 500 C-level executives - CEOs, CFOs, COOs and presidents - from United States-based publicly traded corporations. Respondents included executives from all industry sectors, including manufacturing, mining, utilities, construction, agriculture, finance, insurance, real estate, retail, professional services, computers/technology services and transport. For further information visit www.andersen.com.

ness travelers can modify their travel options as information becomes available.

Value destruction can immediately be suppressed for travel-intensive companies and their employees if a “Door-to-Door” approach to the problem is taken, fully leveraging information and infrastructure along the way. Re-inventing the door to door travel process with wireless data is powerful because one can:

- ◆ Compress door to door travel time - Information prior to beginning the trip can improve schedule predictability. Moving to a day of departure “virtual schedule” and adding “personal travel content” reducing stress, improving employee morale and retention; Options and information can actually make travel safer;
- ◆ Offer productivity options during airport waiting periods - Business travelers need improved high speed access to company sites and commercial channels at these times;
- ◆ Cut costs - For example linking the traveler with Internet booking sites, eliminating unnecessary overnights, reducing traveler & service provider costs;
- ◆ Provide a public service - Passengers can access roadway information, or can search for DOT information on the quality and reliability of airlines, or access relevant information otherwise not available on the state of travel that day, hour, and minute.

Powerful wireless backbone capabilities can also benefit airline, airport and ground service operations. Examples are numerous, but would include:

- ◆ Enable roving gate agents who can instantly reschedule 150 passengers on a cancelled flight;
- ◆ Facilitate more accurate and timely aircraft servicing options during turnaround or maintenance operations.

For airlines and travel service providers this can all serve to increase customer loyalty.

As illustrated in Figure 6, wireless services will restore travel efficiency and predictability at the same time. When one can offer greater predictability through improved information

“content in context” the effect is an improved traveler experience. With improved efficiency the employer and traveler win. A powerful combination – a one-two punch.

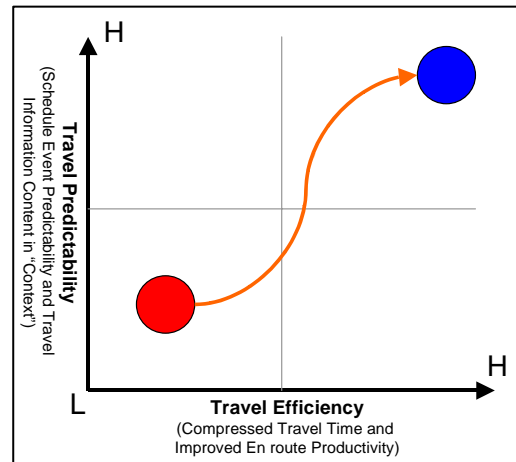


Figure 6 – Improving Travel Predictability and Efficiency Halt Value Destruction and Reduce Traveler Stress

THE TRAVELER INFORMATION SERVICE PROVIDER MARKETPLACE - BUSINESS CASE

We refer to a few definitions here to help with our business case discussion:

- ◆ **Transportation Service Point (TSP)** - Any location where service is delivered over a range of devices to airline travelers. Each TSP is comprised of multiple touch points that allow traveler interaction with the Internet, with other travelers, with the primary sellers of travel products or services, and with travel service providers.
- ◆ **TSP Network** – High-performance wireless networks (linked to optical backbone networks) that bind members and their customers via diverse touch points at Transportation Service Points and facilitate a range of eBusiness opportunities.
- ◆ **Touch Point** – Anywhere that a transaction or interaction can be conducted. These touch points include: points of sale; call centers; wireless access devices; retail sites where the customer can call or visit; specialized appliances; email; and Web sites – and they must all be connected over a single, high-performance network

so that information can be efficiently shared.

- ◆ **TSP Marketplace** – A business framework enabled by a TSP Network that allows diverse vendors to share information to improve the delivery of traveler-related products and services and create new revenue opportunities.
- ◆ **TSP Marketplace Members** – Those companies connected via the TSP Network. Members typically consist of airlines, travel agents, taxi/limo companies, hotels, food suppliers, conference centers, banks, etc. (See Figure 7).

