COLLOCATION AND EFFECTIVE TEAMWORK: EXPERTS DIFFER ON WHETHER PHYSICAL PROXIMITY IS MISSION-CRITICAL

We've been surprised to discover that collocation (sometimes spelled co-location) is a controversial issue among those thinking about better ways to do product development. Based on what converting to a work-cell model has taught over the past decade or so about efficiency and effectiveness, we would have thought that deciding whether or not it's important for a product team to sit together in the same work area for the life of a project would be an easy call. We discovered that it's an issue with some heat to it when doing the research on concurrent product development at TN Technologies (see *BPR* February 96). [Readers of that article may recall TN Technologies R&D vice president Andrew Makare's contention that, due to staffing considerations, he thinks collocation is not completely realistic when there are a small number of people who are necessarily shared resources.]

The question came back to us recently when we read Anne Donnelon's new book, *Team Talk,* in which she studies four product development teams to discover what practices make for effective teamwork. Donnellon doesn't specifically address collocation, but her research leads her to conclude that two dimensions – a strong team *identity* and a clear sense of *interdependence* – are the key signals of whether or not a team is real, and she sees a positive correlation between how real a team is and how well it works. Based on this, we assumed experts would readily agree that collocation is a good idea since it fosters social cohesion.

Looking into it, we found that experts don't even agree on the definition. Concurrent product development expert Brad Goldense, president of Cambridge, MA-based Goldense Group, Inc., says if your ultimate aim is rapid concurrent product development then collocation is mission-critical. Goldense defines collocation as having all members of the core team working within thirty feet of one another. While Babson College operations management professor Farshad Rafii acknowledges that "co-location" (his choice of spelling) can be good, he thinks it's over-rated, and often not desirable. Rafii defines it as being "within walking distance" – which could mean being as far as the next building.

Benefits of Collocation

Goldense and Rafii agree that collocation can have clear benefits. It can alleviate narrow and self-limiting perceptions that emerge from looking at problems through a

functional lens. It tends to foster team cohesiveness. It can mean efficient use of manpower: that of core team members, of support functions, and of the product manager. It can also speed the work along by facilitating the process for making the million and one decisions that go into any development project. That it enhances communication seems like a no brainer.

Says Goldense, *"Think about it. How do we keep track of what's going on in our companies? A good part of it is just sitting at our desks and hearing people's conversations. If I sit in my functional home base, all the noise I'm going to hear in the background will be functional noise. But suppose I'm the engineering manager on a product team and I'm sitting next to the marketing manager for that team. He's on the phone with a customer. I hear his half of the conversation; I can imagine the other part. Or he hears me on the phone with a vendor talking about specs. Same deal. It's real-time information learning, no filtering, no interpretation. You develop an appreciation for each other's realities."*

Adds Raffi, who bases his conclusions on research in Stalk and Hout's 1990 landmark, *Competing Against Time, "Co-location can simplify and facilitate the job of the project manager, who might spend 25% of his or her time moving physically among project participants spread over several buildings and another 25% coordinating meetings, often necessitated by the inability of team members to coordinate their activities informally. It can also enhance resource efficiency by enabling pooling of support functions such as Quality Control, drafting, model shops, and pilot shops for use by multiple projects."*

MIT's Tom Allen, studying engineers to see how physical proximity affected communication, found that there was a 25% chance those with offices next to each other would communicate at least once a week; this dropped below 10% when they were more than 30 feet apart; after 90 feet, the odds were the same whether they were 91 feet or several miles apart. A Bell Labs study found that people on the same corridor tend to collaborate five times as often as people merely located on the same floor; they found that collaboration nose dives when people are located on separate floors. Write organizational effectiveness experts Jessica Lipnack and Jeffrey Stamps, *"Steelcase, Inc., the office furniture company, uses this research as a design principle. The '50-foot rule' is the natural size within which collocation leads to collaboration."*

Where's the Beef?

While acknowledging the benefits of physical collocation, Rafii thinks its importance is overrated, it doesn't guarantee better cross-functional communication or performance, it isn't always feasible or desirable, and there are higher-leverage ways to get cross-functional harmony. Putting a cross-functional group of people together in the context of a strong functional organization can be expensive and frustrating to manage, he says, and may well prove futile if other organizational factors aren't addressed. (Want to generate cross-functional harmony? Asks Rafii: tie your functional leaders' compensation to time-to-profitability!)

Rafii believes physical collocation lends itself to over-reliance on oral communication, which can lead to careless process discipline and outright error. He thinks it also can set up a "skunk works" mindset, with teams risking isolation from the rest of the organiza-

tion. Team members can lose track of critical information, the organization can lose track of the team's learnings, and—particularly with long development projects—both individual team members *and* the organization can suffer from a "rusting" of functional skills.

