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"Virtual Corporation Management System"

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Governor Ridge announced last October the formation of the Lightning Manufacturing Project, which consist of companies in the powdered metals industry that will form a virtual enterprise over the Internet (WorldwidePM.com) for the purpose of developing and supplying products to customers. The powdered metals industry is the first of fifteen industries that will experiment with web-based collaboration to understand better what issues need to be resolved in order for business-to-business commerce on the Internet to become a reality. Pennsylvania has a strong presence in the powdered metals technology. About 25% of powdered metals companies in the U.S. are in Pennsylvania. Combined industry sales are approximately \$5 billion per year, and are growing 12-14% per year. The industry consists of suppliers of powder, binders, tools and dies, and furnace suppliers. About 75% powdered metals customers are in the automobile industry, and 10% are in recreational and hobby equipment.

Many organizations are required to make the Lightning Manufacturing Project successful. Ingersoll-Rand is playing the role of lead customer. It is committed to converting 1000 of its conventionally manufacturing parts to powdered metals processes. It wants to penetrate deeply into its supply-chain and help potential suppliers of powdered metal parts to deliver parts more cheaply. A virtual enterprise will allow small to medium companies to gain economies of scale and become more efficient suppliers, and to learn from each other. The Internet will enable such suppliers to optimally employ capacity, capital equipment, etc. Jim gave an example of a company that had excess capacity and potentially negative returns if it tried to fill an order completely on its own. By collaborating with firms that currently have excess capacity, all firms could operate closer to their optimal capacity. There are no anti-trust issues involved here because the price for the work was negotiated and set prior to its redistribution among companies.

Ingersoll-Rand is using the "Agile Virtual Enterprise Model" to collaborate with its suppliers. This second-generation model (originally funded by the Department of Defense) builds upon the lessons learned in the first generation. The model allows for certification, performance metrics, etc. IBM will develop the security features for web-based commerce that will certify companies to participate in joint bidding on projects, design contracts, etc. Lehigh, Penn State, and Carnegie-Mellon are providing suppliers with technical and management support. The Agile Web also will offer assistance. It is a network of twenty companies with considerable experience in collaboration on capacity, intellectual property, etc.

WorldwidePM.com is currently in the learning and testing phase and is supposed to be on-line in September. The Request for Quote (RFQ) process and aspects of procurement remain to be developed. Technology is a necessary, but not sufficient condition for collaborative success. Jim points out that industry members still must share a great deal of knowledge about powdered metal technology in order to be successful. The members can do this by de-constructing and analyzing all aspects of manufacturing and business practices and the value-chain. The Internet can serve as a catalyst to get the industry organized, but the members must share a community of interest

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