

# SCOR<sup>®</sup>

SUPPLY CHAIN OPERATIONS REFERENCE MODEL



# SCOR Processes

The Supply Chain Operations Reference (SCOR®) model describes the business activities associated with all phases of satisfying a customer's demand. The model itself is organized around the six primary management processes of Plan, Source, Make, Deliver, Return and Enable. Using these process building blocks, the SCOR model can be used to describe supply chains that are very simple or very complex using a common set of definitions across disparate industries. Today public and private organizations and companies around the world use the model as a foundation for global and site-specific supply chain improvement projects.

SCOR spans all customer interactions (quote to cash), all physical material transactions (procure to payment, including equipment, supplies, spare parts, bulk product, software, etc.) and all market interactions (manufacturing, from the understanding of aggregate demand to the fulfillment of each order).

The model is designed and maintained to support supply chains of various complexities and across multiple industries. The model focuses on three process levels and does not attempt to prescribe how a particular organization should conduct its business or tailor its systems or information flow.

## People—Supply Chain Skills

The people section introduced in SCOR 10.0 provides a means for managing talent in the supply chain by incorporating a standard for describing the expertise required to perform tasks and manage processes. The SCOR skills management complements the existing process, metrics, and practice reference components by aligning people and their skills to the processes.

A Skill in SCOR is the capacity to deliver predetermined results with minimal input of time and energy, characterized by a standard definition with associated experience, aptitudes, and training.

Experience is the knowledge or ability acquired by observation or active participation, obtained by doing the work in a real life environment, and undergoing different situations that require different actions.

Aptitude is a natural, acquired, learned, or developed ability to perform a certain kind of work at a certain level.

Training develops a skill or type of behavior through instruction.

All people skills are coded with a capital letter H followed by a capital letter representing the element: S for Skills, A for Aptitudes, E for Experience and T for Training. These are followed by a period and a four digit number. Note: The number in the ID is a unique identifier and does NOT indicate any kind of priority, importance, or other meaning.

sP - Plan				
sP1 Plan Supply Chain	sP2 Plan Source	sP3 Plan Make	sP4 Plan Deliver	sP5 Plan Return
<b>sP1.1:</b> Identify, Prioritize and Aggregate Supply Chain Requirements  <b>sP1.2:</b> Identify, Prioritize and Aggregate Supply Chain Resources  <b>sP1.3:</b> Balance Supply Chain Resources with SC Requirements  <b>sP1.4:</b> Establish and Communicate Supply Chain Plans	<b>sP2.1:</b> Identify, Prioritize and Aggregate Product Requirements  <b>sP2.2:</b> Identify, Assess and Aggregate Product Resources  <b>sP2.3:</b> Balance Product Resources with Product Requirements  <b>sP2.4:</b> Establish Sourcing Plans	<b>sP3.1:</b> Identify, Prioritize and Aggregate Production Requirements  <b>sP3.2:</b> Identify, Assess and Aggregate Production Resources  <b>sP3.3:</b> Balance Production Resources with Production Requirements  <b>sP3.4:</b> Establish Production Plans	<b>sP4.1:</b> Identify, Prioritize and Aggregate Delivery Requirements  <b>sP4.2:</b> Identify, Assess and Aggregate Delivery Resources  <b>sP4.3:</b> Balance Delivery Resources and Capabilities with Delivery Requirements  <b>sP4.4:</b> Establish Delivery Plans	<b>sP5.1:</b> Assess and Aggregate Return Requirements  <b>sP5.2:</b> Identify, Assess and Aggregate Return Resources  <b>sP5.3:</b> Balance Return Resources with Return Requirements  <b>sP5.4:</b> Establish and Communicate Return Plans
sR - Return				
sSR1 Source Return Defective Product	sSR2 Source Return MRO Product	sSR3 Source Return Excess Product	sDR1 Deliver Return Defective Product	sDR2 Deliver Return MRO Product
<b>sSR1.1:</b> Identify Defective Product Condition  <b>sSR1.2:</b> Disposition Defective Product  <b>sSR1.3:</b> Request Defective Product Return Authorization  <b>sSR1.4:</b> Schedule Defective Product Shipment  <b>sSR1.5:</b> Return Defective Product	<b>sSR2.1:</b> Identify MRO Product Condition  <b>sSR2.2:</b> Disposition MRO Product  <b>sSR2.3:</b> Request MRO Return Authorization  <b>sSR2.4:</b> Schedule MRO Shipment  <b>sSR2.5:</b> Return MRO Product	<b>sSR3.1:</b> Identify Excess Product Condition  <b>sSR3.2:</b> Disposition Excess Product  <b>sSR3.3:</b> Request Excess Product Return Authorization  <b>sSR3.4:</b> Schedule Excess Product Shipment  <b>sSR3.5:</b> Return Excess Product	<b>sDR1.1:</b> Authorize Defective Product Return  <b>sDR1.2:</b> Schedule Defective Return Receipt  <b>sDR1.3:</b> Receive Defective Product (includes verify)  <b>sDR1.4:</b> Transfer Defective Product	<b>sDR2.1:</b> Authorize MRO Product Return  <b>sDR2.2:</b> Schedule MRO Return Receipt  <b>sDR2.3:</b> Receive MRO Product  <b>sDR2.4:</b> Transfer MRO Product

