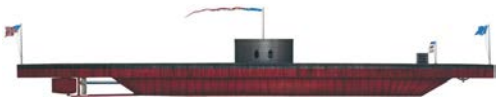

THE MONITOR AND MERRIMACK

Newsletter of the
Greater Hampton Roads Chapter
District 02 – Chapter 03
SOLE– The International Society of Logistics

January 2016

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From the Chapter Chairman

Welcome to 2016! Make a new year's resolution to join us at a luncheon or tour. We look forward to seeing you!

In February we are going to have a introduction session to ICAPS. If you're a frequent user or wanted to learn, come join us. ***Mr. Dan Jarrard*** will be our quest speaker this month. His topic will be ***"ICAPS Introduction."***

Stay tuned in. Our schedule for luncheons and tours will be filling in soon.

Charlie Littleton
Chairman GHRC SOLE

Coming Events:

Thursday February 25th.
1130 – 1300
"ICAPS Intro"
Mr. Dan Jarrard, LCE

Teppanyaki Grill and Buffet
7525 Tidewater Drive, Suite 8
Norfolk, Virginia

Dawn of 2016

Certified Professional Logistician Corner

The next CPL Exam will be given in May 2016

Customer Support

1. Customer support refers to:

a. all of the activities provided by a supplier for a customer to support a system, product, or service purchased by that customer from the supplier.
b. the before sale activities performed by the customer.
c. the after sale activities performed by the buyer for the supplier.
d. all of the support activities performed by the buyer and the seller.

2. The principle elements of the customer support plan include:

a. a description of the supplier activities that are to be performed by the supplier.
b. identify the resources required to accomplish the support.
c. identify the number and location of consumer operational sites.
d. all of the above.

3. Some examples of support policies include:

a. system maintenance performed by the producer throughout the planned life cycle.
b. system support activities at each level of maintenance will be performed by the producer for a given period of time.
c. all system maintenance activities at each level of maintenance will be accomplished by the user organization.
d. all of the above.

4. One problem that often arises in customer support is:

a. the parts of the logistics support plan are incompatible with each other.
b. the level of support in certain areas is always about what it should be.
c. the customer has little input into the supply interface.
d. customer support requirements are often left out of the contract.

5. The key questions to ask in gathering data for customer support analysis are:

a. what is the true performance and effectiveness of the system?
b. what is the true effectiveness of the logistics support capability?
c. are the initially specified requirements being met?
d. all of the above.

6. The steps used in establishing a data support system are:

a. identification of the requirements of the system that have to be monitored and the design and development of an information system that will enable the user to analyze the data.
B the design of an information system and the analysis of the data.
C working with the customer to see what information it needs about its support requirements and analyzing the data.
d. the design and development of an information system that will enable the data to be collected and implementing the system.

7. Some applications of the data collected in a support system include:

a. evaluation of mission requirements and performance measures.
b. verification of system utilization.
c. verification of cost system effectiveness.
d. all of the above.

8. Some applications of support data in the facilities area include:

a. evaluation of facility adequacy (operation, maintenance).
b. evaluation of delivery response time.
c. availability and utilization of transportation equipment.
d. all of the above

Answers on Page 3

Near term Calendar of Events

GHRC SOLE

February 2016

ASNE

Dinner Meetings: **Every 3rd Tuesday, Springhill Suites, Newtown Road, Va. Beach, (1800-1900 Social Hour); 1900-2030 Dinner and** Program; Reservations: on l ine at ASNE Tidewater site.

