

AARNET PROJECT SUBMISSION

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**Royal Melbourne Institute of Technology**  
**Computer Centre**  
**Electronic Communication Group**

**Proposal for AARNet Project Funding**

April 1991

"Interoperability Test Centre: Test Suite Evaluation and Design."

**Objectives**

To evaluate existing test procedures and communications standards and develop a set of procedures for the testing of layer 1 and 2 devices as specified by the International Organisation for Standardisation's seven layer Open Systems Interconnection Reference Model. To investigate and survey existing techniques for testing layer 3 devices to support the future development of testing procedures for these devices.

## **Introduction**

The Royal Melbourne Institute of Technology is currently examining the feasibility of establishing an Interoperability Test Centre for the purpose of testing communications products for their conformance to internationally accepted standards, and their ability to operate in multi-vendor environments. The Electronic Communications Group at RMIT has been involved in testing communications equipment which operates at the lower two layers of the the International Organisation for Standardisation's Open Systems Interconnection Reference Model. The need to test this equipment has been motivated by the inability of certain equipment to meet international standards and to interoperate with similarly specified equipment.

The purpose of this proposal is to develop formal procedures for testing network equipment based upon the relevant standard specifications. The ultimate intention is to create a Test Centre with the aim of testing a large range of network equipment, and to evaluate them on the basis of their adherence to the standards specification under which they are claimed to operate. Of equal importance will be the mechanism for determining their ability to operate with similar equipment. A long term goal will be the development of new test procedures for higher level network devices and to contribute to international standards groups such as the Internetwork Engineering Task Force. It is intended that the results of these tests be made freely available to AARNet members to assist in their evaluation and purchase of communications equipment.

## **Scope of Proposal**

To support the establishment of the test centre it will be necessary to design a set of test procedures which will be used to determine the performance of the equipment under test. This proposal calls for the funding for six months, of a Communications/Software Engineer. The scope of the work to be carried out is defined below.

1. Survey of International Communications Standards
  - i. Define scope and relevance of standards
  - ii. Identify dominant standards within AARNet Community
  - iii. Identify dominant standards outside AARNet Community
2. Evaluate Existing Test Procedures and Equipment
3. Determination of Network Performance Parameters
  - i. Physical Layer Parameters
  - ii. Network Layer Parameters
  - iii. Data Link Layer Parameters
4. Design Test Procedures (layers 1 and 2)
  - i. Specify test parameters and minimum requirements
  - ii. Define test equipment specification
  - iii. Develop automated measurement procedures
  - iv. Develop result verification techniques

5. Establish Database of Layer 1,2 and 3 Network Equipment and Manufactures

6. Investigate Layer 3 Test Procedures

- i. Identify existing test procedures
- ii. Identify limitations of existing techniques
- ii. Identify groups currently involved in this area

**Costing**

The proposal requires the funding of a temporary position within RMIT. To attract people of the appropriate calibre it is recommend that the position is funded at the level of Professional Officer Level 3 ( or Computer Systems Officer 3 ). At RMIT this position description (attachment 1) defines a salary range \$33,163-\$43,096. Based upon a six month funding period the required level of funding is:

Base Salary (six months)	\$21,548
Salary On-costs	\$ 1,958
<u>Total</u>	<u>\$23,506</u>

The incumbent would work within the Electronic Communications Group at RMIT, which as part of the central Computer Centre. The Electronic Communications Group currently has a staff 16 and is responsible for all electronic communications at RMIT. Support for this project from RMIT is through continuing capital allocations for communications development. In particular equipment to support network testing is currently available and is constantly being complemented. The Electronic Communications Group also has a close association with the Department of Communication and Electrical Engineering which provides additional test equipment and Technical Consultation.

External support is being sort from Wellfleet Data Communications particularly relating to layer 3 routers and testability. RMIT has a close relationship with Wellfleet having been the first Wellfleet site in Australia. This relationship has lead to offers to beta test versions of OSPF (Open Shortest Path First) routing protocols, and FDDI products.

**Conformance to Guidelines**

Based upon the general guidelines for AARNet Project funding the above proposal will address technical issues of testability and interoperability of network equipment commonly used by the AARNet Community. Organisations will benefit from the information published which will assist in their evaluation and purchase of network equipment. As this proposal supports the overall development of an Interoperability Test Centre the long term aim is to contribute to the international standards organisations testability work groups. This in the long term will support one of the general AARNet funding guidelines which is " to foster a body of knowledge in advanced network technology" .

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**Attachment 1.****Section 1****1. POSITION SUMMARY**

Title	:	Communications Engineer
Number	:	208-01-
Classification	:	Professional Officer 3
Salary	:	\$33,163 - \$43,096(fractional)

**2. ORGANISATIONAL SUMMARY**

Faculty/Division	:	Computer Centre
Dept./Branch/Section	:	Electronic Communications Group
Supervisor's Title	:	Head Electronic Comms. Group
Classification	:	PO4

**3. RECRUITMENT INFORMATION**

Closing date for applications :

**Section 2****1. JOB SUMMARY**

This is a temporary contract position (six months) associated with Electronic Communications Group. The position is primarily concerned with the development of test procedures for testing data communications equipment. The successful applicant will be responsible defining the the performance parameters of communications network equipment which is specified by the lower three layers of the International Organisation for Standardisation's Open Systems Interconnection Reference Model. In addition the successful applicant will be required to design test procedures for this equipment and where necessary research new performance measurement criteria.

**Section 3****1. JOB SPECIFICATION****QUALIFICATIONS**

Degree in a relevant engineering or computer science discipline with specialisation in digital communications and communications software.

**EXPERIENCE**

A minimum of 5 years' experience in digital communications systems, preferably with experience in Standards based communications protocols. Experience in the design of automated test rigs would be highly desirable.

