

Sub-Contract and Out-Sourcing Management: Critical to the Evolution of the Virtual Corporation

Preston W. Blevins CFPIM, CIRM
Acuity Consulting

Abstract

Competitive pressures are forcing many manufacturers to re-organize around their core competence. This new way of operating is often referred to as the 'Virtual Enterprise'. This move toward the 'Virtual' Enterprise presents many new challenges to the purchasing professional. These challenges require the development of new techniques and refinement of many existing skills. The primary emphasis of this presentation is on the techniques needed for successful sub-contract and out-sourcing management with special consideration to "value-added" services.

Discussion Outline

1. The Virtual Enterprise – the why & what
2. The new challenges for both the procurement & resource management professional
3. Communicating within the Virtual Enterprise
4. Managing "value-added services"
5. Managing material supplied to partners
6. Managing the virtual environment with Enterprise Resource Planning (ERP)



The Virtual Enterprise: Why Did It Evolve and What Is It?

The catalyst for the development of the Virtual Enterprise business model is a direct result of the intense competition in manufacturing industry today. The manufacturer today is faced with continuous competition that started in the eighties and has never abated. This intense level of competition is the result of numerous factors.

Factors such as the portability of production capability and the development and widespread dissemination of good practices in procurement, resource management, product design, quality management, cost management and project management. With highly reliable equipment and a workforce trained in the appropriate good practice Body-Of-Knowledge (BOK) a factory can operate at a competitive level anywhere, in the Congo, Mexico or in North America. These factors have created more competent competitors who often have advantages in operating cost structures.

In certain segments of manufacturing, product miniaturization has allowed manufacturers to compete long distances from their home markets. Miniaturization has removed the considerable cost of transportation and often reduced delivery times when air transport is practical. Electronic component manufacturing is an excellent example, from bulky vacuum tubes to small lightweight chips in less than twenty years. Again, this has increased the number of competitors an organization must deal with.

With the end of the cold war many organizations have taken their considerable expertise and redirected it toward commercial products. Also, with peace there has been the movement to opening markets. The bottom line is more competition.

The most compelling reasons are that even our traditional competitors have become more formidable. Organizational complexity is another important factor. The manufacturing enterprise had become and still is complex and difficult to manage. The need to rethink the basis of competing was and still is necessary. All of the points discussed above are the "why" of the Virtual Enterprise.

The “what” of the Virtual Enterprise is the direct result of many companies rethinking their basis of competing and concluding that they “could not be all things to all people”. What emerged from this thought process was the realization that focus was important. But, the focus had to be on what an organization does best to provide competitive advantage. What an organization does best is also known as its “core competence”. Identifying what an organization does best or its ‘core competence” is often very difficult. There are many emotional and political agendas that must be put aside. Also, there is a need for engaging in upside-down thinking. Leveraging its “core competence” can only be achieved by limiting what an organization does. Limiting what an organization does requires organizing around its core competence and sub-contracting out everything else.

Those who now do the “everything else”, that is supplying the products and services outside of your core competence, function more as partners than suppliers. Together, you and your partners make up a Virtual Enterprise.

Effective outsourcing and sub-contract management is critical to the well being and proper functioning of the Virtual Enterprise.

A recent study by the Outsourcing Institute identified the top ten reasons companies outsource. The top three reasons highlight the linkage between sub-contract and outsourcing management and the goals of the Virtual Enterprise:

1. Improve company focus
2. Access to world-class capabilities
3. Accelerate reengineering

Benefits

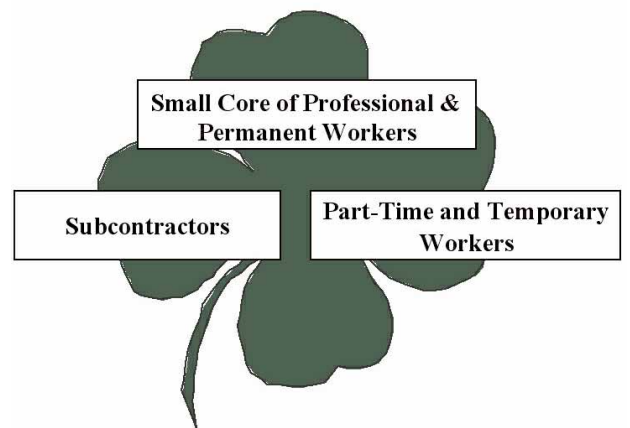
- Share risks
- Free resources for other purposes and...

