

Data Management in Flood Prediction

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Abstract. In this paper we present the data management tasks and tools used in a flood prediction application of the CROSSGRID¹ project. The application consists of a computational core - a cascade of three simulation stages, a workflow manager, two user interfaces and a data management suite. The project is based on the Grid technology, especially the Globus toolkit 2.4 and 3.2 and the EU DataGrid project. The paper begins with brief introduction to the application, its architecture and used technology. Most of the rest of the paper then describes in detail the various data management problems of the application and their solutions. The paper is concluded with a brief description of planned future work.

1 Introduction

Flood prediction became in recent years a serious problem (not only) throughout Europe. Floods have caused severe damage in most European countries and their prevention, or at least damage mitigation was seen as a very much desired research result. Therefore as one of the testing applications of the CROSSGRID[4] project was chosen a flood prediction application from Slovakia.

The rest of the paper briefly introduces the project CROSSGRID and the used Grid technology. Then there is an overview of the flood prediction application (FloodGrid), followed by the description of the constructed data management suite. The conclusion of the paper describes our plans for future work in this area. Grid computing emerged in recent years as a specialised track of distributed computing, with focus on large-scale distributed applications and massive, yet user-friendly resource sharing. The term Grid was coined in the 1990s and points toward the creation of a new network of interconnected resources, available on demand via the Internet - just as electricity is available through the power grid today. Vision of the Grid infrastructure was described[1] in 1999 and since then numerous scientific and some industrial projects based on the Grid technology emerged. Most of these projects develop the Grid middleware - a software layer implementing the vision and interfacing the various distributed resources to their users. Perhaps most known and most used is the middleware

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