



TRADEMERIT

Know Where Your Business is *GOING*

Managing Supply Chain Risks

The Case for Supply Chain Event Management

www.trademerit.com
Info@trademerit.com

Executive Summary

Supply Chain network complexity is constantly increasing. As companies globalize and outsource, partners' interdependence deepens and the potential for supply chain failures increases. Such failures may start from what appears to be a minor Event and end up creating severe bottlenecks across the entire Supply Chain network. These bottlenecks manifest themselves in the form of reduced availability, customer dissatisfaction, service disruption, and other risks to the organization. Supply Chain Event Management allows for the timely detection of such Events and the reduction of risk to the organization.

Traditionally, companies focused on the use of planning tools in the hopes of minimizing undesired Event occurrence. However, given that Events can't realistically be fully avoided, companies are deploying Supply Chain Event Management (SCEM) tools to minimize the impact of the Events.

SCEM tools provide companies with an effective way to reduce the impact of undesired Events. These tools have evolved from simply monitoring the progress of the Supply Chain processes to intelligently detecting deviations from the plan, determining potential impact, identifying risk to the overall organization, and initiating appropriate corrective measures and resolution tasks.

SCEM represents a low hanging fruit where these tools can be easily deployed to considerably reduce risk and achieve high returns.

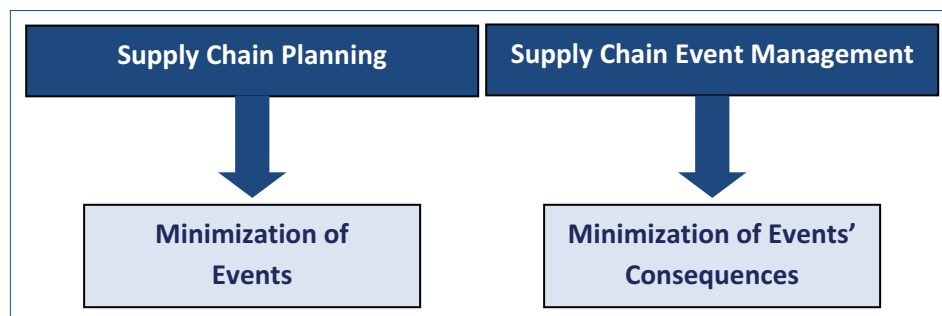
Risk Management

Risk Management is composed of two major elements:

- ❖ **Probability of Event Occurrence:** This represents preventive controls such as planning and strict Business Process Management that aim at preventing the occurrence of undesired Events and reducing deviations from the Plan.
- ❖ **Impact of Event Occurrence:** This represents detective and corrective measures such as Event Management tools that reduce the impact of an undesired Event when a deviation from the plan does occur.

To manage Supply Chain risks, companies must:

- ❖ Diligently plan their Supply Chain business processes, and continuously invest in tools such as Enterprise Resource Planning (ERP). The aim of planning is to ensure that undesired Events are reduced if not eliminated.
- ❖ Tap into the second element of Risk Management that deals with Event consequences by deploying Supply Chain Event Management (SCEM) tools.



Supply Chain Planning

Superior Goal: Event Avoidance

In the context of Supply Chain Risk Management, the main task of planning is the avoidance and/or minimization of Events. The rational is that as plans become more exact and their enforcement is carried out consistently, deviations from the plan are eliminated or at least minimized.

Accordingly, companies have increased their investment in planning methods and systems. Tools like Enterprise Resource Planning (ERP) and Sales & Operation Planning (S&OP) are increasingly being used to close gaps in the overall Supply Chain processes.

In all cases, for these planning efforts to achieve their objectives, it is necessary that organizations:

- ❖ Carry out simultaneous planning activities instead of the traditional sequential approach. This allows organizations to incorporate feedback and take into account all relevant factors.
- ❖ Understand the interaction between partners such as suppliers, logistics providers, government agencies, etc. More specifically, it is necessary to understand how a partner's activity may influence the overall process.
- ❖ Create a culture that enforces the planned business process independent of departmental or geographic variations. This implies that practices that do not conform to overall plan must be changed. Such change is typically met with some resistance as it may not be aligned with the specific departmental objectives.
- ❖ Implement an integrated information system to manage Supply Chain data. This presents an overwhelming task to the organization due to the number of systems and standards that would have to be integrated, and in some cases changed, in order to implement the overall plan. In some cases, companies have attempted to avoid integration issues by relying on a single ERP vendor. In reality, challenges still remain across partners and in some cases modules from the same vendor.

