Introduction to VCOR

The Value Chain Operations Reference model – VCOR is instituted to support the Evolution of the Business Environment

Value Chain’s and their networks are now being elevated to priority status. CEO's are receiving board room pressure for complete process accountability together with horizontal integration of all the processes thus providing the best possible value to the value chain's customer.

The VCOR model supports the key issues and the gearing together of processes within and between the individual units of chains (networks) for the benefit of the following:

- Planning
- Governing
- Execution (information - financial - physical flows)

with the objective to increase the performance (yield) of the total chain and support the ongoing evolution.

The structure of the VCOR model supports and enables corporations to integrate their three critical domains; Global Product Developments, Global Supply Network Integration and Global Customer Success, using one reference model to support the vision of an integrated value chain.

Corporations applying the model are able to reach their goals of both horizontal and vertical collaboration. VCOR uses a “process based, common language” of syntax and semantics while at the same time creating a foundation for the successful Service Oriented Architecture Game Plan.

The Hierachical Structure of VCOR
Strategic Level
The Top Level of the model encompasses all the high level processes in Value Chains and are represented through the Process Categories Plan – Govern – Execute. The Level is defined to be the Strategic Level of the Model, meaning that this is where high level decisions are made regarding how to gain a competitive advantage for the Value Chain in scope.

An example of such a competitive advantage could be Increased Market Share through a Cost Optimized, Adaptive Value Chain and extensive Collaboration with Customers and/or network partners. By some this level of the model is categorized as the C-Suite.

Tactical Level
The Second level of the model contains "abstract" processes decomposed from the Strategic Level. To implement and fulfill the strategic goals set in the top level of the model hierarchy a set of tactics needs to be developed and realized. Examples of such tactics can be in- or out-sourcing of activities within one - or multiple domains, change of value chain planning such as (e.g. Sales and Operation Planning), focusing on product development to gain a competitive advantage or changing from "push to pull" conditions for the supply network.

Operational Level
The third level of the model represents specific processes in the value chain related to actual activities being executed. On this level focus is usually vertical business process improvements or business process re-engineering as many name it. In a value chain perspective this is the level where fine-tuning occurs.

The Activities and Actions
These levels of granularity are not in scope of the VCOR model itself but given decompositions of the VCOR models third level of processes.
The VCOR ValueCards

**Network Level ValueCard**

<table>
<thead>
<tr>
<th>Network Goals</th>
<th>Description</th>
<th>Tactical Objectives</th>
</tr>
</thead>
<tbody>
<tr>
<td>Collaboration</td>
<td>to achieve high Degree of strategic alignment in the value chain</td>
<td>global vs. local optimum</td>
</tr>
<tr>
<td></td>
<td>to achieve highly integrated business processes, either for planning or</td>
<td>reduced Value Chain lead times</td>
</tr>
<tr>
<td></td>
<td>execution aspects</td>
<td>reduced transaction costs</td>
</tr>
<tr>
<td>Coordination</td>
<td>to achieve seamless information and material flows between in the partner</td>
<td>reduced total inventory</td>
</tr>
<tr>
<td></td>
<td>network</td>
<td>higher efficiency resource utilization</td>
</tr>
<tr>
<td></td>
<td>to achieve high degree of Information transparency</td>
<td>higher inventory turns</td>
</tr>
<tr>
<td></td>
<td></td>
<td>higher delivery reliability</td>
</tr>
<tr>
<td>Transformability</td>
<td>to achieve high potential of flexibility in (re)configuration of value</td>
<td>speed up logistics (VC) decisions</td>
</tr>
<tr>
<td></td>
<td>chains for customer responsiveness.</td>
<td>quicker time to market</td>
</tr>
<tr>
<td></td>
<td></td>
<td>higher customer responsiveness</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maximize value to final customer</td>
</tr>
<tr>
<td>Profitability</td>
<td>to achieve the maximum amount of profit from a given market segment.</td>
<td>reduce purchase material cost</td>
</tr>
<tr>
<td></td>
<td></td>
<td>maximize asset unitization</td>
</tr>
<tr>
<td></td>
<td></td>
<td>reduce cash to cash cycle</td>
</tr>
</tbody>
</table>

The VCOR model supports the issues of value chain horizontal improvements, strategic goals and tactical decision making through two essential tools being the Value Card with Value Chain Network Goals, and the Value Card for the setting of Priorities for the Enterprise.