18 February 2016 **RADM Berkey - FFC N43**
Status of Fleet Maintenance

16 March 2016 **Dr. Jennifer Michaeli** ***ODU Research***

NDTA

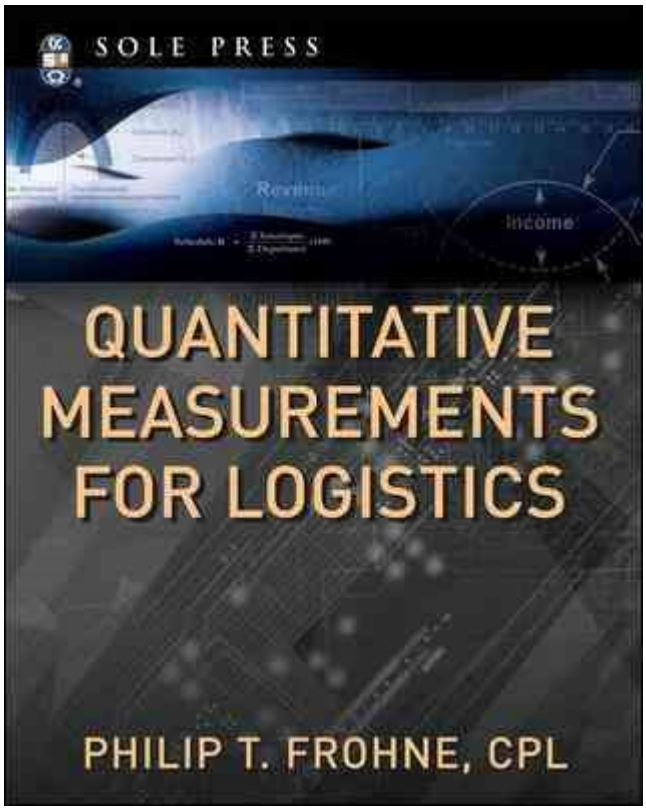
No events scheduled

CPL/CML CORNER ANSWERS

Answers			
1	e	6	a
2	d	7	d
3	c	8	a
4	a		

Springtime Follows

No Business Meeting was held this month.



Quantitative Measurements for Logistics (Paperback)

by Philip Frohne

Philip Frohne,Paperback - New Edition, Edition: 1,Series: McGraw-Hill Sole Press Ser., English-language edition ,Published by McGraw-Hill Professional Publishing

Genre: Technology

Author: Philip Frohne

SOLE Press

Publisher: McGraw-Hill Professional Publishing

The preeminent text of logistics formulas.

Greater Hampton Roads Area Chapter
SOLE – The International Society of Logistics

Presents

Mr. Dan Jarrard
Life Cycle Engineering

Interactive Computer-Aided Provisioning System (ICAPS) Introduction

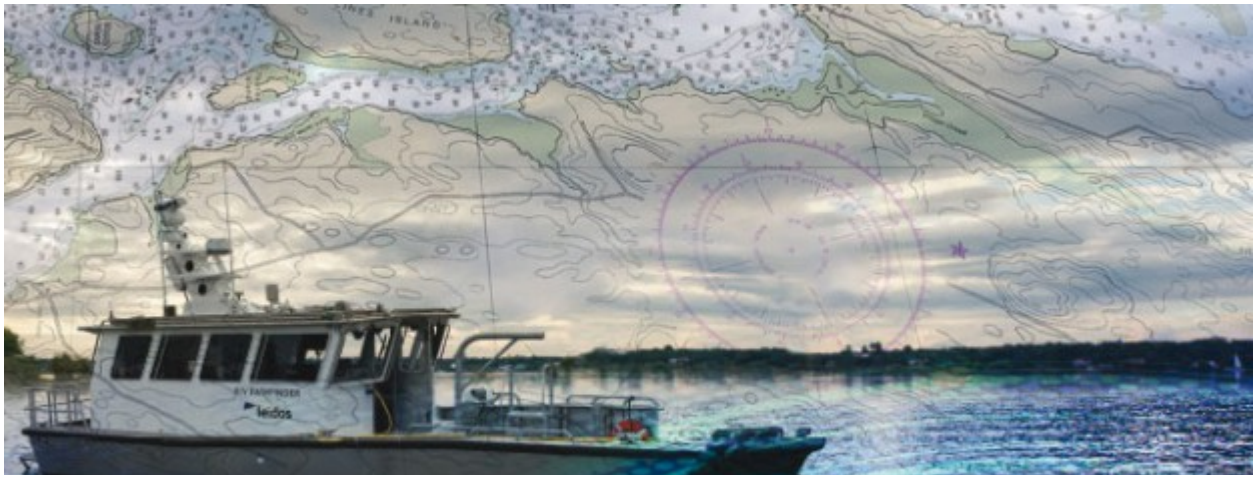
11:30 to 1:00 PM
October 22, 2015

Teppanyaki Grill and Buffet
7525 Tidewater Drive, Suite 18
Norfolk, Virginia

Please RSVP by contacting our Chairman, Mr. Charlie Littleton at clittleton@LCE.com or phone him at 757-857- 1311 (ext: 4203) NLT cob Wednesday, 24 February. The luncheon is $15.00 cash or check.

