Supply Chain Event Management
Is It Time to Implement?

By Chris Norek Ph.D.
and Scott Sykes

When there is an ad hoc change in a customer's order, or a deviation from a planned process, SCEM can help you to sense that event and satisfy the customer. This article will provide you with a better understanding of SCEM and show where the deployment of SCEM capabilities can enhance the overall effectiveness of your supply chain and company.

Introduction

Supply Chain Event Management offerings are finally commanding attention in the marketplace. These types of software applications allow companies to track orders across the supply chain in real-time between trading partners. The information provided by these systems allows a company to sense and respond to unanticipated changes to planned supply chain operations. Customers understand that deviations from plan will arise – but increasingly it is how their partners manage the exceptions that make a difference in customer satisfaction.

Imagine a shipping delay detected upstream in the supply chain. To ensure that the customer isn't disappointed, the supplier is prepared to incur significant cost to make up for the lost time with expedited freight. As it turns out, the customer has also had a change in plans, and the original required delivery date has been extended. In fact, the customer does not want the product quickly any more. When the downstream players' supply chain demands have more "wiggle room", then the perceived urgency of the disruption may not be all it first appears. What would have been both a customer service failure and an increase in costs could be transformed into a mutually beneficial supply chain collaboration opportunity. What is it worth to have the knowledge of supply chain changes as they occur? What tools, systems and processes must be in place to pursue this capability?

Defining Supply Chain Event Management

Let's define what we mean by supply chain event management. A wise advisor and logistician, Bud LaLonde, Professor Emeritus at The Ohio State University, once said that if you fail to set the level of expectations for an audience, then the audience will create its own scorecard and evaluate you on their terms. For many of the terms in the evolving field of supply chain management, each individual or company often has its own set of definitions. To set the parameters for this article, our definition of supply chain event management is the management of the information regarding a multitude of events across a supply chain. In other words, an event is any happening or occurrence within a function or process of the supply chain that can be monitored and reported upon.

SCEM does not plan, source, make, deliver or return a product, but rather conveys information regarding those supply chain processes at a specific event level, such as:
- a hand off from one supply chain entity to another
- the commitment of a product to an order
- the movement of a shipment between two logistics network nodes

• the placement of a product into storage.

These events carry with them auditable documentation (increasingly all electronic) that enables systems to be developed that capture and respond to their happening (or not happening). It is the establishment and documentation of a set of auditable, and recordable supply chain events, and the subsequent deployment of technology tools and software that monitor and report on those events, that creates a supply chain event management system.

SCEM's Relation to Other Functional Systems

How and where does SCEM fit within the overall enterprise applications landscape? SCEM is a tactical application, and it is deployed in conjunction with other transactional systems used within the enterprise, such as order management and manufacturing execution systems. Again, SCEM is utilized to monitor and report on events, which we defined as any happening or occurrence within the supply chain operations process. A summary of other functional systems linked to SCEM is included in Exhibit 1.

In deploying an SCEM solution, it is imperative that the company first articulate a listing of events that are critical steps in their business process – those that create ripple effects up and down the supply chain when they do not come off as scheduled and planned. Examples include the reporting of production yield quantities in a manufacturing process, receipt of containers or rail cars for outbound loading and staging, or the hard reservation of inventory within a company's inventory systems to a specific customer's order. After defining the business processes and the specific events within them, the next step is to document and identify the entities within the company's business systems that will serve as the electronic representatives of the actual steps of the physical process. Think of these as fields in a database, or a status within an operational system's transaction log. Depending upon the business process to be monitored and managed, it is not unreasonable for there to be upwards of one hundred potential events contained in the overall business process.

A key in defining the events is to establish the proper level of granularity such that the SCEM's output yields actionable and value-creating information, but to not get so granular that the managers in charge of the business process become inundated with alert messages. One way to manage this is to provide ranges to monitor events and managers are not notified unless the performance falls outside of these ranges.

