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#### Contention One is Inherency:

#### TRANSPORTATION INVESTMENT IS INEVITABLE—ITS IS KEY TO EFFECTIVE INFRASTRUCTURE

**Ezell ‘10** (Stephen Ezell, a Senior Analyst with the Information Technology and Innovation Foundation (ITIF), with a focus on innovation policy, The Information Technology and Innovation Foundation, January 2010, Explaining International IT Application Leaderhip:

Intelligent Transportation Systems)

Over the next five years, the United States is poised to invest more than $500 billion on the nation’s surface transportation infrastructure. Intelligent transportation systems must be a critical component of these investments in order to maximize the operational performance of the transportation system and attain the significant benefits enumerated in this report. If the United States does not take advantage of the current opportunity to significantly fund ITS as part of the next surface transportation authorization, it risks not only falling further behind world leaders and other developed economies in ITS, but also losing ground to rising countries such as China and India, which are beginning to make substantial investments in ITS development and deployment.

ITS goals and effectiveness is low now due to lack of funding – States don’t want to invest despite the tech being ready

**Ezell ‘10** (Stephen Ezell, a Senior Analyst with the Information Technology and Innovation Foundation (ITIF), with a focus on innovation policy, The Information Technology and Innovation Foundation, January 2010, Explaining International IT Application Leaderhip:

Intelligent Transportation Systems)

However, GAO’s report noted that that **DOT’s criteria set** “relatively **low thresholds of ITS infrastructure such as 20 percent of freeway miles** and 33 percent of ¶ signalized intersections covered by certain ITS tech-¶ nologies.” Moreover, the report found that **communities were not enjoying** many of the **potential benefits** ¶ from deployed intelligent transportation systems **because their operations were underfunded and not performing to capacity**. For example, the report noted that ¶ Chicago had built ten traffic management centers, but ¶ because of funding constraints, six of the ten lacked ¶ staff dedicated to monitoring traffic conditions on a ¶ regular basis, compromising their potential traffic and ¶ congestion mitigation benefits.149 In another example, ¶ the study found the San Francisco Bay Area had 4,700 ¶ traffic sensing detectors across its 2,800 freeway miles ¶ in 2003, with 29 percent of the roadways featuring sen-¶ soring devices spaced every one mile, and 40 percent ¶ with sensors spaced every two miles. However, about ¶ **45 percent of** the **devices were out of service** (lack-¶ ing funds for maintenance or break-fix), significantly ¶ **reducing the system’s ability to produce reliable** traffic ¶ **data**.150 GAO’s 2009 report on real-time traffic infor-¶ mation confirmed that **these problems persist and** in ¶ some cases **have not improved appreciably** since 2005.¶ The **GAO found “several barriers that limit the widespread deployment” of ITS** at the state, regional, and ¶ local level in the United States. The study noted that ¶ **state** and local transportation **officials** often **view other** ¶ transportation **investment options, such as adding a new lane** to a highway, **more favorably than ITS** when ¶ deciding how to spend limited transportation funds.151 ¶ Moreover, the GAO found that, unfortunately, “infor-¶ mation on benefits does not have a decisive impact on ¶ the final investment decisions made by state and local ¶ officials.” This challenge is amplified as elected offi-¶ cials often find ITS investments less appealing than ¶ highway construction. The GAO study quoted Chi-¶ cago- and San Francisco-area transportation officials ¶ lamenting that since ITS applications, “do not usually ¶ offer groundbreaking ceremonies which offer positive ¶ media attention,” politicians were generally not moti-¶ vated to support ITS projects.152¶ This challenge continues today. Both state highway ¶ administrators’ preference for traditional highway in-¶ vestments and lack of funding for ITS projects were ¶ apparent in the distribution of stimulus money as ¶ part of the American Recovery and Reinvestment Act ¶ (ARRA). **Many states have not invested any ARRA funds in ITS**.153 As Kevin Lacy, State Traffic Engineer ¶ for North Carolina DOT explained the view of some ¶ state DOTs toward ITS, “**The ITS industry is not as developed,** still growing and **often** **perceived as a little higher risk**. So having strict time periods on cashing out ¶ has likely reduced opportunities for ITS projects using ¶ ARRA.”154 Unfortunately, this perspective misses that ¶ **there are many readily-available ITS technologies that can be deployed**, that they offer superior benefit-cost ¶ returns, and also **that** ITS deployment **can** likewise ¶ **stimulate economic and employment growth**.

Plan: The United States federal government should increase investments to the full expansion of Intelligent Transportation Systems.Contention Two is the Economy:

#### US economy will collapse in the squo – Bernanke proves

Ben S. **Bernanke 7/17**/2012 [Chairman of the Federal Reserve, *Semiannual Monetary Policy Report to the Congress,* Before the Committee on Banking, Housing, and Urban Affairs, U.S. Senate, Washington, D.C., <http://www.federalreserve.gov/newsevents/testimony/bernanke20120717a.htm>, RH]

The second important risk to our recovery, as I mentioned, is the domestic fiscal situation. As is well known, U.S. fiscal policies are on an unsustainable path, and the development of a credible medium-term plan for controlling deficits should be a high priority. At the same time, fiscal decisions should take into account the fragility of the recovery. That recovery could be endangered by the confluence of tax increases and spending reductions that will take effect early next year if no legislative action is taken. The Congressional Budget Office has estimated that, if the full range of tax increases and spending cuts were allowed to take effect--a scenario widely referred to as the fiscal cliff--a shallow recession would occur early next year and about 1-1/4 million fewer jobs would be created in 2013.3 These estimates do not incorporate the additional negative effects likely to result from public uncertainty about how these matters will be resolved. As you recall, market volatility spiked and confidence fell last summer, in part as a result of the protracted debate about the necessary increase in the debt ceiling. Similar effects could ensue as the debt ceiling and other difficult fiscal issues come into clearer view toward the end of this year.

**The revenue output of the transportation industry is continuously declining—ITS is key to revive the economy and the transportation industry**

**Keeling and Mooney 11** (Mary Keeling and Gerard M. Mooney, Mary Keeling is a Manager of the IBM Institute for Business Value Center for Economic Analysis and Gerard M. Mooney is currently General Manager, Global Smarter Cities, Transportation and economic development Why smarter transport is good for jobs and growth, IBM, 2011, pages 1-10)

High unemployment, languid economic growth and growing urbanization make transport’s role in driving growth more important than ever. Problems relating to congestion, the environment and safety, as well as opportunities presented by growing data and smarter consumers, must be addressed to help support job creation and growth. The intelligent transportation systems (ITS) industry is helping build transport systems that address these issues. To sustain momentum, governments need to accelerate the development of common standards for ITS solutions and open data, the industry needs to collaborate across industry boundaries and cities need to continue building smarter transport networks. The role of transport in driving jobs and growth is more important than ever Transport contributes directly to economic activity and employment through bus, rail, road, air and maritime services. It also has a large indirect impact via all the other sectors and activities in the economy that depend on and use these various modes of transport to move people and goods around, nationally and internationally, in an efficient and safe manner. 1 In the current economic environment, three interrelated factors are placing even greater weight on the role of transport in driving jobs and growth: • The rate of urbanization globally has been rising and, in 2008, for the first time in human history, the proportion of the worlds’ population based in urban areas was greater than 50 percent. In the United States, 82 percent of the total By Mary Keeling and Gerard M. Mooney population is based in urban areas, and this is set to rise to 90 percent by 2050. Cities need to help ensure that their transportation networks can support this high and increasing level of human and economic activity based in cities. 2 • The financial environment for cities and federal, state and local governments is challenging. Many states are amid their most severe fiscal crisis since the Great Depression. The largest collapse in state revenues on record combined with languid economic growth are constraining the use of traditional fiscal instruments to support job creation, as well as creating affordability and funding issues for large infrastructure investments. 3 Because of the importance of transport in supporting job creation, it can help address the pressing structural problem of unemployment in many advanced economies. In the United States, long-term unemployment in particular is at crisis levels unprecedented in the post-war period. 4 Yet,at a time when transport has never been more important in supporting growth and job creation, transportation systems in the United States and globally are facing several key challenges. There are also technological and socioeconomic trends that are creating new opportunities for transport providers (Figure 1). If unaddressed, these challenges and opportunities will inhibit the ability of transport to support job creation and growth. Today’s transport challenges create an urgent need for action Demographic changes and more vehicles are placing new demands on existing networks. Many transportation systems are facing rising demand driven by increased urbanization of populations. Over the past decade, the biggest migration of Americans has been to cities with between 100,000 and 1 million residents. 5 Many of these cities are less than prepared to deal with this influx of individuals and, as a result, are struggling to manage these busier transport networks. But not all cities are facing the same challenge. Chicago and Detroit, for example, are actually experiencing population declines, and cities with populations greater than 10 million suffered a 10 percent rate of outmigration over the last decade. 6 This declining demand exacerbates existing revenue problems. Whether populations are increasing or declining creates a challenge for transportation providers in terms of maintaining an efficient and productive transport system in the face of population changes. In tandem, over the last 20 years, there has been substantial growth across all transport modes and, therefore, more vehicles and vessels using the transport network (see Figure 2). All these additional vehicles and vessels competing for limited capacity on the transport network create a challenge for transport providers trying to efficiently manage the network and balance demand and capacity Congestion is a growing problem that incurs significant costs. Congestion pressures faced by cities are worsening over time and cannot be ignored – traffic congestion in the 100 biggest metropolitan areas in the United States increased by 11 percent last year. 7 Congestion costs time and money – approximately US$101 billion and about 4.8 billion wasted hours last year in the United States. 8 It also negatively impacts quality of life by decreasing personal and business productivity, lowering air quality, creating noise pollution, adversely impacting health, as well as leading to the waste of nearly 1.9 billion gallons of fuel each year. 9 A large portion of congestion is not caused by limited highway capacity – 60 percent of all freeway congestion is caused by incidents such as wrecks and debris on the road. 10 So, reducing these types of incidents could help reduce the incidence of congestion and the negative costs associated with it. “The numbers quantify what is intuitively evident – the extent and cost of congestion in cities of all sizes continue to significantly increase. The congestion numbers also demonstrate that we will not build our way out of the urban mobility problems that have developed.” Dennis Christiansen, Agency Director, Texas Transportation Institute Accidents in the transport network take thousands of lives and cost billions of dollars each year. There are more than 10 million motor vehicle accidents in the United States every year. 11 In the United States, accidents are the leading cause of death among those aged 25 to 34 and cause almost 40,000 fatalities a year – equivalent to two jumbo jets crashing every week! 12 This figure has remained virtually unchanged over the last 20 years (Figure 3). In terms of injuries from vehicle crashes, more than 2.3 million adults are treated every year in emergency departments. 13 These events impose about US$41 billion in medical and work loss costs every year. 14 As 20 percent of all freeway crashes are “secondary,” occurring because the roadway is blocked by an earlier incident, reducing congestion caused by accidents could potentially reduce these costs. 15 “Motor vehicle crashes and the resulting injuries and fatalities impose a huge cost on society. The often-overlooked economic impact of crashes is over US$230 billion annual Pressure is growing – nationally and internationally – to reduce emissions and the negative environmental impact of transport. As transportation greenhouse gases (GHG) account for 29 percent of total U.S. GHG and over 5 percent of total global GHG emissions, it is not surprising the transport industry has been subject to increasing levels of environmental regulations. 16 For example, steps were outlined by U.S. President Obama in May 2010 on the adoption of the first-ever GHG regulations for heavy-duty engines and vehicles, as well as the development of further light-duty vehicle GHG regulations. In August 2011, a regulation was signed relating to Greenhouse Gas Emissions Standards and Fuel Efficiency Standards for Medium- and Heavy-Duty Engines and Vehicles. 17 The increase in regulation is not just happening at the national level. In recent decades, there has been a proliferation of multilateral environmental agreements. Global regulation is likely to continue and to extend to new areas. 18 Environmental pressure is also being driven by changing attitudes among consumers and cities as exemplified by movements such as “Car Free America” and efforts in Arlington County, Virginia, and other urban areas that promote the use of transportation modes other than single-occupancy vehicles. 19Technology and socioeconomic trends are creating new opportunities Transportation system providers can leverage technology to get closer to smarter citizens and give them access to their transport network. Transport system providers are facing smarter citizens as technology fundamentally changes the way they interact, obtain information and purchase goods and services. While 30.2 percent of the world’s population are online, that proportion is even higher in North America at 78.3 percent, representing an increase of 151 percent in North America between 2000 and 2011. 20 Ninety-one percent of the U.S. population has a mobile phone account, and Smartphone penetration of the U.S. mobile phone market will overtake feature phone penetration by the end of 2011. 21 There are over 425,000 iPhone apps and over 15 billion downloads – and this growth occurred in just four years. 22 What all of these statistics serve to illustrate is the growing familiarity that consumers have with technology. What it means for transportation system providers is that they are now facing consumers who are not just more informed, enabled and demanding, but who also increasingly expect technology to be embedded in the services they use. Transportation providers have more data and information at their disposal than ever before. From 2008 to 2009, the amount of digital information increased 62 percent to 0.8 zetabytes – and in 2010, it was estimated to have increased to 1.2 zetabytes. 23 A recent study put this into perspective by estimating this amount equals 75 billion fully loaded 16GB Apple iPads or 707 trillion copies of the 2,000 page U.S. Patient Protection and Affordable Care Act. 24 “In 2009, more than 40 million portable GPS devices were sold worldwide, and 52 percent of those sales were in the United States. 25 In transport, the amount data has also been growing. Several years of fast growth have led to well over 200 million “turn-by-turn navigation” systems in use worldwide, 20 percent of which are factory installed and aftermarket in-dash navigation systems. 26 About 10 percent of the world’s new cars in 2010 had factory-installed telematics – that is expected to increase to 62 percent by 2016. 27 Many cities are also sitting on potential treasure troves of data from individual tickets, journeys and usage of public transport to data in road charging or toll schemes. Transportation providers and agencies have a vast amount of information at their disposal from across their entire transport network. This represents a valuable opportunity to gain greater insight into the network, make better and more informed decisions, take appropriate action and help improve the quality of the transport services. Transport services can become a differentiator for cities to attract and retain the talent necessary to drive growth. Talent is becoming more and more important in driving economic growth in cities and regions. And while the number of mobile highly educated individuals is set to rise over the next 20 years, cities will face intensifying competition to attract and retain this talent. 28 Transport services could become a significant differentiator, as they have a critical influence on the attractiveness and liveability of a location. For cities and regions that can attract this mobile talent, the resulting wealth can be spread out across the economy. More growth means more jobs – not only for higher-skilled but also for lowerskilled individuals. In addition, transportation enhancement can be leveraged by cities experiencing falling population numbers to stimulate recovery, jobs and growth and stem further population declines. To help drive growth and job creation, transport providers must address the challenges and opportunities before them. In answering the question of “how” transport providers can deal with these pressures and opportunities, we now outline how “smarter,” more intelligent transport systems can help. “Economic growth will not be possible without increasing the efficiency and capacity of our highway systems. ITS has proven to be one of the quickest and most cost-effective ways to accomplish these objectives.” Abbas Mohaddes, President and CEO, Iteris Inc. Smarter transport helps drive jobs and growth through ITS solutions, jobs and revenue The ITS value chain spans 15 major industry groupings and accounts for 13 percent of total industry output. In the U.S. economy, this market includes both ITS-driven companies and also more diversified companies (Figure 4), illustrating the breadth of the ITS industry outside of transport. The ITS industry enhances the potential of transport to drive growth and jobs through two key channels. First, it is developing innovative solutions that help transportation providers effectively deal with the challenges and opportunities they face and build smarter, more intelligent transportation systems. Second, the industry itself makes a major contribution to economic activity and jobs through its revenue and employment. ITS helps drive growth through innovative solutions that enable smarter transport systems. Smarter transport systems are instrumented, interconnected and intelligent. The right type of data is collected, managed and integrated across different parts of the transport system, fleet or a single vehicle in a way that allows modern information technology and advanced analytics to be used for further insight. This insight can form the basis for more effective decision making and responses. For example, a smart system can support more efficient and effective use of limited resources by allowing providers to “visualize” the transportation system, quickly identify the source of problems and rectify them, as well as by helping them be better prepared for responses to infrequent events. The ITS industry is helping build smarter transport systems that enable data gathering and analysis and more effective responses to issues such as congestion, safety and environmental efficiency. For example, ITS solutions are relaying real-time traffic information via handheld devices and on-board traffic information advisory systems to help drivers avoid congestion and reroute. ITS solutions that provide information relating to carpools and parking can help increase vehicle occupancy and reduce the number of vehicles and their time on the road. Making better information available for travelers can help facilitate a modal shift by giving them the ability to perhaps mix and match different modes or spread the load on the system through the timing of trips. In terms of safety, on-board collision avoidance systems can detect vehicles or other obstacles and alert drivers of looming threats – and eventually could impose brakes. Other solutions, such as vehicle-to-vehicle communication systems, enable vehicles to be fully “aware” of dynamic information of neighboring vehicles, helping them keep a safe distance and facilitating faster responses to traffic incidents. Such innovative solutions can make a real difference in helping reduce the existing safety problems across the transport network. The industry is also developing solutions to address environmental pressures. GPS-based eco-routing, one of the first applications currently in use, helps drivers choose a route with minimal environmental footprints and environmentally-relevant real-time transportation data. Having been promoted in the U.S. Department of Transportation’s Applications for the Environment: Real-Time Information Synthesis’ (AERIS) program, this application empowers vehicles to mitigate their environmental impact. 29 “We can stay here, stuck in traffic, or we can invest in transportation and ITS technology that have the potential to transform how we travel. Whether it’s a commercial hauler seeking a route for his on-time delivery or a parent trying to make it from the office to her child’s soccer game, this technology can lower business costs, improve quality of life, ease traffic congestion and make us safer.” Kirk Steudle, Director, Michigan Department of Transportation Intelligent vehicle technologies will ultimately enable autonomous driving and cars that don’t crash. Not only will these vehicles revolutionize personal mobility, they also promise to dramatically decrease fuel consumption and emissions, greatly enhance traffic safety and provide significantly more value for consumers.” Nady Boules, Director, Electrical & Controls Integration Lab, General Motors Global Research & Development IBM Global Business Services 9 Solutions are also being created that help transportation system providers capitalize on opportunities to gain information and insight. Embedded and road-side sensors, along with information exchanged wirelessly, could provide more information to transportation agencies. And advanced analytics solutions could gather and help provide insights on which to act. Many organizations are overwhelmed by vast amounts of data and struggle to effectively use it to achieve business results – more than two thirds of organizations report that their organizations have more data than they know how to use effectively. 30 Analytics can help mitigate the mounting complexity resulting from the data deluge and facilitate more informed decision making. “…..the connected vehicle system holds the promise of reducing congestion, improving transport time and doing it in a safer fashion.” Dana Christensen, Deputy Laboratory Director for Science and Technology, National Renewable Energy Laboratory “A significant commitment to safety is needed to fund better data collection systems, road and vehicle improvements, and performance-based counter-measures that can have the greatest impact on saving lives and reducing crashes. Transportation technology solutions play a role in all of these areas.” Jill Ingrassia, Managing Director, Government Relations & Traffic Safety Advocacy, AAA Embedding technology in the transportation system, such as through integrated fare processing or smart cards, facilitates the “smarter” services that “smarter” consumers increasingly demand. Leveraging technology to enhance travelers’ experiences through smart and more accurate traffic signs and smart phone mobility apps, for example, could help cities improve transport services and perhaps attract talent. “ITS systems can now provide for detailed traffic and revenue analysis that truly informs decision making based in great detail on the ‘voices of the consumers’ and how they actually use our transportation systems.” Ken Philmus, Senior VP, Transportation Solutions Group, Affiliated Computer Services, Inc. “Our efforts with transportation agencies worldwide are driving better intelligence from these vast data stores in ways that help them plan, build, manage and measure the performance of our road networks for a fraction of the cost.” Bryan Mistele, President and CEO, Inrix Inc. ITS can thus help providers effectively deal with many of the pressures – and opportunities – they face and generate further spillover benefits for users of the systems. This, in turn, helps foster efficiency savings and benefits for citizens and businesses across the economy. And statistics point to the continued development of innovative solutions – ITS-related patents increased by 17 percent between 2007 and 2008 when overall patent applications in the United States were static. 3110 Transportation and economic development Smarter transport can directly impact economic activity through the revenue and jobs generated by the industry. The ITS end-use products and services market was US$52 billion in 2009 – larger in revenue sizethan motion picture and video production (US$48 billion), computers(US$44 billion), direct mail advertising (US$44 billion) or Internet advertising (US$23 billion). 32 Continued growth is projected through 2015 with the North American ITS market size expected to increase to US$73 billion (consisting of US$67 billion for the United States and an additional US$6 billion for the rest of North America). This amounts to a compound annual growth rate of 5.8 percent per annum over the 2009-2015 period. 33 In addition, as is evident from Figure 5, the annual growth rates for ITS are higher than the average growth for total North American revenue. The ITS industry also directly affects the economy through number and quality of jobs and wages for those jobs. ITS industry employment in 2011 is estimated at over 513,000, with 306,000 in enabling services and components and 207,000 in end-use intelligent transport. This is a 4 percent increase of over 19,000 since 2009 – impressive growth considering an economic environment in which aggregate employment levels in the United States increased by just 4,000 over the same period. 34 The ITS U.S. and North American employment outlook is also positive. By 2015, the ITS value chain is projected to contribute over 564,000 jobs – an increase of 14 percent over 2009 levels. Growth in employment in the ITS industry is also higher than other sectors and the economy overall. 35 ITS jobs typically command annual salaries above the national average as they require specialized skills. ITS average salaries are more than US$32,000 above the national average of US$42,270. More than half of the U.S. ITS jobs categorized by occupation had salaries of US$69,000 or more (see Figure 6). These high-paying earners have a positive impact on the economy via the goods and services they purchase and those employed to provide them.

**Investment in ITS leads to the network effect and creates thousands of jobs in private companies, small businesses, and it creates thousands of green jobs**

**Hansen 11** (Steve Hansen, Director of Media Relations, Congress Urged to Invest in Deployment-Ready Transportation Technologies for Immediate Job Creation, ITS America, 12/2/11)

WASHINGTON, Dec. 2 - Congressional leaders were urged today to invest in intelligent transportation systems (ITS) as they consider additional job creation measures because ITS projects will immediately create new private sector and small business jobs, and will stimulate job creation across multiple sectors, according to federal and international researchers. Details of the immediate impact of ITS investment on the U.S. economy were outlined in a letter sent today from Scott Belcher, President and CEO of the Intelligent Transportation Society of America, to House Speaker Nancy Pelosi and other Congressional leaders. "As you work to craft a jobs package that will quickly create jobs and improve economic growth, we urge you to invest in the modernization of our nation's aging infrastructure through Intelligent Transportation Systems (ITS) and other transportation projects that will enhance multimodal system performance and improve safety, mobility, efficiency, and the environment," Belcher stated in his letter to the Congressional leaders. To read Belcher's entire letter to Pelosi click here. ITS Projects Can Be Deployed Quickly For Immediate Job Creation According to the U.S. Department of Transportation (DOT), an average of 50 percent of ITS project spending goes directly to wages and salaries, a far greater return on investment than other comparable projects. In addition, ITS technologies can be deployed quickly because they require minimal new construction or rights-of-way. Examples include traffic and freight management systems, intelligent intersections with transit signal prioritization and emergency vehicle preemption, smart transit systems, open road tolling systems, weigh-in-motion truck inspections, ramp metering, incident management programs, and real-time traffic, transit and parking information. According to a newly-released GAO study on traffic information, an investment of $1.2 billion in a real-time transportation system information program alone would generate $30.2 billion in environmental, mobility, and safety benefits to the public. A Majority of ITS Impact Would Be Small Business Job Creation "The Federal Highway Administration projects that the field of ITS could create almost 600,000 new jobs over the next 20 years. With a federal commitment to ITS deployment, these figures could be significantly higher. In the United Kingdom, an investment of 15 billion British pounds (approximately $25 billion) in information and communications technology (ITS, smart grid and broadband) is estimated to create or retain 700,000 jobs, of which 360,000 are small business jobs," Belcher said in his letter. ITS Investments Create "Network Effect" Stimulating Job Creation Across Multiple Sectors Belcher added that researchers from the London School of Economics and the Information Technology and Innovation Foundation have found that investment in ITS creates a 'network effect' throughout the economy and directly benefits economic growth by stimulating high-tech job creation across multiple sectors, including green jobs, high-tech, automotive, information technology, consumer electronics, and related industries; and provides a foundation for long-term benefits, including government cost savings, economy-wide productivity, and an improved quality of life. China & Other Industrialized Nations Already Focusing on ITS for Economic Growth "The international commitment to ITS is growing among leading industrialized nations. China, Japan, Singapore, South Korea, Germany, Great Britain, and other nations today view their ITS industry as a key industrial base, and one capable of generating considerable economic growth," Belcher said. "With unemployment rates reaching alarming levels and traffic congestion stifling our economic competitiveness, it's time for the U.S. to make a similar commitment to ITS. This will play a major role in helping American workers retain existing jobs while providing new jobs for the unemployed. It will also provide lasting benefits by increasing safety, reducing congestion and emissions, improving system performance and creating more livable, sustainable communities."

