

India Will Solve the Global Enterprise Level Maintenance Issue for Asia and the Pacific Rim

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ABSTRACT

The article directs the reader's attention to the use of the Internet to solve current maintenance issues. The article addresses the need and discusses previous articles on the subject. It outlines the global enterprise level maintenance requirement as viewed by the author.

The article then proposes India as the logical entity to solve this global issue. The identification of India's Hexagon for Success is then presented as the rationale for this conclusion. The article then closes with some projects that could be initially studies to create resolutions for resolution of the global enterprise level issue presented by the author.

The Future of Maintenance

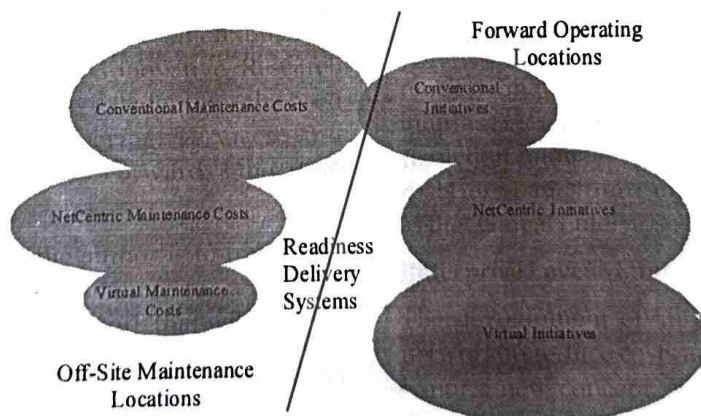
A recent United States of America Small Business Administration Small Business Innovative Research (SBIR) Topic, solicitation AF081-100 identifies the need to provide real-time engineering services and troubleshooting assistance to Forward Operating Locations (FOL).

The major issue as seen by the author is to transit the current conventional maintenance to a Global enterprise level maintenance network that will create a paradigm shift in the reduction of conventional maintenance costs which could be used to fund new initiatives. The future readiness efficiency goal would be to transit from the current maintenance efforts of the system operators to one that is supported by a remote, NetCentric Maintenance assistance to the equipment in the FOL. The assistance will provide on-demand

maintenance support at a reduced cost. Eventually, the NetCentric Maintenance will evolve to Virtual Maintenance assistance where the FOL equipment will request maintenance assistance without operator interface. This will create a second phase of cost reduction allowing an even greater paradigm shift of costs to expand future initiatives. This will be referred to as the "Global Enterprise Level Maintenance" issue.

Enterprise Level Maintenance Networks

The development of an enterprise level maintenance network to reduce costs and use it to expand initiatives is not a new concept. Mr. Carl Floyd and Mr. Daniel Miles in an August 2002 article published in National Defense magazine, "NetCentric Maintenance Needed on Subs" details a four step approach for implementing netcentric maintenance. The first step is a delivery system located at or on the FOL with Internet



Paradigm Shift of Global Enterprise Level Maintenance

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connectivity capable of connecting test equipment or systems to remote subject matter experts (SMEs) for the purpose of providing real-time engineering services and troubleshooting assistance. The second step, design new smart equipment, would follow since the military would purchase equipment with the "hooks and handles" necessary to interface with the delivery system. Step three, smart test equipment, is evolving through the need to test in an Intranet local environment. This provides vendors the ability to verify systems made up of several major components providing for a system level of certification. The final step, the smart facility, addresses to need of the aforementioned SBIR Topic. Ms. Helene Anderson and Mr. Daniel Miles in a March 2004 article published in National Defense magazine, "Virtual Maintenance Promises Big Savings" provides an application of an enterprise level maintenance network. Mr. Daniel Miles in a July 2007 article published in The Icfai University Press publication, Projects & Profits, "Sustainment Modeling for Project Managers" briefly discusses the use of an enterprise level maintenance system to facilitate the development and management of a sustainment center for high-speed security boats.

The Global Enterprise Level Maintenance Requirement

The same need exists in industry due to the fact that technology changes so rapidly. Field service representatives cannot keep up with the new changes. The need for a centralized corporate managed real-time troubleshooting capability is needed to support the field service representatives from corporate research & development (R&D) centers. Implementation will also significantly reduce the companies warranty repair costs. The need exists for a global enterprise level maintenance network that can support the following maintenance requirements:

- (1) A remote capability with a universal interface that can be reconfigured to facilitate troubleshooting, repair and support Internet testing/certification, with multiple platforms;
- (2) Provide communication interfaces between the SME and field services to facilitate local support to the SME which should include:
 - ✍ Chat
 - ✍ Audio
 - ✍ Video
- (3) Application sharing, allowing the SME to

simultaneously operate existing programs to the field services interface allowing usage by the SME; and

- (4) Data transfer of files from field services to the SME for remote problem recreating, investigating and repair development and execution planning.