Driving Directions: From both east and west on I-64 take the Tidewater Drive Exit north and Turn Left into the Southern Shopping Center area (before the Little Creek Underpass).

Please join us for a highly interesting logistically related tour of facilities and businesses in the Tidewater Area. Spouses and guests, bosses, and co-workers are welcome and *you DO NOT have to be a SOLE Member to attend!*



Maritime Autonomy–Reducing the Risk in a High-Risk Program

Author: David Antanitus (Reprinted from Defense AT &L – Jan/Feb 16)

The fielding of independently deployed unmanned surface vessels designed from the ground up for no person to step aboard at any point in their operating cycles under sparse remote supervisory control is the next necessary technology leap if we are to drastically reduce the number of personnel required to support our warfighting missions and platforms. The Defense Advanced Research Projects Agency (DARPA) undertook the challenge of developing an autonomy suite and building a ship to accomplish this goal with its vision and invitation in early 2010 for industry to design and build the Anti-Submarine Warfare Continuous Trail Unmanned Vessel (ACTUV). This revolutionary concept for a maritime vessel, currently being built by an industry team led by Leidos, constitutes the first step in developing a ship with autonomous behaviors capable of extended at-sea operations. In order to meet all of the DARPA requirements for ACTUV, the Leidos team had to formulate and implement a robust risk-reduction plan.

Continued on Page 10

GHRC Executive Board Officers:

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Vacant

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Long Term 2016 Calendar Greater Hampton Roads Chapter Monthly Schedule

	Business Meeting	Lunch/ Tour	Speaker/Topic
”		”	

February	**12 February**	**25 February**	**Mr. Dan Jarrard “ICAPS Intro”**
March	**12 March**	**24 March**	**TBA**
April	**18 April**	**28 April**	**TBA**

Spring is around the bend!

.Transportation Topics

US freight rail traffic ends 2015 with a whimper (Reprinted from IOC.com 5 Jan 16)

U.S. freight rail traffic was down 9.7 percent year-over-year in the week ending Dec. 26 as a double-digit drop in carload traffic offset a 1.6 percent gain in intermodal volume, the Railroads reported.

Contract rates follow spot market decline on major trades, Drewry says (Reprinted from IOIC daily news wire online 7 Jan 16)

Ocean freight rates for cargo moving under contracts on the major East-West trade routes continued to decline in the last quarter, according to Drewry's Benchmarking Club that tracks a group of multinational retailers and manufacturers that monitor their contract freight rates.

Airlines prepare for cargo surge when box weight rule is enforced (Reprinted from IOC.com 10 Jan 16)

The International Air Transport Association will urge member airlines to prepare for a possible surge in air freight volumes caused by possible disruptions when the new container weighing requirements are implemented globally from July.

CSX sees flat intermodal volume ahead (Reprinted from IOC.com 14 Jan 16)

CSX Transportation forecasts flat intermodal growth in the first quarter, as the loss of international intermodal business to Norfolk Southern Railway is expected to offset domestic volume increases gained from highway conversions and a key customer shifting loads away from its eastern U.S. rail archrival.

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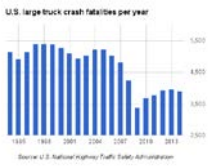
. **Less US truck-related fatalities spell reduced liability risk for shippers** (Reprinted from IOC.com 15 Jan 16)



Based on an analysis of federal data, truck safety in the U.S. is improving, even as trucks and motorists rack up more mileage on highways, the American Trucking Associations said.

UPS upgrades cross-border services linking US, Mexico (Reprinted from IOC.com 16 Jan 16)

Banking on continued expansion and Mexico, UPS is restructuring freight services linking the countr

Panama locks opening now expected in second half (Reprinted from IOC.com 17 Jan 16)

The opening of larger Panama Canal locks, already postponed several times by construction delays, has been pushed back again and now is expected early in the second half of this year, a canal official said

For unlimited access to breaking news, data and

CP asks US to investigate other railroads' 'campaign

(Reprinted from IOC.com 20 Jan 16)

Canadian Pacific Railway has asked the U.S. Department of Justice to investigate a "collective campaign" spearheaded by other major railroads to block its increasingly hostile stock-and-cash bid for Norfolk Southern Railway.

