Kit-Catalogue™ - Loughborough University's open source equipment database system - demonstrates the intelligent use of ICT to make cost and energy savings allowing transformation towards a more sustainable future. The system is innovative and strategic, maximising the use of equipment and enabling new models of sharing with far-reaching benefits for research, teaching and learning.

In 2008, the Materials Research School and the Centre for Engineering and Design Education at Loughborough University created an 'Equipment Database', an online catalogue of laboratory equipment, workshop machines and specialist tools from across the University. This catalogue, which now contains several thousand items, enabled staff and students to search for a particular item to borrow, book out or hire for research or teaching use.

In March 2011, the JISC funded developments to the equipment database in order to exploit the intelligent use of ICT to make cost and energy savings, allowing transformation towards a more sustainable future. The project made significant enhancements with the intention of providing public views of the website (http://equipment.lboro.ac.uk) as well as open linked data for other web services to exploit. The project enhanced the cataloguing effort, improved system functionality and integrated it within procurement and policy workflows: embedding and encouraged greater use across the institution.

The enhanced application, Kit-catalogue™, has been available as open source software (http://www.kit-catalogue.com) since December 2011.

Loughborough University continues to sustain the initiative, making significant investments including:

- System developments; enhancing descriptive data; browsing and searching capability and links to finance systems.
- An increased cataloguing effort promoting publically viewable items
- Advocacy of the system and the provision of supporting material for a growing external community of adopters
- Advocacy of the benefits of sharing and maximising equipment usage (and therefore research capacity) between departments, research groups, institutions and industry.

Kit-Catalogue™ has achieved everything it set out to do and more. The interest, in such a short space of time, has been overwhelming. Since first release, Kit-Catalogue™ has undergone significant enhancements based on valuable feedback from pilots and the latest award-winning version was launched in June 2012 (S-Lab Awards, 2012 – 'Laboratory Equipment & Services'). Both the Universities of Nottingham and Bristol are implementing Kit-Catalogue™ and the project team are currently working closely with several other potential adopters.

The far-reaching potential of the system can be seen in the formation of the M5 group (a Midlands collaboration to enable regional Universities to share equipment) and nationally via Kit-Catalogues' role in the 'Uniquip' Project (http://www.uniquip.org) - defining standards for the publication of research facilities and equipment data.

Kit-Catalogue™ has many strategic benefits for Loughborough University. It aims to get the best possible value from existing capital investments, avoiding needless duplication of equipment and responds to the Research Council's priority of demonstrating improved utilisation of equipment and facilities. We believe that the Kit-Catalogue™ system is an outstanding contender in this category because it is an open source innovation that can be easily and freely adopted by any organisation, with tangible benefits for UK Research and sustainability.

For further information and to download the latest Kit-Catalogue™ system:
http://www.kit-catalogue.com

For general queries about Kit-Catalogue™ please contact:
kit-catalogue@lboro.ac.uk

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The Kit-Catalogue™ Initiative – Supporting Information

What is Kit-Catalogue™?

Kit-Catalogue™ is an open source, online system that can help any organisation effectively catalogue, record and locate their kit. This might be laboratory equipment, workshop machines, ICT and specialist tools - in fact any physical asset that requires descriptive information to be recorded, the item located and then used to its full potential. Kit-Catalogue™ can contain a wealth of information on each item including its specification, custodian, location, handbook, access requirements, usage data and photos.

The system is a PHP/MySQL application that needs to be downloaded and installed on a web server by IT within an organisation. End-users, i.e. staff and students at the host organisation, can then log-in and view items in the catalogue. With 'admin' or 'custodian' level permissions, certain users can then add items to the catalogue, either manually or automatically via a CSV file (spreadsheet) import.

Items can be added into free-text categories that have been set up by the system administrator for your local installation, or the European standard Common Procurement Vocabulary (CPV) codes that come embedded in the system. Out-of-the-box, Kit-Catalogue™ provides the ability to browse your catalogue by department, category (what type of equipment it is), access type (who can typically use it) and user generated tags. You can also enable browsing using any extra fields you may have added to the equipment database through local configuration changes. At Loughborough, for example, we also record which "research school" a piece of equipment is relevant to (custom field), as well as its department (built-in field), so browsing by research school is an option.