Reality: Event Minimization

In the reality of business practice, the superior goal of “Event Avoidance” cannot be achieved. While the goal of “Event Avoidance” seems possible in theory, it is however unrealistic in practice:

- ❖ As complexity of the Supply Chain network increases, the number of planning parameters has grown dramatically and it is not feasible to determine all possible interdependencies. This problem is amplified by the fact that companies do not have complete control over all Supply Chain activities.
- ❖ Since not all participants in the Supply Chain aim to achieve the same level of collaboration, information is not always available and planning is generally limited to key activities.
- ❖ In some cases, process compromises must be made not just for partners but even within the same organization. Valid business reasons - such as reducing implementation costs - are typically the justification for such compromises. It means however that processes that can be feasibly enforced are not as exact as the planners had hoped for.
- ❖ Finally, while the implementation of integrated information systems is already an overwhelming task, it is further complicated by the Supply Chain fast pace of change. Even when the plan is updated to reflect necessary changes, information systems and the actual implementation lag behind. The result is further gaps between the ideal plan and operational reality.

In fact, when considering the implementation costs and law of diminishing returns; the true objective of diligent planning should be to achieve Event Minimization, thus reducing the probability of a deviation from the plan as low as possible. This is especially true when considering that an effective Risk Management mechanism is available through the use of SCEM to reduce the impact of deviations from plans.

Supply Chain Event Management

Given that it is not possible to eliminate deviations from plans, it is necessary to reduce the negative impact of Events as they occur. SCEM monitors the progress of activities across the Supply Chain network in order to discover deviations from the plan in real time. Once a deviation is discovered, SCEM generates appropriate notification reports and triggers corrective measures.

The aim is to detect and mitigate the impact of these Events in a timely fashion before they pose any risk, such as reducing customer satisfaction or service availability.

Event Detection

In order to properly interpret the meaning of an Event, SCEM must first identify applicable milestones along with their expected timeframe. Advanced SCEM is also capable of deducing milestone parameters, associated costs and expected data by analyzing plans, operational data and historical patterns.

In the SCEM context, an Event describes any situation that must be monitored for the purpose of detecting deviations and potential failures. Accordingly, an Event can be one of the following types:

- ❖ **Expected Event:** An Event that occurs as expected within a set time, cost, and/or other thresholds. While this does not represent a deviation, it is used to establish a benchmark and predict thresholds for subsequent activities. For example, a shipment has been dispatched by the supplier on the expected shipping date and with the appropriate item counts.
- ❖ **Missing Event:** An Event that was expected according to the plan but has not occurred. SCEM considers an Event missing if it has not occurred within the expected timeframe. It could mean that an activity was not carried out or that it is taking longer than expected. For example, a shipment dispatch was never received from the supplier and the shipping date has passed.

- ❖ **Delayed Event:** An Event that occurred later than the expected timeframe. In some cases, a delayed Event is a re-categorization of an Event that was previously considered missing. For example, a shipment dispatch is now received from the supplier but a few days after the shipping date.
- ❖ **Inconsistent Event:** An Event that does occur within expected timeframes but contains information that deviates from the plan. For example, confirmation of logistic arrangements describing a different number/type of packages from what is necessary to properly fulfill an order.
- ❖ **External Event:** An unplanned Event that occurs outside of the control of the participants. Examples include strikes at a given port and severe weather conditions.

Corrective Measures

Once an Event is detected, SCEM must at a minimum notify users to take appropriate action. Ideally, SCEM should also estimate potential impact in order to assign appropriate severity. The severity may be based on customer, product, inventory, region, and/or other critical parameters. Thus, advanced SCEM goes beyond identifying deviations and their potential impact to Event prioritization that enables users to focus on critical data.

In addition, advanced SCEM is capable of automatically triggering adjustments in order to compensate for detected failures. In doing so, problems may be avoided both reliably and efficiently without disrupting normal business operations.

Finally, if measures taken are deemed insufficient, SCEM initiates an escalation process whereby a problem that is not resolved within a certain timeframe, is escalated to the appropriate person. The process may be first initiated by an automated resolution process then subsequently escalated to employees and managers until a resolution is confirmed.

SCEM Benefits

Beyond Risk Management, advanced SCEM improves efficiency and increases customer satisfaction. As SCEM automatically responds to events and takes appropriate actions, resources are better focused and service quality is improved.

