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The increasingly dynamic, competitive, and global business environment in which many organizations operate has created a need for new business and information systems (IS) models. These new models must be (1) flexible to enable the rapid redesign of business processes, (2) clearly focused on internal competencies to insure efficiency, and (3) responsive to allow rapid response to changes in customer demand (Wernerfelt 1984). Technological paradigm shifts are enabling the new models through a broadening of what Malone (1997) calls the organizational "design space." This design space is the set of all possible organizational configurations given existing conditions. The new technologies are lowering coordination costs and enabling more flexible, coordination-intensive business models (Malone and Rockart 1991). In many such business models, object technology (OT)-based IS are an important facet in providing the required flexibility, efficiency, and responsiveness. However, problems such as difficulties in conceptualizing business processes and predicting future business practices, inherent difficulties in understanding very large applications and their problem domains, and complexity of enterprise-wide coordination (Lewis 1994; Newman 1995) have slowed the acceptance of OT in the business community (Pancake 1995). What is lacking is a theoretical foundation on which to build the OT-based IS that are an integral part of the new business models. A theoretical foundation is required that will facilitate an understanding of the structure of the business model, its information processing requirements, and its business environment.

In order to provide the required foundation and to guide IS developers, an enterprise-wide, organizational theory-based IS development model is proposed. Building on Taylor's (1994) *convergent engineering* paradigm, business processes are conceptualized as distributed collections of self-contained interacting business objects. In this model, IS are developed concurrently with the business process and are composed of interacting sets of empowered, OT-based *software teams*. The empowerment of software teams through the incorporation of business rules allows decentralized control, enables more flexible "organizational" structures, and allows IS to be easily adapted as business environments shift. These software teams are conceptually very similar to teams of employees in an organization. This similarity allows the use of information processing theory (IPT) (Galbraith 1973), which is traditionally oriented toward understanding the control and coordination requirements in human organizations, to provide a theoretical background in designing the distributed IS organizations. IPT is based primarily on the environment-structure relationship postulated by contingency theorists (Dess and Beard 1984). As applied in the development model, it provides a basis for determining the type of software teams that need to be created, the type of business rules that must be implemented, and the IS structure that is most appropriate given the business environment.

This research investigates the use of IPT in a new, distributed systems design methodology. Using an example in the context of electronic commerce, a portfolio management system based on distributed OT utilizing the new design methodology is created. While infrastructure improvements such as ubiquitous TCP/IP and distributed object

middle-ware facilitate this investigation, they are not the primary focus. The primary emphasis is on the understanding of coordination requirements in flexible, dynamic IS.

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