Airlines, travel service companies, and others catering to business travelers are indeed becoming more customer-centric. The Internet and related services have become strategic weapons in determining success. At any one of these touch points, any member of the TSP Marketplace can conduct real-time marketing programs by automatically creating customized offerings based on the profile of the customer. The close interrelationships required to create a TSP Marketplace demand tight partnerships, information sharing, and the ability to consolidate applications and infrastructure.

The ability to deploy wireless technology to link critical applications among multiple busi-

ness partners is a major requirement. Integra-

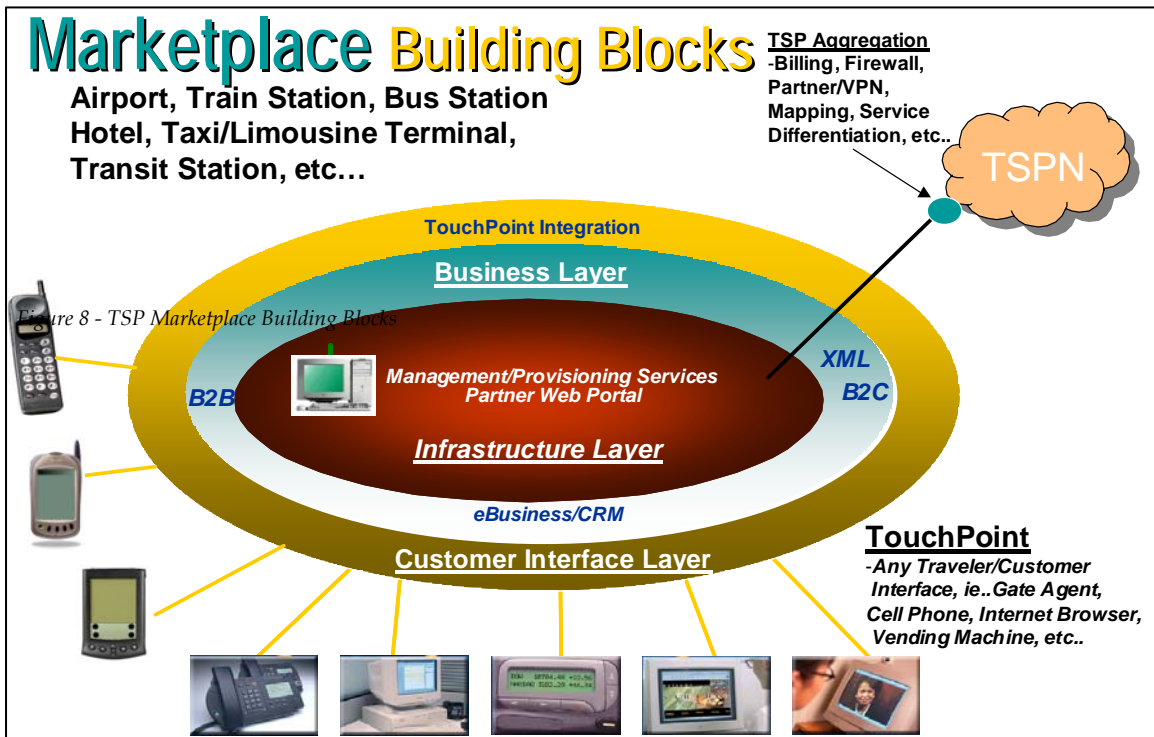
The following is a partial list of the potential members (businesses and content providers) of the traveler TSP Marketplace:

- | | |
|-------------------------|----------------------------------|
| • Airlines | • Airport Authority |
| • Banks | • Barbers |
| • Bars | • Book Stores |
| • Car Rental Companies | • Catering companies |
| • Charter Operators | • Communications and Media |
| • Credit Card Companies | • Federal Air Regulators and ATC |
| • Fitness Centers | • Foreign Exchange |
| • Fuel Companies | • Gift Shops |
| • Ground Handling Cos. | • Health Clinics |
| • Highway Authorities | • Highway Travel Advisories |
| • Hotels | • Internet Service Providers |
| • Phone Companies | • Regional Carriers |
| • Restaurants | • Retailers |
| • Security Companies | • Shoe Shine Outlets |
| • Sky Chefs | • Travel Stores |
| • Travel Agencies | • Vending Companies |

Figure 7 - TSP Marketplace Members

tion of applications can allow service providers to build synergistic relationships with customers that expand market reach and enable highly tailored product and service offerings.

