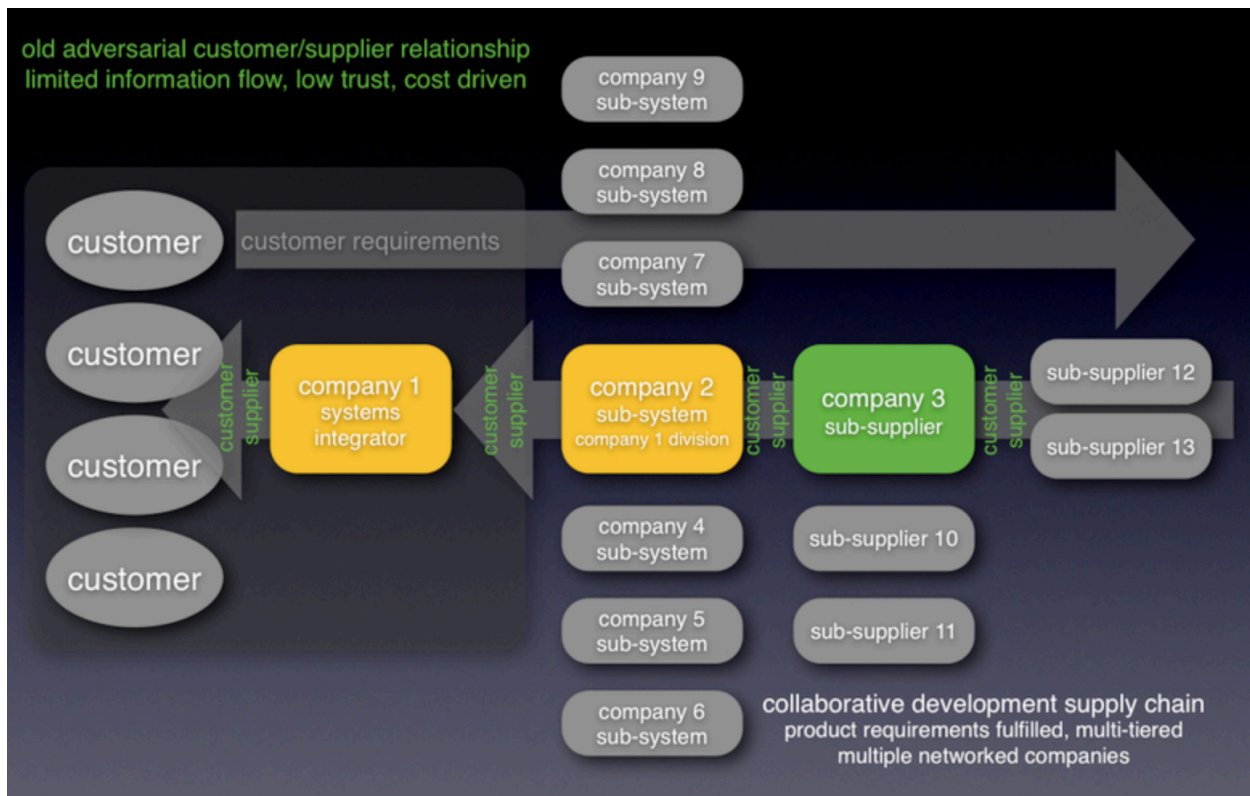


## Collaborative Development Supply Chain Case Study

Vertically integrated development supply chain (example):

Company 3 (sub-supplier) --> Company 2 (sub-system supplier, same company as company 1, but a separate business unit) --> Company 1 (systems integrator business group) --> Company 1's International Customers



Simplified example of the “development supply chain.” In reality there were many more players at each level that needed to be coordinated in order to deliver a complex industrial manufacturing system to multiple world-wide customers -- on time, simultaneously.

### Problem

It originated in Company 1. They had about 20 major suppliers developing products for their integrated manufacturing system. Each supplier was given little information and was on a “need to know” basis. Company 1 managers tried to manage the interface points between suppliers. Aggressive and somewhat arbitrary schedule targets were given to the suppliers. The idea was that these “stretch” goals would make them perform better, which turned out not to be the case. Risk was not shared and passed down the supply chain with each level assuming more of it! It was a classic adversarial customer-supplier system. As the schedule pressure increased and the

complexity of the interface points expanded the animosity flowing down the supply chain increased. Few in the chain complained to the level above for fear of losing access to what would be a very high volume business.