To illustrate, let's consider the mapping and deployment of an SCEM solution for a manufacturing company that operates in a make-to-order model (see Exhibit 2). In this scenario, the event management design is aimed at monitoring the completion of the order-to-delivery process. Unique electronic identifiers are selected to model this process within the SCEM system and are monitored to achieve an electronic audit trail of the business process. The events included in this example, and the systems they might originate from, include:

- **Order Management System**
  - Capturing and Entering the order (either in a call center or via electronic methods)
  - Performing a check of available inventory to produce the order
- **Purchasing System**
  - Either reserving the required inventory for the Bill of Material (BoM), or alternatively creating the electronic Purchase Order for the required raw material
- **Transportation Management System**
  - Scheduling the raw material inbound (if necessary)
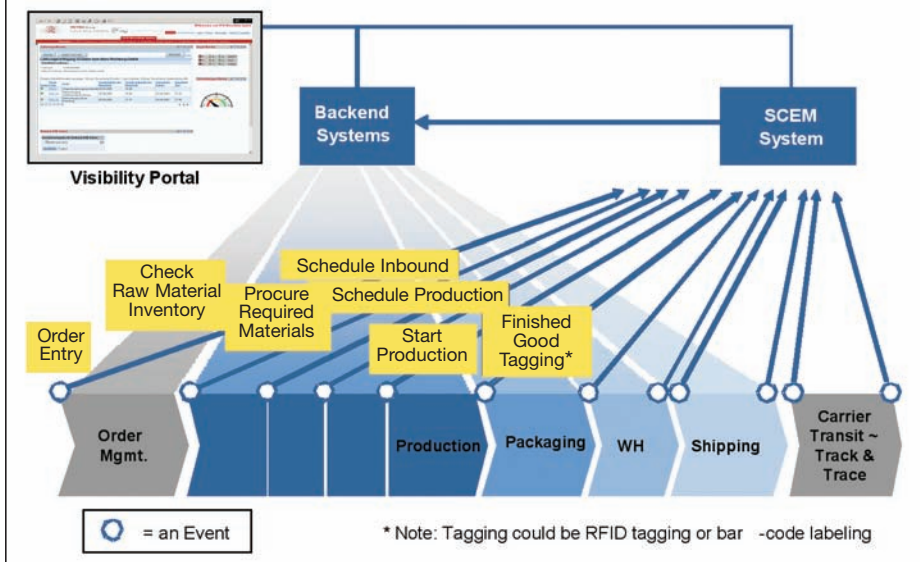 - Truck loading and dispatching

- Post-shipment in transit trace-and-trace updates from the carrier
- Delivery confirmation / Receipt acknowledgement from the destinator
- **Manufacturing/Production Management System**
  - Scheduling production for the order utilizing the required delivery date to establish the latest acceptable job date
  - Starting production
  - Monitoring of the manufacturing process at identified event steps through the process where adherence to plan can be confirmed or denied
  - Post-production quality inspection
  - Product packaging and labeling
- **Warehouse Management System**
  - Warehousing processing steps (as prescribed by the order profile)
  - Scheduling timing and placement of product in the staging area for vehicle loading
  - Customer pick-up or load into carrier's vehicle
- **Transportation Management System**
  - Truck loading and dispatching
  - Post-shipment in transit trace-and-trace updates from the carrier
  - Delivery confirmation / receipt acknowledgement from the customer

Note that in the example above we listed 18 events throughout the business process that serve as key performance indicators (KPIs) for the order-to-delivery process. Whether the appropriate number of events for your company's business situation is half- or double-that level is a consideration that you must make with your colleagues and trading partners. As a guide to that determination, we offer the following insights:

- Begin your process design by first listing all the available event candidates that currently exist within your enterprise systems (if you can't capture the information, you can't manage the process with it)
- Assign more weight to event types that carry definite and known up and down stream "ripples" (such as constrained inventory availability, or goods damaged in transit)
- Determine the possible severity of each event-type outcome in terms of cost, quality and service, and ensure that the most critical potential stumbling blocks are most readily monitored
- Establish thresholds within each process area where your key events transpire, and determine what actions should be taken and which process owners should be alerted when an event outcome exceeds a threshold or range.

