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Chapter 4

The Effects of Collaborative Technologies

Ned Kock
Temple University

WHY *DISTRIBUTED* IMPROVEMENT AND LEARNING?

The information era is characterized by a tremendous explosion in the amount of information flowing within and outside organizations. Information flows internally between organizational functions (or organizational *roles*, usually distinguished by different job titles). Information flows outside the organizations when communication takes place between the organization and one of its suppliers or customers.

As discussed in previous chapters, one of the main reasons why such explosion of information flow is taking place is the specialization of knowledge. As more and more knowledge is produced on a global scale, the scope of knowledge that is possessed by individuals becomes increasing narrower. Individuals strive to hold in-depth knowledge in a very limited number of fields and subjects, or, in other words, they specialize. Specialization is an involuntary phenomenon, and follows from human cognitive and, most importantly, *time* limitations. In the information era, those who do not specialize tend to become less competitive, because they do not have the time to acquire the knowledge and skills needed to compete with others in specific fields of knowledge. If you do not believe me, try to think of anyone who could be a top criminal lawyer and, at the same time, an internationally renowned brain surgeon. Even if we are talking about a super-genius here, time constraints will prevent this from happening, as both specialties require years and years of study and focused practice.

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However, as the number of different knowledge specialties increases, so does the need for organizations to hire and manage groups of experts who specialize in different subject areas. A typical mid-sized financial services firm, for example, has to maintain hundreds of experts who specialize in different areas of financial analysis. Each of these areas, e.g. mutual fund management and securities analysis, are themselves made up of dozens of experts who specialize in different economic sectors and industries, e.g. Asian government bonds and domestic high-tech stocks. The existence of such knowledge variety leads organizations into a high degree of departmentalization (Hunt, 1996), or the organization around a heterogeneous structure of work teams (Eason, 1996), to cope with the management complexity that it generates.

Previous studies have shown that a high degree of knowledge specialization and the resulting high degree of departmentalization correlate with an intense flow of information. My own research on this topic suggests the existence of a very strong correlation between the number of functions in a process and the number of information exchanges in it[1]. That is, the trend towards knowledge specialization seen today is also leading to a severe increase in the amount of information that has to be transferred in organizations.

Figure 1: Information exchanges often lead to knowledge exchanges

John and Mark are working on the development of a new toothbrush. In order to do so they have to exchange information *and* knowledge. The dialogue below illustrates an initial exchange of information (two first paragraphs) that leads to the need for an ensuing exchange of knowledge (last paragraph).

"John, you told me that the elasticity of the middle section of our toothbrushes will decrease next year. Why is that?"

"Mark, you're always the last to know things around here, aren't you? It is because we will be using high density polyethylene to manufacture them, instead of the softer low density polyethylene that we use today."

"What? John, can you explain this to me please."

"Well, high density polyethylene is a very strong and hard type of plastic. If we use this type of plastic in our toothbrushes, their middle sections will be much less elastic than they are now."