Most organizations would prefer to operate in a scenario with all their value chain partners using the same goals and priorities as their own. However, this is hardly the case in practice.

For the purpose of intra-company developments across value chains with multiple strategy and business plans the VCG has instituted the Value Card with Network Goals. A set of Attributes are proposed in the Value Card to act as guidelines for the developments.

**Enterprise Level ValueCard**

The Enterprise Level Value Card’s purpose is as being a guide for deciding on priorities within the boundaries of the enterprise’s area of direct influence and decision making.
The Value Card on the Enterprise level is created to support implementation of Strategic and Business Plans as well as being a guide and support tool for Tactical Plans and Priorities. The seven Priority Dimension do “compete” and a priority between them should be established and communicated at an early stage of any developments.

Enterprise Level ValueCard & supporting metrics
“You can not run a business without metrics” - is true and the Value Chain Group is certainly aware of that fact. Each of the Seven Priority Dimensions have a set of supporting performance indicators (metrics) enabling high level performance for monitoring each of the dimensions.

The VCOR Processes

Strategic Level - Macro Processes
The Plan and Govern Process categories encapsulates:

**PLAN**
- Gather Requirements
- Assess Resources
- Align Resources
- Communicate Plan

**GOVERN**
- Rules
- Performance
- Information
- Financial
- Assets
- Personnel
- Network
- Change
- Compliance
- Lifecycle

The VCOR Tactical Level Processes

The Tactical Level can be described being instituted for “Horizontal Value Chain Process Re-Engineering” The VCOR model processes decomposes from Strategic to the Tactical Level with...
Plan and Govern keeping their respective naming in the first part of the process notations on this level as they influence each of the Execution Processes e.g. Plan Research and Govern Support (not shown in the figure).

Execute decomposes to Market-Research-Develop-Acquire-Build-Sell-Fulfill-Support. Specific for the Market process is that it actually has an impact on all the other execution processes demonstrated by being shown on top in both ends of the execution processes in the figure below.

**Details on VCOR Tactical Level - Plan Processes**

Plan process which is based on aggregated information from the other process specific Planning processes to balance Value Chain Requirements with Value Chain Recourses

**Details on VCOR Tactical Level - Govern Processes**

Product Development Domain
Planning processes assigned to specific execution processes to balance Requirements with Recourses

Supply Network Domain
Planning processes assigned to specific execution processes to balance Requirements with Recourses

Customer Relations Domain
Planning processes assigned to specific execution processes to balance Requirements with Recourses
Details on VCOR Tactical Level - Execution Processes

- **Market**: The alignment of value chain needs with product developments, supply network capabilities and supplier relations.
- **Research**: The preparations necessary for product developments.
- **Develop**: The definition and creation of a product or service for manufacturing or market entry (services).
- **Acquire**: The acquisition from suppliers of goods and services enabling further value-adding activities.
- **Build**: The transformation of materials according to Value chain Requirements.
- **Fulfill**: The preparations for delivery, the deliveries and following activities fulfilling customers demands.
- **Sell**: The activities related to sales.
- **Support**: The after-sales activities performed in a customer relationship.
VCOR Tactical Configurations

VCOR offers Tactical Configurations as a sub-set of processes to the domain specific execution processes. They are instituted to support Strategic Decisions and to describe the business conditions of Tactical Level Processes being applied. In certain scenarios Tactical Configurations are not relevant and can lead to confusion for those modeling and analyzing the output of the work being done. For this reason VCOR configurations are optional to apply.