sS - Source			sM - Make	
sS1 Source Stocked Product	sS2 Source Make-to-Order Product	sS3 Source Engineer-to-Order Product	sM1 Make-to-Stock	sM2 Make-to-Order
<b>sS1.1:</b> Schedule Product Deliveries <b>sS1.2:</b> Receive Product <b>sS1.3:</b> Verify Product <b>sS1.4:</b> Transfer Product <b>sS1.5:</b> Authorize Supplier Payment	<b>sS2.1:</b> Schedule Product Deliveries <b>sS2.2:</b> Receive Product <b>sS2.3:</b> Verify Product <b>sS2.4:</b> Transfer Product <b>sS2.5:</b> Authorize Supplier Payment	<b>sS3.1:</b> Identify Sources of Supply <b>sS3.2:</b> Select Final Supplier and Negotiate <b>sS3.3:</b> Schedule Product Deliveries <b>sS3.4:</b> Receive Product <b>sS3.5:</b> Verify Product <b>sS3.6:</b> Transfer Product <b>sS3.7:</b> Authorize Supplier Payment	<b>sM1.1:</b> Schedule Production Activities <b>sM1.2:</b> Issue Material <b>sM1.3:</b> Produce and Test <b>sM1.4:</b> Package <b>sM1.5:</b> Stage Product <b>sM1.6:</b> Release Product to Deliver <b>sM1.7:</b> Waste Disposal	<b>sM2.1:</b> Schedule Production Activities <b>sM2.2:</b> Issue Sourced/In-Process Product <b>sM2.3:</b> Produce and Test <b>sM2.4:</b> Package <b>sM2.5:</b> Stage Finished Product <b>sM2.6:</b> Release Finished Product to Deliver <b>sM2.7:</b> Waste Disposal
	sE - Enable			
sDR3 Deliver Return Excess Product	sE1 Manage Supply Chain Business Rules	sE2 Manage Supply Chain Performance	sE3 Manage Supply Chain Data and Information	sE4 Manage Supply Chain Human Resources
<b>sDR3.1:</b> Authorize Excess Product Return <b>sDR3.2:</b> Schedule Excess Return Receipt <b>sDR3.3:</b> Receive Excess Product <b>sDR3.4:</b> Transfer Excess Product	<b>sE1.1:</b> Gather Business Rule Requirements <b>sE1.2:</b> Interpret Business Rule Requirement <b>sE1.3:</b> Document Business Rule <b>sE1.4:</b> Communicate Business Rule <b>sE1.5:</b> Release/Publish Business Rule <b>sE1.6:</b> Retire Business Rule	<b>sE2.1:</b> Initiate Reporting <b>sE2.2:</b> Analyze Reports <b>sE2.3:</b> Find Root Causes <b>sE2.4:</b> Prioritize Root Causes <b>sE2.5:</b> Develop Corrective Actions <b>sE2.6:</b> Approve & Launch	<b>sE3.1:</b> Receive Maintenance Request <b>sE3.2:</b> Determine/Scope Work <b>sE3.3:</b> Maintain Content/Code <b>sE3.4:</b> Maintain Access <b>sE3.5:</b> Publish Information <b>sE3.6:</b> Verify Information	<b>sE4.1:</b> Identify Skills/Resource Requirement <b>sE4.2:</b> Identify Available Skills/Resources <b>sE4.3:</b> Match Skills/Resources <b>sE4.4:</b> Determine Hiring/Redeployment <b>sE4.5:</b> Determine Training/Education <b>sE4.6:</b> Approve, Prioritize and Launch

