SOLEtech

December 2001 • SOLE - The International Society of Logistics • Volume 4.12

In This Issue:

Logistics: A Major Consideration In The Systems Engineering Process

Ben S. Blanchard, CPL, Fellow, Professor-Emeritus, Virginia Tech

Preamble

This is the third in a series of short articles pertaining to *logistics*, as defined and presented in the context of the system life cycle. In the October ***SOLEtech***, it was appropriate to commence with a few basic definitions of a *system, systems engineering*, the *system life cycle*, and the *systems engineering process*. It was emphasized that the maintenance and logistic support infrastructure should be considered as a major element of a "system" if the system is to perform its intended function (mission) in an effective and efficient manner. In the November ***SOLEtech***, it was shown that there are key logistics activities in each phase and throughout the entire life cycle for any given system; i.e., logistics requirements in *system design* and *development*, *construction and/or production*, *system utilization and support*, and *system retirement and material recycling/disposal*. Further, it was emphasized that these various activities (to include those pertaining to the areas of "business" logistics, "defense" logistics, "supply-chain management," etc.) must be viewed as a total *integrated* entity. Given all of this, it is now important to ensure that this "integrated entity" be addressed from inception and as part of the early stages of system design and development; i.e., in the conceptual design phase as the requirements for a system are initially being defined. This can best be accomplished by addressing logistics in the context of the *systems engineering process.*

Logistics - As An Integrated Entity

Referring to the November ***SOLEtech***, I attempted to define *logistics*: (1) from a commercial "business" view covering those production-related activities pertaining to physical supply, materials flow, warehousing, transportation, and the physical distribution of products to the consumer (refer to the Council of Logistics Management's definition of logistics); (2) in terms of an expanded spectrum of activity dealing with the currently-envisioned activities of "supply-chain management;" and (3) in the context of a "defense" approach viewing the subject from a total system's perspective, to include an overall maintenance and support infrastructure. Further, I attempted to stress that these activities are all highly interrelated, and that it is important to ensure that they be addressed on a total integrated basis.

Through a review of the many different activities associated with logistics (refer to the illustrations in the November ***SOLEtech***), it seems appropriate to combine these into the "functional" areas shown in Figure 1. While this is certainly not a new concept, it is important to ensure that ALL of logistics activities be adequately represented, and that they be presented in a highly integrated manner. Referring to the figure, one can add that there is an overall "environment" that needs to exist to cause such integration to happen. By this, I am referring to the application of an effective and efficient *information and communications network* that must prevail across-the-board and as an aid in tying these various functional elements together. Realization of this is certainly possible and feasible through application of the various facets of information technology (IT), utilizing electronic commerce (EC) and related methods that have been introduced in recent times.

Logistics - Some Perspectives From The Past

Historically, logistics has been addressed somewhat "after-the-fact" in the development of new systems, and its elements have not been very well integrated from the beginning. While there are variations in the consequences of such, it is felt that in many instances a large percentage of the life-cycle costs for a given system are associated with the "downstream" activities involving system operation and support. While the costs associated with system design and development, construction/production, etc., are fairly well known from the beginning, the follow-on costs of operation and support (to include those activities noted in Figure 1) are somewhat hidden. In other words, there is a lack of *total cost visibility*, as illustrated by the "iceberg" in Figure 2.

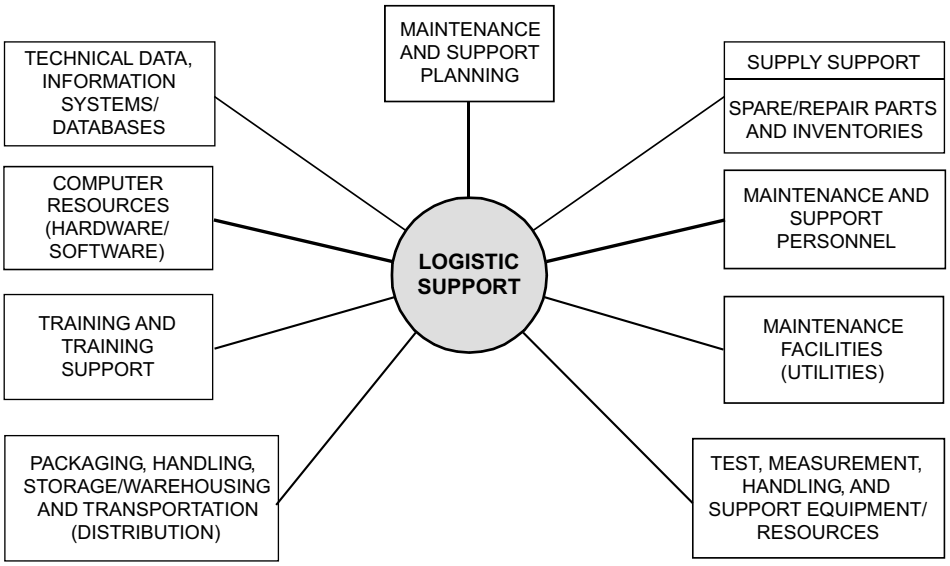

Figure 1. Functional elements of logistics (source: B.S. Blanchard, *Logistics Engineering and Management*, 5th Ed., Prentice Hall, NJ, 1998, Figure 1.3)

