Conclusion: Logistics Networks in 2028 – Supply Chain Synchronization, Security and Speed Taken as Givens, Give Way to New Horizons

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Today's world has changed so rapidly and in ways so significantly just in the last 12 months: new fuel prices, known and unknown security threats, humanitarian crises and the global economic landscape. These challenges that the global logistics community must operate in are not necessarily new in type or magnitude, but new in terms of frequency and speed – such as the emerging uncertainty Mother Nature first ushers in ahead of her chaos. We have a sense of what is to come, but won't know until it comes or goes.

With this compelling context, we have laid out in this journal a framework of approaches, points of view and solutions to address this chaos and uncertainty for logisticians and the extended community of governments and industry moving global supply to meet global demand. Our articles have touched on global supply chain security and effectiveness, port security, handling and movement of high-risk cargo, disaster response operations, supply chain visibility and logistics networks.

While some of the capabilities discussed in these articles are in operation today, many will still take years to gain substantive scale across the global supply chain. These ongoing "projects" include:

- International standards and compatible trade regulations
- Data cleansing and formatting
- Infrastructure modernization
- Technology immersion – mesh networks, radio frequency identification (RFID), embedded sensors and chips
- Performance-based logistics models
- New operating models, joint ventures and consortiums.

But then what? After all, the industry is not addressing these for the first time. Rather, they've been discussed for quite some time now. While we can't make blanket assumptions, we have to assume human ingenuity and collective energies will continue to chip away at these old problems. And technology will accelerate the impact and unfortunately, at times, negate waste associated with geopolitical tensions, increased regulation and terrorism. Entities such as FedEx, Wal-Mart and the U.S. Department of Defense (DoD) continue to address these projects on a large scale. Follow-the-leader dynamics will ensue, and soon an RFID-enabled supply chain will one day be as common as a bar code-enabled supply chain.

Smart chips, microscopic computers and sensors will permeate the physical supply chain, including items, pallets, containers, ships, trucks and planes. Not only will this new wave of data be produced, but new software will then automate our processes and workflow that is either paper-based or human-based today. This technological

surge will close the gap with the logical or information supply chain, literally fusing the two together into a cohesive neural supply chain.

Technology has always been the easy part. The human part – the art of getting two nations to open up trade barriers or two competing companies to collaborate on asset management or data sharing – will sadly still be in play in 2028.

Academia, government and industry have all taken a look to the future and its implications on the security and efficiency of the global supply chain. In academia, the MIT Center for Transportation & Logistics' Supply Chain 2020 project sees a world in three scenarios:

- **Synchronicity** – Where democratic ideals spread into new nations and markets, further facilitating global commerce, openness, collaboration, partnerships and environmental stewardship. Trust and integrity is essential.[1]
- **Alien Nations** – Fueled by a lack of trust, nationalistic attitudes take hold and citizens of alien nations think and act locally. Foreign peoples and governments are mistrusted or even disdained. Conservation and energy efficiency are pursued with vigor in quest for scarce global natural resources.[2]
- **Spin City** – Globalization in this world is driving economic growth but at a slow and uneven pace. Government regulation reins in the global expansion of business.[3]

Clearly those three worlds exist to some degree today and will continue to do so in the future, thereby shaping, accelerating and decelerating advancements across logistics enterprise.

The government policy environment at perhaps one of the largest hubs of global commerce, with the United States representing nearly 20 percent of global maritime activity, will likely shape and influence the future global supply chain. The Security and Accountability for Every Port Act of 2006, or the SAFE Port Act, required that the Secretary of the U.S. Department of Homeland Security, in consultation with appropriate federal, state, local, and tribal government agencies, the private sector and the international community, develop and implement a strategic plan to enhance the security of the international supply chain. This strategy establishes the overarching framework for the secure flow of cargo through the supply chain and builds on existing national strategies and has four parts:

- Accurate data and information sharing
- Secure cargo
- Secure transit
- International standards and compatible regulations

Additionally, 15 strategic objectives are laid out addressing compelling capabilities and technologies necessary to secure the global supply chain and 33 programs identified to implement and usher in these capabilities. These may take every bit of the next 20 years to run their course and to have truly global supply chain implications.

Finally, without question, the future of the world's energy, including its supply, demand and effects on the environment, will have fundamental and lasting impacts on nations, governments, industry, the planet and the human race, let alone the future of logistics. In 2008, Shell released its "Shell Energy Scenarios To 2050" to help think about the future of energy. In it, they developed two scenarios that describe alternative ways it may develop.

In the first scenario, entitled "Scramble," policymakers pay little attention to more efficient energy use until supplies are tight. Likewise, greenhouse gas emissions are not seriously addressed until there are major climate shocks. This will fundamentally alter current supply chain configurations, performance and even purpose. In the second scenario, called "Blueprints," growing local actions begin to address the challenges of economic development, energy security and environmental pollution.

While the energy market is set to undergo significant change, we are facing an era of revolutionary transition and considerable turbulence. And while prices and technology will drive some of these transitions, political

1 Massachusetts Institute of Technology Center for Transportation & Logistics. "Supply Chain 2020 Baseline Scenarios." Available from ctl.mit.edu/public/Scenarios%20Descriptions.pdf; 6; Internet; accessed 15 October 2008.
2 Ibid, 2.
3 Ibid, 4.

and social choices will be critical. Given that profound change is inevitable, Shell asks how will it happen? Will national governments simply "scramble" to secure their own energy supplies? Or will new "blueprints" emerge from coalitions between various levels of societies and government, ranging from the local to the international, that begin to add up to a new energy framework? These are big questions for big challenges.

We fully recognize that to implement the points of view presented in this Journal, there is a challenge in transition, as many readers are faced with existing processes and systems that are in fact barriers themselves. We propose a multi-dimensional approach to initiate the transition process, shown in **Figure 1**. As strategy, process and data, technology and infrastructure are inherently tied together, this approach too must address each cohesively. The concurrent approach should also seek to deploy value in iterative (frequent and modular) capability releases taking advantage of both technology innovations and realistic deployment challenges.

In conclusion, we hope we have articulated the strategic significance and scale of the government supply chain and logistics function and elevated the germane issues for readers striving to understand and deploy new capabilities in their very unique missions. We've challenged the prevailing wisdom of traditional supply chain models in the fundamental new, dynamic environments in which they operate today. It is our vision that synchronization, security and speed are indeed capabilities in supply chain logistics that can and should persist simultaneously.

Figure 1. Transition Approach to Transformation