SCEM yields quick and significant returns for organizations that need to:

- ❖ *Manage large number of customers, suppliers, partners, and/or products.* Due to the large amount of data, employees can be overwhelmed with day-to-day activities such as reviewing inventory reports and verifying orders issued to suppliers. Instead, SCEM allows employees to focus on exceptions, by automatically analyzing parameters such as inventory levels, days of supply, service level, and forecast limits.
- ❖ *Quickly respond to demand variations.* SCEM monitors demand variations to trigger any necessary adjustments, thus allowing employees to focus and respond as necessary to critical exceptions. In doing so, SCEM monitors both surplus as well as shortage and compares them against the organization's sales and operational plans. For example, when a new product is launched and sudden demand variations occur, SCEM can trigger purchase orders or inventory transfers.
- ❖ *Analyze performance to improve plans.* As SCEM monitors processes across the Supply Chain, it tracks Key Performance Indicators (KPI) and exceptions' root causes, thus enabling organizations to identify potential improvements to their plans. In addition, advanced SCEM uses historical event data to simulate plan adjustments and better understand "what-if" scenarios. For example, organizations can use SCEM analytics to identify excessive transportation costs due to expedite services. Subsequently, SCEM can analyze a 'what-if' scenario to calculate potential transportation savings if order lead time was increased.

Characteristics of Successful SCEM

SCEM has evolved over the years from a simple track and trace system to a more advanced system capable of analyzing the business impact of events, triggering resolutions, and suggesting improvements.

In order to achieve the desired benefits and improve Risk Management, advanced SCEM is necessary. Given that such a system is significantly different from a traditional one, the following are key characteristics that need to be addressed by a successful SCEM implementation.

Event Collection

SCEM involves the gathering of large amount of data from disparate sources. However, SCEM deployment should not be treated as yet another integration task. Doing so would only add to the already overwhelming task of integrating different enterprise information systems. Instead, the proper SCEM solution is characterized by an open framework capable of accepting data *as-is* from any system. This is the key differentiator between an SCEM and other enterprise applications.

In a typical enterprise application integration project, the various applications must agree beforehand on the structure of data to be exchanged. Adjustments are then made to both sides in order to conform to the overall process flow. Instead, advanced SCEM must accept the data without any modifications. It then derives any missing information based on its knowledge of the plans and business rules.

This means that SCEM must be truly an open system that is independent of a specific application or vendor. This is more evident when attempting to manage the "gray" area that lies between corporations. Often, this is where controls are lacking and SCEM is required to gather as much data as possible.

Business Interpretation

SCEM is not another term for a visibility solution. Traditional visibility solutions are typically limited to a combination of:

- ❖ Identifying when a given piece of data has been received/delivered. In this context, data typically refers to commonly used standards for exchanging messages between partners. No attempt is made to neither interpret the data nor verify it against the organization's plans and agreements with its partners.
- ❖ Displaying updates received from logistics partners about the location and/or status of a given shipment and/or order. Again, this is typically a track and trace functionality which is disconnected from the overall supply chain process.

Instead, having collected the necessary event data, SCEM must put this data in perspective. Data received is referenced against the organization plans and derived milestones. In addition to verifying the time of the event, advanced SCEM also inspects each Event to verify its data content against business rules as well as previously collected Events. In doing so, SCEM performs process consistency checks as the organization carries out its operations.

Finally, SCEM should be able to represent Events along with their content in a way that is already familiar to users. For example, when attempting to gain understanding of an alert related to procurement, applicable Events should be presented using Purchase Order, Shipping Notice, and other business documents that are familiar to the user.

Impact Analysis

SCEM must recognize the impact of a given Event within the larger context of the Supply Chain. Unlike traditional SCEM solutions, which are limited to local problems with focus on very low level processes, advanced SCEM is capable of identifying potential disruptions as a result of a combination of events. These events, when considered separately, may not signify a problem. However, when analyzed over time and against the overall supply chain state, advanced

SCEM is able to properly assess their potential for disruption (or possibly lack of). This analysis would not be possible if SCEM was monitoring one exception at a time. Instead, the analysis is carried out over time, across different supply chain segments, and includes future projections in order to provide the organization with a greater window of time to take corrective actions.

For example, a slight shipping delay may be acceptable to traditional SCEM - e.g. a track and trace system. On the other hand, advanced SCEM can recognize patterns of delays - e.g. many shipments being slightly delayed - and their potential impact on critical customers that have recently experienced increase in demand.

