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A central facility has been developed for the storage, analysis and exchange of natural resource and related information for the Herbert River catchment.

Wendy Pyper reports on a community based GIS facility that is supporting economic and ecologically sustainable development in the Herbert River catchment.

Pooling resources

A model centre

THE HERBERT Resource Information Centre is a model for generic collaborative resource information centres. At workshops in Perth, Adelaide and regional northern Queensland and Western Australia, Dr Daniel Walker described the key features of such centres as:

- Owned, directed and staffed by independent, local people to ensure trust and that locally relevant issues are tackled.
- A joint venture between partners, who may include community, business, and industry groups and local, state and federal government departments.
- Having common goals among the partners to ensure conflict is resolved.
- Self-funded to ensure they remains 'dynamic and vibrant'.
- Staffed by people highly skilled at managing the data sets, ensuring data exchange between stakeholders.
- A medium to long-term commitment.

Big things are happening in the small town of Ingham, thanks to a collaborative venture between industry, government and primary producers.

The north Queensland sugar town has become a model for improved natural resource use, management and planning, through the success of its Herbert Resource Information Centre (HRIC).

The centre was established four years ago with the signing of a 10-year partnership between the Hinchinbrook Shire Council, CSR Ltd, The Herbert Cane Protection and Productivity Board, Canegrowers, the Queensland Department of Natural Resources and CSIRO. Its aim is to provide a central facility for the storage, analysis and exchange of natural resource and related information for the Herbert River catchment.

This information is in the form of spatial data, which can be used to generate maps for a range of catchment activities, infrastructure and resources, using 'geographic information systems' (GIS) technology.

For example, the centre has used GIS tools and satellite images to predict sugar cane yields (see story on page 28). Crop dusting companies have used GIS and HRIC data sets to plan their flight paths. And the Hinchinbrook Shire Council has used GIS with aerial photos of the town to map infrastructure, drainage lines, power poles, park benches and other urban assets.

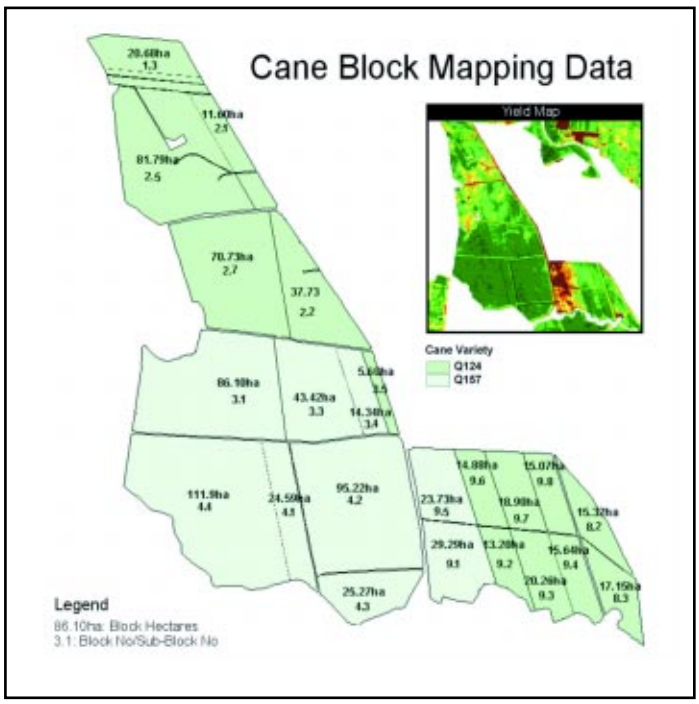
So how does the HRIC work? To answer this question, it helps to understand how the centre began.