**ITS creates the following scenarios which are key to the economy as per our heeling Keeling and Mooney evidence and our Hansen evidence:**

**1. Savings**

#### Savings are key to economic growth

**Jackson 8** (Gerard Jackson, founder of BrookesNews, Safe Haven, Jan 20, 2008, Without Savings There Can Be No Economic Growth)

Missing from Davidson's brilliant views on savings and growth were their definitions. Savings are usually defined as an act of not consuming. This is only partly correct. The full definition is that savings is a process by which present goods are transformed into future goods, i.e., capital goods, that produce a greater flow of consumer goods at some further point in time. In short, present goods in the form of money are used to direct resources from consumption (the production of consumer goods) into the production of capital goods. From this we (with the evident exception of Davidson) can deduce that growth is the accumulation of capital goods. Nevertheless, even this somewhat more realistic definition is misleading because it can convey the impression that growth is nothing more than the simple accumulation of capital goods. This is the kind of theoretical trap that greens and neoclassical economists fall into, even though in practise the latter recognise the heterogeneous nature of capital goods. Capital, as Austrian school economists point out, is a heterogeneous structure consisting of complex stages of production. As more and more stages of production (roundabout methods) are added to the structure it becomes even more complex and productive. Now what is being suggested is that this structure can grow faster than savings. But how can that be when it equals savings? Put another way: it is being stated that growth can occur without any sacrifice of consumption. In case you did not know, this is called magic pudding economics.

**2. Network Effect**

#### A large network effect means a large increase in investment

**Bennahum 2k** (David S. Bennahum , President & CEO, The American Independent News Network, strategy + business, 1/1/00, The Biggest Myth of the New Economy)

An inversion of the law of supply and demand, the network effect is self-consciously styled to refute the Old World premise that value derives from scarcity - the reason that diamonds, oil and college degrees are expensive, and bottled air relatively cheap. In the New Economy, a product may be cheap, but the network that grows around it can accrue enormous worth. An example is America Online Inc. By charging subscribers $19.95 a month, AOL has become one of the few profitable companies of the young Internet era. Yet AOL's shares, which trade at P/E ratios that far exceed 100, are priced beyond any possible mathematical calculation about future cash-flow growth. Rather, the price reflects the network effect: Investors are betting that the value of the network will become vastly greater than the revenues generated by subscriber fees. As long as the company can add new subscribers at a rate above 20 percent a year, it will be perceived as a success, and worthy of its lofty market capitalization

**3. Investment and the private sector**

#### Business investment and the private sector are key to the economy

**Weller 10** (Christian Weller, a Senior Fellow at American Progress and an associate professor of public policy at the University of Massachusetts Boston, Center for American Progress, 10/29/10, Latest GDP Figures Show Business Investment Powering Economic Growth)

Today’s release of the latest economic growth figures show that our economy is demonstrably on the mend, but the strength of the recovery remains to be seen. Gross domestic product grew at an annual rate of 2 percent between July and September this year, powered by business investment and consumption, the largest driving force behind continued economic expansion and strong enough to overcome less spending on real estate by households. Third quarter GDP growth accelerated slightly from the 1.7 percent increase in the second quarter of 2010 The quarterly change in GDP, the sum of all new products that were produced in the United States minus U.S. imports in a given quarter, is a crucial indicator of the economy’s strength. It shows whether consumers, businesses, the government, and foreigners are buying more U.S.-made goods and services. More domestic production can ultimately mean more income for people in the United States, more sales and profits for businesses, and more revenue for the government. A faster expansion is a good foundation for higher living standards. It is the rising tide that could lift all boats. Economic policy will play some role in determining the strength of economic growth, especially in the current situation, where the economy and the labor market are trying to recover from the worst recession since the Great Depression. The most relevant economic policy intervention to shake the grip of Great Recession was the American Recovery and Reinvestment Act of 2009. The Recovery Act made it easier for consumers, businesses, and the government to spend money by cutting taxes, raising unemployment and Social Security benefits, and helping struggling states and localities cope with shortfalls in their budgets due to falling tax revenue. In addition, stimulus spending focused on infrastructure projects, investments in green technologies, and new transportation efforts ensured there would be sustained economic growth over the course of 2009 and 2010. And that’s what happened. The private sector turned around in the summer of 2009—18 months after the recession started—and the recession officially ended. (The official business cycle dates are chosen by the business cycle dating committee of the National Bureau of Economic Research, a private economic research group in Cambridge, Massachusetts.) The overwhelming majority of the stimulus spending was intended to go to the private sector—households and businesses—because that’s where the greatest weaknesses of the economy were during the recession. There could be no strong, sustained recovery without a turnaround in the private sector. Short-term government spending is necessary in a recession to fill the hole left by the lack of consumption and investment, but it is not a sustainable way to boost economic growth over the medium term. The private sector has to take on that role of generating sustainable momentum. That’s why it is critically important to see sustained and hopefully strengthened expansions in business investment and consumer spending at this point

**4, Small Businesses**

#### Small businesses solve any alt causes to the economy coming down

**Targeted News Service 8** (Targeted News Service, 8/13/08, New Study Says Small Business Keeps Economy Afloat)

In an economy that is barely staying afloat small business is again coming to the rescue and helping the US economy keep its head above the water -- at least that is what the latest data from the ADP Employment Report suggests. Employment in the private sector rose by 9,000 jobs across the country from June to July, sparked by an increase of 50,000 jobs among small businesses. By contrast, large businesses shed 32,000 positions, according to the ADP National Employment Report released last week.

**5. Green Jobs**

#### Green jobs are key to the economy and small businesses

**DiPasquale and Gordon 11** (Christina C. DiPasquale and Kate Gordon, Christina DiPasquale is an Associate Director for Press Relations at the Center for American Progress and Kate Gordon is a Senior Fellow at American Progress., Center for American Progress, 9/7/11. Top 10 Reasons Why Green Jobs Are Vital to Our Economy)

Green jobs are integral to any effort to jumpstart our economy and reduce as rapidly as possible our 9.1 percent unemployment rate. The rapid growth of green jobs will boost demand in our economy by reducing unemployment, make America more competitive in the global economy, and protect our public health—all of which will result in greater economic productivity and long-term economic prosperity. Here are the top 10 reasons why this is the case today and into the future: 1. There are already 2.7 million jobs across the clean economy. Clean energy is already proving to be larger job creation engine than the heavily subsidized fossil-fuels sector, putting Americans back to work in a lackluster economy. 2. Across a range of clean energy projects, including renewable energy, transit, and energy efficiency, for every million dollars spent, 16.7 green jobs are created. That is over three times the 5.3 jobs per million dollars that are created from the same spending on fossil-fuel industries. 3. The clean energy sector is growing at a rate of 8.3 percent. Solar thermal energy expanded by 18.4 percent annually from 2003 to 2010, along with solar photovoltaic power by 10.7 percent, and biofuels by 8.9 percent over the same period. Meanwhile, the U.S. wind energy industry saw 35 percent average annual growth over the past five years, accounting for 35 percent of new U.S. power capacity in that period, according to the 2010 U.S. Wind Industry Annual Market Report. As a whole, the clean energy sector’s average growth rate of 8.3 percent annually during this period was nearly double the growth rate of the overall economy during that time. 4. The production of cleaner cars and trucks is employing over 150,000 workers across the United States today. These job numbers are likely to increase as improved car and light truck standards recently announced by President Barack Obama will require more skilled employees and encourage further investment. 5. Median wages are 13 percent higher in green energy careers than the economy average. Median salaries for green jobs are $46,343, or about $7,727 more than the median wages across the broader economy. As an added benefit, nearly half of these jobs employ workers with a less than a four-year college degree, which accounts for a full 70 percent of our workforce. 6. Green jobs are made in America, spurring innovation with more U.S. content than other industries. Most of the products used in energy efficiency retrofits are more than 90 percent made in America. Sheet metal for ductwork is over 99 percent domestically sourced, as are vinyl windows (98 percent) and rigid foam insulation (more than 95 percent). Even major mechanical equipment such as furnaces (94 percent) and air conditioning and heat pumps (82 percent) are predominantly American made. 7. We have a positive trade balance in solar power components such as photovoltaic components and solar heating and cooling components of $1.9 billion, and are exporting components to China. Contrast this with the oil industry, where in 2010 alone we imported over $250 billion in petroleum-related products. As our nation’s basic manufacturing base declines, we risk losing our place in the forefront of innovation if we don’t invest in advanced manufacturing in the green sector. 8. Three separate programs for energy efficiency retrofits have employed almost 25,000 Americans in three months. The Weatherization Assistance Program, Energy Efficiency Block Grant Program, and State Energy Programs have collectively upgraded over half a million buildings since the programs began to ramp up from April 1, 2011 and June 30, 2011, providing immediate new and sustainable job opportunities to tens of thousands of construction workers eagerly searching for work. 9. Clean energy jobs are better for U.S. small businesses. Specialty construction companies that perform energy retrofits show very high rates of small business participation in the construction. Ninety-one percent of the firms involved in retrofits are mall businesses with less than 20 employees. 10. An abundance of jobs in the green sector are manufacturing jobs with an upward career track. Forty-one percent of the nation’s green jobs offer medium to long-term career building and training opportunities, and 26 percent of green jobs are in the manufacturing sector, compared to 9 percent in the traditional economy. The bottom line: Green jobs being created through smart investments in our energy infrastructure are expanding employment opportunities while reducing pollution of our air and water, providing an alternative to foreign oil, and allowing us to export more American-made goods abroad.

**6. Innovation**

#### Innovation is key to economic growth but is eroding - Plan solves

**Center for American Progress 1/19**/12 [A public policy research and advocacy organization "dedicated to improving the lives of Americans through progressive ideas and action", “Series on U.S. Science, Innovation, and Economic Competitiveness: Retooling to Ensure America Remains No. 1 in the 21st Century”, <http://www.americanprogress.org/issues/2012/01/dwwsp_overview.html>, RH]

**Innovation is and always has been the engine that drives economic growth in the United States**. Economists believe that innovation—new technologies, products, processes, and the industries they create—is responsible for between half and 80 percent of all economic growth. Indeed, U.S. companies and industries, with the help of federally funded research, have invented many things that the world wants to buy—think light bulbs, assembly line automobile production, computers, Internet applications, handheld wireless devices, photovoltaic solar cells, Global Positioning System satellites, and the list goes on. This innovative spirit of the American people, protected by the rule of law, keeps us in the world’s top position in innovation, and subsequently ensures we are home to the world’s best-paying jobs and highest standards of living. But **in the 21st century our lead is beginning to erode**. It’s not that we’ve started doing anything wrong—we are still home to the world’s most productive workers and innovative companies. Rather, it is because others have followed in our footsteps, and in some cases gone even further to invest specifically in the interrelated building blocks of a high-performance innovation engine. Across a spectrum of metrics—from education and workforce readiness, to research and development, to manufacturing, to infrastructure—our nation’s competitive position is slipping relative to other countries that are investing more in the driver of economic growth and prosperity. This slippage costs us jobs, investment, and wage growth.

**8. Industrial base**

#### A strong industrial base key to economic growth – interagency cooperation solves too

Sheila **Ronis 2003** [Ph.D. and President of the University Group, Inc., “Erosion of U.S. Industrial Base is Troubling; Growing Dependence on Foreign Suppliers Should Concern Policy Makers”, Lexis]

The U.S. industrial base is eroding, and this situation has enormous national security implications. It has made the United States so dependent on foreign countries for critical components and systems that it may have lost its ability to control its supply chains. The United States is becoming dependent on countries such as China, India, Russia, France and Germany for critical weapons technology. It's conceivable that one of these governments could tell its local suppliers not to sell critical components to the United States because they do not agree with U.S. foreign policy. The federal government, and in particular, the Department of Defense, does not manage the country's industrial base as a "system." U.S. government agencies are fiefdoms that rarely compare notes to see how their collective policies might affect a company or an industry. **Interagency cooperation is an essential element of what needs to change in the future**. A Defense Department report entitled "Transforming the Defense Industrial Base: A Roadmap," recommended the department consider "viewing the industrial base as being composed of operational effects-based sectors that support transformational war-fighting. ... Organizing its decision processes to optimize operational effects--not programs, platforms or weapons systems." This report makes sensible arguments, but more needs to be done. U.S. corporations increasingly act as large social systems with a global focus. But ask the CEOs of the Fortune 500 to describe the issues on their minds and, more than likely, national security or the disintegration of the U.S. industrial base would not be among them. Many global corporations do not believe they owe allegiance to any stakeholder except their stockholders, and sometimes, their customers. This attitude has not changed since the end of the Cold War--not even since 9/11. A new vision of national security is needed that includes cooperation between government and industry. National security requires a healthy market-based economy, with a strong industrial base of globally competitive industries continuously improving quality and productivity. The United States cannot sustain the kind of growth it has enjoyed for the last several decades if the industrial base steadily erodes. Increasingly, a number of U.S. companies in specific industries find it impossible to compete in world markets. This is of particular concern for the industrial base that supplies the U.S. military.

#### US economy key to the world economy

**Wang 11** (Joy Wang, Columnist Shanghai Daily, Shanghai daily, 2011)

But there are still many uncertainties, such as debt crises in the European Union, political riots in North Africa and the earthquake in Japan. The situation in the United States was also crucial for recovery, participants said. "The US has passed the most difficult times with better employment and better finance," said Lawrence Summers, a professor at Harvard University and former director of the US National Economic Council. "Now the world has the framework of the G20, which works pretty well, especially in dealing with the crisis. The emerging markets, or to some extent emerged markets, will have a profound influence on the rise of Asia." Li Lihui, president of the Bank of China, said the world's economy had recouped territory lost in the global financial crisis, and there were signs of the growing power of emerging markets. But the global economic order remained the same as before the crisis - dominated by the US. "What the US will do is crucial for the rest of the world," Li said. Quantitative easing policies in the US, due to end in June, led to floods of speculative money flowing into emerging markets. Ronald McKinnon, an economics professor at Stanford University, said it partly explained why inflation was so high in China.

#### Global economic decline causes major war and extinction

**Auslin & Lachman 9** (Michael Auslin and Desmond Lachman, Michael Auslin is a resident scholar and Desmond Lachman is a resident fellow at AEI, American Enterprise Institute, 3/6/9, The Global Economy Unravels)

What do these trends mean in the short and medium term…The result may be a series of small explosions that coalesce into a big bang. What do these trends mean in the short and medium term? The Great Depression showed how social and global chaos followed hard on economic collapse. The mere fact that parliaments across the globe, from America to Japan, are unable to make responsible, economically sound recovery plans suggests that they do not know what to do and are simply hoping for the least disruption. Equally worrisome is the adoption of more statist economic programs around the globe, and the concurrent decline of trust in free-market systems. The threat of instability is a pressing concern. China, until last year the world's fastest growing economy, just reported that 20 million migrant laborers lost their jobs. Even in the flush times of recent years, China faced upward of 70,000 labor uprisings a year. A sustained downturn poses grave and possibly immediate threats to Chinese internal stability. The regime in Beijing may be faced with a choice of repressing its own people or diverting their energies outward, leading to conflict with China's neighbors. Russia, an oil state completely dependent on energy sales, has had to put down riots in its Far East as well as in downtown Moscow. Vladimir Putin's rule has been predicated on squeezing civil liberties while providing economic largesse. If that devil's bargain falls apart, then wide-scale repression inside Russia, along with a continuing threatening posture toward Russia's neighbors, is likely. Even apparently stable societies face increasing risk and the threat of internal or possibly external conflict. As Japan's exports have plummeted by nearly 50%, one-third of the country's prefectures have passed emergency economic stabilization plans. Hundreds of thousands of temporary employees hired during the first part of this decade are being laid off. Spain's unemployment rate is expected to climb to nearly 20% by the end of 2010; Spanish unions are already protesting the lack of jobs, and the specter of violence, as occurred in the 1980s, is haunting the country. Meanwhile, in Greece, workers have already taken to the streets. Europe as a whole will face dangerously increasing tensions between native citizens and immigrants, largely from poorer Muslim nations, who have increased the labor pool in the past several decades. Spain has absorbed five million immigrants since 1999, while nearly 9% of Germany's residents have foreign citizenship, including almost 2 million Turks. The xenophobic labor strikes in the U.K. do not bode well for the rest of Europe. A prolonged global downturn, let alone a collapse, would dramatically raise tensions inside these countries. Couple that with possible protectionist legislation in the United States, unresolved ethnic and territorial disputes in all regions of the globe and a loss of confidence that world leaders actually know what they are doing. The result may be a series of small explosions that coalesce into a big bang.

#### Ignore their impact defense--global economic crisis causes war---strong statistical support

**Royal 10**(Jedediah Royal, director of Cooperative Threat Reduction at the U.S. Department of Defense, Economics of War and Peace: Economic, Legal, and Political Perspectives, Department of Defense, 2010, pg 213-215)

Less intuitive is how periods of economic decline may increase the likelihood of external conflict. Political science literature has contributed a moderate degree of attention to the impact of economic decline and the security and defense behavior of interdependent states. Research in this vein has been considered at systemic, dyadic and national levels. Several notable contributions follow. First, on the systemic level, Pollins (2008) advances Modelski and Thompson’s (1996) work on leadership cycle theory, finding that rhythms in the global economy are associated with the rise and fall of a pre-eminent power and the often bloody transition from one pre-eminent leader to the next. As such, exogenous shocks such as economic crises could usher in a redistribution of relative power (see also Gilpin, 1981) that leads to uncertainty about power balances, increasing the risk of miscalculation (Fearon 1995). Alternatively, even a relatively certain redistribution of power could lead to a permissive environment for conflicts as a rising power may seek to challenge a declining power (Werner, 1999). Separately, Pollins (1996) also shows that global economic cycles combined with parallel leadership cycles impact the likelihood of conflict among major, medium and small powers, although he suggests that the causes and connections between global economic conditions and security conditions remains unknown. Second, on a dyadic level, Copeland’s (1996, 2000) theory of trade expectations suggest that “future expectation of trade” is a significant variable in understanding economic conditions and security behavior of states. He argues that interdependent states are likely to gain pacific benefits from trade so long as they have an optimistic view of future trade relations. However, if the expectations of future trade decline, particularly for difficult to replace item such as energy resources, the likelihood for conflict increases, as states will be inclined to use force to gain access to those resources. Crises could potentially be the trigger for decreased trade expectations either on its own or because it triggers protectionist moves by interdependent states. Third, others have considered the link between economic decline and external armed conflict at a national level. Blomberg and Hess (2002) find a strong correlation between internal conflict and external conflict, particularly during periods of economic downturn. They write, The linkages between internal and external conflict and prosperity are strong and mutually reinforcing. Economic conflict tends to spawn internal conflict, which in turn returns the favor. Moreover, the presence of a recession tends to amplify the extent to which international and external conflicts self-reinforce each other. (Blomberg and Hess, 2002, p. 89) Economic decline has also been linked with an increase in the likelihood of terrorism (Blomberg, Hess and Weerapana, 2004), which has the capacity to spill across borders and lead to external tensions. Furthermore, crises generally reduce the popularity of a sitting government. “Diversionary theory” suggests that, when facing unpopularity arising from economic decline, sitting governments have increased incentives to fabricate external military conflicts to create a “rally around the flag” effect. Wang (1996), DeRouen (1995) and Blomberg, Hess and Thacker (2006) find supporting evidence showing that economic decline and use of force are at least indirectly correlated. Gelpi (1997), Miller (1999), and Kisangani and Pickering (2009) suggest that the tendency towards diversionary tactics are greater for democratic states than autocratic states due to the fact the democratic leaders are generally more susceptible to being removed from office due to lack of domestic support. De DeRouen (2000) has provided evidence showing that periods of weak economic performance in the United States and thus weak Presidential popularity are statically linked to an increase in the use of force. In summary, recent economic scholarship positively correlates economic integration with an increase in the frequency of economic crises, whereas political science scholarship links economic decline with external conflict at systemic, dyadic and national levels. This implied connection between integration, crises and armed conflict has not featured prominently in economic-security debate and deserves more attention. This observation is not contradictory to other perspectives that link economic interdependence with a decrease in the likelihood of external conflict, such as those mentioned in the first paragraph of this chapter. Those studies tend to focus on dyadic interdependence instead of global interdependence and do not specifically consider the occurrence of and conditions created by economic crises. As such the view presented here should be considered ancillary to those views.

#### OUTDATED TRANSPORTATION INFRASTRUCTURE FAILS US TRADE

**Khachatryan and Casavant 11** – Hayk Khachatryan is a research associate at Freight Policy Transportation Institute School of Economic Sciences. Ken Casavant is a director and professor at Freight Policy Transportation Institute School of Economic Sciences. (“THE RELATIONSHIP BETWEEN U.S. TRANSPORT INFRASTRUCTURE

U.S. supply chain and export competitiveness is essentially dependent on the national ¶ transportation infrastructure. The complex system of seaports, airports, warehousing and ¶ distribution centers is connected through intermodal transportation networks to local and global ¶ markets. Maintaining efficient transport infrastructure that serves as a platform for integrated ¶ global supply chains is crucial for meeting the increased demand for transportation services. The ¶ influence of transportation infrastructure improvements on economic growth and development is ¶ one of the key questions in transport economics, which has been subjected to numerous ¶ reassessments (Aschauer, 1989; Clark et al., 2004; Easterly, 1993). Nevertheless, the general ¶ agreement in the peer-reviewed literature is that the transportation infrastructure improvements, ¶ combined with necessary political and institutional conditions can contribute to economic growth ¶ by facilitating international trade, strengthening regional supply chains, and creating jobs (Nadiri ¶ and Mamunes, 1994; Banister and Berechman, 2001; Istrate et al., 2010). In this study, the ¶ Freight Policy Transportation Institute (FPTI) at Washington State University (WSU) reviews¶ the relationship between U.S. transportation infrastructure improvements and its export ¶ competitiveness. ¶ Investigation of infrastructure investment effects on net welfare changes is particularly ¶ important to the U.S. in the aftermath of the recent economic recession. In particular, ¶ infrastructure improvements are essential for export competitiveness in agricultural commodities ¶ trade, an export-oriented industry that heavily relies on timely and efficient transportation of ¶ crops from production regions to processing and/or transshipment locations and exporting ports. ¶ Further, understanding the extent to which the improved transport infrastructure may contribute ¶ to the country’s export competitiveness is particularly essential in light of the grain export-6 ¶ competitor countries’ (e.g., Brazil) recent investments in new and efficient transportation ¶ capacity and infrastructure (Cost et al. 2007). ¶ Increasing U.S. international trade has recently been prioritized by the National Export ¶ Initiative and National Supply Chain Infrastructure Competitiveness Initiative (U.S. Department ¶ of Commerce, 2010). As the recent Presidential executive order states “…a critical component ¶ of stimulating economic growth in the United States is ensuring that U.S. businesses can actively ¶ participate in international markets by increasing their exports of goods, services, and ¶ agricultural products. Improved export performance will, in turn, create good high-paying jobs” ¶ (The White House, 2010). The path to export growth critically depends on capacity ¶ improvement of the complex, interconnected transportation networks, which include highway ¶ networks, railroad, intermodal terminals, inland waterways and sea ports. ¶ To better implement proposed export promotion plans at the state and national levels, ¶ policymakers need to understand how investments in different areas of the aging U.S. ¶ transportation infrastructure will contribute to the country’s international trade flows and¶ producer revenues through an overall increased economic activity. Increasing exports and ¶ staying highly competitive in world markets, requires maintaining reasonable transportation ¶ costs, which can be achieved by preserving and developing efficient transport infrastructure. To ¶ facilitate the decision making at the policy-level, the main goal of this study is to highlight the ¶ potential impact of infrastructural improvements in the U.S. transportation networks on the ¶ country’s export competitiveness.

