Virtual Innovation Clusters and the Grid

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Abstract. In a larger and more competitive global economy, information provides insights into market behaviour and enables new opportunities to be identified. A combination of data, knowledge management and expertise can ignite innovation and enhance competitiveness. Generating complex models requires a level of computing power which is beyond the reach of many organisations. Grid technologies provide access to the High Performance Computing facilities needed for modelling large datasets. The INWA project joins China, the United Kingdom and Australia in a Grid of data, processing power and human expertise. This ARC funded research is investigating Virtual Clusters and the Grid where localised innovation can be fostered through global resources.

1 Introduction

Collaborations are recognised to thrive in geographic clusters, where associated industries and resources combine and become more than the sum of the parts. A successful cluster promotes innovation as a by-product of the interaction between the organisations [1]. Innovation is key to creating and maintaining competitive advantage.

Where resources and expertise are geographically distributed, strong interorganisational links create a virtual cluster. The challenge is to foster innovation and collaboration through available communications networks.

Grid technology provides access to distributed data and processing. In a world with ever-growing datasets, few organisations have sufficient in-house computing power to analyse the data they hold, or gain greater understanding by merging it with external datasets. The Grid provides facilities for collaboration which have the potential to overcome the barriers of distance and isolation.

2 INWA

The Innovation Node: Western Australia (INWA) project consists of three established clusters in Beijing, Edinburgh and Perth, each one providing local expertise and resources that can be accessed by all clusters via Grid portals. The INWA Grid has been used for collaborative exploration of datasets from the telecommunications and finance industries. In the finance case study, the resultant model could be used to not only predict 'IF' a behaviour would occur, but also 'WHEN' it would take place [2]. This complex modelling of a large dataset was made possible through access to expertise, data and processing power via the Grid.

3 Virtual Innovation Clusters

This thread of the INWA project focuses on virtual clusters developed through Grid technologies. An existing geographical cluster can be augmented with additional nodes which are accessed through a Grid portal. The aim is to create an environment that is conducive to innovation. For this to succeed, there must be paths for innovation and the organisation's business processes must knit with the Grid tools.

Through collaborative research across the INWA infrastructure, we are investigating the migration of innovation processes to a Grid environment. The INWA project is being evaluated to understand how our researchers are collaborating, and what modes of communication they find most effective for various tasks. We are mapping the social networks, competencies, contexts and carrying out cluster analysis to model the various levels of interaction. This will help identify the processes that are suited to Grid-based collaboration, and try to uncover new processes and solutions that may arise from adaptation to this environment.

4 Conclusion

The goal for virtual innovation clusters is to improve the competitiveness of organisations. Modelling interactions can help us to understand the multiple dimensions of collaborative ventures. We intend to provide some answers to how the Grid can be used to enable innovation and lead to improved competitive advantage within local markets and the global knowledge economy.

By developing expertise in Grid-based knowledge management, Australia can overcome some issues of geographical isolation. In addition, there is an opportunity to position ourselves as service-providers: adding value and innovative insights in a growing knowledge economy, particularly within our region.

References

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