	sD - Deliver			
sM3 Engineer-to-Order	sD1 Deliver Stocked Product	sD2 Deliver Make-to-Order Product	sD3 Deliver Engineer-to-Order Product	sD4 Deliver Retail Product
<b>sM3.1:</b> Finalize Production Engineering	<b>sD1.1:</b> Process Inquiry and Quote	<b>sD2.1:</b> Process Inquiry and Quote	<b>sD3.1:</b> Obtain and Respond to RFP/RFQ	<b>sD4.1:</b> Generate Stocking Schedule
<b>sM3.2:</b> Schedule Production Activities	<b>sD1.2:</b> Receive, Enter, and Validate Order	<b>sD2.2:</b> Receive, Configure, Enter and Validate Order	<b>sD3.2:</b> Negotiate and Receive Contract	<b>sD4.2:</b> Receive Product at Store
<b>sM3.3:</b> Issue Sourced/In-Process Product	<b>sD1.3:</b> Reserve Inventory and Determine Delivery Date	<b>sD2.3:</b> Reserve Inventory and Determine Delivery Date	<b>sD3.3:</b> Enter Order, Commit Resources & Launch Program	<b>sD4.3:</b> Pick Product from backroom
<b>sM3.4:</b> Produce and Test	<b>sD1.4:</b> Consolidate Orders	<b>sD2.4:</b> Consolidate Orders	<b>sD3.4:</b> Schedule Installation	<b>sD4.4:</b> Stock Shelf
<b>sM3.5:</b> Package	<b>sD1.5:</b> Build Loads	<b>sD2.5:</b> Build Loads	<b>sD3.5:</b> Build Loads	<b>sD4.5:</b> Fill Shopping Cart
<b>sM3.6:</b> Stage Finished Product	<b>sD1.6:</b> Route Shipments	<b>sD2.6:</b> Route Shipments	<b>sD3.6:</b> Route Shipments	<b>sD4.6:</b> Checkout
<b>sM3.7:</b> Release Product to Deliver	<b>sD1.7:</b> Select Carriers and Rate Shipments	<b>sD2.7:</b> Select Carriers and Rate Shipments	<b>sD3.7:</b> Select Carriers & Rate Shipments	<b>sD4.7:</b> Deliver and/or install
<b>sM3.8:</b> Waste Disposal	<b>sD1.8:</b> Receive Product from Source or Make	<b>sD2.8:</b> Receive Product from Source or Make	<b>sD3.8:</b> Receive Product from Source or Make	
	<b>sD1.9:</b> Pick Product	<b>sD2.9:</b> Pick Product	<b>sD3.9:</b> Pick Product	
	<b>sD1.10:</b> Pack Product	<b>sD2.10:</b> Pack Product	<b>sD3.10:</b> Pack Product	
	<b>sD1.11:</b> Load Vehicle & Generate Shipping Docs	<b>sD2.11:</b> Load Product & Generate Shipping Docs	<b>sD3.11:</b> Load Product & Generate Shipping Docs	
	<b>sD1.12:</b> Ship Product	<b>sD2.12:</b> Ship Product	<b>sD3.12:</b> Ship Product	
	<b>sD1.13:</b> Receive and verify Product by Customer	<b>sD2.13:</b> Receive and verify Product by Customer	<b>sD3.13:</b> Receive and verify Product by Customer	
	<b>sD1.14:</b> Install Product	<b>sD2.14:</b> Install Product	<b>sD3.14:</b> Install Product	
	<b>sD1.15:</b> Invoice	<b>sD2.15:</b> Invoice	<b>sD3.15:</b> Invoice	
sE5 Manage Supply Chain Assets	sE6 Manage Supply Chain Contracts	sE7 Manage Supply Chain Network	sE8 Manage Supply Chain Regulatory Compliance	sE9 Manage Supply Chain Risk
<b>sE5.1:</b> Schedule Asset Management Activities	<b>sE6.1:</b> Receive Contract/ Contract Updates	<b>sE7.1:</b> Select Scope and Organization	<b>sE8.1:</b> Monitor Regulatory Entities	<b>sE9.1:</b> Establish Context
<b>sE5.2:</b> Take Asset Off-line	<b>sE6.2:</b> Enter and Distribute Contract	<b>sE7.2:</b> Gather Input and Data	<b>sE8.2:</b> Assess Regulatory Publications	<b>sE9.2:</b> Identify Risk Events
<b>sE5.3:</b> Inspect and Troubleshoot	<b>sE6.3:</b> Activate/Archive Contract	<b>sE7.3:</b> Develop Scenarios	<b>sE8.3:</b> Identify Regulatory Deficiencies	<b>sE9.3:</b> Quantify Risks
<b>sE5.4:</b> Install and Configure	<b>sE6.4:</b> Review Contractual Performance	<b>sE7.4:</b> Model/Simulate Scenarios	<b>sE8.4:</b> Define Remediation	<b>sE9.4:</b> Evaluate Risks
<b>sE5.5:</b> Clean, Maintain and Repair	<b>sE6.5:</b> Identify Performance Issues/Opportunities	<b>sE7.5:</b> Project Impact	<b>sE8.5:</b> Verify/Obtain License	<b>sE9.5:</b> Mitigate Risk
<b>sE5.6:</b> Decommission and Dispose	<b>sE6.6:</b> Identify Resolutions/Improvements	<b>sE7.6:</b> Select and Approve	<b>sE8.6:</b> Publish Remediation	
<b>sE5.7:</b> Inspect Maintenance	<b>sE6.7:</b> Select, Prioritize and Distribute Resolutions	<b>sE7.7:</b> Develop Change Program		
<b>sE5.8:</b> Reinstate Asset		<b>sE7.8:</b> Launch Change Program		