Networking technology can enable high-speed voice, data, and multimedia applications that are capable of streamlining the mobility of people (Figure 8). High-performance network infrastructure can be the only short term driv-



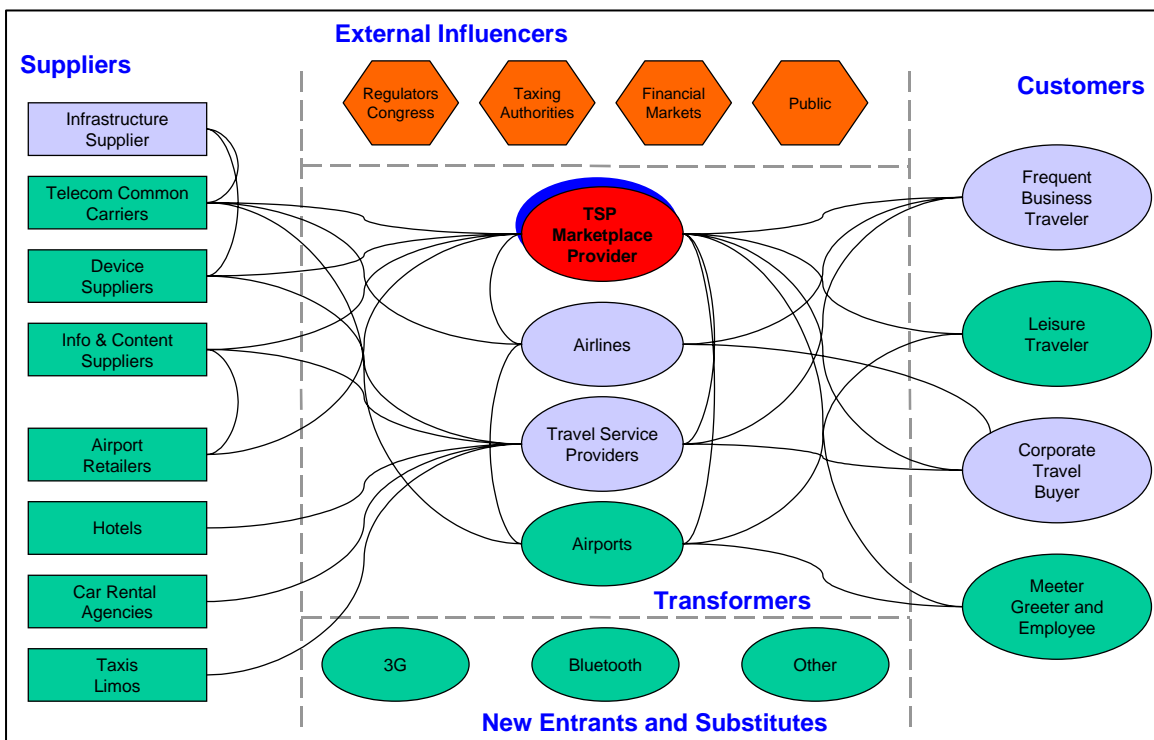
ing force capable of re-shaping of the door-to-door travel process. Airlines and other members of the TSP Marketplace wishing to flourish in today's economy will embrace networking and communications technologies to gain competitive advantages.