Developed hand-in-hand with laboratory technicians, researchers and academics from departments at Loughborough University. Kit-Catalogue™ provides an exceedingly user-friendly interface enabling users to better understand, locate, and share their equipment both within their institution and with outside organisations.

With the level of detail provided for each item listing, including a full description, specifications and manuals, along with the relevant contact information, location and photograph, both staff and students can easily find the right kit for their job without having to hassle laboratory staff or manufacturer enquiry lines.

As a single, wholly populated and searchable resource, Kit-Catalogue™ enables laboratory equipment users to search for and request desired equipment much more efficiently, especially with the introduction of the request form in V.1.0 (June 2012) of the software. Using the report figures from the previous, fully established Equipment Database system, since the beginning of the previous academic year over 350 users viewed a total of 960 items bringing a total of over 10,300 item views in their search to find their desired equipment. This impressive statistic is without any of the improved usability and functionality features that Kit-Catalogue™ introduces, attesting to the popularity of the equipment sharing principle, above all else. It should be noted that of the 350 users, around two-thirds were students.

What are the benefits?

- Currently, Kit-Catalogue™ at Loughborough is populated with 2000 laboratory items, and this number is constantly expanding as the data collection process continues. By making all of the equipment available in one place, researchers become more aware of what is actually available on-site, potentially reducing the need and cost to travel far afield to carry out certain research experiments.
- Due to the high level of detail ascribed to each item listing, more effective judgements can be made in deciding exactly which item will be ideal for each individual laboratory operation. By offering the ability to include a full description, specifications, photographs, user manuals, case studies and other application details for each item listing, Kit-Catalogue™ has another benefit as an educational resource, allowing students to increase their knowledge of certain items, discover new applications of items, and possibly even introduce types of items otherwise unknown to the user.
- By encouraging the sharing of equipment between differently disciplined departments across campus, a greater potential for collaborative research arises, in turn, enabling a greater possibility for new areas of research which would have otherwise been difficult to pursue without this pooling of knowledge and skills.
- With this stimulation towards a more collaborative research ethic, the procurement of funding for new laboratory equipment is facilitated by the reduction of cost for each department. This is particularly significant when considering that the government cut capital budgets to Research Councils by 50%, which means that Research Councils expect a contribution of up to 50% from universities for equipment purchases over £10,000.

- Kit-Catalogue™ prevents the unnecessary and costly double purchasing of items. At Loughborough, Kit-Catalogue™ is linked to the procurement process and a notification is sent to the Kit-Catalogue™ administrators when any equipment above a certain amount is submitted for purchase, for which duplicate or similar items will be checked against. This has recently occurred when one School proposed the purchasing of an item which, when checked, was already present and available elsewhere on campus. The item was subsequently not purchased, saving the university over £25,000, and also stimulated new collaboration between the researchers involved. Not to mention that duplicating equipment requires more technical and academic support. Immediately, the real savings made by the implementation of Kit-Catalogue™ could outweigh the cost of the project!
- With the prevention of the costly double purchasing of equipment comes the reduced need for heating and occupation of additional space within buildings for duplicated equipment. This kind of energy saving contributes towards the Green Impact Scheme for sustainability at Loughborough University.
- By allowing all custodians to control the availability and visibility restrictions for each of their items, including the introduction of a request form, hindrances to normal teaching schedules and research projects are prevented and the process by which users request the use of equipment is greatly expedited and accelerated.
- There is a potential to promote equipment use externally to regional HEIs, industry and Small to Medium Enterprises (SMEs) as Kit-Catalogue™ provides the option to make any item publically visible and available for external hire. This potential for commercial hiring or equipment provides a potential to generate money for the laboratories, and enhance possibilities for collaborative research and development.
- By enabling public visibility for a host of items, Kit-Catalogue™ could also attract prospective researchers and students to join the institution, on the level of equipment already provided.
- The potential for maximising the use of equipment, along with providing detailed records of calibration and electrical safety PAT testing and reports for custodians and administrators also encourages the regular maintenance of equipment, ensuring each laboratory item works to its utmost efficient and effective potential.
- The open source license means that Kit-Catalogue™ is easily adoptable and customisable to other institutions, and the improved functionality for item import ensures that adding items to the catalogue is a relatively quick and easy process. The University of Nottingham and the University of Bristol are already in the process of installing Kit-Catalogue™ for their own institutions, and we have also had interest from Belgium and the United States. Fully comprehensive user manuals and quick-start guides are updated and provided for each version release of the software to help adopters and users of the software make the most out of Kit-Catalogue™ straight out of the box.