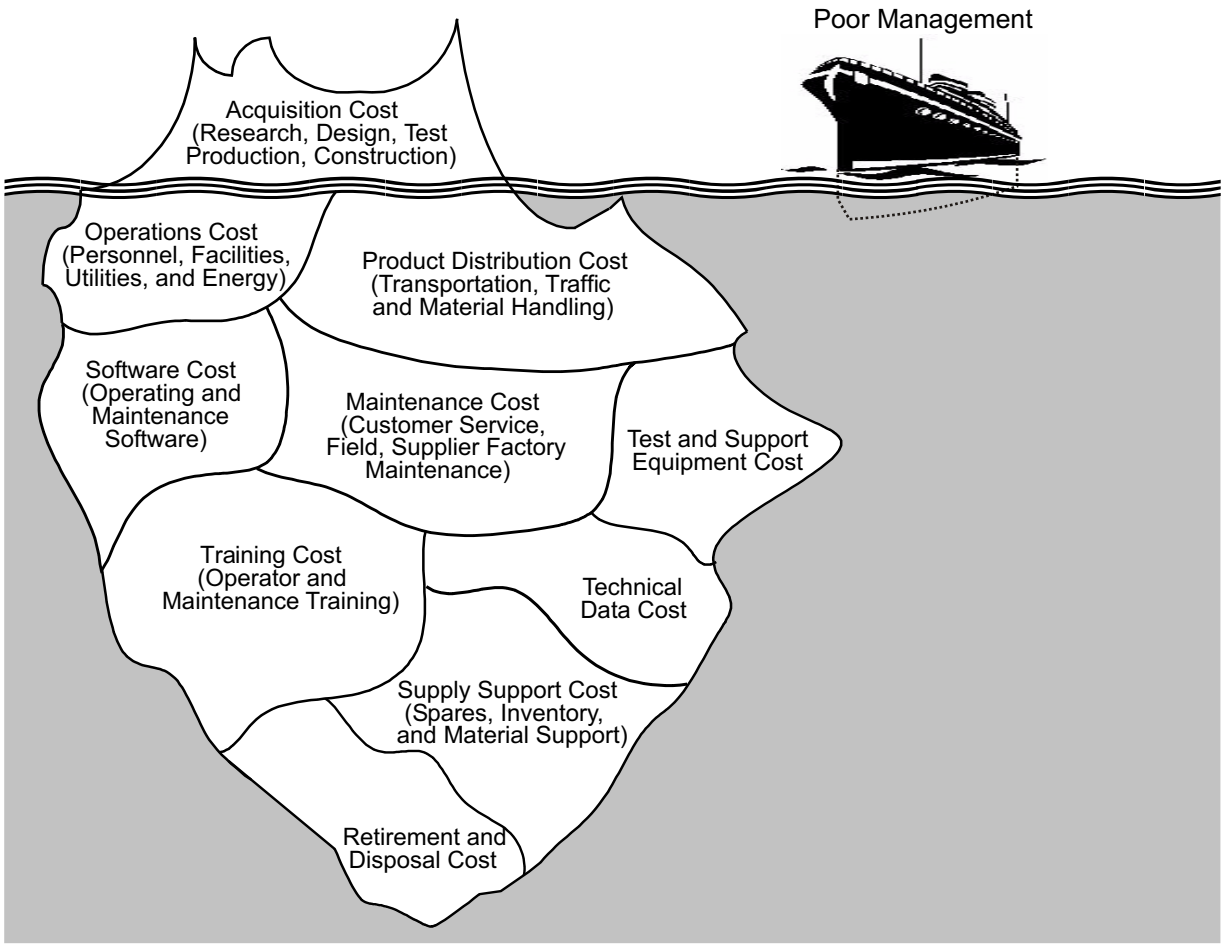

Figure 2. Total cost visibility (source: B.S. Blanchard & W.J. Fabrycky, *Systems Engineering and Analysis*, 3rd Ed., Prentice Hall, NJ, 1998, Figure 17.2)

