Chapter 10

Between Individuals and Teams: Human Resource Management in the Software Sector

Pat Finnegan
University College Cork, Ireland

John Murray
Deloitte & Touche Tomhatsu, Ireland

As the software engineering field has developed, much attention has focused on improving the associated technology and processes. Comparatively little thought has been given to the issue of human resource management. Some see it as central to productivity and software quality. However, little empirical research has explored the required nature of such management. This paper examines human resource management practices in the software industry in Ireland: An economy that is heavily dependent on the software sector, with a high level of foreign multinational investment. A survey of the 100 largest software organisations reveals the nature of human resource practices, and the relative unimportance attached to the management of human resources. Two of the organisations studied are selected as examples of preferred and poor practice, and more in-depth data was gathered from these companies. The authors consider that this comparative analysis reveals a difference that is central to the design of human resource strategies in the software sector: One company managed software engineers as individuals within groups, while the other focused on the management of teams.

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The maturity of software engineering is easily identified. The first ‘wave’ of maturity development was the “Waterfall” method, which was introduced in 1970 (Royce, 1970). Recently it has been argued that the field is in the second ‘wave’ of its evolution—a maturity movement. This is where the field is attempting to formally define the process and the best ways to continually improve it (Paulk et al., 1993). There are three components of software engineering: the technology, the process and the people (Humphrey, 1989). The first wave of evolution used technology as the means of driving progress in the field, or to spur on improvements (Scaachi, 1984). Today, the second wave is concentrating on improving the process (Jones, 1991, McGowan & Bohner, 1993, Paulk, et al., 1993). By simple process of elimination, the remaining component as per Humphrey (1989) is the people or the human resources, on which the software engineering field has yet to focus its attention. The human element is becoming more important as the software industry becomes more global, and the mobility of skilled software developers increases.

This paper is based on a study that used pluralistic research methods to investigate human resource practices in software development organisations in Ireland. The software sector in Ireland is heavily dependent on a highly skilled local workforce to sustain its indigenous software sector as well as to attract overseas investment. In addition, the large number of software engineers leaving the country to work abroad means there is a shortage of skilled people. Nevertheless, the findings of this study demonstrate a low level of support for the human element in software engineering. Human resource practices focus on managing software engineers as individuals and neglect the fact that software development takes place in a team environment. The paper concludes by proposing that the next stage of development within the software engineering field should be centred on team based approaches to human resource management.

**HUMAN RESOURCE MANAGEMENT IN SOFTWARE ENGINEERING**

Software development in the 1990s needs both a revised procedural paradigm and an emphasis on the human dimension (Highsmith, 1992). At present the attention of researchers in the software engineering field is oriented towards improving the process—the process maturity movement (Jones, 1991, McGowan & Bohner, 1993, Paulk et al., 1993). Much of the emphasis on human resource management and the human dimension of software engineering has been deflected to this maturity movement, in the
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