Rafii's biggest reservation about collocation, however, comes from what he sees as the rapidly changing global environment. If my company is based in Boston, and the best design talent for a given project happens to be in Italy, and manufacturing is in Singapore, to hang in with a physical collocation strategy weds me to, at most, a second-best result.

Writes Rafii, in *Business Horizons, "As economic competition and corporations become more global, collocation is increasingly infeasible and insufficient. Companies must distribute elements of their product development organizations around the globe to understand and anticipate the needs of diverse global customers and to take advantage of international centers of excellence."*

Virtual Collocation: How Real Is It?

Like Lipnack and Stamps, Rafii sees the emergence of "virtual co-location" as an alternative and, he thinks, more-promising approach. New information technology, particularly groupware, can enable a project team of hundreds of geographically dispersed individuals to keep the action moving around the clock.

In addition, says Rafii, the nature of networked information systems tends to force cross-functional integration: *"Networks are inherently informal and anti-hierarchical, and thus their use tends to minimize the importance of the formal organizational structure. Knowledge and the willingness to share it, rather than position or job title in a chart, become the key indicators of relevant contribution to a project. These factors contribute to cross-functional integration by making functional walls more transparent and by facilitating the measurement and evaluation of individuals' and units' contributions to project success."*

Continues Rafii, making a point with which Goldense would likely disagree, *"Although initial physical meetings of project participants are valuable to establish relationships, virtual co-location through electronic media can largely supplant the need for and benefits of extended physical proximity."* While Goldense shares much of Rafii's assessment about the changing nature of global competition, he says that what Rafii is calling "virtual co-location" isn't really collocation at all, but *"rapid serial development."*

There are clearly situations where taking this path is a smart strategic choice. But in most situations, because he sees well-done concurrent product development getting bad ideas out of the way early and speeding good ideas along, Goldense says he would hang in with physical collocation for at least for the first third of a development project: *"You make decisions in the first 30% of a project that lock in 90% of your life cycle costs. Closeness really counts at this point."*

How would he handle the fact that you can't have hundreds of team members sitting within thirty feet of one another? It's unlikely that they all need to be part of the action throughout the life of the project. Many are really supporting functions who need to be available to multiple teams. He'd identify cross-functional core teams, have them sit together, and cluster them around a centralized extended team of support functions.

What the debate highlights is that there is no one right way. In a world in which over half of the products that won this year's *Business Week* design awards were created by *"virtual"*

teams, with the design piece outsourced, whether you call the way such teams work *"virtual collocation"* or *"rapid serial development"* doesn't much matter: clearly it's a growing trend for how products get developed.

At the same time, many of Rafii's concerns about limitations of physical collocation evaporate with strong, competent project leadership. From the vantage point of being in conversation with a range of product team leaders, one thing is clear: most with whom we speak tell us that, given a choice, they would choose physically collocated teams.$^{P}_{D}$

About Brad Goldense and GGI...

Bradford L. Goldense is president of Goldense Group, Inc. [GGi], a twelve-year old consulting and education firm concentrating in advanced business and technology management practices for line management functions. Mr Goldense has consulted to over 60 of the Fortune 1000 and has worked on productivity improvement and automation projects in over 175 manufacturing locations across North America, Europe and the Middle East. Over 60 of his articles and papers have been published to date.

Mr. Goldense holds a BS in Civil Engineering from Brown University and an MBA with a concentration in Cost Accounting from Cornell University. Brad is a member of the faculty at the University of Dayton in Dayton, OH and at the Gordon Institute of Tufts University in Medford, MA. He holds an elected position on the University Council of Cornell University. He is a Certified Manufacturing Engineer [CMfgE] by the SME, a Certified Computer Professional [CCP] by the ICCP, and is Certified in Production and Inventory Management [CPIM] by APICS. He is a member of the Board of Directors of the Society of Concurrent Engineering [SOCE] and is president of the Boston Chapter

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Key Learnings:

■According to recent research into what makes effective product development teamwork, a clear team identity and a strong sense of interdependence came up as the two greatest determiners of success.

■Experts agree that collocation facilitates social cohesion but point out that by itself it does not guarantee either clear identity or a strong sense of interdependence.

■Research shows that once people sit more than thirty feet apart the odds of routine collaboration fall off dramatically.

■If you can't do physical collocation for the entire life of a project, you may want to try it for the first 30%, when decisions are made that dictate 90% of the life cycle costs.

■Growing globalization and the trend to outsource key functions, like design, combined with emerging electronic technologies, especially groupware, mean that physical collocation is not always possible and may not even be desirable if the best players you can find are geographically dispersed.