# SCOR Practices

The SCOR Practices section contains management practices, software solutions, and definitions associated with each process. Companies use practices to identify alternative or desired ways for their supply chains to do business. The practices in SCOR may be a subset of the total practices a company recognizes. APICS Supply Chain Council recommends companies interested in adopting SCOR to adapt SCOR by researching, reviewing and integrating relevant industry practices and company practices (internalization).

SCOR Practices are classified to simplify identification of practices by area of interest:

- Business Process Analysis/Improvement
- Customer Support
- Distribution Management
- Information Management
- Inventory Management
- Manufacturing/Production
- Material Handling
- New Product Introduction
- Order Engineering (ETO)
- Order Management
- People Management (Incl. Training)
- Planning and Forecasting
- Product Life Cycle Management
- Purchasing
- Reverse Logistics
- Risk/Security Management
- Sustainable Supply Chain Management
- Transportation Management
- Warehousing

## Special Applications

### GreenSCOR

The following strategic environmental metrics allow the SCOR model to be used as a framework for environmental accounting:

- Carbon Emissions (Tons CO2 Equivalent)
- Air Pollutant Emissions (Tons or kg)
- Liquid Waste Generated (Tons or kg)
- Solid Waste Generated (Tons or kg)
- % Recycled Waste (Percent)

The SCOR framework ties emissions to the originating processes, providing a structure for measuring environmental performance and identifying where performance can be improved. The hierarchical nature of the model allows strategic environmental footprint goals to be translated to specific targets and activities.

# SCOR Metrics

## Performance Attributes

The performance attributes of a supply chain permit it to be analyzed and evaluated against other supply chains with competing strategies. SCOR identifies five core supply chain performance attributes: Reliability, Responsiveness, Agility, Costs, and Asset Management. Without these characteristics it is difficult to compare an organization that strategically chooses to be the low-cost provider against an organization that chooses to compete on reliability and performance.

Directly associated with the performance attributes are the Level 1 strategic metrics. These Level 1 metrics are the calculations by which an organization can measure how successful it is in achieving its desired positioning within the market space.

Many metrics in the SCOR model are hierarchical, just as the process elements are hierarchical. Level 1 metrics are created from lower level calculations. Level 2 metrics are generally associated with a narrower subset of processes. For example, Delivery Performance is calculated as the total number of products delivered on time and in full based on a commit date. Additionally, metrics (diagnostics) are used to diagnose variations in performance against plan. For example, an organization may wish to examine the correlation between the request date and commit date.