Value Exchanges Characterize the Business Case for Wireless Networking Infrastructure for Travelers

The business case for wireless network infrastructure can be made from understanding value exchanges for travelers. To extract maximum value, and make the TSP Market-

- ◆ **Knowledge and Information:** Exchange of knowledge such as strategic travel planning information, trip planning knowledge, process knowledge, cost savings, or technical knowledge that flows around the travel value creation process; and
- ◆ **Intangible benefits:** Exchanges of value and benefits that go beyond the actual services, such as convenience, sense of community, safety of person, customer loyalty, image enhancement, or co-branding.

It is essential at each TSP to create an opportunity to maximize marketplace participation. For example, an airport can be converted into a



place an attractive recipient for capital and other investment, all participants must be able to benefit from three types of exchanges (Figure 9):

Figure 9: TSP Marketplace Value Map and Participants (illustrative)

- ◆ **Goods, services, and revenue:** Exchanges for paid travel services, the delivery of goods, work or leisure-related services, contracts, and invoices, and the receipt of orders, confirmations or payment. Knowledge or knowledge products that are part of any business' core value creation process, and that are travel-related, are included in this category;

TSP Marketplace where the diverse vendors – including the airlines, airport facilities managers, travel agents, taxi/limo companies, food suppliers, hotels, conference centers, banks, taxicab companies, Internet Service Providers (ISPs), and retailers – are linked to the traveler over a common network infrastructure.

TSP Marketplace Members can deliver flexible services to unlimited touch points on the network. Access policies can be defined for each customer group and for each service, and the costs of maintaining the shared network will be allocated to members based on usage.

Value Recapture

The TSP Marketplace provides an essential means of recapturing value transfer and halting value destruction. Analyses performed by Andersen recently are summarized in Figure 10 below. On a labor/productivity cost basis only (that is, not including direct non-salary travel cost savings and other factors), and examining the three categories of business traveler most likely to benefit from wireless infrastructure, we estimate:

- ◆ Cost based productivity recovery, equating to average paid salary time, worth some \$8.4 billion per year; and
- ◆ Value based productivity recovery, which assumes that a business traveler's time is worth more to the company or economy than that person's salary, is even higher, estimating some \$26 billion per year.

These projections represent only partial cost savings and value recapture potential.

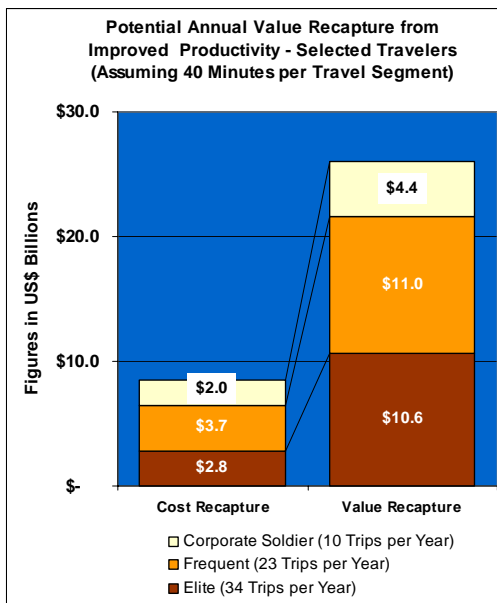


Figure 10 – Potential Annual Door-to-Door Value Recapture for Frequent Business Travelers in U.S. due to Wireless Networking Infrastructure (Sources: USDOT, NBTA, Andersen analysis)

These figures also assume that wireless applications and available spectrum can be used in an efficient and seamless fashion, so that the door-to-door travel experience is improved upon. This means improved travel predictability and efficiency at the same time.

Standards Maximize Value Exchanges – OTA Alliance

With hundreds of millions of people making business and leisure trips annually, the industry sectors that provide products and services geared to the needs of travelers have the opportunity to work together with the common goal of unified and integrated information. Exchanging standards promotes electronic commerce more effectively and serves travelers more efficiently.

By working in cross industry sectors, each member of the TSP marketplace can identify its particular industry requirements. It is essential that all sectors of the travel industry work together with the common goal of unified and integrated information, and exchange standards so as to promote electronic commerce more effectively and serve travelers more efficiently. By creating such unified information and exchange standards, TSP Marketplace Members lessen the probability of duplication of efforts by the different sectors and build upon each other's experience.