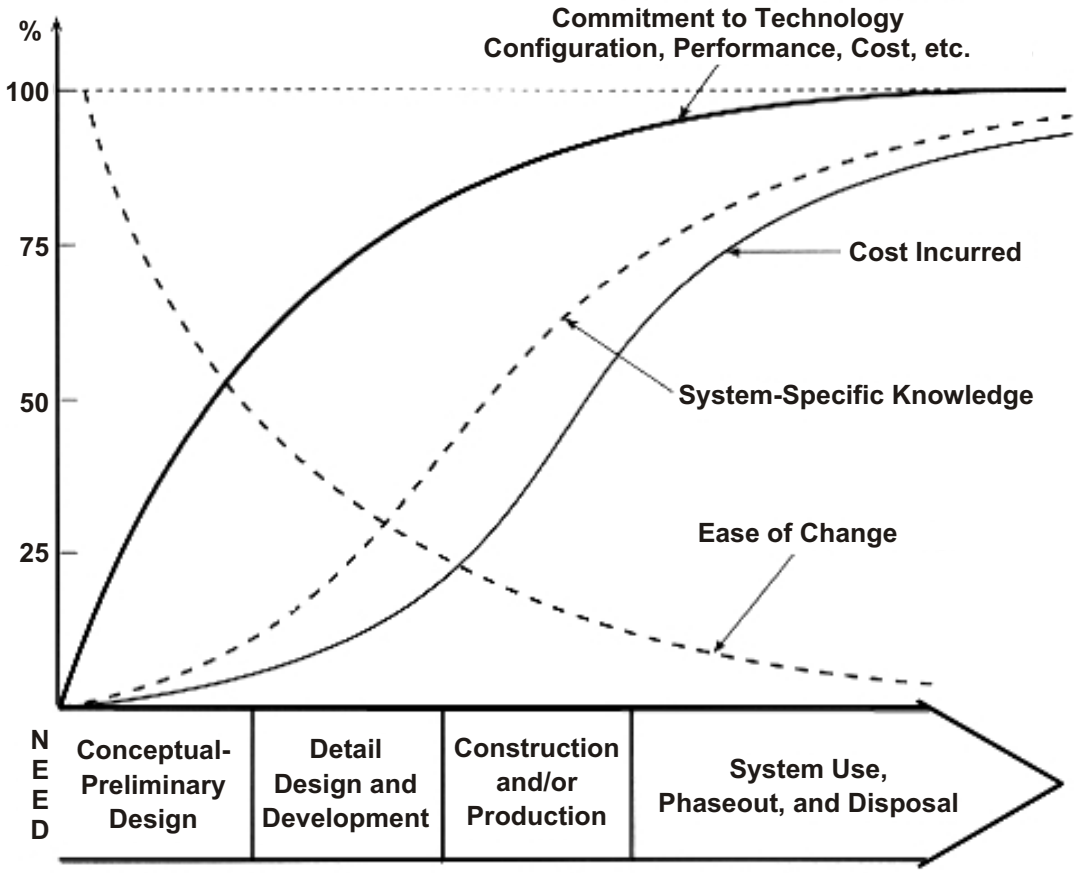

Figure 3. Commitment, system-specific knowledge, and cost (source: B.S. Blanchard & W.J. Fabrycky, Systems Engineering and Analysis, 3rd Ed., Prentice Hall, 1998, Figure 2.11).

In addressing the issue of cost-effectiveness, experience has indicated that there is a large commitment in terms of technology applications, the establishment of a system configuration and its performance characteristics, the obligation of resources, and potential life-cycle cost at the early stages of a program. It is at this point when system-specific knowledge is limited, but when major decisions are made pertaining to the selection of technologies, the selection of materials and potential sources of supply, equipment packaging schemes and levels of diagnostics, the selection of a manufacturing process, the establishment of a maintenance and support approach, and so on. Referring to Figure 3, it is at the early stages of conceptual and preliminary design when decisions are made that will have a great impact on the cost of activities later on. It is at these early stages that one must address the maintenance and support infrastructure (i.e., the logistics functions in Figure 1) in order to avoid some of the unknown "hidden costs" as conveyed through the illustration in Figure 2.

Logistics - A Major Consideration In The Systems Engineering Process

Referring to the September ***SOLEtech*** (*Volume 4.10*), a "top-down/bottom-up" illustration of the systems engineering process was presented as Figure 3. Of particular interest, and requiring emphasis at this point, is the top-down front-end portion of this process. Figure 4 is included herein as an amplification of this process, emphasizing the particular areas of interest where logistics and support requirements need to be addressed Referring to the figure, the first step that requires attention is the "Needs Analysis;" the identification of some current *deficiency and the definition of need*! The prime objective in the development of any system is, of course, to provide a "functioning entity" that will meet all "customer/user" requirements in an effective and efficient manner; i.e., one that will perform in a satisfactory manner, at the desired location(s), and for as long as required. While there is nothing new here, there have been numerous instances

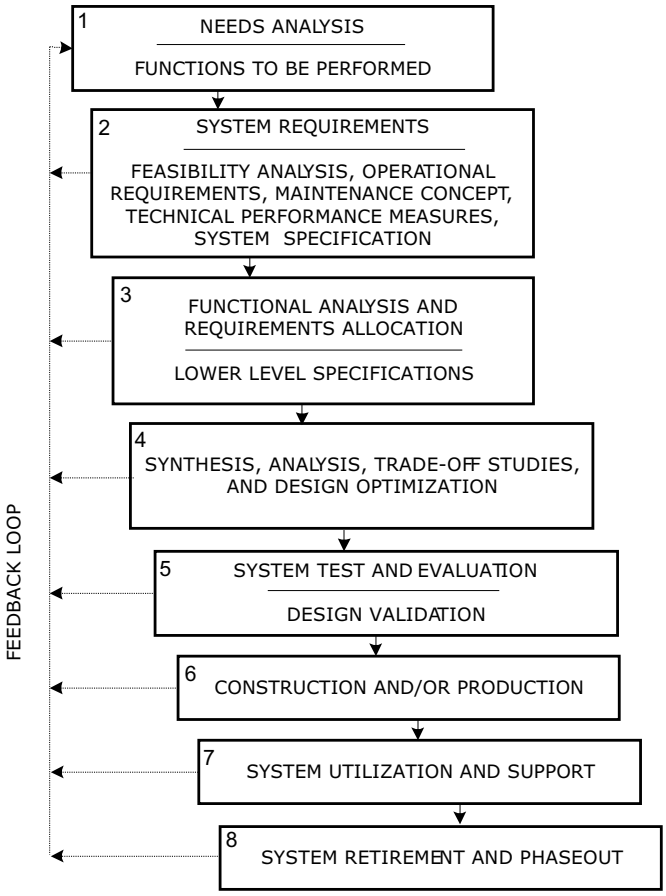

Figure 4. Steps in the system life cycle (with emphasis on system design)

where the resultant system configuration has not been optimum from a design perspective, will not perform as initially intended, and has been costly to operate and maintain. In other words, the requirements of the customer have not been satisfied.

In evaluating the various possible "causes" for these apparent failures downstream in the system life cycle, one of the problems noted reverts back to the **lack of having defined a good and complete set of "requirements" for the system from the beginning**, and having a good "System Specification" on which to build. We are often remiss when it comes to first adequately defining the "problem" (i.e., the "real" deficiency) and then developing a good set of requirements in response. It is not uncommon to gloss over some "perceived" need and then launch into design without first having defined the detailed requirements for such. Then, at some later time we learn that what we have designed will not meet the need, resulting in a lot of last-minute downstream modifications which are usually very costly to implement.

In any event, it is at the earliest stages of conceptual design where the design decisions that are made establish the foundation for what is to come later on! It is at this early stage when the proper "performance" factors must be established that dictate system context and structure from hereon, to include not only those factors that apply directly to the mission-related elements of the system but to the elements of the logistics and support infrastructure as well. It is at this stage when the ultimate effectiveness and life-cycle cost for the system can be influenced to the greatest extent. Thus, it is extremely important that, in the development of any new system, the proper **requirements** be defined from the beginning! Such requirements must address the system as a "whole" and the elements presented in Figure 1 must be included. In other words, **logistics must be addressed from the beginning**!