Global expansion of virtual maintenance capabilities will require a Global Level Maintenance Network. This will support the reducing of current maintenance costs creating an economic stimulus for the development of new initiatives. The current global economy is facing a recession at this time and solving of this problem needs to be accomplished to facilitate continuing global economic growth. The author believes that global regions will create the initial networks and eventually these would be integrated to support global needs. In Asia and the Pacific Rim, the author believes that India will lead this regional development.

The need to support several areas of an economy must be present to support the justification for the creation of a regional network,. As the SBIR Topic suggested, a military expansion could be a catalyst for such a project. The military would need to support its FOL requirements in an effective/cost efficient manner. The ability to leverage the nation's academic community to support such an infrastructure project would assure success. If the nation's manufacturing sector is expanding into global markets, the academic community could mentor changes to industrial products to leverage in the knowledge of remote maintenance repairs derived to support the military needs. This enhancement to the Nation's exported products will increase their value and provide a competitive edge in global markets.

Why India?

Location and Economic Development:

India is strategically positioned in South Asia. Agriculture, services and manufacturing industries all contribute to the development of the Indian economy. Most recent expansion by the services sector into information technology (IT), software development, business process outsourcing (BPO) and IT-enabled services as well as the increasing number of Indian companies becoming global players have all contributed to this success.

Real World Issues:

India has to deal with potential terrorists on a daily basis. Early in 2008 the maritime passages between India and Sri Lanka was mined by terrorists. More

recent attacks, in particular Mumbai amplifies the need for India to invest in infrastructure security. The ability to facilitate a regional global network for Asia and the Pacific Rim neighbors will minimize the terrorist threat.

Internet Connectivity:

India has expanded its global presence through the expansion of its outsourcing capabilities. These capabilities have required a strategic development of the supporting communications networks. India's communication networks can be easily leveraged at minimal cost to evolve to a Global Enterprise level maintenance network. The network will support all India maintenance requirements as well as those of its Asian and Pacific Rim neighbors.

Future Military Purchases:

As the media has advertised, India is planning to invest \$20 billion into the purchase of military equipment. More recent details are the proposed purchase of eight mine countermeasure vessels (MCMV) (<http://mrwhite.blog.co.in/2008/10/30/Indian-navy-seeks-8-mine-countermeasure-vessels/>). With the purchase of this equipment a way to rapidly maintain the equipment at minimal costs will facilitate the paradigm cost shifts. Currently it is estimated that 10% of a programs cost is expended in development, 20 - 25% in the system acquisition phase and 65 - 70% of the cost in the operation and support (O&S) portion of the equipments life cycle. The implementation and usage of the proposed Global Enterprise Level Maintenance network will significantly reduce the anticipated O&S costs of the military hardware.

Debt Financing to Facilitate Infrastructure Development:

The India Infrastructure Development Finance Company (IDFC) is an India-based company. The Company's primary business activity is to provide debt financing for infrastructure projects. IDFC provides debt and equity finance primarily to four infrastructure sectors: energy, transportation, telecom and information technology (IT), and commercial and industrial. The proposed Global Enterprise Level Maintenance network would be a significant enhancement to India's infrastructure which will enhance its global presence. The author recommends that the IDFC consider the network as one of its future infrastructure projects.

India's Academic Assets:

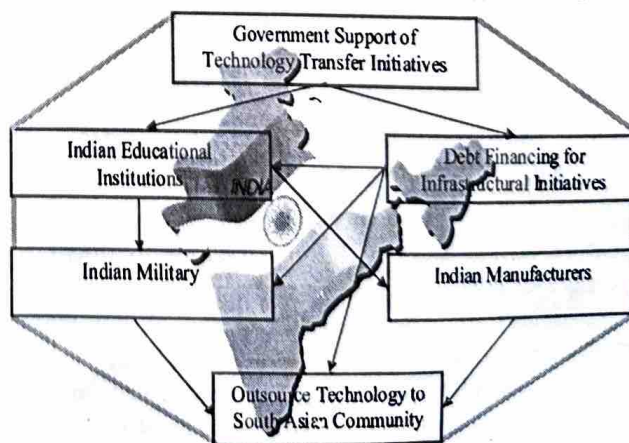
The Institutes of Technology Act, 1961, declared certain

institutions of technology to be institutions of national importance. This act brings together the Indian academic community to a single forum which would be necessary to provide unity in the development of a Global Enterprise Level Maintenance network and its application to the military, commercial, and needs of its Asian and Pacific Rim neighbors. The proposed Global Enterprise Level Maintenance network development will be a challenge which the India's academic community would embrace to expand India's technology transfer expertise.

