



Chapter V

A Generation of Moderators from Single Product to Global E-Supply

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Abstract

This chapter presents the concepts and history of moderator research, covering the long journey from the first engineering moderator to recent proposals for an e-supply chains moderator. The main function of a moderator is to support a design group or team by raising individual members' awareness of the needs and experiences of other team members. Moderators are specialist intelligent software systems which support each individual to perform his particular role from a position of strength, using his preferred methods of working while still understanding the needs of other individuals and the total team. This research addresses demanding and complex business requirements by exploiting the increasingly powerful technologies and infrastructures available for business integration.

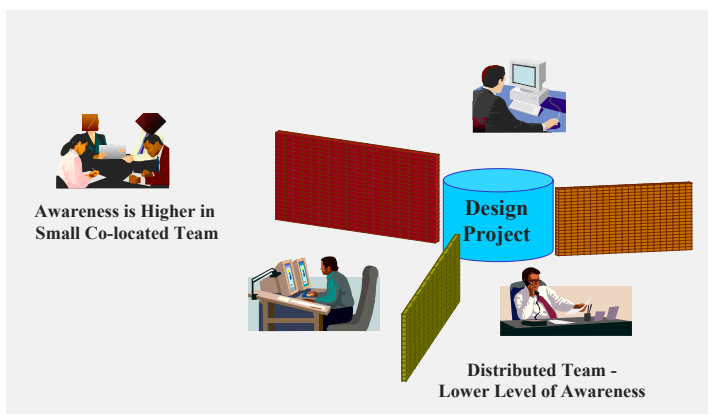
Introduction: Setting the Context

The strength and success of a team depends on how well each individual can contribute the maximum benefit of their skills to a consolidated and shared vision of the total group. The different backgrounds, experiences, and environments of the individuals inevitably influence their views and interpretations of the overall objectives. Hence, as soon as people from different disciplines and backgrounds try to work together, there is potential for misunderstanding or lack of awareness of the needs and interdependencies of each individual contributor. This is true even in small, co-located teams where individuals meet regularly to discuss overall project requirements and progress. It is clearly a far greater problem when teams are large and physically located in different companies or even different countries (see Figure 1).

A simple example, taken from the earliest demonstrations of moderators, may serve to illustrate the problem. The earliest specification of a moderator (Harding & Popplewell, 1996) was demonstrated in a case study examining the design of a shaft for an electrical machine. The shaft is initially designed primarily for its function, namely to carry and rotate copper windings rotating at high speed while being supported in bearings at each end. A set of form features are designed into the shaft to attach windings, to rest in bearings, and to transmit rotation into or out of the machine. These features mainly include cylindrical sections, steps, tapers, bearing surfaces, and keyways. The designer was an expert in the functional design of electrical machines, but not in manufacturing technology, and included in his design a step between cylindrical sections. This precisely met his functional needs, but cannot be machined by conventional methods: The transition between the smaller radius and the radial face must itself have a fillet radius of at least the size of the cutting tool used. The designer has thus, through lack of knowledge of the manufacturing issues, designed an impossible, or at least extremely expensive, feature into the product.

The manufacturing engineer subsequently looks at the design and, without full understanding of the functional reasons for the step, plans to simply use the smallest available tool

Figure 1. Awareness is critical to project success



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