

Knowledge Management Research Projects

Improving Meteorological Forecasting Practice with Knowledge Management Systems

Funding:

[Australian Research Council](#) -Linkage:\$244,000 over 3 years

[Bureau of Meteorology](#): \$525,987 cash and in kind over 3 years.

[School of Information Management and Systems](#): \$410,000 cash and in kind over 3 years.

Researchers and Research Groups:

[Dr Henry Linger](#) and [Associate Professor Frada Burstein](#) from the [Knowledge Management Research Group](#) and [Dr Kevin Korb](#) and [Dr Ann Nicholson](#) from the [School of Computer Science and Software Engineering](#) are Chief Investigators for this project. [Mr Chris Ryan](#) and [Mr Jim Kelly](#) from the [Bureau of Meteorology](#) are partner investigators.

Industry Partner:

[Bureau of Meteorology](#)

Research Aims:

This research aims to improve meteorological services through the application of knowledge management to the forecast process. In particular the project seeks to develop a comprehensive knowledge management framework which includes models of forecasters' explicit, tacit and experiential knowledge and which enables forecasters to learn from their collective experience.

Project Overview:

Twenty-first century weather forecasting presents a number of challenges. Meteorologists need to:

- assess a vast amount of data under strict time constraints,
- incorporate predictive numerical modelling and their collective experiential knowledge into the forecast process
- learn from the forecast process, and
- meet increasing user demand within limited resources.

This project seeks to help forecasters meet these challenges by changing the information technology paradigm which has traditionally underpinned meteorology from one exclusively comprised of predictive numerical models to one which incorporates the knowledge and experience of forecasters. The collaboration between Monash and the Bureau has already led to the definition of the Mandala concept. Applied to forecasting, this concept:

- provides a model to reconceptualise the forecast process where the major functions are monitor, predict, produce and learn,
- models the meteorologist's view of the process, in the form of viewing, editing, producing and verifying,
- represents the integration of the production of a forecast with an understanding of the reasoning behind it, and
- represents learning loops at individual, group and organisational levels.

A goal of this project is to further develop the Mandala concept to the point where it can be used as practical design parameters for operational systems.

Status:

This three year project is just commencing. However the research builds on a longstanding and very successful collaboration between the Bureau and Monash. This partnership has already led to the definition of the Mandala concept, described above, along with a number of postdoctoral, PhD, Masters and undergraduate student projects in the area of knowledge management for meteorological forecasting.