

AGILE BUT VIRTUAL: Organizing 21st Century Business

BY TED GORANSON

Old manufacturing paradigms work something like this: build something as complicated as an airplane, and you'll need large, intricate companies to make sure that everything happens as intended, with the right balance and timing. Take transportation. Design, construction, sales and logistical/technical support for just one type of commercial airliner, for example, involves tens of thousands of people in dozens of companies in a score of countries. Of course, after all is said and done, creation and management of the necessary organizational infrastructure to fit together all the pieces that will lead to production of a safe airplane turns out to be more complex — and costly — than making the airplane itself.

Traditionally, the value of an automobile derives not from the company whose name is on it, but from dozens, maybe hundreds, of suppliers and subcontractors. That isn't surprising, given the sheer number of parts required. What does come as something of a shock is that the price consumers actually pay for a given car, in fact, goes to maintaining the company at the top. While 30 percent of a car's price accounts for its value, 70 percent goes to pay the automotive company to keep itself running, even after subtracting

costs for design, supervision and planning related to assembly and transport, advertising, distribution and liabilities.

But does all this money have to go to support administrative infrastructure? Hardly. A new way of doing business called the "virtual enterprise" promises to forever change traditional practices. One has to look no further than the silver screen to find evidence of one highly effective and profitable model. America's most exportable business, its film industry, can go from idea to full production in a matter of weeks, sometimes even days. When a "go" is given for a movie, as many as 1,000 people can quickly engage in work. Most come from small firms or are brought in individually. An amazing number are involved for a piece of the action and are contracted with simple letter contracts. There is a high reliance on cultural shorthand and personal credibility.

At first glance, it doesn't seem that what works in Tinsel Town could work in Motor City. How can the movie model function effectively for vehicle or appliance manufacturers? The answer is with applied computer help, in the form of dedicated networks and robust Internet support, that can marshal resources, both human and not, far more rapidly than would otherwise be possible.

Radical Solutions

Thanks to a large, continuous expenditure of federal government research dollars — in particular, by the Defense Advanced Research Projects Agency, or DARPA, the same folks that essentially created the Internet — the American information infrastructure has rapidly matured. Progress that used to be counted in years or months has dropped to weeks, and eventually may be measured in days. It's no accident that the American military is taking full advantage of Information Age advances. As we've seen recently in Afghanistan, computer-aided technology can vanquish even the hardest of foes if properly deployed.

What works for the military and in large-scale projects conducted by firms in the private sector can also work for smaller ventures. The basic idea is rethinking where the money goes. Most should go toward actual construction or production, as opposed to overhead. When one performs detailed audits of just how much "management" costs, radical alternatives seem more and more attractive. For example, B2 bombers cost a couple billion dollars apiece. But when you see where the money actually went, far less than half went into the value of the airplane. Most went into fixing the collaborative infrastructure so that people could do "real work." With the new Joint Strike Fighter program estimated at \$300 billion, that can amount to real money.

Cars are a more familiar example. Could we make cars at half the price by eliminating the guy at the top? Yes, if we have something to substitute for all the planning and coordinating that is done by funneling everything through a few decision-makers. In theory, this can be done with some new, somewhat radical software technologies that have emerged from the research on this problem. Plus, you'd have to solve other, "soft" issues such as capitalization, who creates corporate cultures, and how legal issues like liabilities are resolved. Who guarantees employment and contract payments? These are business practices that technology can mitigate but not wholly resolve. So the answer is a mix of novel business practices and some radical new computer technology.

The Advanced Enterprise Research Office (AERO) is a research activity in the College of Business and Public Administration at Old Dominion. AERO addresses practical business models and methods that show promise for revolutionizing certain sectors of the economy. We address information technology and management methods in an integrated way. We've worked for over a decade now on key advances in both computer technologies and business practices to make this new idea — virtual enterprise — possible.

Old Dominion has one of the few engineering-management programs in the country, which provides some core expertise. The Norfolk area is a center of excellence for maritime law, one of those business-practice domains that will be at the heart of some of the most interesting virtual enterprises. And the area hosts the Joint Forces Command, which has taken the lead in transforming to an agile infrastructure.

There from Here

So what's the roadmap to the agile virtual enterprise? How can you make a bottom-line difference in your marketplace using these new ideas and infrastructure? First, you determine whether your marketplace is one that requires agility. Typically, a market demands either lean or agile strategies. Lean is appropriate when huge quantities are involved, everything is stable and cost is the primary driver. Steel-making is a lean market.

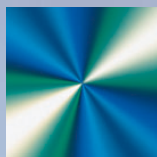
In contrast, the aerospace sector requires agility because technologies change faster than product development cycles. Razor-blade producers sell in an agile marketplace — like Gillette, which doesn't even make or package what they sell anymore because of the need for product thrash. And the consumer electronics marketplace, because it must respond to cost (in terms of price points) and styling, needs both agility and virtual teams.

For its part, the automobile sector is in transition because about one-third of that market is composed of niches that currently go unaddressed. In other words, the market is inherently agile, but the current players are not.

The second step is the most critical: Determine the type of enterprise you will be and the strategy you will have. One way to go is to make your role that of coordinator. Identify the opportunity and manage the brand by collecting a team of mostly small companies to make things happen. In this case, you create and oversee a virtual, often international enterprise. Most of the shoe and fashion business works this way.

Another approach, only slightly different, is to start with a core skill or resource, and build a team and opportunity around that. This is a common case; the core skill is often a distribution channel, a key process, like exotic-metals casting, or a central skill, such as risk management. In such an instance, the goal is frequently not to just make money from an opportunity but to also enhance that core competence in strategic ways.

The far end of the spectrum is where the capabilities are fixed, where the virtual enterprise is not fluid and



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opportunistic, but stable and pre-integrated. There are hundreds of such virtual enterprise groups which form long-term partnerships to market their capabilities as if they were a large enterprise.

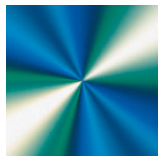
Coincident with this choice of business model is the choice of strategy, generally focusing on the level of adaptation required in the system. The “old way” of doing business is to analyze the future and refine your strategy extensively to “get it right” before you start. The new, agile way recognizes that most of the time you will always be wrong: the future is uncertain, and many markets are simply unknowable until they are plumbed. So the agile way is to just start with very cheap commitments, and make changes — even fundamental ones — late in the game as you discover more about the environment and yourself.

At any point you may choose to swap inappropriate partners or completely bail out at low cost. An agile strategy could find that hit that pays for many inexpensive failures, or it could allow you to really zoom in on an opportunity that you had no clue existed before you started. The third step is, of course, to simply start your virtual enterprise, either cheaply

withdrawing or completely slamming your competition.

Finally, and perhaps most important, is to intimately monitor what is going on so that you can learn and adjust. That adjustment could be a major or minor evolution in the strategy or composition in the enterprise. Or it could be one of several graceful exit strategies, from transitioning to a lean enterprise for lasting markets, to closing the virtual enterprise down, to reconstituting your venture in new ways for the next round of opportunities. This is where the requirement

for support, for trust, shared-risk strategies, visibility of the big picture for all players, and detailed metrics come in.



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Usually, this is handled at the human level, and in fact, this way of doing business has a legacy of several thousand years, greatly predating today’s more mechanical management techniques. But it has gone out of favor because of lack of control, the difficulty of predicting outcomes and the inability to handle complex products and services. That’s what the DARPA research addressed, and where we think AERO’s new techniques can be applied. Create the right infrastructure tools and technologies, and you and your partners will use them to do great things.

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