The Benefits of Remote Laboratories

Experimental laboratories form a critical educational element across many technical disciplines. The costs of developing and maintaining these laboratories in order to support high-quality educational outcomes and meet accreditation requirements is a very significant burden on stretched budgets, resulting in severe restrictions on the quality and diversity of experimental apparatus that is available to students. This is particularly concerning when it is recognised that it is not uncommon to have very similar equipment duplicated across most institutions, and yet within each institution the equipment often has very low utilisation levels.

One solution to this challenge is to supplement existing facilities with internet-based remote access to shared equipment, where the cost is amortised across numerous institutions. The origins of remote laboratories date back to the 1990s though the systems now available are much more diverse, provide a dramatically enhanced student experience and much better integration with other student systems. There has also been significant research into the effectiveness and appropriate use of remote labs.

Initially driven by an interest in providing flexibility for students, there has been a growing awareness of the possibility for enhanced learning outcomes and increased laboratory richness, as well as the enablement of joint facilities and cost sharing. Assuming the operational logistics can be effectively managed, remote laboratories provide a mechanism for educators to:

- provide access to sophisticated experiments at a significantly lower cost;
- enable flexibility in terms of timing and duration of access to experiments;
- share expertise and lessons with colleagues working in similar areas;
- encourage educational innovations and rethinking of approaches to teaching.

The Labshare Institute

A significant challenge in supporting remote lab sharing is managing the logistics encompassing a sharing network – including aspects such as: negotiating the costs of access, ensuring confidence in lab availability; managing access accounts for users; providing support to users; managing a catalogue of available experiments, etc. The Labshare Institute (TLI) was set-up to deal with these issues and make sharing as simple as possible for participating organisations.

TLI is a not-for-profit organisation established in July 2011 as a key outcome of the DEEWR-funded Labshare Project. TLI is owned and managed by ‘Member’ institutions. Membership is open to any institution wishing to participate and

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1 The Labshare Project was an initiative of the Australian Technology Network Universities, and was funded through DEEWR’s Diversity and Structural Adjustment Fund. The project ran from January 2009 to July 2011 and aimed to establish a sustainable model for sharing of remotely accessible laboratories in higher education.
contribute to ongoing management and governance of TLI. TLI is supported by a combination of grant income, partner fees, brokerage charges for managing laboratory sharing, and philanthropic support.

**TLI Partners**

In order to take advantage of the services provided by TLI, organisations become a TLI Partner. Typically, an organisation (a University, Faculty or even just a Department) will sign up as a Partner, thereby allowing any individual academics or teachers in that organisation to gain access to the TLI services and the associated labs to which we support access.

There are a number of different levels of partnership. The primary form is a Consumer Partner who does not have their own remote laboratories but wishes to make use of the laboratory facilities that are being shared by other organisations. Consumer partners have access to the following services:

- Access to a catalogue of labs and associated educational resources;
- Negotiation of sharing agreements for access to laboratories made available by providers;
- Creation and management of student and academic access accounts;
- Help-desk support for any questions or issues relating to access;
- Remote lab seminars held at the partner institution to explain and promote the concept of remote labs.

The partnership agreement specifies a partnership fee and any additional benefits (such as any ‘included’ lab classes). Additional classes can be readily negotiated as new rigs are developed and academics discover the benefits. Access rates (beyond any included in the basic partnership fee) are based on the charges specified by the provider of the laboratory apparatus (which would depend on the rig development and maintenance costs) along with a small TLI brokerage fee.

A Provider Partner has the same benefits as a Consumer Partner, but in addition, TLI promotes access to the Provider’s laboratory rigs, negotiate sharing on behalf of the Provider, manage access accounts, and coordinate invoicing etc. Essentially the Provider simply lets TLI know what rigs are available at what times and what access fees they would like, and then TLI takes care of everything else.

**Further Information**

For further details: www.labshare.edu.au

If you would like to discuss becoming a Labshare Partner, trialling the use of an experimental rig, or discuss other possibilities, then please feel free to contact:

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