Maritime Autonomy–Reducing the Risk in a High-Risk Program (Cont'd from Page 6)

Don't Reinvent the Wheel

Building the first ship of a class carries numerous inherent risks. Construction of the vessel aside, the real science, and hence the majority of the program risk, is in developing an autonomy system that can (1) sense its environment and the health of its own systems, (2) make intelligent decisions to optimize machinery lineups and sensor employment, (3) avoid other ships and obstacles, and (4) execute the intended mission. So, when tasked with developing this maritime autonomy suite for ACTUV, where do you start, and how do you limit the risk in designing the autonomy architecture to meet such complex requirements?

The Leidos team's first step in risk reduction for ACTUV was to leverage code already written for less complex autonomous systems. In the 1990s, the NASA Jet Propulsion Laboratory (JPL) developed the Control Architecture for Robotic Agent Command and Sensing (CARACaS) for the Mars Rover Project. CARACaS already has been successfully adapted for several unmanned surface vessel programs—e.g., for the work done by DARPA in developing Grand Challenge I and II and for the Urban Challenge architecture for an autonomous ground vehicle. Leidos leveraged the work done by JPL in developing CARACaS and by DARPA in developing Urban Challenge (NREC Engine) to develop a maritime autonomy capability that uses open standards, libraries and tools.

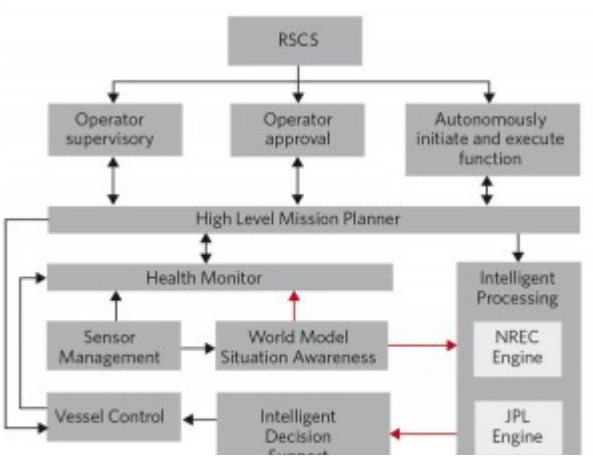


FIGURE 1. AUTONOMY ARCHITECTURE WITH REMOTE SUPERVISORY CONTROL STATION (RSCS)

Employ a Truly Open Architecture

The ACTUV autonomy suite contains decision algorithms embedded as software modules using an object-oriented framework in which key interface definitions isolate algorithm implementations. It supports multiple, simultaneously executing decision engines and the arbitration logic to choose the best decisions for future actions. It implements a true open systems architecture (OSA) approach that allows for the autonomy capability to be modularly connected to other subsystems—within the same platform and external to the platform. This "plug-and-play" modularity minimizes life-cycle costs, enables reuse, and promotes healthy competition among capability vendors. It also reduces overall risk to the program. In addition, the autonomy capability implements the Service Availability Forum industry standards to achieve a high-availability solution that results in near-continuous uptime when the system is fully integrated.

Continued on Page 11

Maritime Autonomy–Reducing the Risk in a High-Risk Program (Cont'd from Page 10

The OSA uses the Society of Automotive Engineers (SAE) AS4 Joint Architecture for Unmanned Systems (JAUS) messaging between major segments and the OMG Data Distribution Service (DDS) message protocol layer to achieve advanced quality of service. The autonomy engine is a set of algorithm-level specifications for the behaviors and capabilities of the autonomy platform. It lists all the important, high-level, mission-oriented tasks either planned or implemented in the context of the vehicle scenario. It employs a modular approach that supports a Distributed Hierarchical Autonomy (DHA) model and uses replaceable, modular and standard interfaces.

Putting all of the components and modules together, we end up with an autonomous ship control system that is based on a DHA employing new advances such as self-learning and multi-model arbitration. However, before we take this system to sea, we must demonstrate that our ship can safely navigate and comply with the Convention on the International Regulations for Preventing Collisions at Sea (COLREGS)—basically, we must show that our vessel can operate safely at sea and not collide with another vessel or run aground with only sparse remote supervision. As the system and capability matures, we must also demonstrate that the ship can simultaneously execute that desired mission and comply with COLREGS.

