Supply Chain Imperatives: Supplier Visibility, Collaboration, and Risk Mitigation

An Advanced Core Technologies White Paper

The need for Supply Chain efficiency, agility and innovation has never been greater. When the current economic pressures and the ever growing global network of suppliers are taken into account, supplier visibility and risk mitigation are quickly added to the ongoing needs of improved efficiency, agility and innovation. Supply chains are also sources of competitive advantage, so more tools are needed to facilitate integration, collaboration, transparency, traceability, and sustainability in the supply chain.

Obviously, suppliers are a key element of any supply chain. However, the traditional Supply Chain Management (SCM) tools focus heaviest on process flow such as demand, material, and production planning. Traditional ERP and SCM IT tools only address contacting, sourcing, and invoicing activities relative to suppliers. Tools to enable greater supplier visibility and risk mitigation are needed to more thoroughly address the issues of integration, collaboration, transparency, traceability, and sustainability in the supply chain. SCM executives must be able to see and analyze supplier relationships within the supply chain, easily assess supplier performance, identify the impact of supply chain disruptions, understand the distribution of suppliers across the supply chain network, discover new suppliers easily which meet the specific requirements of their supply chain projects, track maturation of critical technologies, visually assess supply chain configuration, optimize ROI across multiple modification projects, and forecast surge impacts to the existing supply chain sustainment posture.

To optimize and access the Supplier advantages afforded to the overall supply chain network, SCM executives must be able to assess several key pieces of information regarding supply chain suppliers. Information such as financial health, capacity, process certifications, technology portfolio, environmental disaster exposure, resiliency and supplier relationships relative to others in the supply chain is critical to developing a robust SCM strategy. Outsourcing and off-shoring have also increased the number of tiers in the supply chain. This tends to greatly reduce visibility for the primary enterprise, and makes it dependent on the multi-tiered supplier network for performance monitoring and results. In fact, today’s supply chain challenges are best characterized as pervasive outsourcing, shrinking product life-cycles, and continuous demand volatility.

Suppliers can no longer be treated with an arms-length relationship, in which information is provided only on a "need to know" basis. The need for optimal efficiency in all aspects of the supply chain, and competitive & economic pressures demand more flexibility from a company's supply chain. Today's supply chains are sophisticated, multi-tier and multi-enterprise supply networks consisting of distribution centers, third party logistics suppliers, contract manufacturers, and material suppliers.

Much of the information needed to yield optimal supply chain efficiency, visibility, and risk mitigation reside outside of the prime enterprise firewall. So companies must have tools which enable access to multiple data bases and information sources within and outside of the company’s firewall. Once acquired, the data must be conditioned and analyzed to provide the relevant information needed to optimize supplier relationships with the prime enterprise supply chain network.
The optimal tool is an SCM Intelligence application which easily and seamlessly interfaces with the company’s existing ERP and/or SCM application much like a Business Intelligence solution. However, the SCM Intelligence tool would be optimized for Supply Chain Management. The SCM Intelligence application will facilitate structured access to external supplier databases via the internet, and integrate supplier, BOM, and production data contained within the company’s ERP and/or SCM databases to provide the relevant analysis.

A New More Comprehensive Tool for Supplier Visibility and Risk Mitigation

Visual Supplier Assessment & Analysis Modules (VSAAM™) is a Supply Chain Management (SCM) and Supplier Relationship Management (SRM) Intelligence application consisting of a suite of modules that make it possible for project managers, product design engineers, sourcing managers, and production planners to quickly provide answers to the following questions:

I. Quality of Suppliers
   a. How many suppliers are there for a particular product or project?
   b. How diverse are the suppliers?
   c. Are the suppliers financially sound? What is the state of their financial health?
   d. What is the relationship between suppliers in the supply chain of a particular product or project?
   e. How do they score on our supplier assessment exercise?
   f. What quality, technology, environmental and/or manufacturing certifications have they earned?

II. Supply Chain Disaster Risk
   a. What is the risk to the suppliers in the supply chain due to weather and other environmental events and conditions?

III. Component Level Analysis
   a. How does a particular component of interest look? Display an actual CAD/CAM rendering of the component...
   b. What are the form, fit and function specifications of the component?
   c. Who are the potential alternate suppliers for the particular component?