However in scenarios were configuration are relevant the VCOR model offers options in all the three domains being Product Developments, Supply Networks and Customer Relations options.

Product Development Configurations

The VCOR model currently offers Design to Market, Co-Design and Design to Spec as Configurations for the Product Development Domain. It is expected that more will be added as practical application of the model and this particular Domain in a Value Chain context is executed.

Supply Networks Configurations

The VCOR model offers Stocked, To-Order and Engineered to Order Configurations for the Supply Network Domain. They are instituted to support the developments of Push (activities are forecasted), Pull (activities are based on a firm order) and Engineered to Order (Pull activity requiring Engineering) in Supply Networks.

Customer Relations Configurations

The VCOR model currently offers New Product to Existing Market, New Product to New Market, Existing Product to Existing Market and Existing Product to New market Configurations for the
VCOR Operational Level

In a horizontal value chain perspective the Operational Level is usually applied after the Tactical Level processes have been structured to support Strategic goals and objectives for the purpose of fine-tuning processes. The level is more intra-enterprise focused and as such more applicable for “vertical” improvements than “horizontal” from a value chain perspective.

This Level can of course also be applied directly for traditional BPR purposes without applying the Tactical Level first depending on the user’s scope of VCOR application. Regardless of how the user chooses to apply the model the Inputs and Outputs on this level are valuable guidelines for BPMS (Business Process Management Services).

The 26 Tactical Level Processes decomposes to 191 Processes and an example of such is shown in the figure below using the Tactical Level “Acquire” process.
Process Details in the VCOR Model

The processes of the VCOR model includes a standard format of information. The format includes Process Definitions supporting the benefit of having a Common Language and Semantics, Priority Dimensions with supporting performance indicators, Practices and Input/Outputs.

The Strategic Level Plan, Govern and Execute processes are an exception to this standard and do not include process having specific metrics represented in the Value Cards and Inputs/Outputs. An example of the information represented for each of the processes is shown in the figure below:

D03 - Design Product

The process of converting product requirements into a working product or service configuration.

<table>
<thead>
<tr>
<th>Inputs/Outputs</th>
<th>Metrics</th>
<th>Practices</th>
</tr>
</thead>
<tbody>
<tr>
<td>In</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Corporate Performance Targets</td>
<td>VP3</td>
<td>Concurrent Design</td>
</tr>
<tr>
<td>Design Partnerships</td>
<td>D007</td>
<td>Phase/Stage Gate Process</td>
</tr>
<tr>
<td>Design Standards</td>
<td>D003</td>
<td>Rapid Prototyping</td>
</tr>
<tr>
<td>Engineering Charge Request</td>
<td>D05</td>
<td>Simulation</td>
</tr>
<tr>
<td>Product Performance Analysis</td>
<td>U07</td>
<td>Virtual Product Development</td>
</tr>
<tr>
<td>Product Requirements</td>
<td>D01</td>
<td></td>
</tr>
<tr>
<td>Product Technology Plan</td>
<td>D02</td>
<td></td>
</tr>
<tr>
<td>Product Usage Analysis</td>
<td>U07</td>
<td></td>
</tr>
<tr>
<td>Project Contract</td>
<td>M07</td>
<td></td>
</tr>
<tr>
<td>Validated Technology</td>
<td>R05</td>
<td></td>
</tr>
<tr>
<td>Out</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Engineering Charge Notice</td>
<td>D008</td>
<td></td>
</tr>
<tr>
<td>Material Cost Estimates</td>
<td>A02</td>
<td></td>
</tr>
<tr>
<td>Packaging Specification</td>
<td>B05</td>
<td></td>
</tr>
<tr>
<td>Performance Feedback</td>
<td>D002</td>
<td></td>
</tr>
<tr>
<td>Product Configuration / BOM</td>
<td>D04</td>
<td></td>
</tr>
<tr>
<td>Product Configuration / BOM</td>
<td>D05</td>
<td></td>
</tr>
<tr>
<td>Product Manuals</td>
<td>U05</td>
<td></td>
</tr>
<tr>
<td>Product Specification</td>
<td>D04</td>
<td></td>
</tr>
<tr>
<td>Product Specification</td>
<td>D05</td>
<td></td>
</tr>
<tr>
<td>Prototype / Simulation</td>
<td>D05</td>
<td></td>
</tr>
<tr>
<td>Service Manuals</td>
<td>U06</td>
<td></td>
</tr>
<tr>
<td>Storage Instructions</td>
<td>B06</td>
<td></td>
</tr>
<tr>
<td>Test Plan</td>
<td>D05</td>
<td></td>
</tr>
</tbody>
</table>

