AgriGrid – demands and possibilities of research and development in agricultural information technologies

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Agricultural decisions and rural demands frequently require that several different types of data be processed, accessed and integrated using enormous computing power. Agricultural questions e.g. which crop or variety to plant and what land use is appropriate, whether to spray a crop to protect from disease, when to harvest, how much to irrigate, when will flooding occur, etc. In the rural development one of the most important demand is the information, knowledge and data sharing. Emerging grid technology offers a powerful mechanism for assembling and processing the requisite data for different applications e.g. decision support, knowledge base or monitoring systems.

The grid is expected to bring together geographically and organisationally dispersed computational resources, such as CPUs, storage systems, communication systems, real-time data sources and instruments, and human collaborators. It can maximise data and application usage without centralisation and easily maintain and dynamically integrate different data.

This paper presents a set of possible applications, which can support decisions in the topic of agriculture and demands in rural development. In the Agmodel Project framework open source developments are presented as MetBroker, DemBroker, ChizuBroker, SoilBroker which can collect meteorological, elevation, digital map and soil data to a common, virtual database. Also, a computational grid facility built on the NorduGrid ARC middleware at the University of Debrecen, Department of Business- and Agricultural Information Technology is described.