Why is this activity distinctive?

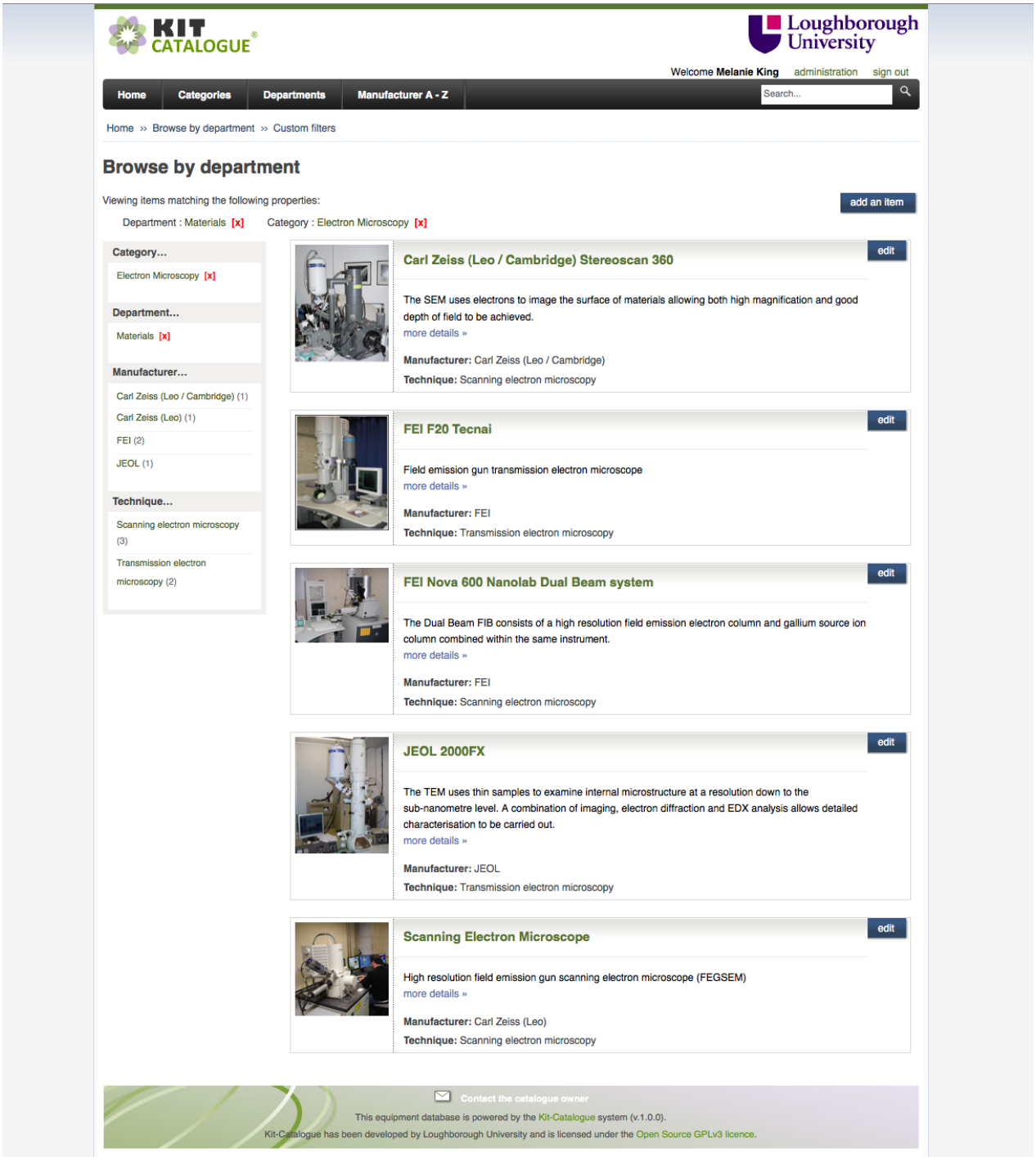
In May 2011 the Research Councils introduced changes in how equipment is funded on grants. The changes were made in response to the Wakeham Review – which highlighted the need for increased efficiency in research funding – and in response to the reduction in capital budgets by 50 per cent across the Research Councils. The guidelines published by the Research Councils emphasised the need for a greater usage of existing capital assets.