Adaptable
Standard Parts and Process (by Product)

Cost
Cost of Design Ratio
Engineer Change Notice Cost
Standard Part Ratio
Warranty Cost per Unit Shipped

Innovation
Average Number of Parts
Components per Product, Average
Number Of Product Designs
Part Count Reduction
Parts Recycle Rate
Parts Reuse Ratio
Product Cost from Royalty Fees
Product Revenues From Royalty Fees
Performance to VOC at Prototype
Product Part Complexity

Reliability
Total Number of Engineering Changes

VCOR Metrics

“You can not manage without metrics” – or performance indicators as some say. The individuals
involved in developing the VCOR metrics all have a broad experience of developing and applying metrics and are willingly sharing their experiences to ensure the delivery of the highest possible quality. With our extensive focus on quality and details we are introducing a new metric standard for BPM models to the market.

The Seven Priority Dimensions have a set of supporting performance metrics enabling performance monitoring of each of the Priority Dimensions through the levels of the model linking Strategy – to Tactics - to Operations. Below is a figure showing the structure of VCOR metrics followed by a metric example to demonstrate the level of detail and quality we are investing in this work.

<table>
<thead>
<tr>
<th>Metric Name</th>
<th>Brief descriptive name less than 50 characters</th>
</tr>
</thead>
<tbody>
<tr>
<td>Metric Definition</td>
<td>Detailed definition usually one sentence to two paragraphs in length</td>
</tr>
<tr>
<td>Priority Dimensions</td>
<td>Strategic Classifications used in Value Chain Alignment</td>
</tr>
<tr>
<td>Metric Class &amp; Sub Class</td>
<td>Classifications for navigation and search index</td>
</tr>
<tr>
<td>Formula</td>
<td>Algorithm for calculating metric value. Some metrics are considered a “Base Metric” in which calculations are not required.</td>
</tr>
<tr>
<td>Input Requirements</td>
<td>Suggested application data fields and sources to acquire information necessary for performing the calculation</td>
</tr>
<tr>
<td>Dimensions</td>
<td>Sources of input from different areas of involvement</td>
</tr>
<tr>
<td>Calculation Rules</td>
<td>General notes and guidelines for use of the metric</td>
</tr>
</tbody>
</table>

**VCOR Metric Example**

**Name**

Delivery Performance, Request Date

**Definition**

The percentage of orders delivered complete on the customer request date.

**Priority Dimension** - Reliability

**Metric Class** - Operation Performance  **Sub Class** - Logistics

**Formula**
Delivery Performance, Request Date = o/d

**On Time in Full, Request Date**
Orders Delivered per Period, Commit Date

**Unit of Measure** - Percentage (%)

**Input requirements**

**Order line:**
- Customer request date
- Customer reception date (delivered to customer at customer destination date)
- Dispatch date from warehouse
- Order place date
- Ordered quantity
- Dispatched quantity
- Received quantity
- Manner of transport

**Customer information:**
- Average transport lead time in days or hours from dispatch warehouse to customer reception warehouse (address)

**Sales Order Line:**
- Order ID
- Company ID
- Customer ID
- Warehouse ID
- Customer warehouse ID
- Item ID
- Manner of transport ID

