Chapter XXVI
GIS Grids and the Business Use of GIS Data

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ABSTRACT

Grid computing is becoming as essential part of different business analysis. In traditional business computing infrastructures data transfer occurs to and from computing resources at the network edges. In the other hand, most business activities are bound to space and location. The aim of this chapter is to describe the business use of geographic data (business intelligence) and Geographic Information System (GIS) grids. As conclusion business intelligence helps to improve productivity by giving users information they need when they need it most at the point of decision. Organizations that effectively use geographic information elements analyzing their risk portfolio and compliance activities can reduce costs and increase the clarity of their operations. Grid computing is an answer to the needs of efficient GIS aided analysis. When geographic data, grid computing and business information are combined, they create new possibilities to enhance and broaden the standpoints of already existing data within organizations.

INTRODUCTION

Modern businesses live in an information economy. For a long time it has been acknowledged that all business activities are time-bound and that time management is an important business activity (Lawson, 2001; Lee, 1999; Negroponte, 2000). Good management of time can lead to competitive advantage.

However, many data cannot be used efficiently because of the tremendous amount of information and the difficulty of the process and transfer through a network. So how to develop internet technology to solve these problems becomes a difficult problem (Shen et al. 2004). Fortunately, grid computing provides the method of solving this problem effectively. Grid computing is a resources sharing model that may solve the current
network resources imbalance problem. (Shen et al., 2004).

Grid computing is becoming as essential part of different business analysis. It has been a popular tool in academia for many years but has recently become more popular in industries such as entertainment, finance, pharmaceutical, manufacturing, engineering and energy. Grid environment, the description, discovery, and monitoring of resources (e.g. hardware, software, data, instruments) is complex due to the diversity, large numbers, transient membership, dynamic behavior, and geographical distribution of the entities where a user might be interested. (Jie et al., 2007).

In traditional business computing infrastructures data transfer occurs to and from computing resources at the network edges. The data movement occurs between servers and databases within the data centre. The grid computing model is very different, as it distributes the processing load to the compute resources at the network edge.

In the other hand, most business activities are bound to space. Business services are very often bound to the location of the customer – such as health care, primary education or barber shop, or the location of a specific resource, such as a travel attraction or production plant. It has been recognized that the management and production of spatial information is relevant (Breunig, 1996; Dennis and Carte, 1998; Keenan et al. 1999; Pick et al., 2000, Mineter et al., 2000). One trace of theory considering time and space leads to the concept of asset specificity central to the theory on transaction costs (Suomi, 1990; Williamson, 1985). Any asset can be specific because it is time or place bound. Asset specificity will cause transaction costs and is also harmful. Business service networks will be able to use specialized services by the application of grid computing to the service orientation of enterprise software. The data containing locational information, spatial data, can be utilized in various applications, e.g. map drawing, location planning in retailing and modeling environmental phenomenon such as floods. The tools for these analyses are called Geographic Information Systems (GIS). GIS is a rapidly growing technological field that incorporates graphical features with tabular data in order to assess real-world problems.

**MAIN FOCUS**

The aim of this article is to describe the business use of GIS data and GIS grids. For the purposes of this article, grid computing is defined as dynamically matching jobs of certain computational requirements with available resources that meet those requirements. Furthermore, it is assumed that the computational resources are widely distributed across the enterprise; the resources are, in fact, composed of a large number of desktop (Foster et al., 2001).

**BACKGROUND**

Application of spatial information has longer traditions in public administration than in private business. Warfare, a privilege of public authority, is tightly bound to geographical data. Establishment and maintenance of different infrastructure, such as roads, electricity and telecommunication networks is mainly the task of public authority. In all of these, managing spatial data is crucial. In statistics production geographical data is often also in a key position and statistics production is usually a part of public administration. Postal services – as special case of logistics - are deeply involved with spatial data, and this area also used to be a part of public services, so as for example weather forecasting, a very spatial information intensive activity.

However, private business is taking up the topic very fast. There is nowadays the whole separate industry working with and producing spatial data. This industry can be called sector 1
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