What's Next

In the January 2002 issue of the ***SOLEtech***, I would like to concentrate primarily on "**System Requirements**" as covered by the second step in Figure 4 (block 2). More specifically, I am referring to the accomplishment of feasibility analysis, definition of system operational requirements and the maintenance concept, and the identification and prioritization of system *technical performance measures (TPMs).*

Performance-Based Supportability (PBS) The Logistic Engineer's Part Of Performance-Based Acquisition

Charles O. Coogan, CPL, Fellow, President Of Acquisition Logistics Engineering (ALE)

These days, emphasis in the acquisition world is on performance, Total Ownership Cost (TOC) Reduction, and the metrics that measure our achievement of objectives in these areas. What is our part as Logistic Engineers and how do we play in the process?

Several years ago, SOLE established an Ad Hoc Committee to re-engineer supportability analysis. The objective of that committee was to reduce the cost of supportability analysis by 50 percent and double its effectiveness. While this seemed ambitious at the start, it turned out that the stated goals were conservative and quite exceedable. The committee reviewed several programs to determine potential for improvement and to find "best practices" from commercial and government programs.

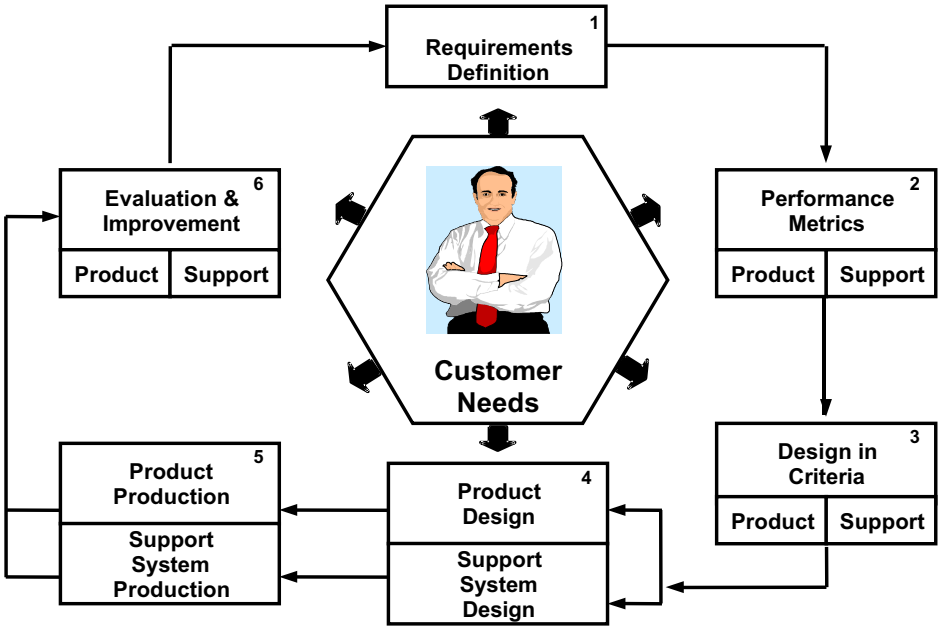

Figure 1. Performance-Based Supportability (PBS) - A Concurrent Engineering Process

The best practices were then organized into a process or approach for performing supportability analysis that covered all phases of programs and were applicable to programs of all sizes, for both the private and public sectors. The process is called ***Performance-Based Supportability***, or simply **PBS**. This article provides a brief introduction to PBS and explains some of the key steps necessary to implement PBS on programs or in enterprises. It also explains some of the challenges encountered on demonstration programs and how they were overcome. PBS is based on a single premise, that *supportability is a performance metric of a system or product.* This premise implies that supportability is a measurable, allocable, and predictable performance characteristic of the system. As such, it can be designed into a system, it can be used to design the support system, and it can be used to control improvements to the system and its support over the life of the system. Adapting this premise provides opportunity to treat supportability in an entirely new way. It enables us to treat supportability as an essential part of overall system performance and a key element of System Engineering.

PBS has been applied to a wide range of programs from small items to entire systems and to all phases of programs from requirements definition to product improvements with consistently good results. Our attention has now turned to developing and providing training on how to apply PBS and to preparing papers such as this to get the word out. Over the past two years, training has been conducted in Europe and Asia as well as the Americas and is becoming a favorite SOLE Chapter workshop.

Figure 1 provides a bird's-eye view of the PBS process. As shown, the customers' needs are at the center of the process. PBS recognizes that the customers' needs must be considered at all stages of a product's life cycle to be successful. PBS recognizes that the greatest potential for improving supportability exists in the requirements definition phase. The process provides an effective means of defining performance based supportability requirements based on the customer's overall performance requirements. The System Engineering process is then used to decompose the overall supportability requirements into "design-to" criteria for both the primary system and its related support. PBS employs the concept of an *Interface Control Document* to formally control the critical supportability factors such as failure rates and repair times over the life of the system. The Interface Control Document for supportability-related factors is controlled in the same manner and with the same rigor as the Interface Control Document between an engine and airframe for an aircraft. This results in far more design influence than the historical process of having logisticians review emerging designs.

The latter stages of PBS emphasize design of the support system using a systematic design trade-off process. This promotes balance between traditional logistic functions such as supply, maintenance, technical data, and support equipment, to name a few. The objective is to employ the logistic functions, as a set, to satisfy the established support performance metrics.

In the last stage of PBS, Systems Engineering is applied to the product improvement process. Performance metrics are employed to design product improvements, including improvements to the support arrangement. When an improvement is incorporated, the system is evaluated against the performance metrics to verify the effectiveness of the improvement. This aspect of PBS has received increased emphasis and acceptance recently as responsibility for operational support has increasingly shifted to industry through warranty and *Contractor Logistic Support (CLS)* programs. Under the new rules, industry is looking for effective ways to reduce cost of ownership and finding PBS to be a profitable approach.