**Dimensions**
- Time Dimension
- Company Dimension
- Business Partner Dimension
- Warehouse Dimension
  - Company warehouse
  - Supplier Warehouse
- Customer Warehouse
- Item Dimension
- Supply Chain Dimension
- Order Type Dimension
- Manner of Transport Dimension

**Calculation Rules**

Calculation of Overall performance:
A) Number of orders delivered complete to customer request date
B) Number of orders delivered in the measurement period

Calculation of dimensional (segment) performance:
A) Aggregate order line to selected segment, and count orders delivered complete to Customer request date (segment order = Sum of orders in the segment)/
B) Aggregate order line to selected segment, and count segment orders delivered in the measurement period (segment order = Sum of orders in the segment)

A) Orders delivered complete to customer request date: Count number of order lines where customers have received:
- Items: Quantity ordered is equal to quantity received (delivered to customer at customer site)
- Date: Reception date is before or equal to requested delivery date.
B) Count total number of order lines received from customers in the selected measurement period. Divide A) by B)

- To make an absolutely correct calculation, it is recommended that the real reception information is collected from the customers. This information could be collected as an import file from customer, transport providers or other 3PL. (practice candidate).
- If this requirement is too hard to accomplish, a calculated reception data at customer site based on Dispatch Date + estimated average transport lead time in days or hours is an optional calculation. If available, average lead time based on manner of
transport is an even better specification, because average lead time will vary, based on manner of transport. Unfortunately, you must then assume that dispatched quantity is equal to received quantity (which is not always the truth). VCG's recommendation is that you try to get as updated and real information as possible, and combine the two solutions to perform the calculation. Flags that represent where you have used real data versus calculated and assumed data will expand the analytical value.

Customer Request Date is the date the customer requested the order lines delivered.

Only "New Order Lines" shall be counted in the "Total Order Lines delivered in the period "summary". Back-order lines are not to be counted as "New Order Lines". Sum of order lines in selected dimension must be added to show total number of orders for the dimensions. The aggregated totals shall be based on orders (not order lines), and the numbers to display in the reports are aggregated by dimension.

Value Chain dimension and selections shall make it possibility to aggregate several order lines from one order, to the value chain dimension that is based on the defined VCOR Value Chain Types (order, stock and engineer). It will the be possible to see the measure and analyze:
• All Stock keeping units from several orders
• All Make to order products from several orders
• All Campaign products from several orders

Note that drill down functionality will be according to the single VCOR users data structure and possibilities. ID’s in the users data set will enable drill down possibilities and segmentation and VCOR’s list of identification codes such as Item ID, Supplier ID, Value Chain ID and customer ID, with related dimension data is suggestions, not laws.
This calculations shall be displayed as a percentage (%) value
• Recommended measure name in reports: VCOR Delivery Performance to Customer Request %
• Value guide: A high ratio is good and a low ratio is not. Business people would say that this value should be >90%

VCOR Inputs / Outputs

To enable high level horizontal input and output mapping the VCOR introduces Inputs and Output templates and guidelines for Tactical Level Processes beyond demonstrating Material flows. In addition to Material flows the VCOR model also includes Financial, Resource and Information flows.

The Operations Level Inputs and Outputs are developed to a high quality with emphasis on avoiding disconnects. This to achieve ease-of-use and to support users of the model minimizing frustration.