IV. Supply Chain Demand Surge or Decline Analysis
   a. What is the impact of the demand surge or decline on the supply chain?
      i. Suppliers
      ii. Inventory
      iii. Product or project delivery or completion date
      iv. Production capacity utilization
      v. Distribution availability
V. **New Supplier Discovery for a Particular Component**
   a. Who are the suppliers globally which supply a particular component or service with particular quality, technology, environmental and / or manufacturing certifications?

VI. **Overall Project Status & Management**
   a. What is the current status of my product / project relative to key milestone completion dates?
   b. What is the impact of adding a new supplier to the project resource list?
   c. How does the project plan Gantt chart change with the demand surge and additional suppliers?

**VSAAM™** consists of twelve (12) intelligence modules that are configurable to meet various user specific supply chain / sustainment requirements. **VSAAM™** brings internal enterprise information together with external data to form an integrated, intuitive, visual assessment and analysis environment.
VSAAM’s Supply Chain Intelligence modules empower managers to:

- Discover new suppliers...
- See relationships within the supply chain...
- Assess supplier performance...
- Identify the impact of supply chain disruptions...
- Understand the distribution of suppliers...
- Track maturation of critical technologies, and more...

VSAAM’s System Sustainment modules provide managers with:

- Configuration visibility...
- Optimize ROI across multiple modification projects...
- Forecast surge impacts to existing sustainment posture...
- Assess reliability and availability solutions, and more...

VSAAM’s Technology Monitoring & Mapping Module (TM3) is an advanced approach to address mission assurance impacts of material and component reliability and availability issues in a proactive manner by scanning the environment for tomorrow’s material, manufacturing, and integration solutions today.

- Continuously identifies, assesses, monitors, extrapolates, and forecasts the development stream of technological advances in material and component technologies
- Provides visibility into the future in 5, 10, and 20 year increments
- Helps managers align technology roadmaps with capability-based, future system architecture objectives, and more...

VSAAM’s Anti-Counterfeiting Command and Control (AC³) Module provide both a top-down supplier perspective and a bottom-up component perspective. AC³ helps to mitigate counterfeiting issues by:

- Leveraging VSAAM’s Component Visibility Module and identifies the parts and materials associated with each assembly within a system
- Identifying the supply chain lineage associated with parts and materials
• Assessing past performance of suppliers of interest using in-place supplier metrics
• Identifying counterfeit risk potential and more...

VSAAM’s Project / Program Management Graphics Module (VSAAM Planner) is an intuitive project management graphics frontend which is designed to interface to third party project management tools (i.e. Microsoft Project, Excel, @Task, GNOME Planner, etc.). It is integrated with VSAAM’s intelligence modules and interfaced to an existing project planner application to provide a complete visual and interactive project management environment in which major project milestones are graphically displayed and monitored. As VSAAM’s intelligence modules acquire data and produce supply chain impact information, the VSAAM Planner is automatically updated.

VSAAM™ Data Base Access

The magic of VSAAM™ is its ability to integrate data which resides in multiple internal and external databases, and intelligently configure and analyze it to produce impactful supplier information. The information is then displayed in a visually stimulating multi-media format which facilitates easily understandable and actionable output. This magic is made possible by the proprietary algorithms which are the heart of VSAAM’s SCM intelligence modules. Representative samples of the external databases commonly used by VSAAM™ are shown below. In fact VSAAM™ has accessibility to over 1000 public and proprietary databases. When VSAAM™ integrates information from these databases with that contained in the Client Customers’ ERP and SCM systems, the synergy of the integration enables the level of supplier visibility, collaboration and risk mitigation required to optimize the client company’s supply chain sustainment.
There are three versions of VSAAM to address the needs of customers’ cost, security and portability objectives.

**VSAAM CORE™** interfaces as a thin overlay on the client company’s existing ERP and / or SCM application. VSAAM facilitates structured access to external supplier databases via the internet, and integrates supplier, BOM, and production data contained within the company’s ERP and / or SCM databases as required by its 12 SCM intelligence modules to provide the relevant analysis. VSAAM CORE is installed on the customers’ ERP server on site at the customer’s location by Advanced Core Concepts (ACC) System Integration team or by an ACC Authorized Value Added Reseller (VAR).