In an ideal world, PBS would be easy to implement by simply following good systems engineering principles. In the real world that we all live in, it is not so straightforward. This section describes some of the problems encountered in applying PBS on demonstration programs and how they were overcome.

The most significant problem is the general lack of effective systems engineering found on many programs. To overcome this problem, it was necessary to create a subset of systems engineering that operated in the supportability aspects of the program. For example, it was necessary to perform a separate functional analysis and alternative synthesis process for support-related functions of the system rather than simply using the overall systems engineering process.

The next most significant difficulty encountered was the lack of supportability-related performance criteria from the customers. Ideally, the customer would define support performance requirements. In the absence of this, it was necessary to establish (and promote) internally-generated supportability criteria or metrics on which to base the program. In general, the customers were satisfied and, in some cases, surprised by the criteria established. Nevertheless, this enabled the process to proceed successfully.

The most pervasive problem encountered in applying PBS was lack of understanding or appreciation of the process by middle and upper management. To overcome this problem, a short (four-hour) workshop was established and provided to middle and upper management. That training session proved to be very useful in obtaining management appreciation and support for the program. It is highly recommended for any team applying PBS for the first time. After the initial application, the results will be well known by upper management and their support will be assured.

For more information on PBS, please visit ALE's website at **www.ale.com**. For information on scheduling a PBS training session for your organization or SOLE Chapter, contact Sarah James at SOLE Headquarters (tel: 301-459-8446; E-Mail: **SOLEHQ@erols.com**). Additionally, comments and/or suggestions on PBS and related topics are encouraged. Mr. Charles Coogan can be reached at **ccoogan@ale.com**.

Defining Supply Chain Management

John T. Mentzer (University of Tennessee), William DeWitt (University of Maryland), James S. Keebler (St. Cloud State University), Soonhong Min (Georgia Southern University), Nancy W. Nix (Texas Christian University), Carlo D. Smith (University of San Diego), and Zach G. Zacharia (Texas Christian University)

This is the lead article in the *Journal Of Business Logistics* (Vol. 22, No. 2, 2001), published by the Council of Logistics Management (CLM), 2805 Butterfield Road, Suite 200, Oak Brook, IL 60523, which may be of interest. The "abstract" of the article reads as follows:

A management construct cannot be used effectively by practitioners and researchers if a common agreement on its definition is lacking. Such is the case with the term "supply chain management" -- so many definitions are used that there is little consensus on what it means. Thus, the purpose of this paper is to examine the existing research in an effort to understand the concept of "supply chain management." Various definitions of SCM and "supply chain" are reviewed, categorized, and synthesized. Definitions of supporting constructs of SCM and a framework are then offered to establish a consistent means to conceptualize SCM. Antecedents and consequences of SCM are identified, and the boundaries of SCM in terms of business functions and organizations are proposed. A conceptual model and unified definition of SCM are then presented that indicate the nature, antecedents, and consequences of the phenomena.

The article goes on to address the question -- what is supply chain management? "Despite the popularity of the term Supply Chain Management, both in academia and in practice, there remains considerable confusion as to its meaning. Some authors define SCM in operational terms involving the flow of materials and products, some view it as a management philosophy, and some view it in terms of a management process." Five sources, each with a slightly different perspective, are identified.

After some discussion of the various approaches (and for the purposes of this paper), the authors offer the following definitions for consideration:

1. ***Supply chain*** *-- a set of three of more entities (organizations or individuals) involved in the upstream and downstream flows of products, services, finances, and/or information from a source to a customer.*

2. ***Supply chain management*** *-- the systemic, strategic coordination of the traditional business functions and the tactics across these business functions within a particular company and across businesses within the supply chain, for the purposes of improving the long-term performance of the individual companies and the supply chain as a whole.*

Referring to this issue of the *Journal*, the following articles were also included and may be of interest: *Logistics Skills and Competencies for Supply Chain Management* by Britta Gammelgaard and Paul. D. Larson; *Information System Utilization Strategy for Supply Chain Integration* by Ram Narasimhan and Soo Wook Kim; *The Effects of Logistics Capabilities on Firm Performance; Customer-Focused Versus Information-Focused Capabilities* by Meng Zhao, Cornelia Droge, and Theodore P. Stank; *Partner Congruence in Electronic Data Interchange-Enabled Relationships* by Rebecca Angeles and Ravi Nath; *An Examination of Reverse Logistics Practices* by Dale S. Rogers and Ronald S. Tibben-Lembke; and *Replacement Parts Management: The Value of Information* by Ronald S. Tibben-Lembke and Henry N. Amato.

17th International Logistics Congress, Thessaloniki, Greece -- A Great Success

Sarah R. James, Executive Director, SOLE

With a theme of "Logistics From Alpha To Omega: Strategies And Applications," the *17th International Logistics Congress*, organized by the Thessaloniki Chapter (with support from the Athena Chapter) and held October 18-20 at the Hyatt Regency, Thessaloniki, was a major success. With over 350 registrants, 19 exhibitors, a full day of eight tutorials preceding the Congress, and speakers and panelists from four continents, the Congress included valuable and timely technical presentations in the areas of *Logistics Operations, e-Business Logistics, Defense and Systems Logistics, Supply Chain Management, Logistics in Services, Logistics Applications, Third-Party Logistics, Logistics Information Systems, and Cooperative Strategies.*

The Congress was co-chaired by Dr. Panayiotis Ketikidis (Chapter Chair, Thessaloniki) and Evangelos Angeletopoulos (Chapter Chair, Athena). As it was during the 13th ILC (held in Athens in 1996), the District Greece hospitality was exemplary (from the corporate sponsors to the exhibitors to the awards ceremony and gala), and all attendees were welcomed into the "logistics family." The Program Chairpersons, Dr. Vicky Manthou and Andreas Pastroumas, put together a technical and scientific program that was not only germane to today's ever-changing global logistics realities, but also provided a springboard for future developments and logistics partnerships.