There is an ancestor to the Virtual Enterprise. A visionary, Charles Handy predicted the emergence of the virtual organization. Handy called this predecessor the Shamrock Organization. The Shamrock model had three leaves. Each leaf

represented a contributing group. One leaf was the core group of permanent employees. Another was sub-contractors who were paid for a product or service delivered. They are paid for the delivery of a result. The final leaf represents temporary or part-time workers who are brought into the organization as needed.

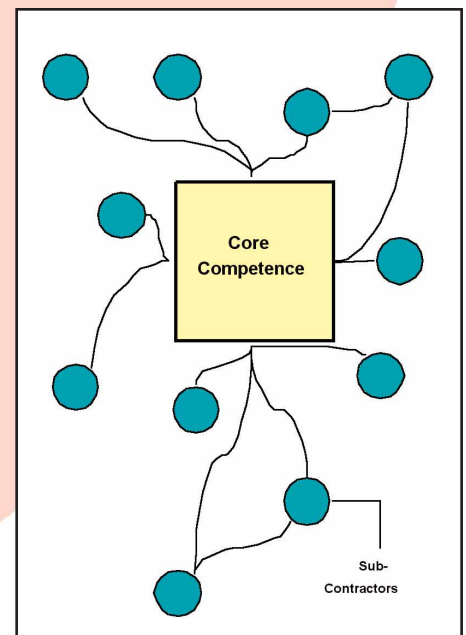
In detailing the new model Handy also addressed the need to revise the notion of a career and what constitutes legitimate work. A portfolio replaces a career. This portfolio has in it the various forms of legitimate work. These forms are the traditional salary work, fee based work, volunteer work and study/education work. Every individual will frequently rebalance and refresh their portfolio much like an investor does with their financial assets. As you can see, the Virtual Enterprise has a profound impact on people. Those who have been unprepared and inflexible have had great difficulty coping.

The Shamrock Organization



There is a mental picture that might help the reader. The traditional manufacturer resembles a management organization chart or a graphical Bill-Of-Material (BOM). It's hierarchical in nature. A Virtual Enterprise is like a network with many nodes connected to it via a hub.

When a company transforms itself into a Virtual Corporation and sub-contracts out everything outside of its core competence what happens to the employees who performed that work? Also, where will all these sub-contractors come from? The trend is for those employees to migrate to companies whose core competence is in alignment with theirs. Also,





former employees often form new enterprises and these provide the goods and services needed.

How long does the transformation from traditional to a virtual organization take? I know of no specific study on this but progress is dependent on the markets served, the underlying technology of the products produced, local conditions and the organization's ability to understand and implement change. The effort resembles a journey more than an event.

Is a new set of management skills required? Yes there is. The following quote really nets-it-out:

"Today and in the future, business organizations have to become resource integrators.... If you envision an organization of world-class resources with various 3rd party organizations centered on the core..."

— Charles M. Monroe, CMC Pegasus Organization
APICS—the Performance Advantage

Are there other challenges? Yes there are: communicating within the virtual network; managing sub-contracted "value-added" services; managing material you supply to sub-contractors; managing the delivery of "value-added" services; managing customer supplied material we will discuss this shortly!

A mini-review: continuous competition has forced many manufacturing companies to rethink the basis on which they compete. Many have concluded that they need to be focused and identify what they do best. What they do best is often called "core competence". Competing on the basis of core competence requires a new organizational structure since most things outside the core competence is sub-contracted out.

The new organizational model was originally called the Shamrock organization. The Shamrock organization has three distinct components; the core organization; sub-contractors and temporary workers. Today we refer to the Shamrock organization as the Virtual Enterprise. Sub-contract and out-sourcing management is extremely important in the Virtual enterprise model. There are new skills required in the Virtual Enterprise. Resource integration is critical.



The New Challenges for Both the Procurement and Resource Management Professional

In your Virtual Enterprise you're the center of the universe, but...unless you sell to the end consumer you're also a node in someone else's network! This means that the procurement and resource management professionals share the new challenges inherent in the Virtual Enterprise.

Earlier in our discussion we mentioned the need to become resource integrators. This is a distinct departure from the traditional procurement/resource management model. The only disciples that have mastered this requirement are generally outside of manufacturing. For example, technical consultants in the computer software/hardware industry, often-called "commercial systems integrators", have these skills. Also, those who practice project management as a distinct discipline have these skills. The challenge is centered on the fact that organizing around core competence often results in the sub-contracting of internal service functions. Managing "value-added complex" services is relatively new to main stream manufacturing. Succeeding in the Virtual Enterprise requires that we quickly develop resource integration skills. Fortunately we can study the methodologies used by commercial system integrators and project managers. An interesting point to note, membership in the Project Management Institute (PMI), the largest professional society for project management has increased dramatically in the last decade.