**STATUS QUO INFRASTRUCTURE CAUSES INEVITABLE INCREASES IN CONGESTION AND COST—ITS SOLVES TRADE AND ELIMINATES NEED FOR TRADITIONAL INFRASTRUCTURE DEVELOPMENT**

**Ezell 10** (Stephen Ezell, a Senior Analyst with the Information Technology and Innovation Foundation (ITIF), with a focus on innovation policy, The Information Technology and Innovation Foundation, January 2010, Explaining International IT Application Leaderhip:

Intelligent Transportation Systems)

ITS improve the performance of a country’s transportation network by maximizing the capacity of existing infrastructure, reducing the need to build additional highway capacity. Maximizing capacity is crucial because, in almost all countries, increases in vehicle miles traveled dramatically outstrips increases in roadway capacity (and in many countries there is either little more room to build, little political will to build, or both). For example, from 1980 to 2006 in the United States, the total number of miles traveled by automobiles increased 97 percent, but over the same time the total number of highway lane miles grew just 4.4 percent, meaning that over twice the traffic in the United States has been traveling on essentially the same roadway ca- pacity.35 A number of ITS applications contribute to enhancing the operational performance of transportation networks. For example, traffic signal light optimization can improve traffic flow significantly, reducing stops by as much as 40 percent, cutting gas consumption by 10 percent, cutting emissions by 22 percent, and reducing travel time by 25 percent.36 Applying real-time traffic data could improve traffic signal efficiency by 10 per- cent, saving 1.1 million gallons of gas a day nationally and cutting daily carbon dioxide emissions by 9,600 tons.37 Ramp metering can increase vehicle through- put (the number of cars that pass through a road lane) from 8 to 22 percent and increase speeds on roads from 8 to 60 percent.38 As up to 30 percent of congestion on highways occurs at toll stops, deploying electronic toll collection systems can significantly reduce congestion. Assessing the impact of intelligent transportation systems, including ramp metering, incident management, traffic signal coordination, and arterial access management, a September 2005 Government Accountability Office (GAO) study found that ITS deployments to date had reduced delays in 85 urban areas by 9 percent (336 million hours), leading to a $5.6 billion reduction in annual costs due to reduced fuel consumption and hours of delay.3 Indeed, reducing traffic congestion is one of the principal benefits of ITS. American commuters spend five days per year (a full work week) stuck in traffic, a total of 4.2 billion hours per year, wasting over 2.8 billion gallons of fuel.40 When the impacts on lost productivity, unreliability, cargo delay, and safety are considered, the U.S. Department of Transportation’s chief economist concludes that congestion’s toll on the U.S. economy amounts to up to $168 billion each year.41 In the United States, congestion costs have been growing at 8 percent per year.42 Over the next 20 years, the cost of congestion could amount to $890.5 billion, or 4.3 percent of the value of the entire national economy.43 At current rates, congestion in the United States is expected to become so severe by 2030 that 58 urban areas will have regional congestion levels high enough to qualify as “severe” (up from 28 in 2003.)44 European Union countries experience 7,500 kilometers of traffic jams every day on their roads, with ten percent of the EU’s road network affected by con-management, traffic signal coordination, and arterial access management, a September 2005 Government Accountability Office (GAO) study found that ITS deployments to date had reduced delays in 85 urban areas by 9 percent (336 million hours), leading to a $5.6 billion reduction in annual costs due to reduced fuel consumption and hours of delay.3 gestion.45 In fact, 24 percent of Europeans’ driving time is spent in traffic congestion,46 at a yearly cost of one percent of the European Union’s GDP.47 Australia annually suffers $12.5 billion in costs due to urban congestion. In Japan, congestion costs the nation 3.5 billion man-hours, worth almost ¥11 trillion ($109 billion) each year.48 Deploying intelligent transportation systems has been shown to have a significant and direct impact on reducing congestion. South Korea found that in the initial cities in which it deployed intelligent transportation systems, aver- age vehicle speed increased 20 percent and delay time at critical intersections decreased 39 percent. Experts predict that, in the United States, traffic jams can be reduced as much as 20 percent by 2011 in areas that use ITS.49 ITS-enabled variable or congestion pricing can also reduce congestion. According to recent research, a comprehensive pricing approach that incorporates variable pricing tied to travel demand levels (such as congestion pricing) could provide significant congestion benefits. One study estimated that region-wide congestion pricing could reduce peak travel by 8 to 20 percent.50 A Brookings Institution study estimated that congestion pricing on the nation’s Interstates and other freeways would reduce total vehicle miles traveled by 11 to 19 percent.51 And a Federal Highway Administration (FHWA) report looking at results from its Value Pricing Pilot Program, which implemented tolling on a number of facilities nationwide, found that even targeted pricing can have a number of effects on driver behavior and traffic volumes, including changes in times, routes, or modes of travel; willingness to pay for faster travel times by traveling on toll lanes; reductions in peak-period traffic volumes; and more-efficient use of highway capacity.52 ITS also enable transportation agencies to collect the real-time data needed to measure and improve the performance of the transportation system. For ex- ample, ITS allow transportation agencies to collect data before and after construction projects to assess their effectiveness in relieving congestion. Japan, for example, uses probe data to create three-dimensional maps showing time loss due to traffic congestion (Fig- ure 2) and fatal accident rates on each section of ma- jor highway. Such systems can also be the centerpiece of efforts to reform surface transportation funding systems to hold transportation service providers (for example, state Departments of Transportation) more accountable for providing real results.

**US TRADE IS KEY TO GLOBAL SUPPLY CHAIN WHICH IS INTRINSIC TO INTERNATIONAL TRADE—SMALL DISRUPTIONS DETRIMENTAL**

**Riad 12 (**Nagwa Riad, Senior Advisor to Executive Director for the Middle East at International Monetary Fund¶ Senior Economist (SPR) at International Monetary Fund¶ Senior Advisor to Executive Director at The International Monetary Fund (IMF) <http://www.imf.org/external/pubs/ft/dp/2012/dp1201.pdf>)

Sectors that respond the most to the exchange rate changes differ across ¶ countries. An appreciation induces an increase in the share of high-technology ¶ exports in China and (to a lesser extent) the euro area, whereas a depreciation ¶ results in an increase in the share of medium-high-technology exports in ¶ Japan and the United States, largely driven by changes in the auto sector. This ¶ result again reﬂects the relatively higher proportion of imported inputs in ¶ high-technology products compared to medium-high-technology products ¶ which have higher domestic content. Finally, adjustment in the trade balance ¶ takes place mainly outside of the supply chain, as exports to supply chain ¶ partners are more resilient to relative price changes. This likely reﬂects two ¶ interrelated factors. First, the cost of breaking up a trade relationship may be ¶ particularly large in a supply chain, which expresses itself in relatively lower ¶ substitution elasticities in supply chain countries. Second, the simulation ¶ countries are dominant players in their regional supply chains in terms of ¶ both volume and value of their exports going to these destinations, which ¶ makes substitution for their trading partners more difﬁcult. ¶ The growing role of global supply chains is associated with increased trade ¶ interconnectedness. Network-based analysis illustrates several trends taking ¶ place over the past decade, most notably the emergence of China, along with ¶ the United States, as major systemically important trading hubs. This not only ¶ reﬂects the size of trade but also the increase in the number of its signiﬁcant ¶ trading partners. Importantly, there is almost a perfect overlap between ¶ countries hosting both systemically important trade and ﬁnancial centers. ¶ These countries could constitute a natural focus for risk-based surveillance on ¶ cross-border spillovers and contagion.

#### TRADE KEY TO SOLVE WAR

**Penn State News ‘01**, (“Countries That Share Capital Market And Monetary Policy Linkages Are Less Likely To Go To War” December 7, 2001 <http://www.psu.edu/ur/2001/economictieswar.html>

UNIVERSITY PARK, Pa., Dec. 7 [AScribe Newswire] -- Countries that maintain in-depth financial and economic ties with each other are less likely to engage in military conflict, according to a Penn State study. "Political analysts have observed for several centuries that international trade inhibits interstate war between countries by raising the cost of military violence," says Dr. Quan Li, assistant professor of political science. "Recent studies by John Oneal, Bruce Russett and several others evolve along this liberal reasoning. Our study, however, shows mathematically that it is not the prospective loss of trade, but the costly signaling of resolve by manipulating economic ties that render exchanges of violence unnecessary." "Furthermore, we show statistically that compared with trade ties, capital market and monetary policy linkages are more effective in inhibiting conflict behaviors. In short, monetary ties allows countries to fight with money rather than with bullets." "Financial interdependence incorporates portfolio investment of funds in foreign companies; loaning and borrowing between banks in different countries; and direct investment, an example of which would be an American company opening a factory in China," Li says.¶ Li, Dr. Erik Gartzke, assistant professor of political science at Columbia University, and Charles Boehmer, Penn State doctoral candidate in political science, published their findings in "Investing in the Peace: Economic Interdependence and International Conflict" recently in the journal, International Organization. The researchers constructed a game theoretic model to compare the opportunity cost and costly signaling arguments. The model shows that the benefits of interdependence have no discernable effect on the probability of conflict, but a country's willingness to signal costly resolve by manipulating the interdependent ties decreases the probability of fighting. The authors also argue for a notion of interdependence that covers not just trade ties but also capital market and monetary policy linkages. The researchers examine their claims statistically over a sample of political relevant dyads from 1951 to 1985. The dependent variable is the onset of Militarized Interstate Disputes -- meaning threats, displays or uses of military force. Political relevant dyads are defined as pairs of countries that are either neighbors or involve one of the five major post-World War II powers: United States, Soviet Union, Great Britain, France and China. A country on the verge of hostilities with another country already knows the monetary value of its trade with that other country. Therefore, the researchers say, the risk factor in terms of trade is not an unknown. However, what each country doesn't know is how strongly the other country is willing to fight over some other issue beside trade: a slice of territory coveted by both countries, a military build-up perceived as a threat, the exposure of a spy network or the mistreatment of an ethnic or religious minority, they note. "Interdependent countries are in a better position to test the resolve of economic partners because they can more effectively exert non-violent [i.e. economic] pressure, and then observe the consequences," Li notes. "By taking commercial measures that represent both a clear and credible threat, a state can signal to economic partners that it is prepared to make considerable sacrifices. If, however, these sacrifices are too critical, the country could lose bargaining power in future conflicts." "In the event of a serious dispute, countries that are autarkic or economically isolated are most at risk of war, because they have no financial bargaining chips. All they can do is fall back on bluff and 'cheap talk.' Should that fail, their only option is to fight," says Li.¶ The Suez crisis of 1956 is an example of how economic interdependence allows countries to compete financially rather than through force. On July 26 of that year, Egyptian President Gamal Abdel Nasser nationalized the Suez Canal, prompting protests from Great Britain and France. When negotiations failed to resolve the crisis, British and French forces invaded Egypt on Oct. 31. Despite a U.N. General Assembly resolution ordering a cease-fire and vocal opposition from the United States, Britain and France persisted in their attempts to occupy the canal and overthrow Nasser. On Nov. 5, the United States, which then represented 45 percent of the world economy, decided to take action against its traditional allies, Britain and France. Rather than employing military force, the U.S. government started selling off its supply of British pounds Sterling, compelling the central bankers in Britain either to buy pounds on the market or face a devaluation of their currency relative to the dollar, the international benchmark at that time. This caused British reserves to fall 15 percent within a month.¶ "U.S. Treasury Secretary George Humphrey informed Britain that, unless it obeyed the U.N. resolution and withdrew from Suez, the United States would continue to sell pounds and block British access to International Monetary Fund reserves," Li notes. "The United States, by far the biggest contributor to the IMF in those days, could block loans from the IMF by simply refusing to lend it the money. U.S. control of the IMF assured that Britain remained in an economic predicament that the United States had created. This strategy had the desired effect. On Nov. 6, Britain ordered a cease-fire, in effect forcing the French to end military operations as well." The increasing economic openness of China might have just helped in preventing a military contest between China, Taiwan and the United States during the wake of Taiwan's 2000 presidential election. The admission of China to the World Trade Organization will foreseeably generate the positive political externality of promoting peace, the researchers say. In contrast, the economically isolated Afghanistan appears to serve as an example of the effect of economic autarky. "Our findings provide new evidence supporting a new theory why liberal economics may be at least as vital to peace as liberal politics," Li adds.

#### Contention Three is Bioterrorism:

#### Interoperability is low and fails right now- our evidence is comparative

Robert I. **Desourdis, Jr. 2009**, [Science Applications International Corporation, “ACHIEVING INTEROPERABILITY IN PUBLIC SAFETY AND EMERGENCY RESPONSE IT/COMMUNICATION SYSTEMS”, http://manymedia.com/wp-content/uploads/2010/01/PTC09\_Desourdis\_Full-Paper.pdf]

Interoperability is a measure of shared, trusted understanding that drives predictable collaborative action to achieve a common goal. Failed technological interoperability (e.g., radio interoperability) is not the root cause for failed interoperability as a whole – it is a symptom of the disease and not the disease itself. The nature of deficiencies in public safety and emergency response IT/communication systems today are identical to those documented in the congressional report investigating the successful Japanese surprise attack on the U.S. Pacific Fleet at Pearl Harbor in December 1941.

#### ITS solves through its tech and standards--interoperability is key to quick response to hazards

(**RITA 6/28**, U.S. Department of Transportation’s Research and innovative technology administration, RITA, 6/28/12, (RITA 6/28, U.S. Department of Transportation’s Research and innovative technology administration, RITA, 6/28/12, Technical Assistance)

As described in the ITS Strategic Research Plan, 2010–2014², the USDOT's ITS Research Program aims to bring enhanced connectivity to transportation through the application of advanced wireless technologies—powerful technologies that enable transformative change. The program envisions: The Vision of the ITS Program for the next four years... To research and facilitate a national, multi-modal surface transportation system that features a connected transportation environment around vehicles of all types, the infrastructure, and carry-in passenger devices to serve the public good by leveraging technology to maximize safety, mobility, and environmental performance. —The ITS Strategic Research Plan, 2010–2014. A fully connected, information-rich environment where travelers, freight managers, system operators, and other users are fully aware of all aspects of the transportation system's performance across all relevant modes. A cooperative system in which highway crashes and their tragic consequences are rare because vehicles of all types and roadside systems work together to: Communicate the events and hazards happening around them. Coordinate action and response among vehicles and their operators to avoid collisions. Travelers who have comprehensive and accurate information on travel options—transit travel times, schedules, cost, and real-time locations; driving travel times, routes, and travel costs; parking costs, availability, and ability to reserve a space; and the environmental footprint of each trip. System operators who have full knowledge on the status of every transportation asset. Vehicles of all types that can communicate with traffic signals to eliminate unnecessary stops and help people drive in a more fuel-efficient manner. Vehicles that can communicate the status of on-board systems and provide information that can be used by travelers and system operators to mitigate the vehicle's impact on the environment and/or make more informed choices about travel modes.

#### ITS solves for interagency interoperability

(**CMT 99**, Committee on Military Transportation, 12/09/99, U.S. Military Transportation)

Intelligent Transportation Systems The advent of intelligent transportation systems (ITS) has resulted in the rapid and widespread adoption of a wide range of technologies to aid transportation. They include the use of wireless communications, radar, sophisticated computer-aided video detectors, and on-board computer and vehicle navigation systems, all leading to the evolution of an integrated and multimodal transportation concept enabled by technology. ITS could affect military transportation in many ways .Military Transportation 5 The same technology being developed to support commercial vehicle operations, including the use of automatic vehicle location, automated maintenance monitoring, computer-aided dispatch, and improved scheduling and routing, could be applied to aid the military in fleet management. Traveler aid technologies could be used to manage operations of a base or port or to improve convoy operations. The use of ITS standards by the military has the potential of supporting interservice interoperability and ensuring compatibility with civilian traffic management and vehicle dispatch systems.

#### ITS leads to quick response in the case of a biohazard situation—5 reasons

(**RITA 11**, U.S. Department of Transportation’s Research and innovative technology administration, RITA, 4/18/11, Final Report for the Application of Technology to Transportation Operations in Biohazard Situations)

1.4 Technology Application Plan The Technology Application Plan assesses the activities identified by the Operational Concept and proposes communications and ITS technologies that can assist a transportation agency in carrying out those activities. The plan identifies five categories of ITS technologies that can enhance the capabilities of transportation agencies during a biohazard situation: Surveillance and detection (e.g., closed-circuit television cameras, roadway detectors); Communications (e.g., mobile data terminals, computer-aided dispatch); Traveler information (e.g., variable message signs, Highway Advisory Radio); Environmental management (e.g., road weather information systems); and Traffic management (e.g., alternate signal control, signal preemption technology)

#### The information distribution involved in ITS is critical to quick response to a bioterror attack

(**ICF 05**, ICF consulting, ITF, 8/3/05, Application of Technology to Transportation Operations in Biohazard Situations Task 3: Workshop Summary )

Potential Role of ITS Technology to Facilitate Response Participants identified a number of ITS technologies that they believed would improve the response to this scenario. Most of the technologies cited related to traffic management and dissemination of information to the public. To facilitate the flow of traffic, participants said that greater use of closed-circuit television (CCTV) cameras and traffic-signal controls would be useful tools in this type of scenario. Participants were concerned about the availability of funding needed to acquire these technologies for the Madison area.

#### Containment of a bioterrorism attack prevents its spread

Joseph **Barbera et al 2001** [Joseph Barbera, MD, Anthony Macintyre, MD, Larry Gostin, JD, PhD, Tom Inglesby, MD, Tara O’Toole, MD, Craig DeAtley, PA-C, Kevin Tonat, DrPH, MPH, Marci Layton, MD, *Large-Scale Quarantine Following Biological Terrorism in the United States Scientific Examination, Logistic and Legal Limits, and Possible Consequences*]

In most infectious disease outbreak scenarios, there are alternatives to largescale quarantine that may be more medically defensible, more likely to effectively contain the spread of disease, less challenging to implement, and less likely to generate unintended adverse consequences. Decisions to invoke quarantine, therefore, should be made only after careful consideration of 3 major questions examined within the specific context of a particular outbreak: (1)Do public health andmedical analyses warrant the imposition of largescale quarantine? (2) Are the implementation and maintenance of largescale quarantine feasible? and (3) Do the potential benefits of large-scale quarantine outweigh the possible adverse consequences?

#### Risk of a bioterrorism attack is high now- the weapons are easy to manufacture

Laurie **Garrett 1/5/12** [science writer for Newsday, Garrett won a Pulitzer, a Peabody and two Polk awards; in 2004, she joined the Council on Foreign Relations as Senior Fellow for Global Health. She is an expert on public health and the fascinating ways that health policy affects foreign policy and national security Foreign Policy, “Flu Season”, http://www.foreignpolicy.com/articles/2012/01/05/flu\_season?print=yes&hidecomments=yes&page=full]

When flu scientist Ron Fouchier of Erasmus University in Rotterdam announced in September that he had made a highly contagious, supervirulent form of the bird-flu virus, a long chain of political events unfolded, mostly out of the public eye. Fouchier told European virologists at a meeting in Malta that he had created a form of the H5N1 avian flu -- which is naturally extremely dangerous to both birds and mammals, but only contagious via birds -- that was both 60 percent fatal to infected animals and readily transmitted through the air between ferrets, which are used as experimental stand-ins for human beings. The University of Wisconsin's Yoshihiro Kawaoka, one of the world's top influenza experts, then announced hours later that his lab had achieved a similar feat. Given that in some settings H5N1 has killed more than 80 percent of the people that it has infected, presumably as a result of their contact with an ailing bird, Fouchier's announcement set the scientific community and governments worldwide into conniption fits, with visions of pandemics dancing in their heads. Within government circles around the world, the announcement has highlighted a dilemma: How do you balance the universal mandate for scientific openness against the fear that terrorists or rogue states might follow the researchers' work -- using it as catastrophic cookbooks for global influenza contagion? Concern reached such heights that U.S. Secretary of State Hillary Clinton made a surprise visit to Geneva on Dec. 7, addressing the review summit on biological weapons. No American official of her stature had attended the bioweapons summits in decades, and Clinton's presence stunned observers. Clinton told the Palais des Nations audience that the threat of biological weapons could no longer be ignored because "there are warning signs," including "evidence in Afghanistan that … al Qaeda in the Arabian Peninsula made a call to arms for -- and I quote -- 'brothers with degrees in microbiology or chemistry to develop a weapon of mass destruction.'" (Al Qaeda in the Arabian Peninsula is the terrorist group's Yemeni-based affiliate and perhaps its most aggressive arm today, with connections to a number of ambitious plots.) Then, in what has widely been interpreted as an allusion to the superflu experiments, Clinton added, "The nature of the problem is evolving. The advances in science and technology make it possible to both prevent and cure more diseases, but also easier for states and nonstate actors to develop biological weapons. A crude, but effective, terrorist weapon can be made by using a small sample of any number of widely available pathogens, inexpensive equipment, and college-level chemistry and biology. Even as it becomes easier to develop these weapons, it remains extremely difficult … to detect them, because almost any biological research can serve dual purposes. The same equipment and technical knowledge used for legitimate research to save lives can also be used to manufacture deadly diseases." By the end of 2011, few governments or scientific committees were satisfied with the actions that had been taken to date to limit publication of the methods Fouchier and Kawaoka deployed, and most were frankly frightened. The Fouchier episode laid bare the emptiness of biological-weapons prevention programs on the global, national, and local levels. Along with several older studies that are now garnering fresh attention, it has revealed that the political world is completely unprepared for the synthetic-biology revolution.

#### Specifically, Bioterror attack by 2013

Bob **Graham** and Jim **Talent 2010** [Chairman Bob Graham and Vice Chairman Jim Talent,

Commission on the Prevention of Weapons of Mass Destruction Proliferation and Terrorism, “Hearing on the Weapons of Mass Destruction Prevention and Preparedness Act of 2010”, http://www.heritage.org/research/testimony/hearing-on-the-weapons-of-mass-destruction-prevention-and-preparedness-act-of-2010]

The Commission's Report assessed both nuclear and biological threats, and provided 13 recommendations and 49 action items. The Commissioners unanimously concluded that unless we act urgently and decisively, it was more likely than not that terrorists would attack a major city somewhere in the world with a weapon of mass destruction by 2013. Furthermore, we determined that terrorists are more likely to obtain and use a biological weapon than a nuclear weapon. Shortly thereafter, this conclusion was publicly affirmed by then Director of National Intelligence (DNI) Mike McConnell.

There are several reasons for our conclusion that a bioattack is actually more likely than a nuclear attack. Many pathogens suitable for use in a biological attack are found in the natural environment, all over the globe. The lethality of an effectively dispersed biological weapon could rival or exceed that of an improvised nuclear device. The equipment required to produce a large quantity from a small seed stock, and then "weaponize" the material--that is, to make it into a form that could be effectively dispersed--is of a dual-use nature and readily available on the Internet. The most effective delivery methods are well known in the pharmaceutical, agricultural, and insect-control industries. It is much more straightforward to stockpile weaponized pathogens than nuclear material, raising the terrible specter that terrorists could attack an American city using a bioweapon, then quickly "reload" and attack again within a matter of days or weeks.

So, while it is certainly possible for terrorist groups to get a nuclear weapon, it is less difficult for them to develop and disperse a bio-weapon. There may be even fewer barriers for terrorist groups with close ties to those nation states which are accumulating both the materials and scientific capability for weaponization. All of the ingredients are in place for a biological weapon to be in the hands of a terrorist organization, which is subject to none of the international law constraints and retaliatory consequences which might impede a nation state from its use.

#### Not containing a biological attack leads to extinction

**Ochs 02** – MA in Natural Resource Management from Rutgers University and Naturalist at Grand Teton National Park [Richard, “BIOLOGICAL WEAPONS MUST BE ABOLISHED IMMEDIATELY,” Jun 9, http://www.freefromterror.net/other\_articles/abolish.html]

Of all the weapons of mass destruction, the genetically engineered biological weapons, many without a known cure or vaccine, are an extreme danger to the continued survival of life on earth. Any perceived military value or deterrence pales in comparison to the great risk these weapons pose just sitting in vials in laboratories. While a "nuclear winter," resulting from a massive exchange of nuclear weapons, could also kill off most of life on earth and severely compromise the health of future generations, they are easier to control. Biological weapons, on the other hand, can get out of control very easily, as the recent anthrax attacks has demonstrated. There is no way to guarantee the security of these doomsday weapons because very tiny amounts can be stolen or accidentally released and then grow or be grown to horrendous proportions. The Black Death of the Middle Ages would be small in comparison to the potential damage bioweapons could cause.

