From the Editor-in-Chief . . .

THE END OF THE SUPPLY CHAIN?

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In my last column I explained why I think full-fledged business-to-consumer e-commerce (B2C) is technically more challenging than full-fledged business-to-business e-commerce (B2B), even though B2B is currently the more difficult of the two.

The reasons are twofold. One, B2C e-commerce product specifications are generally no less subtle than those for B2B, and the ad hoc nature of consumer demands can impose complex computations for managing the manufacturing and logistics necessary to efficiently satisfy B2C requirements. Two, the GPO (gross product originating) generated by B2C will compare with and may even overtake the GPO generated by B2B. (Last time, I used "revenue" where I should have used "GPO"—the main difference being that the latter eliminates double counting.)

The second of these two reasons is, I believe, the more controversial, so I want to look a bit more closely at it here. One explanation for why B2B rev-

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enue projections so greatly exceed those of B2C is the expectation that consumers will continue to buy more offline than online. Another is that as materiel flows from raw inputs to finished goods, it can change hands many times in B2B transactions but only once in a B2C transaction (in the final stage). Thus, B2B revenues can in effect be counted multiple times, roughly proportional to the length of the supply chain, and present-day supply chains are quite long.

Reducing the Friction

Current supply chains are an artifact of present-day manufacturing and information technologies, wherein manufacturing techniques are mechanistic, specialized according to simple repetitive actions. Thus, creating products—and often packaging and repackaging them—entails many stages before they are ready for consumer use. Each link in a supply chain owes its existence as much to the value it adds as to the information it hides. I believe many businesses today exist because they have found economic niches based solely on package size, volume of product transactions, acquisition of information about customer needs, and so on.

In the networked economy, transactions that are small or large, few or many are equally easy, and information about consumer needs flows easily and directly to manufacturers. Thus, middlemen may be losing the advantages that form the very basis of their existence. At the same time, we are seeing radical changes in the packaging and delivery industries. Packages are being developed that can go directly to the consumer without going through the hierarchy of distributor, wholesaler, and retailer. For point-to-point, on-demand delivery firms, represented by the likes of Federal Express and United Parcel Service in the United States, business is booming. I imagine their gains are coming at the expense of the traditional, hierarchical logistics network. Overall economic growth may hide this network's downturn for some time, but there is no question of a relative decline.

More and more today we're seeing an easy flow of information upstream to producers and of products downstream to consumers. To facilitate a downstream flow of information so that consumers can make informed decisions, there will undoubtedly be a continuing need for information aggregators—portals and vertical marketplaces.

Clearly, even with all the advances in network computing, a single manufacturer won't perform all the manufacturing steps for a consumer good. However, there will be a diminishing need for long,

narrow supply chains in which intermediaries take a cut simply for changing the package or order size. These intermediaries are part of the friction in the economy and will be ripe for elimination.

Value Chains

Future chains will be based on value and aggregation. Intermediaries along the chains will have to add substantial value so as not to be easily subsumed by businesses upstream or downstream. Usually, this means they will aggregate products from more than one path; otherwise, they'll risk having their sole supplier choose to bypass them altogether.

Even today, supply chains resemble trees, because some aggregation takes place. However, the value chains I envision will be trees with much thicker foliage due to a greater average branching factor. This means that the double counting of B2B e-commerce revenues will diminish. And not only will the GPO attributed to B2C begin to exceed that attributed to B2B, but also the revenue ratio favoring B2B will greatly shrink. ∎

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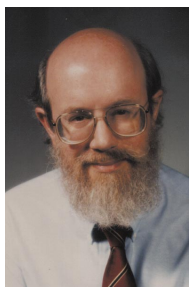
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Stuart Feldman is director of the IBM Institute for Advanced Commerce, and manages a research staff of more than 90 researchers in network-related technologies including e-commerce, Internet media, and antivirus systems. Feldman was a member of the original Unix research team and is best known as the creator of the Make configuration management system, as well as the author of the first Fortran-77 compiler. He has published numerous research papers in software engineering, programming languages, and scientific computing. He received an AB in astrophysical sciences from Princeton University and a PhD in applied mathematics from the Massachusetts Institute of Technology. Feldman is the founding chair of ACM's SIGecom. He is an IEEE Fellow, an ACM Fellow, and a member of Phi Beta Kappa and Sigma Xi.

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