Perhaps most importantly, remember that often times less is more. SCEM systems can be extremely powerful tools, but they can also overwhelm a new user if the process models and alert designs are not appropriately calibrated. (As an example, the distribution center manager does not need to receive a page at 10am on Saturday morning to inform him that seven trucks arrived at the DC the night before as scheduled).

Exhibit 2. Example Deployment of SCEM within a company that uses a make-to-order fulfillment model

Visibility Portal

Backend Systems

SCEM System

Order Entry

Check Raw Material Inventory

Procure Required Materials

Schedule Inbound

Schedule Production

Start Production

Finished Good Tagging*

Order Mgmt.

Production

Packaging

WH

Shipping

Carrier Transit ~ Track & Trace

O = an Event

* Note: Tagging could be RFID tagging or bar-code labeling

Creating Value with Supply Chain Event Management

It is in the management of this granular event information where your company can utilize SCEM applications to enhance customer satisfaction and improve operational performance. For example, by enabling a customer to discover the status of an order you give that customer the assurance that you will deliver on your promises. In addition, delivering this capability to your customers can reduce your cost-to-serve because the inquiry can be made via a self-service web portal with no human intervention on your company's behalf.

Further, when there is a deviation from a planned process, your SCEM application enables you to sense that event, and thus respond in a way that ensures your customer is satisfied despite an unplanned occurrence. In many instances, the response to the supply chain event is transparent to the customer because you were able to detect the deviation early enough to address it without the customer's knowledge. Clearly, any business system that enables you to keep tabs on the performance of your entire supply chain – to monitor all events, and manage only those occurrences that "trip an alert mechanism" – will serve to improve your performance, lower your costs, and enhance your customers' experience.

Companies that deploy supply chain event management systems can expect to achieve the following operational and economic benefits:

• Lower inventory levels
By having a real-time view of the supply chain, lower safety stocks are needed for variations *Increases return on assets and lowers inventory carrying costs*

• Increased customer satisfaction
Visibility provides comfort to customers that shipments will arrive as planned *If a changes does occur, a customer can be notified rather than be surprised*

• Reduced transportation costs
Less need to use expedited forms of transportation if delays

are known in advance and are accommodated

• Reduced labor costs
Less need for overtime for addressing unplanned events *Better labor planning is enabled*

• Lower manufacturing costs
Fewer emergency changes to the production schedule

Conclusions

As we have discussed, SCEM systems do not buy, make, move and sell products, but rather serve to deliver information surrounding those key supply chain operations as they occur (or don't occur). In the scenario discussed for the make-to-order company's order-to-delivery process, the source systems for the "electronic representatives" of the physical process are the company's existing systems used to manage:

• Order Management
• Procurement
• Manufacturing
• Quality
• Warehousing, and
• Transportation

The scope of the scenario we used to illustrate supply chain event management pulls its information heavily from ERP and SCM systems that are already in place for most product-based firms. As you consider your firm's next step in weighing the potential for supply chain event management in your business, keep in mind that SCEM is a complementary solution to what you have in place, not a substitute or a replacement.

As the capabilities afforded by SCEM systems become better understood, they will increasingly become central solution elements of extended supply chains. Further, as supply chains continue to expand across geographies and enterprises, the inclusion of SCEM applications as part of the technology landscape will become a critical aspect in achieving more tightly aligned, interconnected supply networks.

Summary Points for SCEM

• Key is to use information to react to an unplanned event and make arrangements to reduce the impact of the change. Customers realize that not everything goes as planned but they don't like being surprised when it is too late to make an adjustment.
• Monitor events and notify management of exceptions that need to be managed. This frees up time from having to monitor all events.
• Store the data regarding the events to enable analysis at a tactical and strategic level to identify process weaknesses, pursue continuous improvement opportunities, and identify strategic trends.