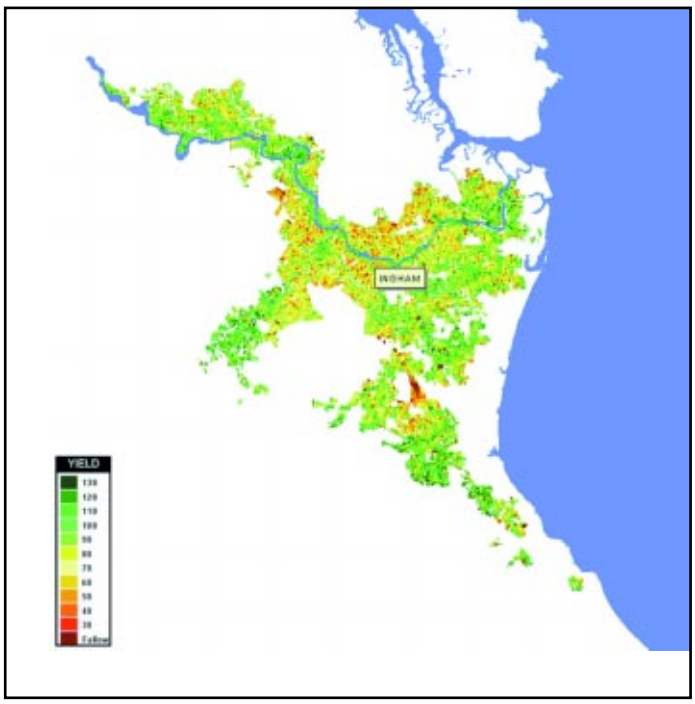
CSIRO scientists, in the early 1990s, were working on a hydrological modelling project in the Herbert area.

'To complete the project, a detailed contour surface map of the Herbert River catchment was needed,' Dr Dan Walker says. 'But to collect the data set we needed to generate the map was going to cost hundreds of thousands of dollars.

'So we got together a consortium of people who wanted the same data set and suggested we all pitch in. That happened, the data was collected and everyone got the data set for a share of the costs.'

In order to use the data set effectively however, the recipients needed the expensive and technologically demanding GIS tools. Enter the six HRIC venture





The Herbert Resource Information Centre has contributed to an accurate estimate of the land available for expansion of the sugar industry and saved the the industry time and money by using satellite images to predict crop yields.

Firm grounds for harvest management and expansion

THE HERBERT Resource Information Centre (HRIC) promotes economic and ecologically sustainable development through the exchange and use of geographic spatial information amongst venture partners and other groups.

For example, a significant achievement of the centre has been the provision of a more accurate estimate of the land available for expansion of the sugar industry.

The industry had estimated that it had 70 000 hectares left for expansion and was using this estimate to plan local sugar mills and other infrastructure.

An analysis by the HRIC, however, showed that much of this land was unavailable or unsuitable, as it was national park, wetland, mahogany glider habitat, prone to acid sulfate soil risk or already in use. As a result, the land available for expansion fell from 70 000 hectares to less than 7000.

'It was a very simple analysis but it completely changed the outlook of industry and altered its prognosis significantly,' HRIC manager, Raymond De Lai says.

'However it allowed CSR to be more strategic in its capital works planning and moved the debate to vertical rather than horizontal sugar production.'

The HRIC has also saved the industry time and money by using satellite images to predict crop yields.

'When farmers plan their harvest strategy they need an accurate assessment of what the total volume of the crop is that's going to be harvested, so they can manage the cane transport infrastructure and distribution of that yield across the catchment,' De Lai says.

'Traditionally they've had a team of 30 cane inspectors who go out to a number of blocks and, on the basis of experience, work out how many tonnes per hectare will result. What the HRIC has been able to do is use satellite images, with some interpolation on top, to make predictions of yield in each paddock, then add that up for the whole catchment.'

partners, who agreed to contribute both cash and in-kind professional and technical support. Add to that an initial seed grant from the Commonwealth Department of Transport and Regional Development, and the group had the means to acquire GIS technology.

And so the HRIC was born, with the philosophy of providing a non-profit, community based, collaborative GIS facility, which would support economic and ecologically sustainable development in the Herbert River catchment.