OpenTravel™ standards will afford new opportunities for TSP Marketplace Members, value transformers (see Figure 9) and travelers alike. These standards will create a lower cost and wider spread communication platform to communicate reservation, product and operational information. TSP Marketplace Members will be working with each other to encourage the creation of new, innovative products and services at a lower cost, that better display their product information, enhance the reservation process and communicate critical operational data that is necessary to create a seamless travel experience for the traveler. This will enhance links among travelers, their employers, and TSP Marketplace Members, and generate new efficiencies for all concerned. Value enhancement is assured.

TSP SOLUTIONS – A LEISURE TRAVEL SCENARIO

The day has finally arrived. A family of four is flying off for a week of fun-in-the-sun on an international vacation.

Since the local airport is now a TSP Marketplace, the various vendors of transportation products and services have joined over a high-performance backbone network to make their products and services more satisfying and

more readily available. Members have enabled both B2B and B2C applications and integrated diverse touch points onto a common, high-speed network. Each Marketplace Member can self-provision highly differentiated services via graphical front-end interfaces and share customer information to customize the experience.

This TSP Marketplace also offers SmartCards to customers to enable streamlined billing.

Airport Arrival

After booking the flight arrangements through the Web site of the travel agency, a shuttle service sent an email showing how the available ground transportation schedule corresponded to the flight time.

Mom selected the shuttle for herself and the kids, and she received a confirmation email and phone message from the shuttle company that included several offers targeted to the needs of a family going on an extended trip. She then went online and took advantage of a few of these offerings by booking lunch at one of the airport restaurants before the flight, and arranging for a concierge to carry the family's bags from the shuttle to the check-in counter.

Dad wanted to make a last-minute trip to the office before leaving on vacation so he made taxi arrangements over the Web.

The taxi company greeted him by name at his home, drove him to the office, and told him they would have a cab waiting for him when it was time to leave work and head to the airport.

Approximately 90 minutes before the flight was scheduled to depart, Mom and Dad received a notice from the airline that the flight was inbound, but the gate departure was to be delayed by an hour and fifteen minutes. The message came through Mom's cell phone and Dad's PDA, and both were asked to select an adjusted departure time, which was transmitted to the other's device for notification purposes. Mom was delighted because this extra hour gave her time to run to the bank. Dad had an extra hour at the office and could clean up a report that "had to be done" before his departure.

He took care of a few last minute issues at the office and packed up his laptop (can't go anywhere without it!) The cab, already notified of his revised pickup time, met him again for the

ride to the airport. During the ride, the taxicab displayed electronic advertising targeted at travelers to warm climates. Dad realized he had forgotten to pick up sunglasses and a few other items. He used his device's screen display to reach the airport's retail directory, bought the items at the airport retail store and arranged for a courier to carry the items to the gate.

Nervous about flight times, he then re-checked the browser in his cell phone and went to the travel agent's Web site and found that the airline's revised departure schedule was holding, and the family would be encountering great flying weather.

He then used his cell phone to call the airline's Interactive Voice Response (IVR) System, which confirmed that the flight would arrive as scheduled – and informed him that there were seats available in first class and offered him a discount to upgrade seating for the whole family! Dad quickly accepted and could not wait to meet the family at the gate and tell them of the surprise upgrade. After being dropped off at the airport, he had a last-minute urge to check his email so he went to a Web appliance in the lobby and paid for Internet access. He was relieved to find that the office was under control, and it was there that he saw a banner advertisement on the Web appliance screen allowing first-class customers to select premium movies for the flight.

The entertainment company had received automatic notification of the upgrade and was able to create a targeted offer to increase revenue by selling premium services. Since Dad was a frequent flyer – with a strong brand preference for the quality of service delivered on this airline – the movie vendor was able to offer films tailored to his preferences that he just could not turn down!