The attendees reflected the face of both the established logistics community worldwide (both members and non-members) and the future of logistics, today's logistics students which were well represented by the City Liberal Studies Student Chapter. Additionally, a number of European Union logistics societies were represented (e.g., European Logistics Association, The Institute of Logistics and Transport, and several European Council of Logistics Round Tables).

During the Friday evening gala, international and local awards were presented (e.g., "Best International Newsletter" and "Best International Chapter" to the Athena Chapter; "Best Paper," 16th ILC; and a Gold Small Chapter Award to Keiserslautern, Germany). A special award was presented by the Thessaloniki Chapter to one of its founders (Mr. Elias); and the SOLEurope community made a special presentation to Klaus Broecker, on the occasion of his retirement as the Executive Director of SOLEurope. In the spirit of the continuing vitality and growth of the Greek chapters, a new chapter banner was presented to SOLE's latest addition to District Greece, Corfu.

Perhaps the success of the Congress is best judged by the Organizing Committee itself. The following closing remarks by Dr. Vicky Manthou best summarize that success:

In closing this successful 17th International Logistics Congress, I would like to present a short review and evaluation. The Congress started officially yesterday and was supported by the presence of political, governmental, and business members who stressed the importance of logistics and their implementation challenges in the Greek reality in a global environment.

- *"Thessaloniki is the crossroad of Balkan and European cooperation for the upgrade of the transportation of products and their distribution, providing new business opportunities to the companies adopting logistics systems," stated the Mayor of Thessaloniki, Mr. Vasilis Papageorgopoulos, in the official opening of the Congress.*

- *According to Mr. Lampropoulos, the Secretary of the Ministry of Agriculture, "a specific framework of logistics implementation in agriculture must be set."*

- *The Minister of Defense, Mr. Tsohatzopoulos, announced the interest of the Ministry concerning logistics in several areas from alpha to omega, and specifically in the development of an integrated support system for the three branches, starting from the military hospitals operation.*

- *Additionally, Mr. Zaharopoulos, consultant to Athens 2004, referred to plans and actions of the organizing committee of the Olympic games in order to cover transportation, storage, procurement, delivery, security, and further logistics requirements in the pre, during, and post implementation stages of the Olympic games.*

Several interesting aspects of logistics practices were presented by keynote speakers at the plenary sessions. The presentation of papers took place in three parallel sessions covering eight different topics in logistics. Although there were a large number of papers and time pressure, the audience attended and participated with great interest in learning the results of research of the scientists and business experts. Questions and discussions followed and triggered ideas for future research and applications, whereas the exchange of opinions and the acquaintance of the participants formed the basis for future cooperation between them.

Apart from the two days where papers were presented, additional activities took place -- in particular, a panel was organized by SOLE and the Ministry of Agriculture, focusing on logistics opportunities and challenges in the agriculture sector. Tutorials in specific areas of logistics were held where distinguished experts from the area of logistics provided their expertise.

In conclusion, I would like to express my gratitude to all the volunteers who contributed to the success of the Congress, as well as the participants who attended the event, although the global circumstances were anything but positive. The fact that the cancellations were very few makes the success of this Congress even greater. I believe that this Congress should not close with a "goodbye" but with a "hello," since we believe that all participants will now join as members of a dynamic cooperative logistics community.

The Society's International Logistics Congresses always provide an excellent opportunity to experience, first hand, how logistics is practiced internationally. The international members of the Society look forward to your joining them next year in Munich, Germany, for the 18th ILC, September 16-18, 2002.

Greek Ministry Of Agriculture Identifies Logistics - And SOLE - As Critical Components Of Future Strategies And Missions

Sarah R. James, Executive Director, SOLE

In a bold opening address to the attendees at the 17th International Logistics Congress (refer to the preceding related article covering the Congress), Mr. Lampros Lampropoulos, Secretary General of the Hellenic Ministry of Agriculture (MOA), announced the Minister's intention to work closely with SOLE - The International Society of Logistics (through District Greece and its members) to promote the scientific management and practice of logistics in all of the Ministry's missions.

Secretary Lampropoulis cited various examples of the Ministry's need for logistics within those directorates that report directly to him: Fishery, Veterinary Medicine, Animal Production, Agriculture Applications and Research, Land Reclamation Works and Agricultural Structures, Plant Production, Development and Protection of Forests and Natural Environment, Administrative Support, and Financial Support and Auditing. He stressed the importance being placed on logistics education and training throughout their Agency. In addition to working with the Congress organizers (the 17th Congress was held under the auspices of the Ministry), a separate day of training before the start of the Congress was organized by SOLE District Greece for selected MOA managers and employees.

In closing, Mr. Lampropoulis challenged the Greek logistics community (both individuals and companies) to work with the Ministry to join together in promoting the need for and application of logistics in agriculture at a major trade fair to be held, February 2002, in Thessaloniki. The partnership between the MOA and SOLE District Greece forged this year will serve as a springboard for many exciting joint initiatives in the future.

The complete text of Secretary General Lampropoulos's remarks follows:

Chairman and Dear Friends:

It is an honor for me and the Ministry of Agriculture (MOA) to be here at the 17th International Logistics Congress. Now, someone who lives in Greece, and knows Greek reality, might be wondering - "What is the Ministry of Agriculture doing in this Congress, given the fact that our Ministry is known for not following the principles of scientific management?" I hope that the answer I'll give will need no further analysis. The answer is that the MOA needs logistics. I would like to attend all of your Congress in order to learn more about the theoretical basis of logistics, but this is difficult for me. I'll try to give you some examples in order to indicate how necessary logistics is in our sector.