Similarly, SCEM is able to identify events that may initially appear critical but in reality have no negative impact. For example, a cancellation of a supplier delivery may be erroneously flagged as a severe exception, whereas intelligent SCEM can recognize that the cancellation is appropriate, in fact desired, due to a drop in demand and projected excess inventory.

Accordingly, SCEM must automatically increase or lower Event severity to reflect the dynamic nature of the Supply Chain. Ideally, SCEM should use the same technique to verify the effectiveness of corrective actions, by re-evaluating the current impact on the most recent supply chain state.

Resolution Management

Once the potential impact of events has been identified, SCEM is responsible for initiating the resolution process. On the most basic level, this may be an alert sent in the form of an email notification to a designated user/group.

However, to improve risk management and achieve greater returns, advanced SCEM offers additional functionality, including:

- ❖ The ability to suggest corrective actions and possible adjustments that users should perform in order to resolve or avoid the potential problem.
- ❖ Initiating an automated task to resolve or avoid the problem. Examples include automatically

updating an outstanding order, changing shipping arrangements, or transferring inventory.

- ❖ Monitoring the status of the problem and escalating as necessary. For example, if automated resolution fails, an alert may be sent to the group/user representing the first escalation point. If after a certain period of time - subject to the type and severity of the exception - SCEM detects that the problem has not been resolved, subsequent escalation is triggered. The escalation process is repeated, possibly with increasing criticality, until resolved.

Plan Improvement

Given that SCEM must interpret plans, collect large amount of events, and evaluate impact, it is well poised to evaluate performance and effectiveness of plans. Advanced SCEM provides planners with analytics functionality that includes Key Performance Indicators, root causes, and historical events.

In addition, advanced SCEM is capable of performing "what-if" scenarios by "replaying" historical events under a simulated Supply Chain context. This provides the planners with a unique opportunity of verifying potential improvement and reducing the risk involved when introducing change

tmEvent - TradeMerit SCEM

tmEvent is an advanced SCEM solution. *tmEvent* exhibits the necessary characteristics described above by providing a wide-area of features.

Open Event Collection Framework

tmEvent provides organizations with the ability to easily gather events from internal enterprise applications as well as external systems.

Intelligent Event Integration

tmEvent greatly simplifies the integration task by accepting the data 'as-is' from external sources. To do so, it provides a configurable mechanism to interpret the data and automatically complete/correct content based on process and business rules.

Dynamic Impact Assessment

tmEvent automatically evaluates the impact of events in the larger context of the overall supply chain process. In doing so, it continuously adjusts the potential impact of a given event based on the analysis of event trends, forecasts, existing plans, and the current supply chain state.

Event Timeliness and Quality

tmEvent assesses both the timeliness of the event as well as the quality of its data. Data quality is checked by comparing the event content to what should be expected according to plans and previously received events. As discussed, this provides for process consistency checks, which can be an effective measure in detecting operational errors before any negative impact has materialized.

Automated Resolution

tmEvent supports automated resolution tasks, thus allowing the organizations to close common gaps in their process by configuring desired actions that should be taken when a given condition is detected. In addition, *tmEvent* includes an advanced notification engine with support for escalation management.

Adaptive Business Presentation

tmEvent also provides the ability to represent applicable Events in a format already familiar to the user. It allows applicable Events to be reviewed and

modified over the web in the form of business documents. This web interface is easily customized by the user in order to account for different business terminologies, departmental and geographic variations as well as different languages. This approach increases adoption by external as well as internal users by eliminating the need to learn a new information system terminology.

Built-In Supply Chain Knowledge

tmEvent provides built-in process patterns that allow web users to quickly describe their plans, partners, and business rules. These built-in process patterns are based on extensive analysis of collaboration and supply chain arrangements commonly in use across various organizations. This unique **tmEvent** approach dramatically reduces the time required for initial implementation as well as subsequent change rollout.

Return on Investment

tmEvent is currently offered under Software as a Service (SaaS) as well as on-premise models.

tmEvent is typically implemented within a period of 2 months and requires minimal start-up investment. This combination allows companies to gradually scale up their SCEM as they materialize its benefits.

Independent studies have shown a payback period of less than 4 months, and Internal Rate of Return (IRR) of more than 400%.



For more information

www.trademerit.com

info@trademerit.com