### **Solution**

We were able to get Company 1 to view suppliers as co-development partners. We created combined schedules and refreshed them together with the suppliers every week (done on a world-wide basis). All sides opened, shared risk, and acted as co-dependent partners towards a mutually beneficial outcome. Touchpoints between Company 1 and their suppliers were identified as well as touchpoints across suppliers, so when the schedule shifted the impact could be felt across the program. Note that much is being omitted for confidentiality reasons.

### **Background**

Company 1's business was expanding exponentially. The systems they were selling were new and complex (i.e. new technology, new manufacturing process, new and expanding market). The sites where they were installed were spread around the world adding to the complexity of the implementation. Company 1 controlled the product development supply chain, yet Company 1 dealt with each level like advisories (in some cases worse); suppliers were not to be trusted and given little information. The vertical integration potential of all these businesses in the chain were not leveraged effectively. In fact, the worst relationship we observed was the internal one between

Company 2 (a key supplier) and Company 1 (their customer). They were part of the same company, yet in a very separate business with different products and focus. Company 2 did not help since they were poorly organized. They were non-responsive to Company 1 (their customer) and they also treated their suppliers poorly. They provided little information and constantly changed designs so their suppliers were constantly left guessing. They wanted volume discounts yet would not make volume commitments (since they themselves had weak forecasting capability in terms of how the market was growing). They were unable to forecast and appeared to be making it up as they went, so it seemed when looking in from the outside. On top of this they appeared to be micro managing sub-supplier decisions.

The ECOs (engineering change orders) were killing the schedule at Company 3. Company 3 was saying "yes" because they wanted the business from Company 2, but since Company 2 didn't have a real development schedule of its own, no one saw the impact (of saying "yes"), but did later on when delivery schedules were missed. The requirements were changing and completely fluid. Company 3 was told the units they were making were the same as the units the other supplier (first source supplier) was making, but it turned out not to be the case.

We asked "who owns this misstep in requirements definition; Company 2 or Company 1?" Company 3 also was required to fabricate their beta units in the far east. This was high risk, since Company 3 had never done it remotely (for the first articles) before. Who was driving these requirements at Company 2? Did they understand the risk? Did they care? Further, Company 2 managers were

selecting Company 3's sub-suppliers so that they would be different from the first source's sub-suppliers. This forced Company 3 to use suppliers that had never done this kind of work before. The risk just kept escalating. Each demand and directive from Company 2 seem uncoordinated and lacked context from Company 3's perspective. It became a nightmare for the third tier supplier. It was as if there was no schedule or structure at Company 2. We suspected that Company 1 was making it up as they went and the confusion just flowed downhill. This, some reasoned, made shifting blame easier later on. No one was asking questions for fear of exposing the problem and potentially losing business from the up-chain customer.

What exacerbated this was the fact that Company 2 did not provide degrees of flexibility for schedule or cost. They fixed these variables, didn't permit them to change, yet they kept the requirements fluid. This was a recipe for disaster for all three levels of the development supply chain. In the end though not for Company 2, but for their suppliers since they would force the suppliers to "eat it" to get the business. This made for a bad relationship and in the end Company 2/Company 1/Company 1's customer would lose through delayed delivery, high cost, and products that potentially did not meet their needs, which meant rework and more lost profit (for Company 1). Since the end product was bid at fixed-price and payment was based on yield/volume targets being met, Company 1 shareholders were really the ones that could "get screwed" at the end of the day as a result of this inefficient supply system. In effect, no one from Company 1 was looking (or owned) the thread from end customer down to the sub-supplier network.

Target dates? The dates Company 3 was given were arbitrary (it would seem) since no one there could tell us what they drove (if they were missed), who the customers were, what sites the units were going into when completed, where they were going to be shipped, what the facility requirements were when they got there, what customers were impacted, and so on and so forth. Company 3 managers were in a total information vacuum, by design.

### **Solution**

A co-development environment that treated the supply chain like one large extended organization, not separate companies; between Company 2 and Company 1 and between Company 2 and their suppliers like Company 3. Schedules at each level that were linked and project planning done in teams (customers and suppliers present). Share information and be honest about when key deliverables were required.

Further, we engaged with the team at Company 2 developing Product X and its follow-on product (Product Y). They defined, prioritized, and froze requirements and implemented a formal project management process. This structure required the Company 2 management team to co-develop up their supply chain with the Company 1. The change required executive level intervention. This was not the kind of change that came from the bottom up. Managers at Company 2 tried to drive the change in process but this type of mindset change needed to be explained and embraced by all the executives in the supply chain first, before any meaningful improvement could occur at the operating level.