The first example has to do with the M.A. FAO and our Ministry - we have undertaken a project to train farmers in the Balkans. The second example has to do with the cooperation of the Greek and Turkish authorities to perform surveillance and monitor the coasts in Asia Minor in order to detect animal diseases. As you understand, this is a difficult project, which demands coordination of executives, of material, of medicines, and of transport. Third, as you know, Greece has lots of small islands, and they are characterized as decentralized areas by the European Union. The Ministry of Agriculture is in charge of procurement and operations of these local societies, especially at critical times.

I won't further tire you out. I believe these three examples and one more that I'll mention depict our concern, anxiety, and problems in the Ministry. They also express our hope and expectation that contemporary logistics theories and tools will be used. My last example refers to the forest protection system in Greece. According to this, there are mechanisms of executives, material, and transport means which are not at all efficient. However, I believe that logistics can and will be applied in the MOA so that we can do something better. According to a government decision, the MOA is re-organizing itself. Logistics will be a part of the new scheme. Moreover, 400 new employment posts have been approved for candidates with postgraduate studies in fields related to logistics. The public sector and our Ministry do not have the luxury any more of ignoring logistics.

I am particularly interested in the logistics theoretical background, and in some questions in particular. Is logistics more necessary in a globalized economy or not? Is logistics more appropriate for a specific type of society organization? Is logistics the result of our contemporary economy? I can't give answers to these questions - but I hope that your Congress will. Because practical solutions provided by conferences are useful, but we -- politicians and decision-makers, also -- need the relevant theoretical documentation.

In February, the MOA is organizing the second biggest fair in Thessaloniki - "Agrotica." In view of this, I would like to ask for the cooperation between the logistics companies and the MOA in order to promote logistics in agriculture. We need this cooperation. In fact, we will "monopolize" your cooperation for some time ... because we need it.

May you have a successful Congress. The Ministry of Agriculture will always be by your side.

In order to learn more about the Hellenic Ministry of Agriculture and its missions, visit the Ministry's web site at **http://www.minagric.gr** (click on the British flag for the English version).

Calendar of Events

1. *11th MIRCE International Symposium - Data, Information, And Knowledge Management*, MIRCE Akademy (in conjunction with SOLE, Product Assurance and Reliability Centre, and Distribution Business and Management Association), Woodbury Park, Exeter, United Kingdom, December 4-6. Contact tel: +44 1395 233856; fax: +44 1395 233899; or e-mail: **mirce@mirce.com.**

2. *Defense Logistics 2001*, sponsored by PriceWaterHouseCoopers , SAP, and ORACLE, The Ritz Carlton, Pentagon City, VA, December 4-6. The Conference theme is "Capitalizing On Defense Logistics And Procurement Strategies To Facilitate World-Class Frontline Support." For additional information, contact tel: 800-882-8684 or 973-256-0211; fax: 973-256-0205; e-mail: **info@wbresearch.com**.

3. *2002 Annual Reliability And Maintainability Symposium (RAMS) - The International Symposium On Product Quality And Integrity*, sponsored by 10 technical societies (to include SOLE), Seattle Westin Hotel, Seattle, WN, January 28-31, 2002. The theme is "Beyond 2001: The Reliability And Maintainability Odyssey Continues." Contact L.M. Rabon, 2002 RAMS General Chair (**wrabon@belvoir.army.mil**) or Dr. Raymond W. Sears (tel: 603-863-2832; e-mail: **r.w.sears@ieee.org**).

Calendar of Events

4. *Enterprise Supply Chain Summit*, organized by Synergy Summits, Sheraton El Conquistador Hotel, Tucson, AZ, February 4-6, 2002. For additional information, contact Suzanne Costa at 312-977-1426, or visit **www.ESCSummit.com**.

5. *International Conference On COTS-Based Software Systems*, Orlando, FL, February 4-6, 2002. Visit web site **www.iccbss.org**.

6. *9th Annual Technical Conference - Florida LOG 2002*, sponsored by the Florida SOLE Chapters, Delta Orlando Resort, Orlando, FL, February 15-16, 2002. The theme is "New Logistics Visions." The General Chair is Ray Hoopes (**rthoopes@aol.com**), the Technical Program Chair is Gaines Corbett (**gaines.w.corbett@lmco.com**), and the Registration Chair is Michele Smith (**michele.smith@honeywell.com**). For additional information, please contact any of the above.

7. *15th Conference On Software Engineering Education And Training (CSEE&T)*, Covington, KY, February 25-27, 2002. Visit web site **www.site.uottawa.ca/cseet2002**.

8. *4th Annual Mid-Atlantic Professional Development Workshop And Technical Conference*, sponsored by the SOLE Chapters in District 2, Holiday Inn, 1815 West Mercury Blvd., Hampton, VA 23666-3229, April 12-13, 2002. The theme is "Logistics: Beyond 2002." The General Chair is Richard Smith (**smithlog@att.net**), the Technical Chair is Eric R. Nelson (**ernelson57@hotmail.com**), and the Registration Chair is John Davids (**john_h_davids@mail.northgrum.com**). For additional information, please contact any of the above. Also, visit web site **www.mid-atlantic-log.addr.com**.

9. *Software Technology Conference 2002*, Salt Lake City, UT, April 28-May 2, 2002. The theme is " Forging The Future Of Defense Through Technology." Visit web site **www.stc-online.org**.

10. *Institute Of Industrial Engineers (IIE) Annual Conference 2002*, sponsored by the IIE, Hilton Hotel, Walt Disney Resort, Orlando, FL, May 20-22, 2002. For additional information, contact **cs@iienet.org** and/or visit web site **www.iienet.org**.