**VSAAM CLOUD™** is accessible via secure internet access and is supported directly by the Advanced Core Concepts VSAAM™ SCM Cloud Server team. Each customer is assigned a VSAAM™ project manager who

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### Representative Sample of VSAAM Data Bases

<table>
<thead>
<tr>
<th>Source</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Central Contractor Registry (CCR)</td>
<td>The primary registrant database for the U.S. Federal Government. CCR validates the registrant information.</td>
</tr>
<tr>
<td>Small Business Administration (SBA)</td>
<td>This office also provides small businesses with subcontracting procurement opportunities, outreach</td>
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<tr>
<td>US Census Bureau</td>
<td>The United States Census is a decennial census mandated by the United States Constitution.</td>
</tr>
<tr>
<td>Government-Industry Data Exchange Program (GIDEP)</td>
<td>A cooperative activity between government and industry participants seeking to reduce or eliminate expenditures of resources by sharing technical information.</td>
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<tr>
<td>Department of Veteran Affairs (VA)</td>
<td>Database of Veteran-owned small businesses (VOSB) to enable VA contracting officers to easily identify for procurement opportunities.</td>
</tr>
<tr>
<td>Public and Commercial Financial Sources</td>
<td>Multiple data sources with access to information on millions of companies integrated with customers’ existing enterprise infrastructure.</td>
</tr>
<tr>
<td>The Library of Congress</td>
<td>Makes federal legislative information freely available to the public to include the features and content on Bills, Resolutions, Activity in Congress, and Congressional Record.</td>
</tr>
<tr>
<td>National Oceanic and Atmospheric Administration (NOAA)</td>
<td>A scientific agency within the United States Department of Commerce focused on the conditions of the oceans and the atmosphere. NOAA warns of dangerous weather, charts</td>
</tr>
<tr>
<td>U.S. Geological Survey (USGS)</td>
<td>The USGS collects, monitors, analyzes, and provides scientific understanding about natural resource conditions, issues, and problems. The diversity of scientific expertise</td>
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<tr>
<td>U.S. Forest Service (USGS)</td>
<td>The Forest Service provides the scientific and technical knowledge necessary to protect and sustain the Nation’s natural resources on all lands, providing benefits to people</td>
</tr>
<tr>
<td>Supplier Product Databases</td>
<td>All supplier databases which include product descriptions, availability, and cost.</td>
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leads the Cloud Server Team and manages the customer’s SCM account (i.e. configured VSAAM SCM intelligence modules and databases) on behalf of the customer. The team performs VSAAM™ SCM intelligence module and database configuration per the client customers’ supply chain requirements, and facilitates access to the customer ERP and/or SCM databases as needed. The client company avoids the capital expense and IT staffing cost required to implement an on-site hosted version of VSAAM™. The client customer’s daily operating cost is only that of a monthly subscription based on the number of users and VSAAM modules accessed.

**VSAAM CONTAINED™** operates within a stand-alone server which includes the VSAAM executive operating system and the prescribed databases (i.e. supplier, environmental, business registry, CAD/CAM, etc.) such that no external communication via internet is required to access the otherwise externally hosted databases. Databases are prescribed/preselected based on the client company’s supply chain requirements and loaded onto the server for secure access by VSAAM’s 12 SCM intelligence modules. The entire system is on site at the Client Company, and behind its firewall. Everything it needs to facilitate structured access to pertinent databases and integration of supplier, BOM, and production data is contained within the secure stand-alone server.

**About Advanced Core Technologies**

Advanced Core Technologies is a business analysis and process simulation software development company noted for its Advanced Algorithm R&D. Typical commercial applications include Supplier Management & Relationship tools, Supply Chain Risk Mitigation & Resiliency Analysis, Supplier Performance Assessment, and Decision Management tools. Process applications include simulation and analysis tools for Obsolescence Visibility, Autonomous Electric Transportation and Technical Natural Language Processing. We routinely develop business solutions involving all aspects of business, and are especially adept at providing solutions which combine the benefits of “standard” software modules, with customized functionality and user interfaces.

We’ve found that the most effective and successful solutions are those which optimize accuracy and efficiency around process best practices without forcing users and process owners into a pre-determined/shrink wrapped process flow. Rather we work with our customers to determine the most effective process flows, data handling techniques, analysis and reporting tools which are optimized for their business.

Our prime concern is our customers’ success. We enable customer success by developing and deploying the most effective business and technology solutions.