Because of the radically different nature and challenges of the Virtual Enterprise, many forward thinkers are suggesting the creation of a new executive office on par with the offices of the Chief Information Officer (CIO) and Chief Financial Officer (CFO). The title often used to describe this new office is Chief Resource Officer.

Communicating Within the Virtual Enterprise

The traditional procurement process flow, at least in the context of the Virtual Enterprise, is inefficient and a poor communication channel. There is a proven technique that improves communication, reduces cost and eliminates waste. This technique is really more of a philosophy than a technique and was pioneered in

the automotive Industry and has been adopted by other industries. The technique is called Supplier Scheduling and it is has a win-win orientation and has both the buyer and seller working together as partners.

Generally the supplier/partner is nominated as the sole source for the part, part family or services delivered. For this privilege the supplier/partner is expected to perform at very high levels with respect to quality, on-time deliveries and cost. In exchange the supplier/partner not only gets an exclusive on providing parts or services but gets access to planning and scheduling information from the buyer/partner. The selection of partners, negotiation or more appropriately the securing of consensus on the details of working together, is the responsibility of the procurement professional. Details of the agreement, particularly on planning and scheduling issues, are the responsibility of the planner at the buyer/partner and the planner at the seller/partner. The emphasis is on planner-to-planner communication and collaboration.

When the characteristics of the Virtual Enterprise are compared to the characteristics of the Supplier Scheduling philosophy they are very compatible. Supplier Scheduling is the right approach for the Virtual Enterprise model.

Managing “Value-Added Services”

After the reorganization around their “core competence” it is likely that a company will have a plan to sub-contract many internal services. The problem is that these internal services have often been managed on an informal and undisciplined basis. In context and incorrectly they were considered “overhead” and not value adding. The model of how the service should be delivered, how performance should be measured, and the true costs of delivering the service and the true value to the “customer” of the service were often not defined or developed. Often in response to the ambiguity, hidden buffers of time and money are put in place to “protect” the internal service provider. This is in sharp contrast to manufacturing operations, materials management, procurement, etc.

Sub-contracting services require a well thought out definition of the value-added service, proper costing (Activity Based Costing?), and performance measurement and relationship management. Also, there is a need for more precise planning,



scheduling, monitoring and communication because organizational buffers will be removed. The analysis and front-end planning to initially sub-contract out an internal service should not be under estimated. Fortunately, we can performance benchmark the system integrator and project management profession's to learn how to estimate, plan, control and cost "intangibles".

Examples of "Value-Added" Services

A manufacturer of a wide range of temperature, pressure and differential industrial switches had over a period of years become a key supplier to a large company that manufactured power turbines. The companies were geographically close to each other and the supplier leveraged this by spending a lot of time "face-to-face."

Both organizations were thought of as progressive and recognized as market leaders and innovators. The working relationship between them was excellent and they jointly pursued improvements in price, delivery, quality, etc. They both viewed the other organization as trustworthy.

Despite the excellent relationship, the supplier could not secure single-source status for switches with this customer. What the supplier needed was a compelling business case or reason to become the sole supplier. "Win—win" was an integral part of their relationship. Eventually, a compelling reason was identified: a service that the supplier could perform that was based on their high level of competence in the use of resource planning and control systems. What was proposed and implemented was that the switch manufacturer would take over all material planning for switches for the customer and the planning team would be located at the customer's site. The supplier guaranteed that there would be significantly fewer shortages (targets were established) than the customer currently had. This "service" represented a significant value—added service to the customer and the supplier became the "sole source" supplier.

The next company I'll describe is in the process of transforming itself from a manufacturer to service provider. The product they originally designed and manufactured is relatively complex and innovative. The product is used to install cabling and conduits underground using "trench less" technologies. This equipment installs cabling and conduit without trenching. Trenching in mature



areas and commercial sites is very disruptive, expensive and has huge social costs. The company also provided technology to renovate and preserve existing cabling and conduits. I'm sure this company gets two thumbs up from the environmental movement. Originally they produced and sold their equipment to utility companies. With deregulation on the horizon, utility companies have started to search for efficiencies and cost reductions in all areas of their operations. This situation caused this firm to rethink their business model. What they have done is become a provider of trench less drilling, cable installation and renovation services. The logic of their migration is reasonable: if you are expert at designing equipment to do work efficiently you may also be very good at performing the work using the equipment you designed! As a service provider, they offer a better value proposition to their customers who as an industry are undergoing that potentially difficult transition to a competitive deregulated marketplace.