Reliability
RL.1.1 - Perfect Order Fulfillment
RL.2.1 - % of Orders Delivered In Full
RL.3.33 - Delivery Item Accuracy
RL.3.35 - Delivery Quantity Accuracy
RL.2.2 - Delivery Performance to Customer Commit Date
RL.3.32 - Customer Commit Date Achievement Time Customer Receiving
RL.3.34 - Delivery Location Accuracy
RL.2.3 - Documentation Accuracy
RL.3.31 - Compliance Documentation Accuracy
RL.3.43 - Other Required Documentation Accuracy
RL.3.45 - Payment Documentation Accuracy
RL.3.50 - Shipping Documentation Accuracy
RL.2.4 - Perfect Condition
RL.3.12 - % Of Faultless Installations
RL.3.24 - % Orders/Lines Received Damage Free
RL.3.41 - Orders Delivered Damage Free Conformance
RL.3.42 - Orders Delivered Defect Free Conformance
RL.3.55 - Warranty and Returns

Responsiveness
RS.1.1 - Order Fulfillment Cycle Time
RS.2.1 - Source Cycle Time
RS.3.8 - Authorize Supplier Payment Cycle Time
RS.3.35 - Identify Sources of Supply Cycle Time
RS.3.107 - Receive Product Cycle Time
RS.3.122 - Schedule Product Deliveries Cycle Time
RS.3.125 - Select Supplier and Negotiate Cycle Time
RS.3.139 - Transfer Product Cycle Time
RS.3.140 - Verify Product Cycle Time
RS.2.2 - Make Cycle Time
RS.3.33 - Finalize Production Engineering Cycle Time
RS.3.49 - Issue Material Cycle Time
RS.3.101 - Produce and Test Cycle Time
RS.3.114 - Release Finished Product to Deliver Cycle Time
RS.3.123 - Schedule Production Activities Cycle Time
RS.3.128 - Stage Finished Product Cycle Time
RS.3.142 - Package Cycle Time
RS.2.3 - Deliver Cycle Time
RS.3.16 - Build Loads Cycle Time
RS.3.18 - Consolidate Orders Cycle Time
RS.3.46 - Install Product Cycle Time
RS.3.51 - Load Product & Generate Shipping Documentation Cycle Time
RS.3.102 - Receive & Verify Product by Customer Cycle Time
RS.3.110 - Receive Product from Source or Make Cycle Time
RS.3.111 - Receive, Configure, Enter, & Validate Order Cycle Time
RS.3.116 - Reserve Resources and Determine Delivery Date Cycle Time
RS.3.117 - Route Shipments Cycle Time
RS.3.120 - Schedule Installation Cycle Time
RS.3.124 - Select Carriers & Rate Shipments Cycle Time
RS.3.126 - Ship Product Cycle Time
RS.2.4 - Delivery Retail Cycle Time
RS.3.17 - Checkout Cycle Time
RS.3.32 - Fill Shopping Cart Cycle Time
RS.3.34 - Generate Stocking Schedule Cycle Time
RS.3.97 - Pick Product from Backroom Cycle Time
RS.3.109 - Receive Product at Store Cycle Time
RS.3.129 - Stock Shelf Cycle Time

Agility
AG.1.1 - Upside Supply Chain Flexibility
AG.2.1 - Upside Flexibility (Source)
AG.2.2 - Upside Flexibility (Make)
AG.2.3 - Upside Flexibility (Deliver)
AG.2.4 - Upside Return Flexibility (Source)
AG.2.5 - Upside Return Flexibility (Deliver
AG.1.2 - Upside Supply Chain Adaptability
AG.2.6 - Upside Adaptability (Source)
AG.2.7 - Upside Adaptability (Make)
AG.2.8 - Upside Adaptability (Deliver)
AG.2.9 - Upside Return Adaptability (Source)
AG.2.10 - Upside Return Adaptability (Deliver)
AG.1.3 - Downside Supply Chain Adaptability
AG.2.11 - Downside Adaptability (Source)
AG.2.12 - Downside Adaptability (Make)
AG.2.13 - Downside Adaptability (Deliver)
AG.1.4 - Overall Value at Risk (VAR)
AG.2.14 - Supplier's/Customer's/ Product's Risk Rating
AG.2.15 - Value at Risk (Plan)
AG.2.16 - Value at Risk (Source)
AG.2.17 - Value at Risk (Make)
AG.2.18 - Value at Risk (Deliver)
AG.2.19 - Value at Risk (Return)