**Monitoring and directing capabilities of ITS are key to manage and respond to emergencies – Transportation is key**

Josh **Hinds**, former Graduate Research Assistant at Center for Transportation Research and Education

Transportation Engineer at South Dakota Department of Transportation, 10-11-**07**, [“The Emergency Transportation Operations within ¶ the Intelligent Transportation System,” Midwest Transportation Consortium ¶ ¶ Scholars Paper, <http://ctre.iastate.edu/mtc/papers/documents/hinds2007paper.pdf>] E. Liu

The surface transportation system is vital to our nation's economy, defense, and quality ¶ of life. A major concern of the USDOT is that the surface transportation system is **extremely ¶ vulnerable to attack** because of its size and easy accessibility. It has been shown that all ¶ emergencies and hazardous incidents have a transportation component, and that transportation ¶ is always the primary means for response and recovery. (3) The United States experiences over ¶ 400 tropical storms, hurricanes, tornadoes, and hazardous material (hazmat) incidents per year ¶ that require emergency evacuations. Additionally, numerous winter storms, wild fires, and ¶ complex vehicle incidents require a higher level of preparedness. (4) Unless the transportation ¶ system is actively managed, the United States will not be prepared for or able to effectively ¶ respond to a disaster. ¶ The emergency transportation operations objective is to provide programming, standards, ¶ and suggestions for local, state, and federal transportation systems in preparing for any ¶ emergency. (3) This will be achieved by addressing research in areas to provide effective ¶ traveler information during disasters, ¶ create planning and managing tools for incidents, and use **ITS to monitor travel conditions**. ¶ Responder procedures and practices will be improved because during disasters responders have ¶ difficulty getting the correct equipment to the right location. Advances in emergency technologies ¶ and practices will provide improved emergency response and recovery. (4) ¶ ¶ Recent advancements in both audio and visual communication technologies will be used ¶ to provide real-time information about disaster or emergency areas. The ability for first ¶ responders to send pictures and talk to disaster relief centers quickly will provide essential data to ¶ possibly minimize the effects of any disaster. Essentially, effective real-time management of ¶ transportation systems during major incidents results in more timely response to and recovery ¶ from a disaster. The developments in the ETO will assist responders to verify the nature of the ¶ problem, identify appropriate response, and get the correct equipment to the most critical areas ¶ quickly and safely. **The best way to minimize a major disaster is to provide effective management ¶ to the transportation systems**. (4) ¶ The surface transportation system across the United States is used by millions of people ¶ every day. The system is expected to be operational at all times and provide for the ¶ transportation of many items from city to city. It is not realized until a large accident, terrorist ¶ action, or a hurricane that if the transportation system is interrupted in any way, it can have ¶ catastrophic impacts on people's lives. An example of this is the recent Hurricane Katrina ¶ catastrophe in the Gulf Coast Region. The lack of a plan to maintain traffic flow in and out of the ¶ urban areas along with not having an evacuation plan created several problems that could have ¶ been minimized or avoided. The federal government wants to have plans prepared ahead of time ¶ to maintain the transportation system as best as possible. (3) ¶ Previously, the responsibility of creating an evacuation or emergency response plan was ¶ left to the city to develop. Several problems were evident in previous emergencies that the ETO ¶ initiative will attempt to solve by developing new programs and guides. Many local governments ¶ had emergency response plans, but would not coordinate those plans with neighboring cities or ¶ counties. Also, if a city did have an emergency plan it would not contain plans for a major ¶ disaster or emergency. With the current situation of global terrorism, the ETO initiative will ¶ provide strategies and technology to handle a terrorist attack, catastrophic event, or major ¶ emergency. (4) ¶ A city or region can never be fully prepared for an emergency, but having the dynamic ¶ ability to respond to any emergency is critical. Often the magnitude and severity of an emergency ¶ can be reduced by quickly evaluating the emergency. Emergency management officials need to ¶ have the operational ability to gather information rapidly and pass the necessary information ¶ along to travelers as quickly as possible. Variable message signs and 511 traveler information ¶ systems are used to guide evacuees and travelers to the right detour and evacuation routes so ¶ that any congestion is minimized. Also, informing travelers of the proper routes to take from the ¶ affected area helps relieve congestion for the emergency officials moving equipment to and from ¶ the scene. The federal government did several studies on the World Trade Center attack, and ¶ concluded that a major problem immediately after the attack was that the transportation systems ¶ were clogged and emergency officials could not get to the scene quickly. Maintaining traffic flow ¶ and directing travelers to the right route can benefit any emergency event. (5)

#### Initiatives under ITS are key to have quick first responses to disasters

Josh **Hinds**, former Graduate Research Assistant at Center for Transportation Research and Education

Transportation Engineer at South Dakota Department of Transportation, 10-11-**07**, [“The Emergency Transportation Operations within ¶ the Intelligent Transportation System,” Midwest Transportation Consortium ¶ ¶ Scholars Paper, <http://ctre.iastate.edu/mtc/papers/documents/hinds2007paper.pdf>] E. Liu

¶ The goal of phase one is to significantly improve the speed and effectiveness of response ¶ by towing and hazmat responders to provide improved management of incidents and queues. (5) ¶ It is a common belief that having a more organized and quicker response system to remove ¶ vehicles or contain hazardous materials spills will drastically reduce the size and number of ¶ evacuations. This phase of the ETO initiative was completed during 2004 and 2005, but the final ¶ results will not be published until the final report. (7) The expected benefit of phase one is faster ¶ and more efficient recovery of normal travel conditions. (8) ¶ ¶ The ability to achieve the phase one goal will rely heavily on the ability to get first ¶ responders to the scene as quickly as possible. A focal point of phase one is an increased ¶ understanding between towing companies and public safety personnel of the need for decreased ¶ response times when the towing services are needed. Public safety personnel lose precious ¶ minutes waiting for emergency vehicles in a traffic jam upstream of the accident scene. The ETO ¶ initiative will bring to the attention of transportation and public safety officials that quickly moving ¶ wrecked vehicles will decrease the response times. Also, many public safety vehicles are ¶ involved in crashes trying to get to the emergency scene. (8) The emergency vehicles are ¶ ¶ ¶ traveling at high speeds when they arrive at a traffic jam increasing the chance of a rear-end ¶ collision occurring. The ETO initiative will provide proper methods and strategies to have a ¶ towing company available to quickly respond to a scene and open the road to traffic. Increasing ¶ the response time of towing companies will decrease the probability of accidents around a scene, ¶ and increase the speed that emergency vehicles arrive. (7)

#### Contention Four is Solvency:

#### US federal investment is necessary for ITS deployment

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

In contrast to the leaders, **the United States lags in ¶ ITS deployment**, particularly with regard to provision ¶ of real-time traffic information, progress to date on ¶ vehicle-to-infrastructure and vehicle-to-vehicle inte-¶ gration, adoption of computerized traffic signals, and ¶ maximizing the effectiveness of its already fielded ITS ¶ systems. While the United States certainly has pockets ¶ of strengths with regard to ITS in particular regions ¶ and applications—including use of variable rate high-¶ way tolling, electronic toll collection, certain advanced ¶ traffic management systems such as ramp metering, ¶ and an active private sector market in telematics and ¶ travel information provision—**overall the implementa-¶ tion of ITS varies significantly by state** and region, thus ¶ **tending to be sporadic and isolated and not connected ¶ into a nationally integrated** “intelligent transportation ¶ **system**.” As one illustration of U.S. challenges in ITS, ¶ the percentage of U.S. metropolitan areas delivering ¶ real-time highway travel time and highway travel speed ¶ information to the public in 2007 was, respectively, 36 ¶ percent and 32 percent, while for arterial roadways, ¶ only 16 percent of U.S. metropolitan areas disseminate ¶ real-time travel speed information and only 19 percent ¶ distribute real-time travel time data. ¶ For the most part, **U.S. challenges in ITS have been ¶ the result of** two key factors: a continued **lack of ad-¶ equate funding for ITS; and the lack of a federally led ¶ approach**, as opposed to the “every state on its own ¶ approach” that has prevailed to date. At the federal ¶ level, the U.S. ITS effort focuses on research, is funded ¶ at $110 million annually, and operates out of the U.S. ¶ Department of Transportation’s Research and Inno-¶ vative Technology Administration’s (RITA) ITS Joint ¶ Program Office (JPO). To reorganize and reanimate ¶ the U.S. ITS effort, on January 8, 2010, RITA unveiled ¶ a new, five-year “ITS Strategic Research Plan, 2010-¶ 2014.” While the Strategic Plan represents an impor-¶ tant step forward, **the United States needs to make a** ¶ fundamental **transition** from a focus mostly oriented ¶ around research **to include** a much greater **focus on ¶ deployment** and endeavor **to accelerate the speed at ¶ which ITS technologies reach the** traveling **public**.¶

#### Federal investment and action is key to close the leadership deficit with countries on ITS

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

I¶ nformation technology (**IT) has transformed many** industries, ¶ from education to health care to government, **and is now in the early stages of transforming transportation** systems. While many ¶ think improving a country’s transportation system solely means build-¶ ing new roads or repairing aging infrastructures, **the future of transportation lies** not only in concrete and steel, but also **increasingly in using IT. I**T enables elements within the transportation system—vehi-¶ cles, roads, traffic lights, message signs, etc.—to become intelligent by ¶ embedding them with microchips and sensors and empowering them ¶ to communicate with each other through wireless technologies. **In the leading nations in the world, ITS bring significant improvement in transportation** system performance, including reduced congestion and ¶ increased safety and traveler convenience. Unfortunately, **the United States lags the global leaders**, particularly Japan, Singapore, and South ¶ Korea **in ITS deployment**. For the most part, thi**s has been the result of** two key factors: a **continued lack of adequate funding** for ITS a**nd the lack of the right organizational system to** drive ITS in the United ¶ States, **particularly the lack of a federally led approach, as opposed to the** “**every state on its own approach**” that has **prevailed to date**. ¶ This report examines the promise of ¶ ITS, identifies the global leaders in ITS ¶ and why they are leaders, discusses the ¶ reasons for the U.S. failure to lead, and ¶ proposes a number of recommendations ¶ for how Congress and the Administra-¶ tion can spur robust ITS deployment. ¶ If the United States is to achieve even a ¶ minimal ITS system, **the federal gover**n-¶ **ment will need to assume a far greater leadership role in not just ITS R&D, but also** ITS **deployment**. In short, it is time ¶ for the U.S. Department of Transpor-¶ tation to view ITS as the 21st century, ¶ digital equivalent of the Interstate high-¶ way system, where, like then, the federal ¶ government took the lead in setting a ¶ vision, developing standards, laying out ¶ routes, and funding its construction. Just as building ¶ the Interstate Highway System did not mean an aban-¶ donment of the role of states, neither does this new ¶ role; but just as building the Interstate required strong ¶ and sustained federal leadership, so too does trans-¶ forming our nation’s surface transportation through ¶ ITS. Accordingly, **this report recommends** that in the ¶ reauthorization of the surface transportation act, **Congress should**:¶ ??¶ **Significantly increase funding for ITS at the federal level**, by $2.5 to $3 billion annually, **including funding for large-scale demonstration projects, deployment,** and the ongoing opera-¶ tions and **maintenance** of already-deployed ITS. ¶ Specifically, the next surface transportation au-¶ thorization bill should include $1.5 to $2 billion ¶ annually in funding for the deployment of large-¶ scale ITS demonstration projects and should ¶ also provide dedicated, performance-based ¶ funding of $1 billion for states to implement ex-¶ isting ITS and to provide for ongoing operations, ¶ maintenance, and training for already deployed ¶ ITS at the state and regional levels.

#### Federal policy is the most important factor for success – Key to coordination, scale and funding – Other countries prove

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

The degree of **centralization in ITS decision-makin**g ¶ authority **may be the most important policy factor ¶ for ITS success.** **The importance of centralized ITS** ¶ decision-making **is pertinent from** two perspectives: ¶ **The extent to which transportation**—and hence in-¶ telligent transportation systems—**policymaking and ¶ implementation** authority **resides at a national level** or ¶ at the state/regional level, **and the extent to which ITS ¶** decision-making **authority resides with a single** (or fi-¶ nal) **agency** or authority.¶ The degree of centralization is one of the most im-¶ portant explanatory factors because, as discussed pre-¶ viously, many **intelligent transportation systems** have ¶ chicken-or-egg characteristics, **face very difficult** sys-¶ tem **coordination problems, and often require scale ¶ and need to be implemented at a nationwide level.** Lo-¶ cal or **state actors may not have the same willingness ¶ to innovate** or invest in ITS, **and** even if they do they ¶ **are unlikely to have sufficient funding or** the **ability to ¶ reach sufficient** **economies of scale**. For all these rea-¶ sons, **national level vision, leadership, and coordina-¶ tion are essential for ITS success.** ¶ The **countries leading the world in developing** and ¶ deploying **intelligent transportation systems feature ¶ strong government leadership** in crafting a clearly-¶ articulated ITS vision, setting a national agenda, con-¶ vening relevant stakeholders, and spearheading imple-¶ mentation. Japan, Singapore, and South Korea have the ¶ advantage of being unitary polities that permit strong ¶ policy setting and coordination at the national level.

#### State actors fail – Won’t deal with interstate issues, spend efficiently or manage the network

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

As discussed subsequently, the United States’ federated ¶ governance structure for surface transportation creates ¶ an inherent challenge to building ITS systems to scale ¶ and approaching the transportation system as a nation-¶ ally integrated network. But **travelers don’t just drive ¶ within state lines; they want to travel across state lines, ¶ and they want** their **ITS applications**—whether traffic ¶ information systems, toll payment systems, or Intelli-¶ Drive systems—**to travel with them.¶** But even with regard to ITS applications that leverage ¶ long-established technologies and don’t face systemic ¶ barriers—such as ramp meters, computerized smart ¶ signals, or traffic cameras—many nations, including the ¶ United States, under-invest in and insufficiently deploy ¶ ITS solutions. This happens, in part, because **transpor-¶ tation funding is often allocated without consideration ¶ of performance, giving** local and **state transportation ¶ planners** **little incentive** **to give preference to invest-¶ ments that can have** maximum **impact on optimizing ¶ system performance.** Part of this is legacy; **state** and ¶ local transportation **agencies were created to build and ¶ maintain infrastructure, not to manage a** transporta-¶ tion **network**.77 Yet combined with bureaucratic inertia ¶ and a lack of vision, some government transportation ¶ agencies see themselves as “builders of pieces” and not ¶ “managers of a system” and place more emphasis on ¶ building roads than on ensuring the system functions ¶ optimally.

### Inherency

**LACK OF FUNDING AND STATE-CENTERED APPROACH DOOM ITS IN THE STATUS QUO**

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

Information technology (IT) has transformed many industries, from education to health care to government, and is now in the early stages of transforming transportation systems. While many think improving a country’s transportation system solely means building new roads or repairing aging infrastructures, the future of transportation lies not only in concrete and steel, but also increasingly in using IT. IT enables elements within the transportation system—vehicles, roads, traffic lights, message signs, etc.—to become intelligent by embedding them with microchips and sensors and empowering them to communicate with each other through wireless technologies. In the leading nations in the world, ITS bring significant improvement in transportation system performance, including reduced congestion and increased safety and traveler convenience. Unfortunately, the United States lags the global leaders, particularly Japan, Singapore, and South Korea in ITS deployment. For the most part, this has been the result of two key factors: a continued lack of adequate funding for ITS and the lack of the right organizational system to drive ITS in the United States, particularly the lack of a federally led approach, as opposed to the “every state on its own approach” that has prevailed to date.

**TRANSPORTATION INVESTMENT IS INEVITABLE—ITS IS KEY TO EFFECTIVE INFRASTRUCTURE**

**Ezell ‘10** (Stephen Ezell, a Senior Analyst with the Information Technology and Innovation Foundation (ITIF), with a focus on innovation policy, The Information Technology and Innovation Foundation, January 2010, Explaining International IT Application Leaderhip:

Intelligent Transportation Systems)

Over the next five years, the United States is poised to invest more than $500 billion on the nation’s surface transportation infrastructure. Intelligent transportation systems must be a critical component of these investments in order to maximize the operational performance of the transportation system and attain the significant benefits enumerated in this report. If the United States does not take advantage of the current opportunity to significantly fund ITS as part of the next surface transportation authorization, it risks not only falling further behind world leaders and other developed economies in ITS, but also losing ground to rising countries such as China and India, which are beginning to make substantial investments in ITS development and deployment.

ITS goals and effectiveness is low now due to lack of funding – States don’t want to invest despite the tech being ready

**Ezell ‘10** (Stephen Ezell, a Senior Analyst with the Information Technology and Innovation Foundation (ITIF), with a focus on innovation policy, The Information Technology and Innovation Foundation, January 2010, Explaining International IT Application Leaderhip:

Intelligent Transportation Systems)

However, GAO’s report noted that that **DOT’s criteria set** “relatively **low thresholds of ITS infrastructure such as 20 percent of freeway miles** and 33 percent of ¶ signalized intersections covered by certain ITS tech-¶ nologies.” Moreover, the report found that **communities were not enjoying** many of the **potential benefits** ¶ from deployed intelligent transportation systems **because their operations were underfunded and not performing to capacity**. For example, the report noted that ¶ Chicago had built ten traffic management centers, but ¶ because of funding constraints, six of the ten lacked ¶ staff dedicated to monitoring traffic conditions on a ¶ regular basis, compromising their potential traffic and ¶ congestion mitigation benefits.149 In another example, ¶ the study found the San Francisco Bay Area had 4,700 ¶ traffic sensing detectors across its 2,800 freeway miles ¶ in 2003, with 29 percent of the roadways featuring sen-¶ soring devices spaced every one mile, and 40 percent ¶ with sensors spaced every two miles. However, about ¶ **45 percent of** the **devices were out of service** (lack-¶ ing funds for maintenance or break-fix), significantly ¶ **reducing the system’s ability to produce reliable** traffic ¶ **data**.150 GAO’s 2009 report on real-time traffic infor-¶ mation confirmed that **these problems persist and** in ¶ some cases **have not improved appreciably** since 2005.¶ The **GAO found “several barriers that limit the widespread deployment” of ITS** at the state, regional, and ¶ local level in the United States. The study noted that ¶ **state** and local transportation **officials** often **view other** ¶ transportation **investment options, such as adding a new lane** to a highway, **more favorably than ITS** when ¶ deciding how to spend limited transportation funds.151 ¶ Moreover, the GAO found that, unfortunately, “infor-¶ mation on benefits does not have a decisive impact on ¶ the final investment decisions made by state and local ¶ officials.” This challenge is amplified as elected offi-¶ cials often find ITS investments less appealing than ¶ highway construction. The GAO study quoted Chi-¶ cago- and San Francisco-area transportation officials ¶ lamenting that since ITS applications, “do not usually ¶ offer groundbreaking ceremonies which offer positive ¶ media attention,” politicians were generally not moti-¶ vated to support ITS projects.152¶ This challenge continues today. Both state highway ¶ administrators’ preference for traditional highway in-¶ vestments and lack of funding for ITS projects were ¶ apparent in the distribution of stimulus money as ¶ part of the American Recovery and Reinvestment Act ¶ (ARRA). **Many states have not invested any ARRA funds in ITS**.153 As Kevin Lacy, State Traffic Engineer ¶ for North Carolina DOT explained the view of some ¶ state DOTs toward ITS, “**The ITS industry is not as developed,** still growing and **often** **perceived as a little higher risk**. So having strict time periods on cashing out ¶ has likely reduced opportunities for ITS projects using ¶ ARRA.”154 Unfortunately, this perspective misses that ¶ **there are many readily-available ITS technologies that can be deployed**, that they offer superior benefit-cost ¶ returns, and also **that** ITS deployment **can** likewise ¶ **stimulate economic and employment growth**.

#### Solvency – Implementation

#### US federal investment is necessary for ITS deployment

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

In contrast to the leaders, **the United States lags in ¶ ITS deployment**, particularly with regard to provision ¶ of real-time traffic information, progress to date on ¶ vehicle-to-infrastructure and vehicle-to-vehicle inte-¶ gration, adoption of computerized traffic signals, and ¶ maximizing the effectiveness of its already fielded ITS ¶ systems. While the United States certainly has pockets ¶ of strengths with regard to ITS in particular regions ¶ and applications—including use of variable rate high-¶ way tolling, electronic toll collection, certain advanced ¶ traffic management systems such as ramp metering, ¶ and an active private sector market in telematics and ¶ travel information provision—**overall the implementa-¶ tion of ITS varies significantly by state** and region, thus ¶ **tending to be sporadic and isolated and not connected ¶ into a nationally integrated** “intelligent transportation ¶ **system**.” As one illustration of U.S. challenges in ITS, ¶ the percentage of U.S. metropolitan areas delivering ¶ real-time highway travel time and highway travel speed ¶ information to the public in 2007 was, respectively, 36 ¶ percent and 32 percent, while for arterial roadways, ¶ only 16 percent of U.S. metropolitan areas disseminate ¶ real-time travel speed information and only 19 percent ¶ distribute real-time travel time data. ¶ For the most part, **U.S. challenges in ITS have been ¶ the result of** two key factors: a continued **lack of ad-¶ equate funding for ITS; and the lack of a federally led ¶ approach**, as opposed to the “every state on its own ¶ approach” that has prevailed to date. At the federal ¶ level, the U.S. ITS effort focuses on research, is funded ¶ at $110 million annually, and operates out of the U.S. ¶ Department of Transportation’s Research and Inno-¶ vative Technology Administration’s (RITA) ITS Joint ¶ Program Office (JPO). To reorganize and reanimate ¶ the U.S. ITS effort, on January 8, 2010, RITA unveiled ¶ a new, five-year “ITS Strategic Research Plan, 2010-¶ 2014.” While the Strategic Plan represents an impor-¶ tant step forward, **the United States needs to make a** ¶ fundamental **transition** from a focus mostly oriented ¶ around research **to include** a much greater **focus on ¶ deployment** and endeavor **to accelerate the speed at ¶ which ITS technologies reach the** traveling **public**.¶

### Solvency Advocate

#### Federal investment and action is key to close the leadership deficit with countries on ITS

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

I¶ nformation technology (**IT) has transformed many** industries, ¶ from education to health care to government, **and is now in the early stages of transforming transportation** systems. While many ¶ think improving a country’s transportation system solely means build-¶ ing new roads or repairing aging infrastructures, **the future of transportation lies** not only in concrete and steel, but also **increasingly in using IT. I**T enables elements within the transportation system—vehi-¶ cles, roads, traffic lights, message signs, etc.—to become intelligent by ¶ embedding them with microchips and sensors and empowering them ¶ to communicate with each other through wireless technologies. **In the leading nations in the world, ITS bring significant improvement in transportation** system performance, including reduced congestion and ¶ increased safety and traveler convenience. Unfortunately, **the United States lags the global leaders**, particularly Japan, Singapore, and South ¶ Korea **in ITS deployment**. For the most part, thi**s has been the result of** two key factors: a **continued lack of adequate funding** for ITS a**nd the lack of the right organizational system to** drive ITS in the United ¶ States, **particularly the lack of a federally led approach, as opposed to the** “**every state on its own approach**” that has **prevailed to date**. ¶ This report examines the promise of ¶ ITS, identifies the global leaders in ITS ¶ and why they are leaders, discusses the ¶ reasons for the U.S. failure to lead, and ¶ proposes a number of recommendations ¶ for how Congress and the Administra-¶ tion can spur robust ITS deployment. ¶ If the United States is to achieve even a ¶ minimal ITS system, **the federal gover**n-¶ **ment will need to assume a far greater leadership role in not just ITS R&D, but also** ITS **deployment**. In short, it is time ¶ for the U.S. Department of Transpor-¶ tation to view ITS as the 21st century, ¶ digital equivalent of the Interstate high-¶ way system, where, like then, the federal ¶ government took the lead in setting a ¶ vision, developing standards, laying out ¶ routes, and funding its construction. Just as building ¶ the Interstate Highway System did not mean an aban-¶ donment of the role of states, neither does this new ¶ role; but just as building the Interstate required strong ¶ and sustained federal leadership, so too does trans-¶ forming our nation’s surface transportation through ¶ ITS. Accordingly, **this report recommends** that in the ¶ reauthorization of the surface transportation act, **Congress should**:¶ ??¶ **Significantly increase funding for ITS at the federal level**, by $2.5 to $3 billion annually, **including funding for large-scale demonstration projects, deployment,** and the ongoing opera-¶ tions and **maintenance** of already-deployed ITS. ¶ Specifically, the next surface transportation au-¶ thorization bill should include $1.5 to $2 billion ¶ annually in funding for the deployment of large-¶ scale ITS demonstration projects and should ¶ also provide dedicated, performance-based ¶ funding of $1 billion for states to implement ex-¶ isting ITS and to provide for ongoing operations, ¶ maintenance, and training for already deployed ¶ ITS at the state and regional levels.