To promote and facilitate this core requirement for equipment sharing both within and across institutions, the Research Councils have mandated that the sector validates datasets of research equipment and facilities to enable the required procurement efficiencies as well promoting the sharing of equipment across institutions. The aim is to gain the best possible value from existing capital investments, avoiding needless duplication of equipment and responding to the Research Council's priority of improving the utilisation of capital investments.

As a response to this, the Kit-Catalogue™ team at Loughborough is a partner in an EPSRC funded collaborative project with the Universities of Southampton, Bath and Leeds. The project brings together a partnership of four universities with access to, and representing, regional consortia comprising of 22 universities. The aim is to research and propose guidelines and technical standards, harmonising vocabulary and schema in use across the sector, to enable the development of solutions to be used in the cataloguing and publishing of research facilities and equipment on a national scale. This project is due to start in July 2012 with a national conference planned in the autumn. The Kit-Catalogue™ system will be piloting and ultimately implementing the national agreed taxonomy and standards for describing and sharing data about equipment and facilities in UK HE.

The potential for UK HEIs, of having many institutions using this way of making their equipment more discoverable both internally and externally, will have cost saving and sustainability benefits for all, as well as raising the profile and maximising exploitation of research assets of UK HEIs internationally.

Screen shot showing a listing page – browsing by department and category



Screen shot showing an item page

KIT CATALOGUE

Loughborough University

Welcome **Melanie King** administration sign out

Home | Categories | Departments | Manufacturer A - Z | Search...

Home » Browse by department » Custom filters » FEI Nova 600 Nanolab Dual Beam system

FEI Nova 600 Nanolab Dual Beam system

Enquire

MANUFACTURER	FEI (manufacturer's website)
MODEL	Nova 600 Nanolab Dual Beam system
ACRONYM	FIB

edit item

Materials

ACCESS LEVEL	Full Access
USER GROUP	Faculty
TRAINING	Training is required to use this item and we can arrange this if needed.

CUSTODIAN	g.west@lboro.ac.uk
SITE	Main Campus
BUILDING	S Building
ROOM	S.1.07b

Categories

Electron Microscopy (6)

Visibility

This item is publically visible.

+1 Tweet

Description

The Dual Beam FIB consists of a high resolution field emission electron column and gallium source ion column combined within the same instrument. This allows milling of cross sections (typically 20 x 5 microns) through samples and subsequent imaging using either electrons or ions.

Typical applications

- Cross sections through defects and the preparation of TEM samples from specific areas where this is impossible using conventional means. Features observed can be analysed in situ by EDX and EBSD.

Ancillary equipment

- EDAX PEGASUS, Energy-dispersive X-ray microanalysis (EDX) System.
- Ultra high speed Hikari, Electron backscattering diffraction (EBSD) camera.
- RAITH ELPHY QUANTUM lithography package providing advanced nano-patterning/machining capabilities. The system is configured for use with both the electron and ion beams.
- High speed electrostatic beam blanker.
- OMNIPROBE micromanipulator.
- 3 Gas Injectors (Platinum, Insulator enhance etch (IEE) and Selective carbon etch (SCE)).
- Solid state retractable backscatter detector with low voltage capability.
- STEM detector with BF and DF modes.