11. *International Conference Of Maintenance Societies (ICOMS-2002)*, organized by the Maintenance Engineering Society of Australia (MESA), Hilton Hotel, Brisbane, Queensland, Australia, May 21-24, 2002. The theme is "Changing The Future."The Conference will include a variety of workshops and exhibits, in addition to many technical paper presentations. Some of the sessions will be simulcast between Brisbane and Gladstone. For further information, contact Sally Nugent, P.O. Box 634, Brentford Square, Victoria 3131, Australia (**icoms@corrprev.org.au**). Also, visit web site **http://www.mesa.org.au**.

12. *EUROMAINTENANCE 2002: 16th International Maintenance Congress*, Helsinki, Finland, June 3-5, 2002. For additional information, contact Hannu Vallanen (tel: +358 9276 7688; fax: +358 9290 0081). Also, visit **http://www.kunnossapito.fi/Congress/call-pap.htm**.

13. *8th IEEE International Symposium On Software Metrics (Metrics 2002)*, Ottawa, Canada, June 4-7, 2002. Visit web site **www.software-metrics.org**.

14. *12th Annual International Symposium On Systems Engineering,* sponsored by the International Council On Systems Engineering (INCOSE), Riverina Hotel, Las Vegas, NV, July 28-August 1, 2002. The theme is "Engineering 21st Century Systems: Problem Solving Through Structured Thinking." For further information, contact INCOSE Headquarters at **incose@halcyon.com** and/or visit web site **www.incose.org**.

15. *37th Annual International Logistics Symposium: Technical Workshop, Conference, And Exhibits (SOLE-2002)*, Point South-South Mountain Resort, 777 South Mountain Parkway, Phoenix, AZ 85044, August 10-15, 2002. The theme is "21st Century Logistics: The Global Bridge." For additional information, contact John Davis, General Chair (**JDavisCPL@aol.com**) or SOLE Headquarters (**solehq@erols.com**).

16. *15th International Congress & Exhibitions On Condition Monitoring And Diagnostic Engineering Management (COMADEM)*, University of Birmingham, Birmingham, United Kingdom, September 2-4, 2002. The theme is "Innovative Trends & Sharing Best Practices In World-Class Manufacturing And Industrial Assets Management." For additional information, contact Professor Raj. B.K.N. Rao (**rajbknrao@btinternet.com**) and/or visit web site **http://www.comadem.com**.

17. *18th International Logistics Congress*, sponsored by SOLEurope, Munich, Germany, September 16-18, 2002. For further information, contact SOLE Headquarters (**solehq@erols.com**).

SOLE – The International Society of Logistics
APPLICATION FOR MEMBERSHIP

MEMBERSHIP TYPES

Member: An individual working or interested in the logistics profession or a related activity seeking to improve their competence through professional activities
Retired: An individual who is fully retired from the active work force
Young Logistician: An individual who is 35 years of age or younger, drawing a salary. This category of membership is for ***1 year only.***
Student: An individual carrying at least 30 % of a full-time academic program in the field of logistics as a graduate or undergraduate in a school of recognize standing. Persons drawing full time salaries while attending college are not eligible.
Corporate Member: A special corporate membership application is available at SOLE Headquarters. To get an application, please call (301-459-8446), fax (301-459-1522) or email (solehq@erols.com).

DUES STRUCTURE (Membership Year: Based on Anniversary Date)

Membership Type	New Member	Renewal
Regular 1 Year	$140	$130
Regular 3 Year	$370	$360
Student	$40	$40
Retired	$85	$75
Young Logistician	$75	N/A

PLEASE TYPE OR PRINT CLEARLY

__ Mr. __ Mrs. __Miss __Ms. Other_____

Birthdate_____(MM/DD/YY)

First Name_____

Last Name_____

Address_____

Address_____

Address_____

Country_____

Work Phone_____

Home Phone_____

Fax_____

___ 1 Year
___ 3 Year
___ Student
___ Retired
___ Young Logistician

Email_____

Employer_____

Position_____

Degree Received_____

Affiliate me with _____Chapter

___Nearest Active Chapter

___Virtual Chapter

Revised September, 2001

Mail with payment to: **SOLE – The International Society of Logistics**
8100 Professional Place Suite 211
Hyattsville MD 20785 USA

Application Division Interest (Select one or more)

___ Space
___ Environmental
___ Transportation/Distribution
___ Configuration/Data Management
___ Supportability
___Commercial
___ Defense
___ CALS/Electronic Data
___ Management & Strategy

List me in SOLE's Membership Directory ___Yes ___No

Send me outside mailings ___Yes ___No

Signature of Applicant_____

I hereby sponsor the above applicant for membership in SOLE. I have provided my signature and membership number.

Signature_____

My check # _____ for _____US Dollars is enclosed

Please charge $_____ to my __Visa __Master __Amex __Diners

Account Number_____

Expiration Date_____

Signature of Cardholder_____

FOR SOLE USE ONLY

Membership Number_____

District/Chapter Affiliation_____

SOLE - The International Society of Logistics
8100 Professional Place
Suite 211
Hyattsville, MD 20785

Newsletter Published By SOLE - The International Society of Logistics
8100 Professional Place, Suite 211, Hyattsville, MD 20785
Tel: 301-459-8446; Fax: 301-459-1522; E-Mail: SOLEHQ@erols.com

Editor: Benjamin S. Blanchard, CPL, Fellow
301 Sutton Place, Blacksburg, VA 24060
Tel: 540-552-8910; Fax: 540-552-6527
E-Mail: bsblanch@vt.edu

Numerous Advertising Opportunities with SOLE are Now Available!

SOLE has established a central point of contact for all SOLE advertising, including advertising in the *SOLEtech* newsletter, the *Logistics Spectrum*, and the SOLE Web site

For additional details and pricing information, please contact:
SOLE Hqts: (301)459-8446 Fax: (301)459-1522 Email: SOLEHQ@erols.com