### Solvency – Fed Key

#### Federal policy is the most important factor for success – Key to coordination, scale and funding – Other countries prove

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

The degree of **centralization in ITS decision-makin**g ¶ authority **may be the most important policy factor ¶ for ITS success.** **The importance of centralized ITS** ¶ decision-making **is pertinent from** two perspectives: ¶ **The extent to which transportation**—and hence in-¶ telligent transportation systems—**policymaking and ¶ implementation** authority **resides at a national level** or ¶ at the state/regional level, **and the extent to which ITS ¶** decision-making **authority resides with a single** (or fi-¶ nal) **agency** or authority.¶ The degree of centralization is one of the most im-¶ portant explanatory factors because, as discussed pre-¶ viously, many **intelligent transportation systems** have ¶ chicken-or-egg characteristics, **face very difficult** sys-¶ tem **coordination problems, and often require scale ¶ and need to be implemented at a nationwide level.** Lo-¶ cal or **state actors may not have the same willingness ¶ to innovate** or invest in ITS, **and** even if they do they ¶ **are unlikely to have sufficient funding or** the **ability to ¶ reach sufficient** **economies of scale**. For all these rea-¶ sons, **national level vision, leadership, and coordina-¶ tion are essential for ITS success.** ¶ The **countries leading the world in developing** and ¶ deploying **intelligent transportation systems feature ¶ strong government leadership** in crafting a clearly-¶ articulated ITS vision, setting a national agenda, con-¶ vening relevant stakeholders, and spearheading imple-¶ mentation. Japan, Singapore, and South Korea have the ¶ advantage of being unitary polities that permit strong ¶ policy setting and coordination at the national level.

#### State actors fail – Won’t deal with interstate issues, spend efficiently or manage the network

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

As discussed subsequently, the United States’ federated ¶ governance structure for surface transportation creates ¶ an inherent challenge to building ITS systems to scale ¶ and approaching the transportation system as a nation-¶ ally integrated network. But **travelers don’t just drive ¶ within state lines; they want to travel across state lines, ¶ and they want** their **ITS applications**—whether traffic ¶ information systems, toll payment systems, or Intelli-¶ Drive systems—**to travel with them.¶** But even with regard to ITS applications that leverage ¶ long-established technologies and don’t face systemic ¶ barriers—such as ramp meters, computerized smart ¶ signals, or traffic cameras—many nations, including the ¶ United States, under-invest in and insufficiently deploy ¶ ITS solutions. This happens, in part, because **transpor-¶ tation funding is often allocated without consideration ¶ of performance, giving** local and **state transportation ¶ planners** **little incentive** **to give preference to invest-¶ ments that can have** maximum **impact on optimizing ¶ system performance.** Part of this is legacy; **state** and ¶ local transportation **agencies were created to build and ¶ maintain infrastructure, not to manage a** transporta-¶ tion **network**.77 Yet combined with bureaucratic inertia ¶ and a lack of vision, some government transportation ¶ agencies see themselves as “builders of pieces” and not ¶ “managers of a system” and place more emphasis on ¶ building roads than on ensuring the system functions ¶ optimally.

### Solvency – Fed Key – Expertise/Interest

#### Only a national approach has the expertise and interest to carry out ITS

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

In summary, the U.S. Department of Transportation ¶ needs to move from a focus on research to leadership. ¶ **DOT needs to set a vision for ITS, including** defin-¶ ing what the states need to do, ensuring that the states ¶ are deploying open, interoperable technology, **funding ¶ most of the deployment of nationally integrated ITS** ¶ systems, and holding states accountable for results. ¶ One of the main reasons for this is that the **portion ¶ of ITS that have** system **interdependencies requires a ¶ national approac**h. Another reason for the need for na-¶ tional leadership is that while all **state DOTs** have deep ¶ expertise in conventional transportation technology ¶ (for example, pavement and bridges), many **may lack ¶ either expertise or interest in ITS.** Centralizing that ¶ knowledge in one location makes more sense.¶ government funding for Intelligent Transportation ¶ systems development¶ **The leading countries in intelligent transportation ¶ systems have not only developed an explicit national** ¶ strategy for ITS, **they have also invested heavily in it.** ¶ South Korea’s National ITS Master Plan 21 commits ¶ to investing a total of $3.2 billion from 2007 to 2020 ¶ in intelligent transportation systems, an average of ¶ $230 million annually over the fourteen-year period. ¶ Japan invested ¥64 billion in ITS from April, 2007 to ¶ March, 2008 and ¥63.1 billion in ITS from April, 2008 ¶ to March, 2009, on average about $690 million annu-¶ ally.175 Aggregate investment in ITS at all government ¶ levels in the United States in 2006 was approximately $1 ¶ billion (including $110 million in federal funding and ¶ over $850 million in funding from the U.S. states).176 ¶ As a percentage of GDP, South Korea and Japan each ¶ invest more than twice as much in intelligent transpor-¶ tation systems than the United States (Figure 13).177

### Politics Links

Republicans hate the plan – diverts money from other bills

**Environment and Energy Daily 2/3**/12 [Jason Plautz, E&E reporter, “TRANSPORTATION: T&I panel slogs through 17-hour markup to approve reauthorization”, LexisNexis, RH]

Democrats were also unsuccessful in a number of attempts to change the bill's management of transportation on federal lands with amendments attempting to redirect money and remove some agencies from managing the programs on public lands.

An amendment that would have established a smart communities program and increased spending on so-called intelligent transportation systems, which coordinate transportation to make systems more efficient, also fell by a voice vote. Republicans objected to the notion that it would draw money away from other forms of transportation.

Nadler was also unsuccessful in an attempt to reverse language in the bill that removes transit from the Highway Trust Fund and instead leaves it open to the general fund (see related story). Tough road ahead

The bill faces an uphill climb on the House floor, as support for the GOP bill has begun to crumble. Several transportation interest groups have raised concerns with specific provisions in the bill, and Wednesday the conservative Club For Growth urged members to vote "no" (E&E Daily, Feb. 2).

Plan is bipartisan

**Congressional Documents and Publications 2011** [Reps. Mike Rogers (R-Mich.) and Russ Carnahan (D-Mo.), “In Case You Missed It: Smart Communities can strengthen America's Economy”, LexisNexis, RH]

America is poised to power forward out of the recession and into the new, 21st Century economy. But congestion on our roads and highways is a drag on economic growth, interfering with our daily activities, slowing the flow of goods and services, polluting the environment and wasting fuel. It's an increasingly expensive problem, costing our economy more than $115 billion every year.

To address the issue, we have introduced the SMART Technologies for Communities Act. This bipartisan legislation provides communities with the resources necessary to implement intelligent transportation systems (ITS) that will help to reduce congestion, improve safety and improve the air we breathe by reducing air pollution."

Many of the information and communications technologies that can be utilized in ITS systems already exist: "connected" vehicles that avoid crashes; stress-sensing bridges; active traffic management to reduce congestion; electronic tolling systems to avoid waiting at toll booths; and real-time traffic, transit and parking information for commuters.

Plan strengthens econ – smart tech key

**Congressional Documents and Publications 2011** [Reps. Mike Rogers (R-Mich.) and Russ Carnahan (D-Mo.), “In Case You Missed It: Smart Communities can strengthen America's Economy”, LexisNexis, RH]

By integrating these technologies into demonstration programs in up to six communities across the country, we can create model deployment sites for large-scale installation and operation projects. These "Smart Communities" would serve as real-world test models for comprehensive ITS solutions to traffic management. Each Smart Community would be required to establish clear performance objectives, based upon advanced transportation management systems for reducing traffic-related crashes and congestion. They would also work to optimize system performance and connectivity across all modes of transportation.

The potential benefits are tangible and significant: fewer collisions and increased driver and pedestrian safety; better operational performance of transportation networks; cleaner air and water; streamlined traffic flow and improved access to multimodal transportation alternatives; faster incident and emergency response times; and enhanced personal mobility and convenience. ?

From a purely economic standpoint, Smart Communities are fiscally responsible, getting more bang for the taxpayer's buck with existing funds at a time when budgets are tight. And from a quality of life standpoint, Smart Communities mean we can all spend less time in traffic and more time at home with our families. It's estimated that more than 4.8 billion hours are wasted sitting in traffic in metropolitan communities alone.

Given the benefits, it is small wonder that our bill has already received endorsements from broad range of transportation, business and environmental leaders, including private sector employers such as ATandT, Ford, General Motors, IBM, Intel, Microsoft, Motorola, Verizon -- and the list continues to grow.

These diverse groups know what should be apparent to everyone: **if we are going to compete in the new, global economy, we cannot just grow bigger. We must grow smarter.**

Removing barriers and increasing efficiency through 21st Century technologies is an initiative from which all motorists and pedestrians can all benefit. It's a win for taxpayers, it's a win for businesses, and it's a win for the environment.

Rep. Mike Rogers is a Republican representing Michigan's Eighth Congressional District. Democrat Russ Carnahan represents Missouri's Third Congressional District.

Plan popular with the public – transportation lobbyists

**States News Service** **2011** [“COALITION URGES CONGRESS TO SUPPORT SMART TECHNOLOGIES IN REAUTHORIZATION BILL”, 4/25, LexisNexis, RH]

A coalition of highway and transit organizations, automakers, safety and environmental advocates, and public- and private-sector leaders joined forces Wednesday to implore Congress to invest in high-tech solutions in the next federal surface transportation reauthorization bill to get the most from America's infrastructure and limited transportation dollars.

"Our citizens expect us to be forward thinking and good stewards of taxpayer dollars," Minnesota Transportation Commissioner Tom Sorel said in a statement released by the Intelligent Transportation Society of America, an advocacy group for intelligent transportation systems. "The Minnesota Department of Transportation uses cost-effective ITS technology to ensure that our transportation system is safer, more efficient, and user friendly."

Ed Rendell, a chairman of Building America's Future and former governor of Pennsylvania, said the nation must embrace rapid advancements in innovative technologies.

"Whether they are geared to providing more reliability to our daily commutes or advanced detections to bridges, smart technologies are the wave of the future," he said. A few examples of ITS include advanced crash avoidance systems; active traffic management to reduce congestion and improve incident response; electronic tolling and payment systems; synchronized and adaptive traffic signals; stress sensors in bridges; weigh-in-motion truck screenings; and real-time traffic, transit, and parking information for commuters.

"At a time when governments at all levels are being asked to do more with less, investing in intelligent transportation systems is a cost-effective way to ensure that our transportation system is safer, more efficient and user-friendly, all the while supporting job creation and economic growth," according to a letter sent from more than **100 organizations in the coalition to House Transportation and Infrastructure Committee leaders.**

**The coalition urged lawmakers** to support the Smart Technologies for Communities Act (HR 995), a bipartisan bill introduced by Reps. Mike Rogers, R-Michigan, and Russ Carnahan, D-Missouri, to establish competitive pilot projects in up to six communities across the country that would serve as models for large-scale deployment of high-tech, integrated transportation solutions.

"Technology can help make the transportation system -- and travelers -- smarter, thus maximizing the investment of limited resources and enabling travelers to make informed choices about how they get to their destinations safely and efficiently," said AAA President and CEO Bob Darbelnet.

Sustainability leaders such as the Environmental Defense Fund, Natural Resources Defense Council, Transportation for America, and Pew Center have also endorsed the bill.

"Transporting people and goods more efficiently is one of the key steps towards reducing oil use and our impact on the global climate," said Eileen Claussen, president of the Pew Center on Global Climate Change. "Adopting reliable and cost-effective solutions for deploying intelligent transportation technologies are a no-brainer in these times of constrained budgets."

#### Plan is non-ideological and popular – Public and pragmatism

Samuel J. **Palmisano**, current Chairman and CEO of IBM. He was elected Chairman in October 2002, and has served as Chief Executive Officer since March 2002. Prior to his appointment, Palmisano was President and Chief Operating Officer since 2000, 5-5-**10**, [“A Smart Transportation System: Improving ¶ Mobility for the 21st Century,” IBM, <http://www.ibm.com/smarterplanet/us/en/transportation_systems/article/palmisano_itsa_speech.html>] E. Liu

Smarter transportation is not some grand, futuristic ideal. For one thing, the ¶ examples I’ve mentioned are real, and more are being deployed right now, around the ¶ world. ¶ For another, **smarter transportation is** practical because it is **non-ideological**. Yes, debates ¶ will continue to rage on many contentious issues that impact transportation—from energy, ¶ to security, to climate change, to the economy. **But no matter which viewpoints** ultimately ¶ **prevail, the system that results will have to be smarter**: more transparent, more efficient, ¶ more accessible, more resilient, more innovative. ¶ And that’s one final reason for hope. **Making transportation smarter is in everyone’s ¶ interest**. For a whole spate of reasons, **the boldest** action **and the most pragmatic action ¶ are** now **one**. ¶ We find ourselves today at a unique ¶ moment. **The key precondition for** real ¶ **change** now **exists**: **People want it. And they ¶ are hungry for leadership**. Such a moment ¶ doesn’t come around often, and it will not ¶ last forever.

There’s a lack of political will to do the plan – California proves

Sean **Holstege 2005** [*Oakland Tribune*, “'Intelligent' transit to be costly”, Nov 13, Proquest, RH]

SAN FRANCISCO -- Showing off "intelligent" cars, buses and intersections at an international conference is one thing. Putting them on the street to make real commutes safer, smoother and less polluted is another. Getting the latest and greatest transportation technology from test track to California roadway is a widely shared goal, and how to do it was the subject of a hearing last week led by Sen. Tom Torlakson, D-Antioch. The chairman of the Senate transportation committee, as he pushes a $10 billion infrastructure bond, wants to know how to modernize the state's freeways with life-saving car-to-car and car-to-road communications and how to get cars on the road that can predict and avoid collisions. Over and over, industry leaders, researchers and European transportation officials told the committee that neither technology nor cost are the big hurdles. **Political will, cooperation and social acceptance are**. The problem is evident. As the crowded, rutted U.S. interstate system marks its 50th year, state and federal highway departments have conceded that expanding freeways is no longer a practical way to keep pace with growth. So every year the dilapidated system contributes to 43,000 U.S. highway deaths and wastes $300 billion in injuries, accidents, wasted gasoline and lost productivity. California lawmakers must answer a series of key questions before "intelligent transportation" can meet these challenges. Among those raised by last Wednesday's hearing: -Should the state invest hundreds of millions of dollars to build the wirelesscommunication backbone that makes it all possible? Or is there a way for private enterprise to make money building it? By one estimate, it would take $100 million to wire-up the Bay Area. -Should California mandate targets for introducing safety features in cars, in the same way it led the way on seat belts, catalytic converters or clean fuel additives? Or should it let automakers phase them in as demand for their products grows, in the same way air bags stopped being options on high-end cars and became standard equipment? -Does the insurance industry have an incentive to pay for collision-avoidance systems, in the same way some insurers reduce premiums for cars with rear-window brake lights or pay for minor windshield repairs? Or does Sacramento need to legislate incentives? -As smart cars transmit important data about their speed, location and road conditions, how will individual privacy be protected? Who owns the data and how should it be shared? -Should California mandate by law targets for reducing crashes, deaths and congestion? -To reach those goals, should California set aside money for technological improvements to highways and transit? Or should smart technology be a standard requirement of every public transportation contract? - Should California rewrite Caltrans' contract rules so it can deliver cutting edge technology before it gets stale?

### A2: US CAN’T IMPLEMENT

#### WE HAVE THE TECHNOLOGY, WE CAN BUILD IT

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

In summary, the United States has every bit the technological capability that Japan, South Korea, Singapore, and other countries possess in ITS, and actually had an early lead in ITS technology in the 1990s with the advent of global positioning system technology and first-generation telematics systems. (In fact, many ITS technologies have been initially developed in the United States but found much greater adoption and deployment elsewhere.) But institutional, organizational, policy, and political hurdles have allowed other countries to wrest the vanguard of leadership from the United States at making the benefits of intelligent transportation systems a reality for their citizens. This report now turns to examining the factors explaining that dynamic.

### A2: SPENDING

#### ITS SAVES MONEY

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

ITS are contributing to a fundamental reassessment of vehicle safety. Whereas most developments in transportation safety over the past 50 years were designed to protect passengers in the event of a crash, VII and V2V systems such as Japan’s Smartway or the United States’ IntelliDrive are being designed to help motorists avoid the accident altogether. For example, the U.S. IntelliDrive system could potentially address 82 per- cent of vehicle crash scenarios involving unimpaired drivers.

ITS maximize the capacity of infrastructure, reducing the need to build additional highway capacity. For example, applying real-time traffic data to U.S. traffic signal lights can improve traffic flow significantly, reducing stops by as much as 40 percent, reducing travel time by 25 percent, cutting gas consumption by 10 percent (1.1 million gallons of gas annually), and cutting emissions by 22 percent (cutting daily carbon dioxide emissions by 9, 600 tons). ITS can contribute significantly to reducing congestion, which costs U.S. commuters 4.2 billion hours and 2.8 billion gallons of fuel each year, costing the U.S. economy up to $200 billion per year. Overall, ITS can reduce congestion by as much as 20 percent or more. ITS also enable transportation agencies to collect the real-time data needed to measure and improve the performance of the transportation system, making ITS the centerpiece of efforts to reform surface transportation systems and hold providers accountable for results.¶ By improving the operational performance of the transportation network, ITS enhance driver mobility and convenience, deliver environmental benefits, and even boost productivity and economic growth. For Japan, ITS have been crucial as the country strives to meet its goal to reduce, by 2010, CO2 emissions by 31 million tons below 2001 levels, with 11 million tons of savings come from improved traffic flow and another 11 million tons of savings from more effective use of vehicles. For many countries, ITS represents a rapidly expanding, export-led growth sector which contributes directly to national economic competitiveness and employment growth. For example, the U.S. Department of Transportation has estimated that the field of ITS could create almost 600,000 new jobs over the next 20 years, and a study of ITS in the United Kingdom found that a £5 billion investment in ITS would create or retain 188,500 jobs for one year.

### A2: UNEMPLOYMENT I/L TO THE ECONOMY/COMEPETITIVENESS

#### ITS IS KEY TO LONG TERM JOB CREATION

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

ITS will also be an important growth industry over the next 25 years. Scholars predict that, over a 20-year horizon (1997 to 2017), the cumulative global market for ITS-related products and services will reach $420 billion.64 A number of countries, including South Korea, Germany, and Japan, view intelligent transportation systems as a key industrial sector, capable of generating considerable export-led economic and employment growth.65 The U.S. Department of Transportation has estimated that the field of ITS could create almost 600,000 new jobs over the next 20 years.66 A 2009 ITIF study found that a £5 billion investment in intelligent transportation systems in the United Kingdom would support approximately 188,500 new or retained jobs for one year.67 Nations that lead in ITS deployment are also likely to be international leaders in ITS job creation and to create economic export and competitiveness advantage for themselves.

#### TRANSPORTATION FUNDING IS INEVITABLE—ITS REFORMS TO GENERATE BETTER RETURNS

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

Intelligent transportation systems deliver superior benefit-cost returns when compared to traditional investments in highway capacity. Overall, the benefit- cost ratio of systems-operations measures (enabled by intelligent transportation systems) has been estimated at about 9 to 1, far above the addition of conventional highway capacity, which has a benefit-cost ratio of 2.7 to 1. A 2005 study of a model ITS deployment in Tucson, Arizona, consisting of 35 technologies that would cost $72 million to implement, estimated that the aver- age annual benefits to mobility, the environment, safety, and other areas would total $455 million annually, a 6.3 to 1 benefit-cost ratio. If the United States were to implement a national real-time traffic information program, the GAO estimates the present value cost of establishing and operating the program would be $1.2 billion, but would deliver present value benefits of $30.2 billion, a 25 to 1 benefit-cost ratio.

### A2: STATES

#### USFG KEY

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

Despite their technical feasibility and significant benefit-cost ratios, many nations under-invest in ITS, partly because there are a significant number of challenges involved in developing and deploying ITS. While some ITS, such as ramp meters or adaptive traffic signals, can be deployed locally and prove effective, the vast majority of ITS applications—and certainly the ones positioned to deliver the most extensive benefits to the transportation network—must operate at scale, often at a national level, and must involve adoption by the overall system and by individual users at the same time to be effective, raising a unique set of system inter- dependency, network effect, and system coordination challenges. For example, VII systems like IntelliDrive must work on a national basis to be truly effective: it does a driver little good to purchase an IntelliDrive equipped vehicle in one state if it doesn’t work in other states the driver frequents. Likewise, drivers are not likely to demand on-board units capable of displaying real-time traffic information if that information is un- available. Many ITS systems work optimally at scale: For example, it makes little sense for states to independently develop a vehicle miles traveled usage-fee system because, in addition to requiring an on-board device in vehicles (ideally as part of the original factory-installed equipment), VMT requires a satellite system and a back-end payment system, and it makes little sense for states to independently replicate these infrastructure investments. Moreover, auto manufacturers would not want to have to make or install up to 50 different on- board devices to accommodate states’ potentially differing implementations of a VMT system.

#### FEDERAL ACTION KEY—USFG FUNDING SOLVES

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

For the most part, U.S. challenges in ITS have been the result of two key factors: a continued lack of adequate funding for ITS; and the lack of a federally led approach, as opposed to the “every state on its own approach” that has prevailed to date. At the federal level, the U.S. ITS effort focuses on research, is funded at $110 million annually, and operates out of the U.S. Department of Transportation’s Research and Innovative Technology Administration’s (RITA) ITS Joint Program Office (JPO). To reorganize and reanimate the U.S. ITS effort, on January 8, 2010, RITA unveiled a new, five-year “ITS Strategic Research Plan, 2010- 2014.” While the Strategic Plan represents an important step forward, the United States needs to make a fundamental transition from a focus mostly oriented around research to include a much greater focus on deployment and endeavor to accelerate the speed at which ITS technologies reach the traveling public.

### A2: ENVIROMENT IMPACTS/SPRAWL DA/

#### ITS SOLVES THE ENVIRONMENT DESPITE AN INCREASE IN INDUCED DEMAND

**Ezell ’10** [Stephen, senior analyst with the information technology and innovation foundation (itif), “ Intelligent Transportation

Systems”, http://www.itif.org/files/2010-1-27-ITS\_Leadership.pdf]

Intelligent transportation systems are positioned to deliver environmental benefits by reducing congestion, by enabling traffic to flow more smoothly, by coaching motorists how to drive most efficiently, and by reducing the need to build additional roadways through maximizing the capacity of existing ones. Vehicle transportation is a major cause of greenhouse gas emissions. In England, the transport sector contributes about one-quarter of the country’s CO2 emissions,93 percent of which comes from road transport.54 In France, transport represents 31 percent of final energy consumption and 26.4 percent of greenhouse gas emissions.55 Transportation accounts for 25 percent of worldwide greenhouse gas emissions,56 and 33 percent in the United States.57

Traffic congestion causes an outsized amount of CO2 emissions. Vehicles traveling at 60 kmph (37 mph) emit 40 percent less carbon emissions than vehicles traveling at 20 kmph (12 mph) and vehicles traveling at 40 kmph (25 mph) emit 20 percent less emissions than the 20 kmph baseline.58 One study found that computerized operations of 40 traffic signals in Northern Virginia’s Tysons Corner community alone decreased the total annual emissions for carbon monoxide, nitrogen oxides, and volatile oxygen compounds by 135,000 kilograms (and improved fuel consumption by 9 percent).59 By 2010, Japan expects to reduce CO2 emissions by 31 million tons below 2001 levels, with 9 million tons of reduction coming from more fuel efficient vehicles, 11 million tons from improved traffic flow, and 11 million tons from more effective use of vehicles, the latter two a direct benefit of the country’s investments in ITS. “Eco-driving” is an ITS-enabled application that optimizes driving behavior to the benefit of the environment. Vehicles equipped with eco-driving features provide feedback to the motorist on how to operate the vehicle at the most fuel-efficient speeds across all driving situations; the most sophisticated versions give visual or oral instructions on how much pressure to apply to the acceleration petal. In Japan, Germany, and increasingly the United States, enthusiasts upload records of their driving behavior from vehicles to Web sites where they compete with others to be the most efficient driver.Thus, intelligent transportation systems that decrease congestion and improve traffic flow ameliorate environmental impact considerably. To be sure, by decreasing congestion and enabling traffic to flow more smoothly, intelligent transportation systems may cause some degree of induced demand, encouraging more drivers to take to the roads due to improved traffic conditions. But while ITS may cause some induced demand, overall it is poised to deliver net environmental benefits.

