

~~AT.39.1/005~~

New 39.2/037

Intelligent Monitor System For the Australia Telescope

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Intelligent Monitor System for the Australia Telescope

Project: Develop a system to:

- monitor the operational health of the telescope array;
- alert the operator if data quality is compromised;
- alert the operator if hardware safety compromised;
- assist the engineers in diagnosing and repairing problems.

Grounds for "Demonstration status"

- Challenging problem. The Australia Telescope is a complex system, at a remote location, and manned by a small staff.
- Problem of potential interest to industry.
- Project draws on expertise from DIT and DMS, as well as ATNF.

Why ATNF?

Knows system knowledge

Sophisticated end user

Established links

obv if other successful on cost.

Enhances credibility

High impact show piece ✓

Background:

The telescope array : - 6 antennas.

In each antenna :

- 30 sub-systems

(eg, antenna drives; cryogenics; low noise amplifiers)

- 400 monitor points sampled every 30 seconds.

>> when is a monitor point in error?

>> does it affect data quality?

>> is it correlated with other monitor points?

>> what action should be taken when in error?

The plan:

1. Develop some tools.
 - a. Graphic software to bring out the system architecture: mimic diagrams and block diagrams integrated to the monitor database.
 - b. Graphic software to display the astronomical data and determine the data quality.
 - c. Software to integrate monitor and data quality data in the same display.
 - d. Software to allow remote access to the monitor and astronomical data. (In order that remote experts may assist on-line, real-time).

2. Apply intelligence to the monitor database.
 - a. Diagnostic software -
 - software to detect correlations in the errors -
 - coincidences in time (single events)
 - coincidence in location (several monitor points in the same sub-system).
 - b. Expert system assistance in the diagnostic area.
 - c. Process control approach to the setting of the error windows - using the time records.

Resources. ~

i. Hardware: A quality display device. - workstation class

ii. Software: One person/year.

additional software support from local staff
(M.Kesteven, D.McConnell, R.Wark)

iii. Hardware expertise : local input from R.Gough,
P.Hall.

iv. Expert System consultants (DIT).

v. Process Control consultants (DMS).