Four years on, the HRIC employs two GIS specialists who help the centre's partners and associated groups to establish GIS within their own business operations, by providing training and support.

HRIC manager, Raymond De Lai, says the role of the HRIC staff is not to do the GIS, but to faciliate the work being done within each of the HRIC partner organisations.

'There's a high demand for GIS skills and the HRIC staff couldn't cope if they had to do all the GIS analysis that people need,' De Lai says. 'So about 80 people in the Herbert catchment have gone through a formal training process with GIS and about half of those use it regularly.'

These people include members of the Ingham emergency services, the Girringun

aboriginal corporation, local crop dusting companies, the Hinchinbrook Shire Council, teachers at the High Schools of Ingham and Cairns and various sugar industry groups.

The other fundamental role of the HRIC is to acquire, store and maintain geographic information, which is then freely available to those that need it.

'A lot of agencies, such as state government departments, the CSIRO and the Great Barrier Reef Marine Park Authority, have data sets and are collecting a lot of new data all the time,' De Lai says.

'The HRIC's role is to bring all that data together to provide a common resource that's carefully managed.'

Layers of data

The data is stored in 250 different layers (such as a layer on vegetation cover, another on soils, another on streams and so on) on a central server within the HRIC. The data is then disseminated to different agencies as needed.

Importantly though, the idea of data sharing works both ways. For example, the HRIC helped the Girringun Tribal Elders set up a cultural heritage GIS and provided them with HRIC data sets. The Elders will reciprocate by giving the HRIC data layers that relate to areas of cultural heritage.

Abstract: A collaborative venture between industry, government and primary producers has given the regional community of Ingham the ability to manage its own natural resources. Through the Herbert Resource Information Centre (HRIC), venture partners, businesses and community groups can access and exchange spatial information related to the region. Using geographic information systems technology, this information is used to generate maps of activities, infrastructure and resources, to help plan economically and ecologically sustainable development. As a result of the HRIC's training and activities, GIS is now a part of many industry, community and business operations, enabling a flow of information between the centre and user groups and the establishment of an extensive and central collection of resource information.

Keywords: Herbert Resources Information Centre (HRIC), geographic information systems (GIS), information exchange, information services, environmental monitoring, environmental management, Herbert River, Qld.

Crop dusting companies within the region have also benefited from GIS training and HRIC data, which they use to produce cockpit maps, determine spray drift and establish a database on fertiliser and insecticide application rates. In return, they provide the HRIC with data sets that they generate on application rates and the location and timing of sprays.

'So we now have data set that wouldn't otherwise have been collected, because there was no capacity to do it previously,' De Lai says.

The HRIC works also with individuals who are collecting data to ensure they design the data collection process properly and store it in 'sensible' way, so that it can be integrated into the whole data set.

As a result of these activities the HRIC now offers the most extensive, well-managed and easily accessible data sets and has become the 'centre of gravity' for natural resource research.

Priceless communication

Dr Dan Walker describes a third function of the HRIC is to facilitate collaboration and communication between joint venture partners.

'The Herbert catchment is a fairly significant natural resource management complex, with the rare mahogany glider, the Great Barrier Reef, wetlands and sugar cane expansion,' Walker says.

'The centre has been able to provide data sets that underpin negotiation and debate on environmental and development issues which have previously been a point of conflict. Now the groups have maps as a point of reference, enabling discussions to move forward.'

Through its philosophy and activities the centre has proved time and again that collaboration between groups with common goals can reap substantial rewards.

An independent evaluation by the Queensland Department of Natural Resources conservatively valued the contribution of the HRIC to the Ingham community at $19 million over its 10-year life span.

'What we've proved through the HRIC is that collaboration in a venture such as this can cut costs and make expensive technology possible in a rural area where it might never have been possible,' Walker says.

Sweet success: The Herbert River Resource Centre has shown that in rural communities, collaboration can reap substantial rewards.