Chapter 5.7
Trust, Virtual Teams, and Grid Technology

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ABSTRACT

Flexible and remote working is becoming more and more widespread. In particular, virtual team working is growing rapidly. Although virtual teams have attracted the attention of many researchers, until recently little investigation had been carried out specifically on what impact trust – a key element in favouring cooperation among team members – has on the performance of such teams. In the authors' opinion Grid computing, through the collaborative nature of the technologies employed, provides an opportunity to build trust through the sharing of common resources and the enabling of rich communications.

INTRODUCTION

The rapid development of new technologies has made flexible and remote working more and more widespread. In particular, virtual team working is growing rapidly throughout many types of organization. Although virtual teams have attracted the attention of many researchers (see for example, Lipnack & Stamps, 2000; Lurey & Raisinghani, 2001; Powell et al., 2004; Townsend et al., 2000) until recently (see for example, Zolin & Hinds,

2004) little investigation had been carried out specifically on what impact trust has on the performance of such teams.

Undoubtedly, trust is a key element in favouring cooperation among team members as it avoids suspicions of opportunism and avoids the occurrence of egotistic behaviour. However, an analysis of the role of trust in the specific field of setting up and maintaining virtual teams would be of great benefit in an age where global working is becoming the norm.

Recent research has looked at trust in virtual teams (Birchall & Giambona, 2007; Birchall et al., 2008), information assurance, (Birchall et al., 2003; Birchall et al., 2004), and a variety of issues around the individual's interaction with information resources (Stewart et al., 2007). All three of these research areas give useful insights into the creation, use, and sharing of information through the lenses of trust and virtual teams – do I trust someone that I am not co-located with enough to share "my" information resources with them and to commit to working jointly with them and sharing responsibility for the outcomes?

Grids, through the collaborative nature of the technologies employed, provide an opportunity to build trust through the sharing of common resources and the enabling of rich communications. But is this enough for effective team working? And how can Grid technology help encourage trust overcome these issues linked to trust development? This is the question that this chapter seeks to answer.

In this chapter firstly we will cover some of the relevant aspects of the development of Grid computing and its application to modern organizations. We then go on to examine the nature of collaboration and virtual teams in business and organizations, including aspects of trust and its importance. The role that the Grid and Grid concepts can have in supporting virtual teamwork and facilitating trust in virtual organizations is then explored. The final part of the chapter draws

out the conclusions of the material presented and closes with an examination of the implications.

BACKGROUND

Grid Technology

Grid technology, or Grid computing, is rooted in scientific research ranging from seismology to medicine and pharmaceuticals, to climate modelling (Smith, 2005). It was originally considered as a means of using under-utilised large scale computing resources to solve complex numerical problems (Foster & Kesselman, 1998).

Unsurprisingly, today Grid technology is a mix of computer technologies, softwares and protocols which, among other aspects, are concerned with "coordinated resource sharing and problem solving in dynamic, multi-institutional virtual organizations." (Foster et al., 2001, p. 2). Foster (2002) reinforces the concepts of resource sharing and the "multi-institutional virtual organization" when he suggests that a Grid "integrates and coordinates resources and users that live within different control domains" which can include "different administrative units of the same company; or different companies" (2002, p. 1). Foster goes on to suggest two further central elements of a Grid: the use of "standard, open, general-purpose protocols and interfaces"; and the delivery of "nontrivial qualities of service." (2002, pp. 1-2). This idea of quality of services is particularly relevant to trust as it covers such issues as resource availability, reliability, and security – issues which will be discussed more later on in this chapter.

The Grid in Organizations

In the context of business and organizations there are two main uses for Grid technology which are particularly relevant to organizations and team working. The first finds Grid technology being used in its more conventional sense – the more

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