Airport Check-In

Mom and the kids were still a little early, so they checked in through a kiosk, and met a roving gate agent who tagged and processed her baggage. She went to the vending machine and used her Smart Card to buy everyone a Coke. The vending machine – which was IP enabled and connected to the TSP Network – sent a notification to the airline of the family's soft drink preferences.

Dad checked in and met the rest of the family at the restaurant down from the departure gate. Again, the menu was tailored to his preferences and they all enjoyed a quick meal. Upon signing for the bill, he received a message on the waiter's touch screen appliance that his flight was still on time and would be boarding shortly. The family was excited to hear about the upgrades and the movie selection, but the kids were not too happy when told about the airline meal selections Mom had made for the flight.

[Airport Security](#)

They each showed their Passports, and the security firm ran biometric checks to authenticate the identity of each member of the family. The security firm then ran real-time background checks and cross-indexed their names against a current list of known security offenders. This was all done in a matter of seconds, and upon passing through the International Departures Hall an electronic billboard showed a customized advertisement inviting them to the Duty-Free shop. The security clearance had initiated a targeted advertisement that offered promotions customized to the age groups identified on their Passports.

[Waiting at the Gate](#)

They made a quick buying trip to the Duty-Free shop and then headed for the gate. With 35 minutes before departure, Dad opened up his laptop and replicated his emails, having forgotten to do this before leaving the office. The laptop synced up with a high speed wireless LAN, and Dad was behind his firewall in just a minute. There he scanned his outbox, and discovered that he had forgotten to send his report to senior management! He did this quickly, checked his stock portfolio for the last time, and then shut his laptop down for the flight.

Mom logged into the travel agency's kiosk to confirm the ground transport and hotel accommodations for when they would arrive at their destination. They were informed that the flight would be just a few minutes late, and each passenger was offered a complimentary beverage, complements of the airline, by the gate-area's closest food service firm. Knowing the family's preferences, the waiter offered each of them a Coke!

[Time to Board](#)

A few minutes later, the boarding agent used a scanning appliance to identify the bar codes on their Smart Cards and as they boarded the plane. The kids were excited to sit in the first class section. Mom used the touch screen interface on the back of the seat in front of her to confirm the premium movie and meals and to review the consolidated bill for products and services they had purchased at the airport.

Since all transactions were made using a Smart Card, billing information was consolidated in real-time and she could quickly review all purchases on a display screen. The flight was smooth, everyone enjoyed the movie and dinner, and before landing the steward gave them a coupon book for their destination, with discounts from retailers and travel sites tailored to their preferences and wants!

[Your Flight is Now Arriving](#)

The airplane landed, and the entire family went through Customs and to the baggage claim, where the concierge had already collected their baggage and confirmed the ground transportation to the hotel. The family had experienced a very pleasurable and highly customized trip — and were now ready to begin their vacation at the beach!

In the meantime, the travel service provider and airline were both notified during each step in the process of the progress of the family. The Dad was an Executive Premium million miler, so with the trip a success, both providers sent him a personal message asking how the experience could have been improved. Dad said to himself that he would respond to these queries tomorrow on the beach!

[Marketplace Opportunities](#)

The TSP Marketplaces at these airports have allowed the family to automate much of the drudgery of consumer transportation, and have made it easier for them to purchase additional goods and services. TSP Marketplace Members can count on repeat business from the family and can probably count on referrals from the family that lead to new business from their friends, family, neighbors, and colleagues. Members of the TSP Marketplace created B2B solutions that allowed them to collectively share customer information, create cross-selling

opportunities, streamline customer transactions, and improve the transportation experience for the customer.

CONCLUSIONS

We have identified sources of unintended value transfer that a TSP Marketplace can reverse, especially for the frequent business traveler. Wireless communications offer increased mobility and flexibility. When productivity-enhancing travel information is available and has "content-in-context," business travelers can modify their travel options as they move about. The TSP Marketplace can halt value destruction for today's mobile companies, and the millions of frequent business travelers these companies supply to the transportation system.