Another example: the automotive industry has gone through a vigorous and dynamic reorganizing of their overall business model during the last ten to fifteen years. The conceptual foundation for this new business model was developed in Japan. Those throughout the rest of the world who have adopted the model have built on this model through continuous innovation. The new model is centered on the concept of core competence.

In the past, particularly in North America, automobile manufacturers were vertically integrated. An automobile is a complex device with thousands of parts and many sub-systems with different underlying technologies. The design and manufacture of a new model was time consuming, costly and extremely challenging. Perhaps this is the reason that Detroit relied on cosmetic changes more than genuine engineering improvements during the fifties, sixties and seventies for annual model changes.

The business system model developed in Japan stressed the automobile manufacturer as a marketer, high level designer, and assembler and design collaborator with suppliers. This is the complete opposite of the vertical integration model and resembles a network. This network is organized into several layers called tiers. The lower tier suppliers produce components, the next level, sub-assemble, etc. What are tightly integrated in the network are the schedules

between each level. The key point is there is continuous pressure within the network, particularly for those that are supplying the final assembly level, to assume more responsibilities, innovate and add more value to the overall process. The supplier will often respond by offering a service that replaces activities performed by the customer.

An example: Volkswagen buys seats from its traditional supplier who now not only fabricates and delivers them (to an exacting schedule) but also installs them (the “value—added” service) into the automobile.

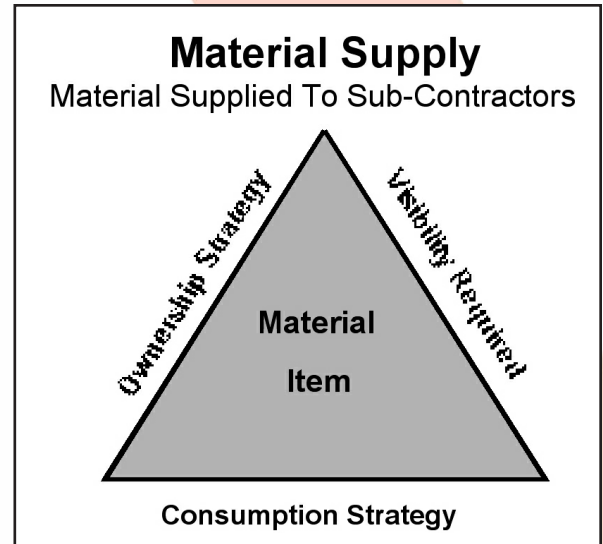
An important point before we move on in our discussion: you must insure that your sub-contractor (partner) has an effective system to manage the delivery of value-added services. The system that they use should be able to differentiate between a material purchased item and a purchased “service item”. This requirement should not be underestimated. Most planning and control system is designed to manage material items only. The old expression “the devil is in the details” applies here.

Managing Material Supplied to Partners

The practice of supplying material to sub-contractors is on the Increase. The reasons are varied. Often, when initially off-loading assembly operations outside of their core competence, there is residual inventory that must be consumed. Or, the buyer/partner is able to secure better discounts than the new virtual partner can from component suppliers. Perhaps, the components supplied are of a proprietary design and critical to success. Controlling access to this inventory is important to maintaining competitive advantage. There are many valid reasons for directly supplying material to supplier/partners.