Specification

Resolution @ optimum WD 1.1 nm @ 15 kV (TLD-SE) 2.5 nm @ 1 kV (TLD-SE) 3.5 nm @ 500V TLD-SE 5.5 nm @ 500 V TLD-BSE

Additional Files

Application Notes

- DualBeam and FIB capability applied to metals research
- DualBeam Milling and Deposition of Complex Structures
- Site Specific Three-dimensional Structural Analysis in Tissues and Cells
- Nanofabrication and rapid prototyping with DualBeamTM instruments

Specification

- Nova 600 NanoLab DualBeamTM-SEM/FIB for Nanoscale Prototyping, Machining, Characterization, and Analysis of Structures below 100 nm

Additional Fields

RESEARCH SCHOOL	Materials Research School

Last Updated: 14-06-2012

The Kit-Catalogue™ Initiative - Testimonials

"I have found the equipment database very useful in various aspects of my research. It has allowed to me to find out about equipment in other departments - for example one of my research students needed to measure the fluorescence properties of some of his samples and we were able to very quickly find out where suitable equipment is in the university (the Chemistry Department) and equally importantly whom to contact about access to the equipment. The database has also allowed people to find out about equipment that I have. A good example of this is the single wavelength ellipsometer that I use. Since it was entered in the database several people from around the university have been in contact with me to arrange to use it. As well as facilitating current research and collaborations I have also found that it is useful for planning future work. For instance I have used the Equipment Database to find out whether equipment needed for a grant proposal was available on the campus. Another benefit of the database system is that it has made me aware of other research within the university that overlaps in some way with mine and at some stage may lead to useful collaborations."

Dr Simon Martin, Materials Department – Loughborough University

"I was planning to spend a vast sum of money to purchase an essential equipment for my own research. Thanks to the Materials Equipment Database, I found two identical pieces of equipment within the university. It allowed me to divert a significant amount of money to much needed resources elsewhere".

Dr. Upul Wijayantha, Chemistry Department – Loughborough University

"I forwarded your photo of the multi- axis platform to the lecturer who needs one and he did not know about it so your project has proved very useful! "

Lesley Griffin, Senior Technician, School of Sport & Exercise Sciences – Loughborough University

We have also garnered some quotes from our adopting institutions that provide reasons on their decision to use the Kit-Catalogue™ system.

"We have been working with Loughborough University to implement its Kit Catalogue system to enable users to record key research equipment at the University. This will serve multiple objectives, such as better supporting Nottingham's researchers, facilitating collaboration, and enabling key research equipment to be showcased nationally and internationally. The Kit Catalogue project is of particular importance to research laboratories in the science, medical and engineering sectors. We anticipate the system will help us highlight and enhance strategic decision-making for equipment replacement and maintenance."

Steven Hardy, Head of Research Outcomes, *Research and Graduate Services, The University of Nottingham*

"University of Bristol have been looking for a means of promoting sharing of equipment used for research purposes within the University. After investigating various options we have decided that the Kit Catalogue system developed by Loughborough University offers the best option for us to meet this overall objective.

We also believe that implementing Kit Catalogue will help us to achieve the following further objectives:

- To understand and document the major research equipment portfolio and the capacity of that resource at University of Bristol to allow sharing and more effective use
- To provide a means to make the dataset accessible to UoB and other users (these may include other HEIs and Industry) in the short and long term, so that staff involved in research activity can easily locate details of existing research equipment that may be useful in their activity
- To consider and make recommendations on processes to ensure that information regarding research equipment is kept up to date
- To communicate the benefits of equipment sharing to staff involved in research both in terms of:
    - promoting research activity
    - successfully applying for research funding
    - minimising cost to the University

The Open Source nature of the solution will be helpful in tailoring the system to meet our requirements."

Martin Fey, Business Analyst, Strategic Projects Office, University of Bristol