India's Hexagon for Success

The author has combined all the reasons as to why India will solve the Global Enterprise Level Maintenance network issue for Asia and the Pacific Rim through the use of a hexagon patterned approach for successful implementation. To initiate the approach, the India government will be required to support the proposed technology transfer initiatives, similar to those that were used to develop current outsourcing initiatives. Through the use of its powers, the government will provide the process to transfer the technologies from other global partners. Companies such as the IDFC would then provide funding to support these transferred initiatives.

In a parallel path, Indian educational institutions, such as the India Institutes of Technology (IITs) would review the technology for applications to the India military as well as India manufacturers. The IDFC would then provide funding to the IIT for development of the network that could be used by military and commercial companies. The IDFC would then provide funds to the military and commercial companies to implement the necessary changes to their equipment/products to take advantage of the network opportunities. Once development has been completed,



India's Hexagon for Success

the results of the technology initiative could then be outsourced to other Asian and Pacific Rim community members for their use.

The ability to resolve the network issue can lead to reduction in the maintenance of existing military systems by "connecting" disconnected legacy systems. Providing the ability to repair new systems remotely will significantly reduce O&S costs for new deployed military systems.

The continuation of this article will present four initiatives that can leverage the proposed Global Enterprise Level Maintenance network providing India new technology products that will enhance its global status.

Where to Start?

The author proposes a phased approach to this question attempting to leverage current assets with a minimal of up front funding to establish a five year growth agenda. With the current global economic issues and planned government expenditures a multi application approach will be of most value at this time.

Virtual Maintenance Engineering Network:

The purchase of new military equipment is very costly to maintain. As also stated, the use of internet maintenance will facilitate an effective and cost efficient method to resolve this potential infrastructure issue. With Government support and debt financing, the military could utilize the academic community to develop the regional global network already outlined and then develop the interfaces with the military hardware purchases necessary to facilitate Internet maintenance. Once these interfaces have been successfully demonstrated, the academic community could then transfer this knowledge to the manufacturing sector to leverage this Internet maintenance into domestically produced goods. This will increase the value of the domestic product and increase its ability to compete in global markets.

Harbor Management and Security Center of Excellence:

With the recent attack in Mumbai and the constant threat of mines, the need for a facility to develop systems that manage harbor environmental issues and also provides the ability to secure the harbor from threats, is also critical. Once the center is operational, it could be viewed by global neighbors who may request India to develop similar centers in their countries.

Underwater Threat Neutralizer:

When mines are moored in other countries waters, for security or as a terrorist threat, the possibility always exists for a mine to break-away from its mooring due to natural events and drift into international waters or other countries waterways, becoming a threat to maritime commerce. An underwater threat neutralizer could be deployed by the military to remove the threat. The neutralizer could be part of the Harbor Management and Security Center.

Pacific Unmanned Application (PUMA) Center:

A final venture would be to provide a facility, which the author will refer to as the Pacific Unmanned Application (PUMA) Center to perform remote maintenance on unmanned surface vehicles (USV) and unmanned undersea vehicles (UUV). Due to the procurement cost, time, and life cycle maintenance costs to produce large warships, USV and UUV provide a low cost intermediate solution. The envisioned PUMA center could provide test ranges in both lateral waters and deep water locations. The center could be used by India and all its global neighbors, including the United States, and NATO members as a training and development center for their unmanned vehicles.

Conclusion

Based on data available to this author, the need to resolve the global enterprise level maintenance issue is a reality. Global regions must work together for its success. Either by design or by destiny, the proposed hexagon approach for India is apparent. The need exists to develop proposed initiatives to assure future commercial success and internal security. The roadmap for success is solving the infrastructure maintenance issues. The first one is the Global Enterprise Level Maintenance issue.

In late January 2009, India's Air Force Chief gave candid replies to questions dealing with the Indian Air Force modernization program that the Indian Air Force (IAF) (www.india-defense.com/reports-4169) has plans to put in place an integrated air command and control system by the end of 2009 and dedicated satellites for the IAF to be launched in 2010. This initiative is also a necessary building block for the proposed Global Enterprise Level Maintenance network addressed in this article. Leveraging the Air Force Chief's control system into the maintenance applications discussed in this article simply verifies that India appears ready to lead Asia and its Pacific Rim neighbors in this endeavor.