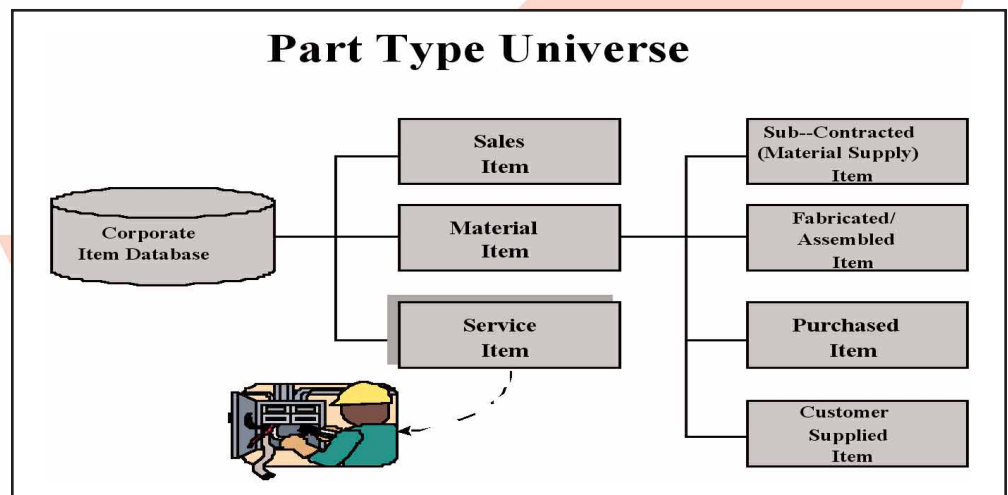
Unfortunately, supplying material to supplier/partners has typically been handled offline and outside the formal system. This is now unacceptable given the increasing number of offsite inventories. To effectively manage material supplied to supplier/partners three key issues must be addressed on an item-by-item basis. These three issues are ownership of the material, the point of material consumption and inventory visibility. At first glance these issues may not seem significant, but they are. For example: the ownership of the material could remain

with the buyer; or it could be transferred to the supplier when they receive it and they are invoiced for it. There are at least two more possibilities in ownership options. There are similar choices for the point of material consumption and inventory visibility. The need is for flexibility over these three considerations on an item-by-item basis. One size doesn't fit all. Most procurement systems don't handle this requirement properly but since the need to manage across these three dimensions is becoming more critical it is reasonable to predict that planning and procurement systems will be enhanced to support this requirement. The "label" often used to describe this capability is Material Supply.



Managing the Virtual Environment with Enterprise Resource Planning (ERP)

Most ERP systems must be enhanced to support the virtual environment. Logic to handle value-added service activities and material supplied to supplier/partners must be incorporated into them. ERP is the



result of over thirty years of evolution. All of ERP's predecessors incorporated new techniques to address new business requirements. Although the Virtual Enterprise is a radical departure from the traditional enterprise model, ERP, once enhanced,



can support this new operating environment. The individual nominated to the role of Chief Resource Officer will inevitably drive this enhancing and evolutionary process.

For those unfamiliar with ERP I suggest reading the paper Enterprise Resource Planning (ERP): An Executive Perspective, Preston Blevins, APICS 37th International Conference Proceedings, 1994

Conclusion

The Virtual Enterprise has evolved because of competitive pressures. Sub-contract and out-sourcing management is absolutely critical to the success of the Virtual Enterprise. The Virtual Enterprise is centered on the conclusion that organizations don't do all things well but do have a "core competence". When an organization organizes around its core competence and sub-contracts out everything else it is a Virtual enterprise. There are new challenges for both the procurement & resource management professional. These challenges are in three distinct areas; communicating within the Virtual Enterprise; managing "value-add services" and managing material supplied to partners. The key skill needed in the Virtual enterprise model is the ability to be a resource integrator. Those who have studied the managerial requirements of the new business model have suggested creation of a new executive role, the Chief Resource Officer. ERP must and can be enhanced to effectively support the Virtual Enterprise model. The future looks very interesting for the mentally nimble!

Book References

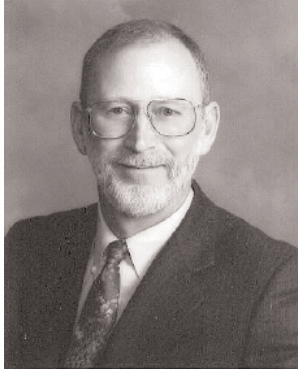
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About the Author



Preston Blevins is an advisor with Acuity Consulting. He has worked the business side of high technology for over twenty-five years. A proven innovator, Preston blends a deep understanding of supply-chain management issues with world-wide experience in consulting, sales, marketing and business development. He excels at managing large or complex projects.

Prior to joining Acuity, Preston served in multiple capacities with GLOVIA International. There, he developed B2B e-commerce initiatives, served as the Y2K Compliance Executive, and developed organizational competency in project-oriented manufacturing.

Prior to GLOVIA, Preston was engaged as a consulting and sales executive with Peoplesoft, Oracle, Cincom, and Computer Sciences (CSC). Mr. Blevins is APICS certified as a CFPIM & CIRM. He has authored industry recognized "White Papers" relating to E-Commerce, Collaboration, and Automation Advancements.

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