### FLEX KEY—USE IN A2: VAGUENESS

#### FLEXIBLE DIRECTIVES SOLVE

**Kim 2001** (Dong Won Kim, phd in Public Administration and Policy from Virginia Tech, “Intelligent Transportation Systems: A Multilevel Policy Network” http://scholar.lib.vt.edu/theses/available/etd-06202001-162624/unrestricted/ITSNET.pdf)

It was found that the U.S. ITS policy network was a well-designed strategic governance structure at the planning level, but an experimental learning-focused one at the implementation level. It was initially designed by a new, timely, cross-sectional coalition, which brought together field leaders from both the public and the private sectors under the slogan of global competitiveness. Yet, day-to-day managers within the net often experience much more complex power relationships and internal dynamics as well as legal obstacles; also, they confront external uncertainty in political support and market.

For better results, policy networks should be designed in flexible ways that will handle their disadvantages such as ambiguous roles, exclusiveness, and increased staff time. In this respect, it is inevitable for the networks to include some components of a wide range of conventional structures, ranging from highly bureaucratic to highly entrepreneurial, on the one hand, and ranging between issue networks (grounded in American pluralism) and policy communities (based on European corporatism), on the other hand.

### TRADE UNIQUENESS

#### INCREASING TRANSPORTATION COSTS REVERSE GROWTH AND STIFLE GLOBAL TRADE

**Lynch**, David J. **2008** USA TODAY (8/12) (senior writer with Bloomberg News)

On the high seas, giant vessels stuffed with furniture, toys and electronics are slowing down in a bid to conserve fuel. Customers are pulling packages from costly air shipments and sending them by ship instead.¶ And some are beginning to wonder what an era of persistently high oil prices will mean for the multinational corporations that have come to rely on globe-girdling supply chains.¶ Crude prices have backed off last month's run toward $150 a barrel. But they persist above $110 a barrel, a level that was hard to fathom even a year ago. The end of cheap oil heralds a potentially dramatic reshaping of the globalized trade flows that have emerged in the past two decades. Rising transport costs are suddenly a key factor in decisions about both where to place factories and how much inventory to stockpile.¶ might be placed with factories closer to home. Shuttered assembly lines could be given new life. And suddenly, the confident claims of globalization's cheerleaders that distance doesn't matter would ring hollow.¶ "The low-hanging fruit of globalization has been picked. … Now, things are changing," says Stephen Jen, currency strategist for Morgan Stanley in London.¶ Consumer products giant Procter & Gamble began readying itself for this new era even before the past year's doubling in crude oil prices. In the past, the cost of building a factory or distribution center far outweighed the costs of moving goods from there to customers, says P&G spokesman Paul Fox.¶ "That is going to flip flop. Transportation costs are now going to be critical to the distribution of products," he says.¶ If Mexico stands to benefit, China's role as factory-to-the-world faces challenges. Wages for factory workers in export centers have been ticking higher. The full impact of higher world oil prices has not yet been felt in export factories, thanks to government energy subsidies. But that protection is scheduled to be withdrawn, meaning Chinese factories will face higher energy bills. Higher wages, electric bills and shipping costs — all will eat into Chinese manufacturers' profit margins.¶ Whatever the long-term results, higher fuel bills are affecting shipping lines and others involved in moving products from point A to point B. At NYK Line, captains are slowing their container ships, while executives consider retrofitting or scrapping older, thirstier models.¶ Still, Keller is skeptical that higher transport costs will turn back the clock to an era when the world economy was much less integrated. "The case for globalization is so strong. … Personally, I don't think we'll go back," he says.

#### SOARING TRANSPORT COSTS THREATEN TO UNDO THE GROWTH IN WORLD TRADE THAT HAS OCCURRED OVER THE LAST 3 DECADES

**Jeff Rubin May 27, 2009** (“Will Soaring Transport Costs Reverse Globalization?”, former chief economist and Benjamin Tal, senior economist for CIBC World Markets write for StrategEcon on http://www.mississippivalleyfreight.org/files/reverse.pdf//)

The last thirty years have seen an unprecedented growth in world trade—a phenomenon widely credited with providing the catalyst for the rapid industrialization of economies like China and India. In turn, the reduction in tariffs and non-tariff barriers over decades of multilateral trade negotiations was facilitated by the surge in global trade volumes. But in a world of triple-digit oil prices, soaring transport costs, not tariff barriers, pose the greatest challenge to trade. Converting transport costs into tariff-equivalent rates provides a poignant perspective on just how trade-disrupting soaring energy costs have become. Even back at a $100 per barrel oil price, transport costs outweigh the impact of tariffs for all of America’s trading partners, including even its neighbours, Canada and Mexico. Back in 2000, when oil prices were $20 per barrel, transport costs were the equivalent of a 3% US tariff rate. Currently, transport costs are equivalent to an average tariff rate of more than 9%. At $150 per barrel, the tariff-equivalent rate is 11%, going back to the average tariff rates of the 1970s. And at $200 per barrel, we are back at “tariff” rates not seen since prior to the Kennedy Round GATT negotiations of the mid-1960s.

**INEFFICIENT SUPPLY CHAINS DISRUPT IMPORT AND EXPORT FLOWS AND IMPEDE INTRA-COMPANY TRADE.**

**Miodrag Pesut February 24, 2009** [Economic Affairs Officer “Global Supply Chains: Transport and Competitiveness” available online at: www.unece.org/trans/doc/2009/itc/Conf\_01\_Pesut.pdf ]

Business practice of MNCs – more than 60% of international trade is intra-company exchanges. Logistics systems improvements are the “blocking and tackling” of economic development. Strong logistics and transportation services can enhance the competitiveness of an economy – inefficient supply chains through high transport and logistics costs could impede export and import flows, may increase cost for firms, especially those competing in the export market.

### US K2 TRADE

#### US KEY TO TRADE

**Levy, 2011** (Philip. resident scholar at AEI - International Trade and US Prosperity, [Testimony before the Joint Economic Committee](http://jec.senate.gov/public/index.cfm?p=Hearings&ContentRecord_id=fa3854d3-f10d-4ab2-ba2c-db7bf1086035))

The United States has a proud bipartisan tradition of leading the world in economic integration. The country has benefited enormously from the open rules-based trading system it has helped create.¶ In difficult economic times, the remaining shortcomings of the system can become particularly salient. There are countries who do not abide by the letter or spirit of global trade rules. There are important areas of commerce that remain uncovered by international agreements, where we have yet to set rules to govern fair play. And many countries retain significant barriers against U.S. goods and services, to their detriment and ours.¶ This just demonstrates that work remains to be done. U.S. leadership is more important than ever. A well-functioning open trading system is critical to America's future prosperity. The United States is uniquely positioned to build and sustain such a system. Reviving U.S. leadership in trade would not only lay the foundations for long-term U.S. economic well-being, it would also send a positive short-term signal to U.S. employers about an improved business climate and the prospect for new economic opportunities. These are the conditions in which investors in the U.S. economy, both foreign and domestic, will create new jobs.¶ I will organize my brief remarks into four parts. First, I will argue why the trade future is bright for the United States. Second, I will discuss some of the confounding factors that often cloud discussions of trade's impact on the United States. Third, I will draw out some of the trade policy implications. Finally, as an addendum, I will address some of the trade issues raised by the special-but important-case of China.¶ "The prospect of the United States as a surplus country is hardly the only reason to support an open trading system."--Philip Levy ¶ As members of this committee will be well aware, economic forecasts can be notoriously unreliable. They can be waylaid by unforeseen swings in consumer or business sentiment, or by significant shocks, either natural or man-made. For that reason, I will not even venture a guess about what we will see next year in terms of GDP, unemployment, or the current account balance.¶ There are other trends, however, that are much more predictable. I will rely on two. The first is demographic. While the U.S. population is aging, it is doing so much more slowly than populations in the major surplus countries of the world economy: Germany, Japan, and China. As a general rule, an aged population will consume more and produce less. As much as China may currently appear an unstoppable juggernaut, the size of its labor force is set to peak and then begin to decline in the near future. This is an instance in which extrapolating from recent experience can be highly misleading.¶ The second long-term tendency, related to the first, is that those who have made loans will ultimately wish to be repaid. The United States has run a current account deficit for decades. The value of goods and services that we have imported exceeded the value we sent back in exchange. The difference can be thought of as a loan. Whether in the form of a Treasury bond, a corporate loan, or currency holdings, the rest of the world has accumulated IOUs. These IOUs, ultimately, are claims on future production of U.S. goods and services. When aging populations around the world cash in their IOUs, they will be providing a new net demand for U.S. goods and services. In such a world, the United States will rely heavily on the rules and sureties of a healthy global trading system.¶ The prospect of the United States as a surplus country is hardly the only reason to support an open trading system. There is a natural tendency to equate exporting with economic success, but this sort of mercantilism was discredited long ago. The country benefits from both imports and exports. Nor is this the sort of lesson that we can afford to embrace only in good times, but must set aside in the harsh light of a downturn. In the recent financial crisis, we saw the U.S. current account deficit decline at the same time that unemployment rose. The simple arithmetic whereby exports are proportional to jobs gained and imports proportional to jobs lost is both theoretically unsound and empirically unsupported.¶ Yet international trade remains suspect in the United States, frequently seen as an affliction more than an opportunity. In part, this is due to reasons I've already described: the tendency to treat current account balances as a scorecard, rather than as an indicator of borrowing or lending; and the facile equation of exports with job gains and imports with job losses. I would like to suggest three additional sources of potential misunderstanding about trade's effects.¶ First, there is a popular tendency to cling to a very old-fashioned, textbook view of trade in finished products. In this conception, ripped from the pages of David Ricardo, one country produces wine, another makes cloth, and they swap goods back and forth on tall-masted sailing ships. There is some of that still today (not the sailing ships), but much of modern trade features globally integrated production. The modern car or large passenger aircraft consists of parts produced around the world. International trade often occurs between parent corporations and their overseas subsidiaries. Foreign production can thus be a complement to domestic production, rather than a substitute. We saw a small demonstration of this interconnectedness in the wake of Japan's terrible earthquake and tsunami earlier this year. Rather than advantaging U.S.-based factories by laying low a competitor, the effect was to threaten output from U.S. production lines, which faced the shortage of key parts produced in Japan. Similarly, when the furor over services outsourcing exploded in the middle of the last decade, most serious simulation studies of the phenomenon found that the controversial practice would, on net, create jobs in the United States. This was because the international service transactions, such as data entry or customized programming, were generally inputs into other businesses and tended to drive down those businesses' costs and allow for the expansion of production.¶ A final, central misperception is that there is a fixed number of manufacturing jobs in the world. If a manufacturing job is lost in the United States, it must be found somewhere abroad, the reasoning goes-the "offshoring" of U.S. manufacturing jobs. The implication is usually that the U.S. manufacturing sector is declining right along with the manufacturing labor force. It is certainly true that there has been a marked decline in the share of the U.S. labor force working in the manufacturing sector. This decline is not new; it dates from 1979 when manufacturing employment was just under 20 percent of total employment. By 2007, manufacturing employment accounted for roughly 9 percent of the total. Yet, while manufacturing employment was falling in relative and absolute terms, manufacturing output was rising dramatically. Over the two decades leading up to the most recent recession, real value-added U.S. manufacturing almost doubled. The difference in the employment and output trends is due to a dramatic increase in manufacturing productivity. The U.S. manufacturing sector is able to make more stuff with fewer workers. Nor is this phenomenon unique to the United States. As production technology has advanced, many countries have seen manufacturing shift to less labor-intensive techniques. Even China was shrinking its urban manufacturing employment throughout the 1990s, until the last decade, when manufacturing employment stabilized as Chinese output exploded. For the U.S. manufacturing jobs that have been lost to technological change, no amount of misdirected railing against foreign trade will bring them back.¶ So far, I have argued that trade presents the United States with a significant economic opportunity and that many of the common popular objections to open trade are flawed. How, then, can the United States take advantage of this opportunity?¶ The country must reclaim its role as a leader in global trade liberalization. It can do so through multilateral bodies, such as the World Trade Organization, or through regional groupings, such as the Trans-Pacific Partnership. To have credibility in any of these fora, however, a prerequisite is the passage of the pending free trade agreements with South Korea, Colombia and Panama. Those agreements will benefit the U.S. economy directly by lowering barriers to U.S. exporters and stimulating economic activity. Even more important, however, will be the reassurance to countries around the world that the United States is a credible economic partner. There was a good reason for global leaders in 2009 to prominently vow that they would bolster the global trading system as a means of restoring economic confidence and heading off a protectionist breakdown. That vow remains unfulfilled, but no less worthy. If the United States cannot meet aging promises to our patient FTA partners, we will have no credibility as we try to bargain for politically sensitive market access concessions from other countries around the globe.¶ One of the most politically popular U.S. trade stances, in recent years, has been a pledge to focus on the enforcement of U.S. rights under existing trade agreements. Of course the United States should enforce its rights. But for such a stance to have the impact that its proponents envision, two prerequisites must be met: 1. The rules granting us the rights we desire must be in place; 2. The institutions overseeing those rights must be sufficiently sturdy to enforce them.¶ While the first point may seem obvious, in many cases that the U.S. deems important, international rules guaranteeing fair and equitable treatment have yet to be agreed. The last broad global trade agreement, the Uruguay Round, was concluded over 17 years ago. Global commerce has changed a great deal since then and new rules have yet to be put in place. Unless we contemplate unilateral imposition of new trading norms, we cannot enforce rules that do not exist. Where these rules are lacking, the push for enforcement should really be a push for negotiating progress.¶ In the absence of new agreements, there is a temptation to seek satisfaction through the aggressive use of venues such as the WTO dispute settlement mechanism-litigation in lieu of negotiation. This poses a serious long-term threat to the viability of the WTO. It is not a legislative body and the United States government has generally objected when dispute settlement panels have taken an expansive view of their powers. The dispute settlement system is highly valuable as a means of settling factual disputes over the application settled agreements. If the dispute settlement mechanism is used to resolve fundamentally political or unsettled points, it will eventually lose credibility and countries will cease to abide by its decisions.¶ There is much more to a successful U.S. trade policy than passing the pending FTAs, but it is an indispensable first step. Then, serious work must be done to restore trade negotiating authority (TPA) to the executive branch. Once these two steps are accomplished, the United States will then be equipped to reclaim its position of global leadership on economic matters. In that position, it can work to shape global commercial rules and standards in a favorable way and ensure market access for the country's producers and employers. This will work to the benefit of all sectors of the U.S. economy, certainly including manufacturing.

### TRADE KEY TO GLOBAL ECONOMY

#### US INTERNATIONAL TRADE IS CRITICAL FOR THE GLOBAL ECONOMY

**Luckett 10** (Tony, August 11, Tony started investing in the stock market over 25 years ago and has been an active investor ever since, He is studying for his fourth Open University degree, Why International Trade Is Good For Us, http://www.fool.co.uk/news/investing/2010/08/11/why-international-trade-is-good-for-us.aspx)

The old saying that "when America sneezes the world catches a cold" has a lot of truth in it, so when the American banking crisis struck in 2008 many pundits expected that the world would enter a global depression comparable to that of the 1930s. There are several reasons why this didn't happen, all of which were the result of central bankers and politicians having learnt from history (for once!) and made sure that they avoided making the same mistakes. The Great Depression wasn't just caused by the insane policy of governments raising interest rates and restricting the money supply during an economic downturn, it was the hammering that international trade took when countries raised import duties, imposed quotas or even banned imports. America's Smoot-Hawley Tariff Act of 1930 was one of the most lethal pieces of anti-trade legislation ever passed and in the five years to 1934 protectionism meant that international trade fell by more than two-thirds. Naturally countries cried foul when their goods were stopped by other countries' trade barriers, but the policy of "beggar thy neighbour" continued until enough people realised that it wasn't working. In 2009 the cries of protectionism were largely ignored and the world recovered. The idea that countries can do better by producing everything by themselves is something that needs to be consigned to the history books. If it was true then Myanmar and North Korea would be roaring successes and we'd be flocking to invest there!

#### TRADE SOLVES POVERTY

**Rodrigue 2009** (Dr. Jean-Paul, Professor of Geography, The Geography of Transport Systems in 2009, Hofstra University Dept. of Global Studies & Geography, Hofstra University Transportation, Globalization and International Trade The Geography of Transport Systems)

Without international trade, few nations could maintain an adequate standard of living. With only domestic resources, each country could only produce a limited number of products and shortages would be prevalent. Global trade allows for an enormous variety of resources – from Persian Gulf oil, Brazilian coffee to Chinese labor – to be made more widely accessible. It also facilitates the distribution of many different manufactured goods that are produced in different parts of the world. Wealth becomes increasingly derived through regional specialization of economic activities. This way, production costs are lowered, productivity rises and surpluses are generated, which can be transferred or traded for commodities that would be too expensive to produce domestically or would simply not be available. As a result, international trade decreases the overall costs of production worldwide. Consumers can buy more goods from the wages they earn, and standards of living should, in theory, increase. International trade consequently demonstrates the extent of globalization with increased spatial interdependencies between elements of the global economy and their level of integration. These interdependencies imply numerous relationships where flows of capital, goods, raw materials and services are established between regions of the world. Another important attribute of international trade is that it increasingly concern exchanges within multinational corporations.

### Trade Good – Environment

#### TRADE SOLVES THE ENVIRONMENT

**Feketekuty 93** (Geza, Chairman of the OECD Trade Committee and Senior Policy Advisor to the U.S. Trade Representative, Minnesota Journal of Global Trade, summer **1993** lexis)

International trade creates a more efficient utilization of world resources than would be possible without trade. This is expected to reduce the exploitation of resources, including environmental resources, associated with a given level of global output of goods and services. Alternatively, trade can be seen as increasing the global output of goods and services without a corresponding increase in the exploitation of environmental resources. Contrary to the mythology created by the growth pessimism of the Club of Rome, n29 such an increase in global economic output has a positive benefit for the environment. Experience has shown that the higher the per capita income of a country, the higher its environmental consciousness, and the more it is willing and able to commit resources to improving the environment. n30 In fact, in a country in which the majority of the population is barely able to sustain life, the government is unlikely to divert resources to an improvement of environmental quality, even if that decision clearly threatens to harm future generations. Positive per capita growth rates in the output of goods and services are therefore essential for achieving sustainable development. n31 To the extent international trade increases economic growth rates and helps lift the population of a country above the subsistence level, international trade will support the achievement of environmental goals.

### TRADE SOLVES WAR

#### TRADE LEADS TO INTERDEPENDENCE DECREASING RISK OF GLOBAL NUCLEAR WAR.

Michael **Spicer**, economist, Former Member of British Parliament, “The Challenge from the East and the Rebirth of the West” **1996** p. 121

The choice facing the West today is much the same as that which faced the Soviet bloc after World War II: between meeting head-on the challenge of world trade with the adjustments and the benefits that it will bring, or of attempting to shut out markets that are growing and where a dynamic new pace is being set for innovative productions. The problem about the second approach is not simply that it won’t hold: satellite technology alone will ensure that consumers will begin to demand those goods that the East is able to provide most cheaply. More fundamentally, it will guarantee the emergence of a fragmented world in which natural fears will be fanned and inflamed. A world divided into rigid trade blocs will be a deeply troubled and unstable place in which suspicion and ultimately envy will possibly erupt into a major war. I do not say that the converse will necessarily be true, that in a free trading world there will be an absence of all strife. Such a proposition would manifestly be absurd. But to trade is to become interdependent, and that is a good step in the direction of world stability. With nuclear weapons at two a penny, stability will be at a premium in the years ahead

#### TRADE EXPECTATION THEORY IS SUPERIOR TO THEIR INTERPRETATION OF REALISM – THE EXPECTATION OF TRADE-DECLINE DECREASES THE LIKELIHOOD OF CONFLICT.

Dale C. **Copeland**, "Economic Interdependence and War: A Theory of Trade Expectations," International Security, Vol. 20, no.4, Spring **1996**

The unsatisfactory nature of both liberal and realist theories is shown by their difficulties in explaining the run-ups to the two World Wars. The period up to World War I exposes a glaring anomaly for liberal theory: the European powers had reached unprecedented levels of trade, yet that did not prevent them from going to war. Realists certainly have the correlation right - the war was preceded by high interdependence - but trade levels had been high for the previous thirty years; hence, even if interdependence was a necessary condition for the war, it was not sufficient. At first glance, the period from 1920 to 1940 seems to support liberalism over realism. In the 1920s, interdependence was high, and the world was essentially peaceful; in the 1930s, as entrenched protectionism caused interdependence to fall, international tension rose to the point of world war. Yet the two most aggressive states in the system during the 1930s, Germany and Japan, were also the most highly dependent despite their efforts towards autarchy, relying on other states, including other great powers, for critical raw materials. Realism thus seems correct in arguing that high dependence may lead to conflict, as states use war to ensure access to vital goods. Realism's problem with the interwar era, however, is that Germany and Japan had been even more dependent in the 1920s, yet they sought war only in the late 1930s when their dependence, although still significant, had fallen. The theory presented in this article - the theory of trade expectations - helps to resolve these problems. The theory starts by clarifying the notion of economic interdependence, fusing the liberal insight that the benefits of trade give states an incentive to avoid war with the realist view that the potential costs of being cut off can push states to war to secure vital goods. The total of the benefits and potential costs of trade versus autarchy reveals the true level of dependence a state faces, for if trade is completely severed, the state not only loses the gains from trade but also suffers the costs of adjusting its economy to the new situation. Trade expectations theory introduces a new causal variable, the expectations of future trade, examining its impact on the overall expected value of the trading option if a state decides to forgo war. This supplements the static consideration in liberalism and realism of the levels of interdependence at any point in time, with the importance of leaders' dynamic expectations into the future. Levels of interdependence and expectations of future trade, considered simultaneously, lead to new predictions. Interdependence can foster peace, as liberals argue, but this will only be so when states expect that trade levels will be high into the foreseeable future. If highly interdependent states expect that trade will be severely restricted - that is, if their expectations for future trade are low - realists are likely to be right: the most highly dependent states will be the ones most likely to initiate war, for fear of losing the economic wealth that supports their long-term security. In short, high interdependence can be either peace-inducing or war-inducing, depending on the expectations of future trade.

#### ECONOMIC INTERDEPENDENCE REDUCES THE LIKELIHOOD OF CONFLICT – FOUR REASONS.

MAJ Tan **Yan Yee**, Pointer, Journal, “Democratisation, Interdependence, and the Prospects for Future War” March **1999**

Like the Democratic Peace Proposition, the notion that increased interdependence reduces the probability of war among nations is not new. For one, economists have long demonstrated that economic interdependence benefits both parties through the process of international trade. The underlying rationale is worth explaining. In a simple model of a two-state-two-product international economy, even if a particular state is more efficient at producing both goods, it would still make more economic sense for each state to specialise in producing one of the goods and thereafter obtain the other through barter exchange. This is because the issue is one of relative rather than absolute efficiency; the more efficient state should optimise its limited resources to focus entirely on producing the goods where it has a relatively greater efficiency. From an economic viewpoint, therefore, international trade represents one of the rare occasions in international affairs that present a win-win situation to both parties.15 Traditionally, theories on the effect of interdependence between states on the risk of war can be divided into two main camps. On the one extreme, liberals argue that economic interdependence lowers the likelihood of war by increasing the value of trading over the alternative of aggression; in other words, states would rather trade than fight.16 To put it simply, trade is mutually beneficial, while war is at best a zero-sum game. At the same time, the increasing lethality of modern weapons has greatly increased the costs and risks of war, thus making the trading option seem even more rational. Four other subsidiary propositions supporting the liberal view are worth mentioning here.17 Firstly, the increased economic activity that accompanies higher trade levels tends to promote domestic prosperity, and in doing so lessens the internal problems that push leaders to war. Secondly, trade may alter the domestic structure of a particular state, giving more influence to groups with a vested interest in the continuation of peaceful trade. Thirdly, a higher level of interdependence inevitably leads to increased interaction between governments and peoples. This enhances understanding and an appreciation of each other's views and perspectives, reducing the misunderstandings and miscalculations that sometimes lead to war. The final argument asserts that trade has the spillover effect of enhancing political ties between trading partners, thus improving the prospects for long-term co-operation.

