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Strategic Coalitions in the Information Technology Industry

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Cooperation between vendor firms is a significant feature of technology intensive industries such as computers (hardware and software) and data communications. We provide a coherent framework to understand the dynamics of coalition formation in the Information Technology (IT) industry. Key research questions include the following: (i) What are the major factors that lead to coalitions in the IT industry? Such factors include the diversity of technology characteristics perceived as important by consumers, risks in IT related R&D, complementarity between hardware, software and networking technologies, and coordination costs. (ii) How do the open networking standards of the Internet and its technologies affect coalitions (e.g., formation, break-up, and payoff distribution) in the IT industry?

Given the current emphasis on workgroup productivity and enterprise-wide information sharing, today’s IT consumers make purchasing decisions based on networking, connectivity and interoperability considerations. This is in sharp contrast with the earlier computing scenarios dominated by stand-alone systems and proprietary standards and applications. The complementarity between hardware, software and networking create high value for the user today, and poses both a challenge and an opportunity for IT vendors to form successful coalitions. As Aumann and Drèze (1974) note, acting together in a coalition may be difficult and costly. However, the growing popularity of Internet based open standards for networking, documents and document transfer helps lower the costs of cooperation between IT vendors in making their products interoperable and work as a system rather than as isolated “islands of technology.” Furthermore, the lower cost of cooperation resulting from the push toward open systems gives more power to small businesses (relative to their investment) than it does to big businesses in a coalition, ceteris paribus. Thus, the Shapley (1953) value for relatively small firms is higher than that of larger firms. This will lead to more even distribution of payoffs within a coalition, and small vendors may enjoy a higher marginal benefit from joining a coalition than large businesses in the IT industry. Open systems also imply that vendors will be forced to indulge in higher levels of R&D activities to constantly innovate in the face of increased competition from smaller players, who may not otherwise be able to compete in a market with proprietary standards. A coalition enables the participating firms to combine their knowledge and R&D investment, and to hedge against the corresponding risks.

How are coalitions in the IT industry different from those in other sectors? First, the relatively low cost of cooperation enabled by Internet technologies will allow firms to form coalitions actively. Applications and systems can be easily made to work with each other when they are based on widely accepted standards such as TCP/IP, HTTP and HTML; by contrast, for two components (say, in the automobile industry) from two different vendors to work together, it may be necessary to completely redesign one or both components. Second, the network externality facing the IT consumer (as opposed to non-IT products/services) and the complementarity between various IT components make coalitions a necessity for success of any given vendor. Third, coalitions in the IT industry are likely to be very vulnerable due to their reliance on open systems. The latter results in a relatively low cost of cooperation, and allows firms not only to form a coalition easily, but also enables marginal players to move from one coalition to another swiftly. That is, smaller players have more marginal negotiation power than the core players in a coalition.

Our ongoing research is focusing on the impact of new entrants upon coalition dynamics and the possibility of reduced payoffs from applications based on open systems.

REFERENCES