Maximize Modeling and Simulation

To cost-effectively mitigate the risk in our autonomy system performance at sea, we must verify quantitatively that the autonomy path-planner engines can navigate safely on the water. Our systematic approach to this quantitative verification is shown in the following assertions:

Assertion 1: Simulations

If the simulation can be demonstrated to correlate highly with on-water testing results in all relevant qualitative senses, we can be confident further simulation results are likely to reflect actual on-water behavior.

Assertion 2: Metrics

If metrics can be demonstrated to correlate highly with subject-matter experts' understanding of safe navigation, we can be confident those metrics can be used for evaluation of the path planners.

Assertion 3: Scenarios

If the set of scenarios can be demonstrated to provide good coverage of on-water situations, we can be confident that performing well in that set of scenarios will correlate with performing well in any on-water situation.

Assertion 4: Effective evaluation tools and methodology

If we have a good simulation (as per Assertion 1), good metrics (as per Assertion 2), and a good set of scenarios (as per Assertion 3) along with a path planner that performs well in that environment, we can be confident that the path planner really is capable of doing safe navigation.

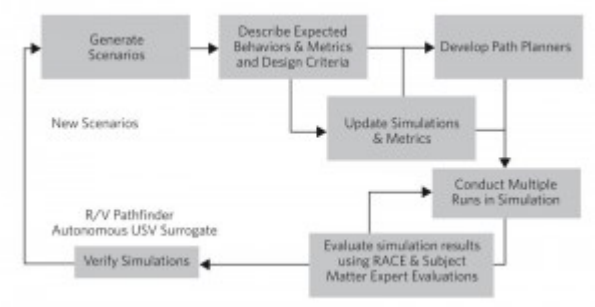
Continued on Page 12

Maritime Autonomy–Reducing the Risk in a High-Risk Program (Cont'd from Page 11)

- **Simulations (Archivist Simulation Integration Framework, Distributed Simulation Environment)**
- **Metrics (Real-time Autonomy COLREGS Evaluator [RACE])**
- **Scenarios**

Prior to at-sea testing, Leidos conducted more than 26,000 simulation runs modeling more than 750 different meeting, crossing and overtaking scenarios in its System Integration Laboratory (SIL) to demonstrate that the autonomy suite would direct actions in accordance with the COLREGS for avoiding collision. Scenarios were developed with the assistance of former U.S. Naval officers with Officer of the Deck and/or Command at Sea certifications, who used a design-of-experiments approach (levels and factors, bounded by the Taguchi method) and included stand-on and give-way behaviors. The approach used to generate and test scenarios is shown in Figure 2.

FIGURE 2. APPROACH USED TO GENERATE AND TEST SCENARIOS



Employ a Surrogate Vessel Early

After satisfactory completion of SIL testing, the autonomy suite was installed on a 42-foot test vessel (see photo on page 22), where frequency-modulated continuous-wave and "X"-band radars provided the sensor input to the autonomy suite, and commands from the autonomy suite were forwarded to the vessel's autopilot for control of the rudder and engines. The test vessel acted as an ACTUV surrogate and allowed for testing of all the autonomy software and ACTUV sensor systems in parallel with the ACTUV ship construction. Before ACTUV ever goes to sea, the autonomy system and sensors will be proven at sea on the surrogate vessel, thereby reducing overall program risk and duration.

To date, more than 100 different scenarios have been executed at sea with the surrogate vessel. During these test scenarios, the autonomy system directed course and speed changes of the surrogate vessel to stay safely outside a 1-kilometer standoff distance from the interfering vessels. The test program clearly demonstrated the ability of the surrogate to maneuver and avoid collision with another vessel and paved the way for follow-on testing involving multiple interfering contacts and adversarial behaviors of interfering vessels.