#### EVEN IF INTERDEPENDENCE INCREASES CONFLICTS, THEY WILL NOT ESCALATE – THE ONLY RISK OF FULL-BLOWN WAR COMES FROM DISCONNECTED STATES.

Edward D. **Mansfield**, Department of Political Science at the University of Pennsylvania, **and** Brian M. **Pollins**, Department of Political Science at The Ohio State University, Journal of Conflict Resolution, “The Study of Interdependence and Conflict” December 2001

A related possibility is that highly interdependent states rarely engage in full-blown war because the costs of doing so are prohibitive. If, however, these states realize that war is unlikely, each one may be tempted to engage in acts of brinkmanship against the other(s) to meet its foreign policy goals since it can rest assured that these acts will not provoke a military reprisal. This scenario implies that interdependence might foster a great deal of low-intensity conflict, but such conflict is unlikely to escalate, thereby helping to reconcile the claims of realists and neomercantilists, on one hand, and liberals, on the other

#### TRADE SOLVES EXTINCTION

**Copley News Service ‘99** [Dec 1, Commentary, L/N]

For decades, many children in America and other countries went to bed fearing annihilation by nuclear war. The specter of nuclear winter freezing the life out of planet Earth seemed very real. Activists protesting the World Trade Organization's meeting in Seattle apparently have forgotten that threat. The truth is that nations join together in groups like the WTO not just to further their own prosperity, but also to forestall conflict with other nations. In a way, our planet has traded in the threat of a worldwide nuclear war for the benefit of cooperative global economics. Some Seattle protesters clearly fancy themselves to be in the mold of nuclear disarmament or anti-Vietnam War protesters of decades past. But they're not. They're special-interest activists, whether the cause is environmental, labor or paranoia about global government. Actually, most of the demonstrators in Seattle are very much unlike yesterday's peace activists, such as Beatle John Lennon or philosopher Bertrand Russell, the father of the nuclear disarmament movement, both of whom urged people and nations to work together rather than strive against each other. These and other war protesters would probably approve of 135 WTO nations sitting down peacefully to discuss economic issues that in the past might have been settled by bullets and bombs. As long as nations are trading peacefully, and their economies are built on exports to other countries, they have a major disincentive to wage war. That's why bringing China, a budding superpower, into the WTO is so important. As exports to the United States and the rest of the world feed Chinese prosperity, and that prosperity increases demand for the goods we produce, the threat of hostility diminishes. Many anti-trade protesters in Seattle claim that only multinational corporations benefit from global trade, and that it's the everyday wage earners who get hurt. That's just plain wrong. First of all, it's not the military-industrial complex benefiting. It's U.S. companies that make high-tech goods. And those companies provide a growing number of jobs for Americans. In San Diego, many people have good jobs at Qualcomm, Solar Turbines and other companies for whom overseas markets are essential. In Seattle, many of the 100,000 people who work at Boeing would lose their livelihoods without world trade. Foreign trade today accounts for 30 percent of our gross domestic product. That's a lot of jobs for everyday workers. Growing global prosperity has helped counter the specter of nuclear winter. Nations of the world are learning to live and work together, like the singers of anti-war songs once imagined. Those who care about world peace shouldn't be protesting world trade. They should be celebrating it.

### TRADE SOLVES DEMOCRACY

#### EXPANDING TRADE SOLVES DEMOCRACY AND FREEDOM GLOBALLY.

**Griswold ‘4** – Associated Director of the Center for Trade Policy Studies @ CATO (Daniel, Trade Policy Analysis #26, “Trading Tyranny for Freedom; How Open Markets Till the Soil for Democracy”, January 6http://www.freetrade.org/pubs/pas/tpa-026es.html, RG)

In the aftermath of September 11, the foreign policy dimension of trade has reasserted itself. Expanding trade, especially with and among less developed countries, is once again being recognized as a tool for encouraging democracy and respect for human rights in regions and countries of the world where those commodities have been the exception rather than the rule.

Political scientists have long noted the connection between economic development, political reform, and democracy. Increased trade and economic integration promote civil and political freedoms directly by opening a society to new technology, communications, and democratic ideas. Economic liberalization provides a counterweight to governmental power and creates space for civil society. And by promoting faster growth, trade promotes political freedom indirectly by creating an economically independent and political aware middle class.

The reality of the world today broadly reflects those theoretical links between trade, free markets, and political and civil freedom. As trade and globalization have spread to more and more countries in the last 30 years, so too have democracy and political and civil freedoms. In particular, the most economically open countries today are more than three times as likely to enjoy full political and civil freedoms as those that are relatively closed. Those that are closed are nine times more likely to completely suppress civil and political freedoms as those that are open. Nations that have followed a path of trade reform in recent decades by progressively opening themselves to the global economy are significantly more likely to have expanded their citizens' political and civil freedoms.

The powerful connection between economic openness and political and civil freedom provides yet another argument for pursuing an expansion of global trade. In the Middle East, China, Cuba, Central America, and other regions, free trade can buttress U.S. foreign policy by tilling foreign soil for the spread of democracy and human rights.

#### DEMOCRACY SOLVES MULTIPLE SCENARIOS FOR EXTINCTION.

**Diamond ’95** (Larry, Senior Fellow – Hoover Institution, “Promoting Democracy in the 1990s”, December, [http://www.carnegie.org//sub/pubs/deadly/dia95\_01.html](http://www.carnegie.org/sub/pubs/deadly/dia95_01.html))

OTHER THREATS This hardly exhausts the lists of threats to our security and well-being in the coming years and decades. In the former Yugoslavia nationalist aggression tears at the stability of Europe and could easily spread. The flow of illegal drugs intensifies through increasingly powerful international crime syndicates that have made common cause with authoritarian regimes and have utterly corrupted the institutions of tenuous, democratic ones. Nuclear, chemical, and biological weapons continue to proliferate. The very source of life on Earth, the global ecosystem, appears increasingly endangered. Most of these new and unconventional threats to security are associated with or aggravated by the weakness or absence of democracy, with its provisions for legality, accountability, popular sovereignty, and openness. LESSONS OF THE TWENTIETH CENTURY The experience of this century offers important lessons. Countries that govern themselves in a truly democratic fashion do not go to war with one another. They do not aggress against their neighbors to aggrandize themselves or glorify their leaders. Democratic governments do not ethnically "cleanse" their own populations, and they are much less likely to face ethnic insurgency. Democracies do not sponsor terrorism against one another. They do not build weapons of mass destruction to use on or to threaten one another. Democratic countries form more reliable, open, and enduring trading partnerships. In the long run they offer better and more stable climates for investment. They are more environmentally responsible because they must answer to their own citizens, who organize to protest the destruction of their environments. They are better bets to honor international treaties since they value legal obligations and because their openness makes it much more difficult to breach agreements in secret. Precisely because, within their own borders, they respect competition, civil liberties, property rights, and the rule of law, democracies are the only reliable foundation on which a new world order of international security and prosperity can be built.

### Trade Good – Leadership

#### TRADE’S KEY TO US LEADERSHIP

**O’Driscoll ‘2** – Former Director at the Center for International Trade and Economics at the Heritage Foundation (Gerald, December 18, “Trade Promotes Prosperity and Security” Backgrounder, [www.heritage.org/Research/TradeandForeignAid/BG1617.cfm](http://www.heritage.org/Research/TradeandForeignAid/BG1617.cfm), )

It is fitting that economic freedom be included as part of the national security strategy. A strong economy undergirds a strong national defense, and the strong U.S. economy is one source of the military strength of the United States. The national security strategy also argues, however, that the economic strength of other friendly countries will enhance U.S. security.

Economic freedom sustains economic growth and wealth creation. Free markets foster the spirit of entrepreneurship and innovation that creates new products and jobs. This creative economic process in turn generates higher incomes, savings and wealth creation, and economic development in nations.

According to the Office of the U.S. Trade Representative, for instance, the North American Free Trade Agreement and the Uruguay Round together "generate annual benefits of $1,300-$2,000 for the average American family of four."8 Such benefits equal more than $100 per month and would greatly assist struggling families throughout the world. According to a World Bank study, "growth generally does benefit the poor as much as everyone else, so that the growth-enhancing policies of good rule of law, fiscal discipline, and openness to international trade should be at the center of successful poverty reduction strategies."9

Chapter VI of the Administration's national security strategy describes the process succinctly: "Ignite a New Era of Global Economic Growth Through Free Markets and Free Trade." Specifically:

A strong world economy enhances our national security by advancing prosperity and freedom in the rest of the world. Economic growth supported by free trade and free markets creates new jobs and higher incomes. It allows people to lift their lives out of poverty, spurs economic and legal reform, and the fight against corruption, and it reinforces the habits of liberty.10

#### US LEADERSHIP PREVENTS NUCLEAR WAR.

**Khalilzad ’95** (Zalmay, RAND Corporation, Washington Quarterly, “Losing the Moment? The United States and the World After the Cold Water”, 18:2, Spring,)

Under the third option, the United States would seek to retain global leadership and to preclude the rise of a global rival or a return to multipolarity for the indefinite future. On balance, this is the best long-term guiding principle and vision. Such a vision is desirable not as an end in itself, but because a world in which the United States exercises leadership would have tremendous advantages. First, the global environment would be more open and more receptive to American values -- democracy, free markets, and the rule of law. Second, such a world would have a better chance of dealing cooperatively with the world's major problems, such as nuclear proliferation, threats of regional hegemony by renegade states, and low-level conflicts. Finally, U.S. leadership would help preclude the rise of another hostile global rival, enabling the United States and the world to avoid another global cold or hot war and all the attendant dangers, including a global nuclear exchange. U.S. leadership would therefore be more conducive to global stability than a bipolar or a multipolar balance of power system.

### TRADE SOLVES RIGHTS

#### GLOBALIZATION INCREASES CIVIL LIBERTIES AND POLITICAL FREEDOM

**Obhof '3 -** JD @ Yale Law School, BA @ Ohio Univ. (Larry, Fall, "WHY GLOBALIZATION? A LOOK AT GLOBAL CAPITALISM AND ITS EFFECTS," 15 J. Law & Pub Pol’y 91,)

One attempt to measure political freedom is offered by the annual Freedom House survey of civil liberties and political rights. n128 This survey includes comprehensive information on 192 countries and 17 disputed territories. It measures political rights according to a citizen's ability to participate in the political process, including the rights of an individual to vote and compete for public office, as well the ability of elected representatives to determine public policies. Civil liberties include the freedom to develop views, institutions, and personal autonomy apart from the state. Open countries tend to score well on the Freedom House survey; with very few exceptions, countries that are highly globalized enjoy greater political freedom than those that are not. Indeed, noting the link between freedoms and capitalism, the most recent survey finds that "efforts to help strengthen property rights, market systems, and the rule of law should be part of the effort to assist less-developed countries." Other studies have found a positive correlation between the presence of multinational corporations and the levels of civil and political rights in developing countries.These results should come as no surprise. Although globalization per se need not expand freedoms, increasing economic liberalization almost certainly does. It has long been known that one of the greatest benefits of a capitalist system is its tendency to diffuse power among individual decision makers, allowing for greater individual autonomy than any other system. Under the invisible hand of the market, individual decision-making replaces centralized authority as the guiding force of society; the result of a market economy is more autonomy for individuals, and hence more freedom. This occurs almost out of logical necessity: capitalism takes power away from the masses, in the form of the state or some other authority, and disperses it among individuals. Freedom of action in the economic sphere underpins political and civil freedom. n132 As F.A. Hayek stated in 1944, "political feeling is meaningless without economic freedom," because economic freedom is the prerequisite for any other freedom. n133 Economic freedom allows us to choose how we spend our time, what we do with the resources we earn, and indeed, how we spend our lives. In a capitalist system, individuals answer these questions for themselves. In any other system, individuals face coercion from others. The fundamental threat to freedom is the power to coerce; political freedom can therefore be defined as the absence of coercion. n134 Removing the organization of economic activity from the control of political authority eliminates the source of coercive power. n135 Market forces tend to eliminate the concentration of power and disperse whatever [\*115] power cannot be eliminated. n136 Hence economic freedom is a check on political power. Capitalism may not be a sufficient condition for freedom, but it is a necessary one.

### Leadership – Investment Key to IT Leadership

#### ITS is a necessary part of information technology commitment and leadership – Current approach is too weak

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

In contrast to Japan, South Korea, and the European ¶ Union, the **United States does not have a national in-¶ formation technology strategy and has not proclaimed** ¶ a goal of **international IT leadership. While the United ¶ States is now in the process of developing a nation-¶ al** broadband **strategy, which may well be forward-¶ thinking** about several technology applications such as ¶ near field communications-based mobile payments or ¶ health IT, **it is** **unlikely** **to include intelligent transpor-¶ tation systems**, at least **in any significant way**. Overall, ¶ **the United States really has not undertaken an** exten-¶ sive **assessment of how information technology can ¶ transform the** **country’s society and economy, and** to ¶ the extent it has done so, **it is late to the game. In con-¶ trast to** these other **countries that recognize the key ¶ role of government in assisting** their countries through ¶ **an IT-enabled transition**, **the United States has largely ¶ believed, incorrectly**, that **this is something the private ¶ sector can do on its own**. To the extent that **the United ¶ States** has developed an **ITS plan,** it **is not connected to ¶ a national IT strategy, is** relatively **late in coming and** ¶ **cautious in its goals**, **and** is **not yet a plan with** clearly ¶ artic**ulated goals for national deployment of ITS**.

**National visions for IT policy including ITS are key to leadership in the sector**

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

Policy factors appear to be much more important than ¶ non-policy factors in explaining international leader-¶ ship in ITS. Overall, the lesson from analyzing policy ¶ factors in the countries leading ITS deployment are: ¶ **Countries must have a comprehensive national vision ¶ for** the promise and impact of **intelligent transporta-¶ tion** systems, **countries must sufficiently fund capital ¶ investments in ITS, and** they **must pursue a coordi-¶ nated, focused national-level ITS implementation**.¶ **governments’ explicit recognition of the Importance ¶ of** and Vision for **ITs**¶ One reason why Japan, South Korea, and Singapore ¶ lead in ITS is because these **countries view ITS as one ¶ of a suite of IT applications or infrastructures that will ¶ transform their societies and drive economic growth**. ¶ As such, **they have focused on establishing policies for ¶ digital transformation** generally**, and ITS transforma-¶ tion specifically**, **and have made both a national prior-¶ ity**. As ABI Research noted, “Japan and South Korea ¶ lead the world in intelligent transportation systems, ¶ and national government agendas are among the ¶ most significant drivers for the development of ITS ¶ there.”162 **In contrast, there has been no national vision ¶ for IT transformation in the United States and** as such, ¶ **ITS**, to the extent it gets attention and funding, is seen ¶ as simply an adjunct tool that might make transporta-¶ tion a bit better.

### Leadership – Investment Key to ITS Leadership

#### Federal government policy and investment is key to ITS leadership

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

**In explaining international leadership in intelligent ¶ transportation systems**, **policy factors appear to be ¶ much more important than non**-transportation **policy ¶ factors**. Overall, **countries leading the world in ITS** de-¶ ployment: 1) **demonstrate national level commitment** ¶ and vision, 2) **make substantial investments** in ITS de-¶ ployment, **and** 3) **feature strong government leadership** ¶ in crafting a clearly articulated ITS vision, setting a ¶ national agenda, convening relevant stakeholders, and ¶ spearheading implementation. Many of **these coun-¶ tries enjoy** a high degree of **centralization in ITS deci-¶ sion making and deployment**, and in some cases fed-¶ eral governments (as in Japan) have direct control over ¶ roadways. But **these countries also invest** in ITS. For ¶ example, South Korea and Japan each invest more than ¶ twice as much in intelligent transportation systems as ¶ a share of GDP than the United States. Further, **these ¶ countries recognize ITS as a “force-multiplier” for ¶ their transportation** networks **that will enable a shift to ¶ a performance-based** transportation funding **system**, ¶ have built their ITS infrastructure through public-¶ private partnerships, and view their ITS investments ¶ as a platform that will lead to the creation of new val-¶ ue-added products and services, many of which can ¶ scarcely be foreseen today.

**Leadership – Low Now – National Policy Key**

**The US is lagging behind – Funding and federal leadership are key to integrated ITS**

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

In contrast to Japan, South Korea, and Singapore, **the ¶ United States lags world leaders in** aggregate **ITS de-¶ ployment,** particularly with regard to provision of real-¶ time traffic information by government transportation ¶ agencies, progress on vehicle-to-infrastructure and ¶ vehicle-to-vehicle integration, adoption of computer-¶ ized traffic signals, and maximizing the effectiveness ¶ of its already-installed ITS systems. To be sure, the ¶ United States has pockets of strengths with regard to ¶ ITS in particular regions and applications, including ¶ use of variable rate highway tolling, electronic toll col-¶ lection, certain advanced traffic management systems ¶ such as ramp metering, and an active private sector ¶ market in telematics and travel information provision, ¶ but the United States is not quite at the vanguard of the ¶ most elite countries deploying ITS. **Implementation of ¶ intelligent transportation systems** in the United States ¶ **varies immensely by state** and region, **thus tending to ¶ be sporadic, isolated, incremental, and,** unlike Japan’s ¶ Smartway, **not connected into a nationally integrated ¶ intelligent transportation system.¶ This is not a reflection on the technology** or the prom-¶ ise of ITS, nor it is a reflection of the organizations at ¶ the state and federal levels responsible for ITS deploy-¶ ment. Rather, as discussed subsequently, **it is the result ¶ of a continued lack of adequate funding** for ITS **and ¶ the lack of** the right organizational system to drive ITS ¶ in the United States, particularly the lack of **a federally-¶ led approach**, **as opposed to the “every state on its own ¶ approach**” that has prevailed to date. Recognizing the ¶ need to reorganize and reanimate the United States’ ¶ approach to intelligent transportation systems, on Jan-¶ uary 8, 2010, the Research and Innovative Technology ¶ Administration within the U.S. DOT unveiled a new ¶ “ITS Strategic Research Plan, 2010-2014.”114 The Plan ¶ charts an ITS research portfolio that will “continue ef-¶ forts necessary for researching, prototyping, testing, ¶ evaluating, and transferring the next generation of ITS ¶ technology.”115 Moreover, it elucidates a framework for ¶ research questions regarding ITS technology, applica-¶ tions, and policy that seeks to make, by 2014, an assess-¶ ment of the feasibility, viability, and value of deploying ¶ fully integrated VII and V2V platforms such as Intel-¶ liDrive. While this research work is important, and the ¶ creation of an ITS research plan for the United States ¶ marks a credible step forward, it is not enough. **The ¶ U.S. Department of Transportation needs to make a ¶ fundamental shift from a focus solely on ITS research ¶ to** include a much greater **focus on ITS deployment**, ¶ and significantly accelerate the speed with which ITS ¶ technologies reach the U.S. traveling public.

### Solvency – Competitiveness/Growth

#### ITS benefits competitiveness and growth – Congestion, mobility, exports, productivity and multipliers

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

¶ **ITS maximize the capacity of infrastructure**, reduc-¶ ing the need to build additional highway capacity. For ¶ example, applying real-time traffic data to U.S. traf-¶ fic signal lights can improve traffic flow significantly, ¶ reducing stops by as much as 40 percent, reducing ¶ travel time by 25 percent, cutting gas consumption by ¶ 10 percent (1.1 million gallons of gas annually), and ¶ cutting emissions by 22 percent (cutting daily carbon ¶ dioxide emissions by 9, 600 tons). **ITS can contribute ¶ significantly to reducing congestion**, which costs U.S. ¶ commuters 4.2 billion hours and 2.8 billion gallons of ¶ fuel each year, **costing the U.S. economy up to $200 ¶ billion per year**. Overall, **ITS can reduce congestion ¶ by** as much as **20 percent or more**. ITS also enable ¶ transportation agencies to collect the real-time data ¶ needed to measure and improve the performance of ¶ the transportation system, making ITS the centerpiece ¶ of efforts to reform surface transportation systems and ¶ hold providers accountable for results. ¶ By improving the operational performance of the ¶ transportation network, **ITS enhance driver mobility ¶ and convenience, deliver environmental benefits, and ¶ even boost productivity and** economic **growth**. For Ja-¶ pan, ITS have been crucial as the country strives to ¶ meet its goal to reduce, by 2010, CO2 emissions by 31 ¶ million tons below 2001 levels, with 11 million tons of ¶ savings come from improved traffic flow and another ¶ 11 million tons of savings from more effective use of ¶ vehicles. For many countries, **ITS represents a rapidly ¶ expanding**, **export-led growth sector** **which contributes** ¶ **directly to** national **economic competitiveness** and em-¶ ployment growth. For example, the U.S. Department ¶ of Transportation has estimated that the field of ITS ¶ could create almost 600,000 new jobs over the next ¶ 20 years, and a study of ITS in the United Kingdom ¶ found that a £5 billion investment in ITS would create ¶ or retain 188,500 jobs for one year.¶ Intelligent transportation systems deliver superior ¶ benefit-cost returns when compared to traditional in-¶ vestments in highway capacity. Overall, **the benefit-¶ cost ratio** of systems-operations measures (enabled by ¶ intelligent transportation systems) **has been estimated ¶ at about 9 to 1, far above** the addition of **conventional ¶ highway capacity**, which has a benefit-cost ratio of 2.7 ¶ to 1. A 2005 study of a model ITS deployment in Tuc-¶ son, Arizona, consisting of 35 technologies that would ¶ cost $72 million to implement, estimated that the aver-¶ age annual benefits to mobility, the environment, safe-¶ ty, and other areas would total $455 million annually, ¶ a 6.3 to 1 benefit-cost ratio. If the United States were ¶ to implement a national real-time traffic information ¶ program, the GAO estimates the present value cost ¶ of establishing and operating the program would be ¶ $1.2 billion, but would deliver present value benefits of ¶ $30.2 billion, a 25 to 1 benefit-cost ratio.