The figure below shows the matrix VCG uses as a guideline for Input/Output developments.
<table>
<thead>
<tr>
<th><strong>IO Type</strong></th>
<th><strong>Sub Type</strong></th>
<th><strong>Examples</strong></th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Financial</strong></td>
<td>Cash</td>
<td>Euros, Dollars, Yen, Kroners, Gold, Silver</td>
</tr>
<tr>
<td></td>
<td>Credit</td>
<td>Customer Credit, Employee Credit</td>
</tr>
<tr>
<td></td>
<td>Receivable</td>
<td>Cash Sales, Customer Invoices</td>
</tr>
<tr>
<td></td>
<td>Payable</td>
<td>Supplier Invoices, Interest Payments</td>
</tr>
<tr>
<td></td>
<td>Budget</td>
<td>Sales Budget, Marketing Budget</td>
</tr>
<tr>
<td></td>
<td>Raw</td>
<td>Silicon, Iron, Steel, Aluminum</td>
</tr>
<tr>
<td></td>
<td>Part</td>
<td>Nuts &amp; Bolts, Semiconductors, Machined Castings</td>
</tr>
<tr>
<td></td>
<td>Component</td>
<td>Transmission, Electric Motor, Hard Drive</td>
</tr>
<tr>
<td></td>
<td>Products</td>
<td>Computers, Automobiles, Airplanes, Package Food, Banking, Transportation Services</td>
</tr>
<tr>
<td><strong>Material</strong></td>
<td>Asset</td>
<td>Real Estate, Information Technology</td>
</tr>
<tr>
<td></td>
<td>Human</td>
<td>Controller, Enabler, Producer</td>
</tr>
<tr>
<td></td>
<td>Information Technology</td>
<td>Services, Interfaces, Applications, IT Systems</td>
</tr>
<tr>
<td></td>
<td>Transaction</td>
<td>Unstructured - Personnel Training Requirements, Preliminary Concept drawing</td>
</tr>
<tr>
<td></td>
<td>Decision</td>
<td>Contract - Production Schedule, Purchase Order</td>
</tr>
<tr>
<td><strong>Information</strong></td>
<td></td>
<td>Request - Production Schedule, Purchase Order</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Confirmation - Engineering Change Notice</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Rules - Asset Governance Policy, Budget Allocation Policy</td>
</tr>
<tr>
<td></td>
<td></td>
<td>Situational - Production Plan, Resource Assignment</td>
</tr>
</tbody>
</table>

**VCOR Input /Output Detail**

The figure below demonstrates the level of detail that has been put into organizing and linking the Operational Level Processes within the model.
The Value Chain Group is well aware of the challenges bridging BPM (Business Process Management), IT Applications and BPMS (Business Process Management Services).

The VCOR BPM model enables organizations to effectively develop and get knowledge of the processes in their Value Chains. With a comprehensive process architecture in place organizations are ready to determine use of technology to support the processes.

The VCG together with partners has developed what we call the Integrated Process & Technology Framework © to support the process of successfully aligning business and IT strategies, architecture, design, execution, monitoring and management of the processes. With this initiative the VCG creates a “bridge” and partnership between process owners and IT addressing organizational and cultural issues by balancing people, process and technology.

Besides VCOR the Federated Enterprise Reference Architecture (FERA) model is an essential component in the Framework. FERA may or may not be applied depending on what scenario is being developed. For Service Oriented Architecture (SOA) specific templates have been developed to support the “game-plan” without applying FERA.

Below is a figure showing the relationship between VCOR and FERA being the essential components of the framework.
The VCOR model is available in a electronic read-only format

VCOR has been database-managed since its inception enabling VCG members to navigate in the model with ease. Bellow is a screen shot shown and by clicking on the link bellow you can enjoy a demonstration of the tool. View ValueScape demo.
VCOR Benefits Statement

The VCOR model enables organizations to develop unique competitive Value Chains with highly integrated business processes that cut across corporate and functional boundaries supporting the strategy of the corporation through;

- being instituted with a structure enabling corporations to integrate the three critical domains of Global Product Development, Global Supply Network and Global Customer Success

- having a hierarchical structure reflecting the layers of decisions and operations found in most corporations

- ValueCards supporting strategic decisions and tactical deployment of the same decisions

- Priority Dimensions linking Strategy and Tactics to operations on all levels of the model

- being a process standard from a non-for-profit organization enabling internal and external collaboration with a “common language”

- Tactical configurations enabling customization of value chains

- Providing the framework for a successful integration of business processes an IT also having the capabilities of supporting the creations of a successful SOA game plan

- ease of navigation in the model being available in a electronic format