Continued on Page 13

Maritime Autonomy–Reducing the Risk in a High-Risk Program (Cont'd from Page 12)

In addition to the structured test events, the surrogate vessel recently completed a voyage between Biloxi and Pascagoula, Mississippi, with only a navigational chart of the area loaded into its memory and inputs from its commercial off-the-shelf radars. The surrogate vessel sailed the complicated, inshore environment of the Gulf Intracoastal Waterway, avoiding shoal water, aids and hazards to navigation, and other vessels in the area—all without preplanned waypoints or human direction or intervention. During the 35-nautical-mile voyage, the maritime autonomy system functioned flawlessly, avoiding all obstacles, buoys, land, and interfering vessels

The Leidos team commenced construction of the first ACTUV vessel in 2014. Named Sea Hunter, this prototype vessel is to launch in early 2016 and embark on a 2-year test program co-sponsored by DARPA and the Office of Naval Research. While problems and issues undoubtedly will surface during this test program (they always do for the first vessel of a class), it is hoped that the number and severity of the issues will be minimized by the work, testing and risk-reduction efforts in the design and execution of the program.

In a program as complex and software-intensive as ACTUV, you have to look beyond the "build a little, test a little" approach and find innovative ways to mitigate as much of the program risk as possible, as early as possible. Ultimately, the success of the ACTUV program will have its roots in the risk-reduction efforts employed in building and testing the autonomy system in parallel with the construction of the vessel. Fielding a revolutionary concept such as ACTUV requires a blend of innovative program management, breakthrough technical skill and a tuned test program.

The author can be contacted at david.j.antanitus@leidos.com.

Antanitus is a senior capture manager in the Surveillance and Reconnaissance Group of Leidos (previously the Science Applications International Corp.—SAIC) in Reston, Virginia. He is a retired U.S. Navy rear admiral and career submarine officer and former major program manager for the Navy's Undersea Surveillance and Deep Submergence Programs. He is former director for installations and logistics and chief engineer of the Space and Naval Warfare Systems Command (SPAWAR) in San Diego, California.

Winter is finally with us

FAMOUS LOGISTICS QUOTES (Reprinted from Air University online)

When you do battle, even if you are winning, if you continue for a long time it will dull your forces and blunt you edge…If you keep your armies out in the field for a long time, your supplies will be insufficient. Transportation of provisions itself consumes 20 times the amount transported." -- Sun Tzu

Victory is the beautiful, bright colored flower. Transport is the stem without which it could never have blossomed." -- Sir Winston S. Churchill, The River War, vii (1899)

"The war has been variously termed a war of production and a war of machines. Whatever else it is, so far as the United States is concerned, it is a war of logistics." Fleet Admiral Ernest J. King, in a 1946 report to the Secretary of the Navy

"There are five kinds of incendiary attack: The first is called setting fire to personnel; the second, to stores; the third, to transport vehicles and equipment; the fourth, to munitions; the fifth, to supply installations…In all cases an army must understand the changes induced by the five kinds of incendiary attack, and make use of logistical calculations to address them." -- Sun Tzu

"Experience has taught me that manufacturers are now as necessary to our independence as to our comfort." -- Thomas Jefferson

THE RELATIONSHIP BETWEEN MILITARY AND COMMERCIAL LOGISTICS (EXTRACT FROM VALLEY DISTRIBUTING & STORAGE CO, SITE ONLINE)

The usage and mention of the word "Logistics" in both academic and non-academic settings is almost always a reference to specifically military logistics. Why is this? The word itself began with a military meaning in mind during the 19th century, despite the actual mechanisms of logistics existing for thousands of years prior.

The history of military logistics is a history of the re-discovery of logistics. What the market does by itself, for itself, has been learned slowly and painfully by various generals and governing bodies over the years. For example, disasters such as the French and later Nazi invasions of Russia were both considered failures of logistics. These were instances where short sighted leaders attempted to manage and plan what they imagined they could control – that is, the distribution of millions of products of varying necessity and value.

And yet somehow, since early ancient times, bands of traders carried tons of spices, silks, and other rare substances halfway across the earth. Phoenician merchants carried African ivory, Mesopotamian grain, and British Tin around the globe before large navies were even in existence. Military logistics should be viewed as an interesting if awkward chapter in a deep commercial tradition. Even today, thousands of workers and researchers are employed by military bodies to make progress in "Applied Information Economics" and "Advanced Operations Research", whose output should be seriously questioned. On the other hand, micro-revolutions in logistics efficiency and reach occur on a regular basis out of the private sector. Note the recent trends of predictive delivery, utilization of digital means of logistics information, and even crowd sourcing taxi services that all come from individuals outside of the military logistics tradition.