### Solvency – Efficiency and Congestion

#### Traveling is rapidly outpacing new infrastructure – ITS is key to manage congestion and efficiency

Stephen **Ezell**, Senior Analyst, ¶ Information Technology and Innovation Foundation, led the Global Service Innovation Consortium, 1-**10**, [“ Intelligent Transportation ¶ Systems¶ Explaining intErnational it application lEadErship,” The Information Technology¶ & Innovation Foundation, <http://trid.trb.org/view.aspx?id=911843>] E. Liu

**ITS improve** the performance of **a country’s transpor-¶ tation network by maximizing** the **capacity of existing ¶ infrastructure,** reducing the need to build additional ¶ highway capacity. **Maximizing capacity is crucial be-¶ cause, in almost all countries, increases in** vehicle **miles ¶ traveled dramatically outstrips** **increases in** roadway **ca-¶ pacity** (and in many countries there is either little more ¶ room to build, little political will to build, or both). ¶ For example, from 1980 to 2006 **in the United States, ¶ the total number of miles traveled** by automobiles in**-¶ creased 97 percent, but** over the same time the total ¶ number of **highway** lane **miles grew just 4.4 percent**, ¶ meaning that over twice the traffic in the United States ¶ has been traveling on essentially the same roadway ca-¶ pacity.35¶ **A number of ITS applications contribute to** enhanc-¶ ing the **operational performance of transportation** net-¶ works. For example, traffic signal light optimization ¶ can improve traffic flow significantly, reducing stops by ¶ as much as 40 percent, cutting gas consumption by 10 ¶ percent, cutting emissions by 22 percent, and reducing ¶ travel time by 25 percent.36 Applying real-time traffic ¶ data could improve traffic signal efficiency by 10 per-¶ cent, saving 1.1 million gallons of gas a day nationally ¶ and cutting daily carbon dioxide emissions by 9,600 ¶ tons.37 Ramp metering can increase vehicle through-¶ put (the number of cars that pass through a road lane) ¶ from 8 to 22 percent and increase speeds on roads ¶ from 8 to 60 percent.38 As up to 30 percent of conges-¶ tion on highways occurs at toll stops, deploying elec-¶ tronic toll collection systems can significantly reduce ¶ congestion. Assessing the impact of intelligent trans-¶ portation systems, including ramp metering, incident ¶ management, traffic signal coordination, and arterial ¶ access management, **a** September 2005 Government ¶ Accountability Office (**GAO) study found that ITS ¶ deployments** to date **had reduced delays** in 85 urban ¶ areas **by 9 percent** (336 million hours), **leading to a ¶ $5.6 billion reduction in annual costs** due to reduced ¶ fuel consumption and hours of delay.3¶ Indeed, **reducing traffic congestion is one of the prin-¶ cipal benefits of ITS**. American commuters spend five ¶ days per year (a full work week) stuck in traffic, a total ¶ of 4.2 billion hours per year, wasting over 2.8 billion ¶ gallons of fuel.40 When the impacts on lost productiv-¶ ity, unreliability, cargo delay, and safety are consid-¶ ered, the U.S. Department of Transportation’s chief ¶ economist concludes that **congestion’s toll on the U.S. ¶ economy amounts to up to $168 billion each year**.41 In ¶ the United States, congestion costs have been grow-¶ ing at 8 percent per year.42 Over the next 20 years, ¶ the cost of congestion could amount to $890.5 bil-¶ lion, or 4.3 percent of the value of the entire national ¶ economy.43 At current rates, congestion in the United ¶ States is expected to become so severe by 2030 that 58 ¶ urban areas will have regional congestion levels high ¶ enough to qualify as “severe” (up from 28 in 2003.)44¶ European Union countries experience 7,500 kilome-¶ ters of traffic jams every day on their roads, with ten ¶ percent of the EU’s road network affected by con-¶ gestion.45 In fact, 24 percent of Europeans’ driving ¶ time is spent in traffic congestion,46 at a yearly cost ¶ of one percent of the European Union’s GDP.47 Aus-¶ tralia annually suffers $12.5 billion in costs due to ¶ urban congestion. In Japan, congestion costs the na-¶ tion 3.5 billion man-hours, worth almost ¥11 tril-¶ lion ($109 billion) each year.48 Deploying intelligent ¶ transportation systems has been shown to have a ¶ significant and direct impact on reducing congestion. ¶ **South Korea found that** in the initial **cities in which ¶ it deployed intelligent transportation systems, aver-¶ age vehicle speed increased** 20 percent **and delay time** ¶ at critical intersections **decreased** 39 percent. Experts ¶ predict that, in the United States, **traffic jams can be ¶ reduced** as much as 20 percent by 2011 in areas that ¶ use ITS.49¶ ITS-enabled variable or congestion pricing can also ¶ reduce congestion. According to recent research, a ¶ comprehensive pricing approach that incorporates ¶ variable pricing tied to travel demand levels (such as ¶ congestion pricing) could provide significant conges-¶ tion benefits. One study estimated that region-wide ¶ congestion pricing could reduce peak travel by 8 to ¶ 20 percent.50 A Brookings Institution study estimat-¶ ed that congestion pricing on the nation’s Interstates ¶ and other freeways would reduce total vehicle miles ¶ traveled by 11 to 19 percent.51 And a Federal Highway ¶ Administration (FHWA) report looking at results ¶ from its Value Pricing Pilot Program, which imple-¶ mented tolling on a number of facilities nationwide, ¶ found that even targeted pricing can have a number ¶ of effects on driver behavior and traffic volumes, in-¶ cluding changes in times, routes, or modes of travel; ¶ willingness to pay for faster travel times by traveling ¶ on toll lanes; reductions in peak-period traffic vol-¶ umes; and more-efficient use of highway capacity.52

### Solvency – Freight

#### ITS technologies are key to reliability and productivity of freight

Scott **Johnson**, 18 years of transportation experience in government and industry and is a transportation specialist in FHWA's Office of Freight Management and Operations in Washington, DC **and** Joanne **Sedor** is a transportation specialist in FHWA's Office of Freight Management and Operations, 11/12-**04**, [“Reliability: Critical to Freight Transportation,” FWHA Publications, Vol. 68 • No. 3, <http://www.fhwa.dot.gov/publications/publicroads/04nov/09.cfm>] E. Liu

In addition to developing freight analysis tools, **FHWA stresses the need for** using intelligent transportation system (**ITS) technologies in freight transportation**. The targeted use of **ITS technologies** in critical steps in the supply chain **can boost** the **reliability and productivity of freight** transportation, **and improve global connectivity** for domestic and international trading partners. In operational tests at the Chicago O'Hare International Airport and the New York City-JFK International Airport, **ITS technologies**, such as the Electronic Supply Chain Manifest System, **reduced the time spent on** processing manifests and **transferring loads from one mode to another** **by 56 to 100 percent**. Moreover, processing drivers at air cargo facilities was two to four times faster than using a manual, paper-based system. The time savings resulted in estimated cost savings per shipment of $1.50 to $3.50.New Distribution Model¶ FHWA's Economic Effects of Transportation: The Freight Story cites how Ford Motor Company is taking advantage of transportation improvements by reorganizing its logistics to change the way it distributes vehicles to dealers. Traditionally, assembly plants ship finished vehicles directly to dealers, but only when a sufficient quantity of orders has been received to fill an entire railcar or truck. To shorten the average delivery time from the assembly plant to the dealer from 72 days to a goal of 15 days, Ford created what it calls "national mixing centers." These centers, located in Chicago, IL; Shelbyville, KY; Kansas City, MO; and Fostoria, OH, act as distribution centers by receiving all types of vehicles from assembly plants and then reshipping the correct number and type of vehicles by rail or truck to dealers. It is estimated that a vehicle is held at a mixing center for less than 24 hours before being shipped to a dealer.¶ **ITS technologies are also important in the new environment of** increased **emphasis on security and safety, and the push for increased visibility** in the transportation process. "Security and safety have always been a concern, but particularly now because of the potential for threats to the supply chain," says Michael Onder, leader of the Intermodal Freight Technology Team in FHWA's Office of Freight Management and Operations. The use of **ITS technologies offers** greater visibility and potentially **a more secure supply chain**.¶ Information about ownership and location of freight as it moves through the supply chain is essential to achieving the reliable, efficient, and secure movement of goods. Information provides the thread that binds individual operations into an efficient intermodal system.¶ In response to increased emphasis on security and the need to improve information sharing in the supply chain, FHWA has launched several intermodal freight technology initiatives. They include the testing of ITS freight technologies and development of models to simulate needed changes in infrastructure and operations at border crossings. FHWA's intermodal freight technology initiatives involve partnering with industry to conduct deployment tests that provide data on costs and benefits associated with the implementation of various products and practices. FHWA is partnering with border working groups to ensure that the technology development and deployment initiatives satisfy both transportation and security enforcement needs.New Distribution Model

### Solvency – Freight Efficiency

#### ITS is key to information communication systems that bolsters freight efficiency

Pushpendra **Kumar**, Ecole Polytechnique Universitaire de Lille ¶ Villeneuve d’Ascq, France , **et al.,** Belkacem Ould Bouamama, and Haffaf Hafid, **12**, [“Communication aspect in ICT for Freight Transport System,” http://www.thinkmind.org/download.php?articleid=icwmc\_2012\_16\_20\_20412] E. Liu

**The key role of ICT for enabling sustainable freight ¶ transport is in establishing cooperation** among logistics ¶ companies and various actors of freight transport system **by ¶ enabling the real time flow of information. ICT helps to ¶ build trust** among the various actors of the freight transport ¶ system by encouraging them to share information for ¶ achieving optimum transport strategies. **Another important ¶ contribution** of ICT towards sustainable freight transport ¶ system **is** its **ability to support intermodal** freight **transport. ¶ Various practical applications** of ICT in freight transport ¶ **include** vehicle **tracking, monitoring** and control, vehicle to ¶ vehicle ¶ **communication**, ¶ vehicle ¶ to ¶ infrastructure ¶ communication, **security and safety purposes**. ¶ Ollo-López and Aramendía-Muneta [4] examined the ¶ impact of ICT on competitiveness, innovation and ¶ environment, and found that use of ICT seems to favor these ¶ issues. **Several applications can be cited thanks to** **ICT ¶ development in ITS**: Tracking and tracing, localization, ¶ Monitoring and control, dynamic scheduling, traffic flow ¶ (optimization), weather and congestion information, ¶ pollution control, safety and security. For example, a trailer ¶ could be automatically identified, given permission to enter ¶ a container yard and instructed where to drop its load. In ¶ [20], a framework of a devoted highway freight transport ¶ platform in China is described. Such platform can provide ¶ the availability of drivers to transport companies by ¶ destination requests, generating route plans, and returning ¶ the calculated plans to the users. Furthermore, the ¶ information is processed through a Geographic Information ¶ System (GIS) [19] capable to provide accurate and real-time ¶ weather information on a specific area.

### Solvency – Implementation

#### US federal investment is necessary for ITS deployment

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In contrast to the leaders, **the United States lags in ¶ ITS deployment**, particularly with regard to provision ¶ of real-time traffic information, progress to date on ¶ vehicle-to-infrastructure and vehicle-to-vehicle inte-¶ gration, adoption of computerized traffic signals, and ¶ maximizing the effectiveness of its already fielded ITS ¶ systems. While the United States certainly has pockets ¶ of strengths with regard to ITS in particular regions ¶ and applications—including use of variable rate high-¶ way tolling, electronic toll collection, certain advanced ¶ traffic management systems such as ramp metering, ¶ and an active private sector market in telematics and ¶ travel information provision—**overall the implementa-¶ tion of ITS varies significantly by state** and region, thus ¶ **tending to be sporadic and isolated and not connected ¶ into a nationally integrated** “intelligent transportation ¶ **system**.” As one illustration of U.S. challenges in ITS, ¶ the percentage of U.S. metropolitan areas delivering ¶ real-time highway travel time and highway travel speed ¶ information to the public in 2007 was, respectively, 36 ¶ percent and 32 percent, while for arterial roadways, ¶ only 16 percent of U.S. metropolitan areas disseminate ¶ real-time travel speed information and only 19 percent ¶ distribute real-time travel time data. ¶ For the most part, **U.S. challenges in ITS have been ¶ the result of** two key factors: a continued **lack of ad-¶ equate funding for ITS; and the lack of a federally led ¶ approach**, as opposed to the “every state on its own ¶ approach” that has prevailed to date. At the federal ¶ level, the U.S. ITS effort focuses on research, is funded ¶ at $110 million annually, and operates out of the U.S. ¶ Department of Transportation’s Research and Inno-¶ vative Technology Administration’s (RITA) ITS Joint ¶ Program Office (JPO). To reorganize and reanimate ¶ the U.S. ITS effort, on January 8, 2010, RITA unveiled ¶ a new, five-year “ITS Strategic Research Plan, 2010-¶ 2014.” While the Strategic Plan represents an impor-¶ tant step forward, **the United States needs to make a** ¶ fundamental **transition** from a focus mostly oriented ¶ around research **to include** a much greater **focus on ¶ deployment** and endeavor **to accelerate the speed at ¶ which ITS technologies reach the** traveling **public**.¶

### Solvency – Productivity/Growth/Competitiveness

#### ITS expands economic growth by removing several inefficiencies and creates new markets that improve competitiveness

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**Intelligent transportation systems boost productivity ¶ and expand economic and employment growth. By im-¶ proving** the **performance** of a nation’s transportation ¶ system, thus **ensuring** that **people and products reach ¶ their appointed destinations** as quickly and efficiently ¶ as possible, **ITS can enhance the productivity of a na-¶ tion’s workers and** businesses and **boost** a nation’s eco-¶ nomic **competitiveness**. Many transportation agencies ¶ already use ITS effectively to reduce traffic congestion ¶ and its nearly $200 billion estimated annual impact ¶ on economic producitivty and the environment.61 A ¶ 2009 Reason Foundation study found that **reducing ¶ congestion and increasing travel speeds** enough to im-¶ prove access by 10 percent to key employment, retail, ¶ education, and population centers within a region in**-¶ creases** regional **production of goods** and services **by ¶ one percent**. The study reported that achieving “free-¶ flow traffic conditions” (that is, reducing congestion) ¶ around key urban and suburban destinations in eight ¶ U.S. cities—Atlanta, Charlotte, Dallas, Denver, De-¶ troit, Salt Lake City, the San Francisco Bay Area, and ¶ Seattle—could boost the economies in those cities ¶ alone by $135.7 billion and generate close to $9 billion ¶ in new tax revenues.62 ¶ **ITS deliver other economic benefits** as well. **They can ¶ help mitigate the** $230 billion annual economic im-¶ pact—**equivalent to nearly 2.3 percent of** U.S. **GDP—¶ of traffic accidents** and associated injuries or loss of life. ¶ The Eddington Commission in the United Kingdom ¶ estimated the effects of congestion pricing on freight ¶ and found commercial services industries would be net ¶ beneficiaries.63 It also noted that **businesses**, in particu-¶ lar, **accrue significant net gains** from road pricing **and** ¶ that these cost **savings get passed on to consumers** in ¶ the form of lower prices.¶ **ITS will also be an important growth industry** over the ¶ next 25 years. Scholars predict that, over a 20-year ho-¶ rizon (1997 to 2017), **the cumulative** global **market for ¶ ITS**-related **products** and services **will reach $420 bil-¶ lion.64** A number of countries, including South Korea, ¶ Germany, and Japan, view intelligent transportation ¶ systems as a key industrial sector, capable of generat-¶ ing considerable export-led economic and employment ¶ growth.65 The U.S. Department of Transportation has ¶ estimated that the field of ITS could create almost ¶ 600,000 new jobs over the next 20 years.66 A 2009 ¶ ITIF study found that a £5 billion investment in intel-¶ ligent transportation systems in the United Kingdom ¶ would support approximately 188,500 new or retained ¶ jobs for one year.67 **Nations that lead in ITS deploy-¶ ment are** also **likely to be** international **leaders in ITS ¶ job creation and to create** economic **export and com-¶ petitiveness advantage** for themselves. ¶ T

### Solvency Advocate

#### Federal investment and action is key to close the leadership deficit with countries on ITS

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I¶ nformation technology (**IT) has transformed many** industries, ¶ from education to health care to government, **and is now in the ¶ early stages of transforming transportation** systems. While many ¶ think improving a country’s transportation system solely means build-¶ ing new roads or repairing aging infrastructures, **the future of trans-¶ portation lies** not only in concrete and steel, but also **increasingly in ¶ using IT. I**T enables elements within the transportation system—vehi-¶ cles, roads, traffic lights, message signs, etc.—to become intelligent by ¶ embedding them with microchips and sensors and empowering them ¶ to communicate with each other through wireless technologies. **In the ¶ leading nations in the world, ITS bring significant improvement in ¶ transportation** system performance, including reduced congestion and ¶ increased safety and traveler convenience. Unfortunately, **the United ¶ States lags the global leaders**, particularly Japan, Singapore, and South ¶ Korea **in ITS deployment**. For the most part, thi**s has been the result ¶ of** two key factors: a **continued lack of adequate funding** for ITS a**nd ¶ the lack of the right organizational system to** drive ITS in the United ¶ States, **particularly the lack of a federally led approach, as opposed to ¶ the** “**every state on its own approach**” that has **prevailed to date**. ¶ This report examines the promise of ¶ ITS, identifies the global leaders in ITS ¶ and why they are leaders, discusses the ¶ reasons for the U.S. failure to lead, and ¶ proposes a number of recommendations ¶ for how Congress and the Administra-¶ tion can spur robust ITS deployment. ¶ If the United States is to achieve even a ¶ minimal ITS system, **the federal gover**n-¶ **ment will need to assume a far greater ¶ leadership role in not just ITS R&D, but ¶ also** ITS **deployment**. In short, it is time ¶ for the U.S. Department of Transpor-¶ tation to view ITS as the 21st century, ¶ digital equivalent of the Interstate high-¶ way system, where, like then, the federal ¶ government took the lead in setting a ¶ vision, developing standards, laying out ¶ routes, and funding its construction. Just as building ¶ the Interstate Highway System did not mean an aban-¶ donment of the role of states, neither does this new ¶ role; but just as building the Interstate required strong ¶ and sustained federal leadership, so too does trans-¶ forming our nation’s surface transportation through ¶ ITS. Accordingly, **this report recommends** that in the ¶ reauthorization of the surface transportation act, **Con-¶ gress should**:¶ ??¶ **Significantly increase funding for ITS at the ¶ federal level**, by $2.5 to $3 billion annually, in**-¶ cluding funding for large-scale demonstration ¶ projects, deployment,** and the ongoing opera-¶ tions and **maintenance** of already-deployed ITS. ¶ Specifically, the next surface transportation au-¶ thorization bill should include $1.5 to $2 billion ¶ annually in funding for the deployment of large-¶ scale ITS demonstration projects and should ¶ also provide dedicated, performance-based ¶ funding of $1 billion for states to implement ex-¶ isting ITS and to provide for ongoing operations, ¶ maintenance, and training for already deployed ¶ ITS at the state and regional levels.

### Solvency – Fed Key

#### Federal policy is the most important factor for success – Key to coordination, scale and funding – Other countries prove

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The degree of **centralization in ITS decision-makin**g ¶ authority **may be the most important policy factor ¶ for ITS success.** **The importance of centralized ITS** ¶ decision-making **is pertinent from** two perspectives: ¶ **The extent to which transportation**—and hence in-¶ telligent transportation systems—**policymaking and ¶ implementation** authority **resides at a national level** or ¶ at the state/regional level, **and the extent to which ITS ¶** decision-making **authority resides with a single** (or fi-¶ nal) **agency** or authority.¶ The degree of centralization is one of the most im-¶ portant explanatory factors because, as discussed pre-¶ viously, many **intelligent transportation systems** have ¶ chicken-or-egg characteristics, **face very difficult** sys-¶ tem **coordination problems, and often require scale ¶ and need to be implemented at a nationwide level.** Lo-¶ cal or **state actors may not have the same willingness ¶ to innovate** or invest in ITS, **and** even if they do they ¶ **are unlikely to have sufficient funding or** the **ability to ¶ reach sufficient** **economies of scale**. For all these rea-¶ sons, **national level vision, leadership, and coordina-¶ tion are essential for ITS success.** ¶ The **countries leading the world in developing** and ¶ deploying **intelligent transportation systems feature ¶ strong government leadership** in crafting a clearly-¶ articulated ITS vision, setting a national agenda, con-¶ vening relevant stakeholders, and spearheading imple-¶ mentation. Japan, Singapore, and South Korea have the ¶ advantage of being unitary polities that permit strong ¶ policy setting and coordination at the national level.

#### State actors fail – Won’t deal with interstate issues, spend efficiently or manage the network

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As discussed subsequently, the United States’ federated ¶ governance structure for surface transportation creates ¶ an inherent challenge to building ITS systems to scale ¶ and approaching the transportation system as a nation-¶ ally integrated network. But **travelers don’t just drive ¶ within state lines; they want to travel across state lines, ¶ and they want** their **ITS applications**—whether traffic ¶ information systems, toll payment systems, or Intelli-¶ Drive systems—**to travel with them.¶** But even with regard to ITS applications that leverage ¶ long-established technologies and don’t face systemic ¶ barriers—such as ramp meters, computerized smart ¶ signals, or traffic cameras—many nations, including the ¶ United States, under-invest in and insufficiently deploy ¶ ITS solutions. This happens, in part, because **transpor-¶ tation funding is often allocated without consideration ¶ of performance, giving** local and **state transportation ¶ planners** **little incentive** **to give preference to invest-¶ ments that can have** maximum **impact on optimizing ¶ system performance.** Part of this is legacy; **state** and ¶ local transportation **agencies were created to build and ¶ maintain infrastructure, not to manage a** transporta-¶ tion **network**.77 Yet combined with bureaucratic inertia ¶ and a lack of vision, some government transportation ¶ agencies see themselves as “builders of pieces” and not ¶ “managers of a system” and place more emphasis on ¶ building roads than on ensuring the system functions ¶ optimally.

### Solvency – Fed Key – Expertise/Interest

#### Only a national approach has the expertise and interest to carry out ITS

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In summary, the U.S. Department of Transportation ¶ needs to move from a focus on research to leadership. ¶ **DOT needs to set a vision for ITS, including** defin-¶ ing what the states need to do, ensuring that the states ¶ are deploying open, interoperable technology, **funding ¶ most of the deployment of nationally integrated ITS** ¶ systems, and holding states accountable for results. ¶ One of the main reasons for this is that the **portion ¶ of ITS that have** system **interdependencies requires a ¶ national approac**h. Another reason for the need for na-¶ tional leadership is that while all **state DOTs** have deep ¶ expertise in conventional transportation technology ¶ (for example, pavement and bridges), many **may lack ¶ either expertise or interest in ITS.** Centralizing that ¶ knowledge in one location makes more sense.¶ government funding for Intelligent Transportation ¶ systems development¶ **The leading countries in intelligent transportation ¶ systems have not only developed an explicit national** ¶ strategy for ITS, **they have also invested heavily in it.** ¶ South Korea’s National ITS Master Plan 21 commits ¶ to investing a total of $3.2 billion from 2007 to 2020 ¶ in intelligent transportation systems, an average of ¶ $230 million annually over the fourteen-year period. ¶ Japan invested ¥64 billion in ITS from April, 2007 to ¶ March, 2008 and ¥63.1 billion in ITS from April, 2008 ¶ to March, 2009, on average about $690 million annu-¶ ally.175 Aggregate investment in ITS at all government ¶ levels in the United States in 2006 was approximately $1 ¶ billion (including $110 million in federal funding and ¶ over $850 million in funding from the U.S. states).176 ¶ As a percentage of GDP, South Korea and Japan each ¶ invest more than twice as much in intelligent transpor-¶ tation systems than the United States (Figure 13).177

### Solvency – Federal Obligation

#### Interstate highways prove precedent and need for federal ITS funding

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So entrenched is the view that states and localities ¶ implement surface transportation policy in the United ¶ States that it is somewhat anathema to many to sug-¶ gest that the federal government take a more active ¶ role in ITS implementation. But **it is not as if the Unit-¶ ed States is incapable of exercising federal leadership ¶ over** the **national transportation** system. The Inter-¶ state Highways Act, and **the** building of the **Interstate ¶ Highway System, was largely a federal initiativ**e. The ¶ **federal government funded it, set the** design **standards** ¶ (down to the width of Interstate highway lanes), **and** ¶ even **selected the routes.** Certainly the states were part-¶ ners in building the Interstate, but **the United States ¶ would never have had an Interstate Highway System ¶ if the federal government had** simply **given money to ¶ the states and suggested they build it. ITS is the 21st ¶ century**, digital **equivalent of the Interstate Highway ¶ System, and needs the same level of federal govern-¶ ment leadership** that the development of the Interstate ¶ Highway System enjoyed.

### Solvency – Market Signals Key

#### Government signals of interest in buying ITS is key to technology investment and devlopment

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**Uncertain marketplaces for intelligent transportation ¶ systems may** also **inhibit their development**. In many ¶ industries, companies are more than willing to self-¶ fund research and development investments for new ¶ products and services, such as new desktop operating ¶ systems, software programs, even entirely new jetlin-¶ ers, for which there is a clear customer. But **in the case ¶ of intelligent transportation systems, companies** par-¶ ticipating in the industry in some countries **may have ¶ no clear sense if the customers (principally** national, ¶ state, or regional **transportation agencies) have any ¶ money—or appetite—to purchase such systems. ITS ¶ development** thus **entails much higher risk than does** ¶ development of many **other products** and services, in ¶ part **because governments are key buyers, and in** some ¶ countries, such as **the United States**, **they have shown** ¶ at best **mixed signals as reliable purchasers.** Moreover, ¶ many government transportation departments barely ¶ have enough money to engage in needed maintenance, ¶ much less invest in new technologies. At the same time, ¶ many are more comfortable investing in concrete than ¶ in (silicon) chips. **Given that customer interest** in ITS ¶ **may be unclear** or uncertain, **companies may be under-¶ standably reticent to invest in** highly risky **research** and ¶ product development of ITS systems.

### Internal Tradeoff Link

#### ITS projects compete with other projects for funding

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Currently, **ITS projects** often **have to compete ¶ with conventional transportation projects for ¶ funding**, such that **ITS projects**, which are poised ¶ to deliver greater long term benefits, may **have ¶ to compete with projects that**, while they may ¶ be immediately pressing, **are not positioned ¶ to deliver as great long-term benefits, such as ¶ road repair or even new** road **construction**. In ¶ addition to a lack of funding (which tends to ¶ exacerbate focus on more immediate concerns ¶ at the expense of a longer-term vision of ¶ the benefits of deploying ITS applications), ¶ bureaucratic inertia or a lack of interest, ¶ technical skill, or knowledge of ITS benefits ¶ have made it more difficult for ITS projects ¶ to compete with conventional transportation ¶ projects out of the same funding pools.