Cost
CO.1.001 - Total Cost to Serve
CO.2.001 - Planning Cost
CO.3.001 - Planning Labor Cost
CO.3.002 - Planning Automation Cost
CO.3.003 - Planning Property, Plant and Equipment Cost
CO.3.004 - Planning GRC and Overhead Cost
CO.2.002 - Sourcing Cost
CO.3.005 - Sourcing Labor Cost
CO.3.006 - Sourcing Automation Cost
CO.3.007 - Sourcing Property, Plant and Equipment Cost
CO.3.008 - Sourcing GRC, Inventory and Overhead Cost
CO.2.003 - Material Landed Cost
CO.3.009 - Purchased Materials Cost
CO.3.010 - Material Transportation Cost
CO.3.011 - Material Customs, Duties, Taxes and Tariffs Cost
CO.3.012 - Material Risk and Compliance Cost
CO.2.004 - Production Cost
CO.3.014 - Production Labor Cost
CO.3.015 - Production Automation Cost
CO.3.016 - Production Property, Plant and Equipment Cost
CO.3.017 - Production GRC, Inventory and Overhead Cost
CO.2.005 - Order Management Cost
CO.3.018 - Order Management Labor Cost
CO.3.019 - Order Management Automation Cost
CO.3.020 - Order Management Property, Plant and Equipment Cost
CO.3.021 - Order Management GRC and Overhead Cost
CO.2.006 - Fulfillment Cost
CO.3.022 - Transportation Cost
CO.3.023 - Fulfillment Customs, Duties, Taxes and Tariffs Cost
CO.3.024 - Fulfillment Labor Cost
CO.3.025 - Fulfillment Automation Cost
CO.3.026 - Fulfillment Property, Plant and Equipment Cost
CO.3.027 - Fulfillment GRC, Inventory and Overhead Cost
CO.2.007 Returns Cost
CO.3.028 - Discounts and Refunds Cost
CO.3.029 - Disposition Cost
CO.3.030 - Return GRC, Inventory and Overhead Cost
CO.2.008 Cost of Goods Sold

Asset Management Efficiency
AM.1.1 - Cash-to-Cash Cycle Time
AM.2.1 - Days Sales Outstanding
AM.2.2 - Inventory Days of Supply
AM.3.16 - Inventory Days of Supply ( Raw Material )
AM.3.17 - Inventory Days of Supply ( WIP )
AM.3.23 - Recycle Days of Supply
AM.3.28 - Percentage Defective Inventory
AM.3.37 - Percentage Excess Inventory
AM.3.44 - Percentage Unserviceable MRO Inventory
AM.3.45 - Inventory Days of Supply ( Finished Goods )
AM.2.3 - Days Payable Outstanding
AM.1.2 - Return on Supply Chain Fixed Assets
AM.2.4 - Supply Chain Revenue
AM.2.5 - Supply Chain Fixed Assets
AM.3.11 - Fixed Asset Value (Deliver)
AM.3.18 - Fixed Asset Value (Make)
AM.3.20 - Fixed Asset Value (Plan)
AM.3.24 - Fixed Asset Value (Return)
AM.3.27 - Fixed Asset Value (Source)
AM.1.3 - Return on Working Capital
AM.2.6 - Accounts Payable (Payables Outstanding)
AM.2.7 - Accounts Receivable (Sales Outstanding)
AM.2.8 - Inventory

# About APICS Supply Chain Council

APICS SCC advances supply chain and operations management and innovation through research, publications, education and talent development. APICS SCC maintains the Supply Chain Reference model (SCOR®), the supply chain management community's most widely accepted framework for evaluation and comparing supply chain activities and performance. APICS SCC is part of APICS, the premier professional association focused on supply chain and operations management.

**For more information, visit [apics.org/apicsscc](https://apics.org/apicsscc).**



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