Use of Central Labs for INF1 Practical Work
First Year Informatics 2013

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Summary
Informatics first year courses currently use AT teaching labs and the DICE computing environment for timetabled lab sessions. Several factors mean that this is becoming increasingly difficult. This paper discusses whether/how we may able to use central IS facilities instead. This involves locating and booking appropriate rooms, as well as ensuring the availability of the necessary software.

1 Motivation

- The limited capacity of the AT Labs means that the number of sessions will need to be increased next year to cater for the projected increase in student numbers. This will be difficult (or perhaps impossible) in terms of both staff and accommodation.

- It seems likely that Informatics will need to vacate Appleton Tower for a period for re-cladding (likely to begin in early 2015). Having the flexibility to use central IS labs for the practical work during this time would be very useful (possibly essential).

- Having appropriate facilities in the public labs may allow us to return to setting a single practical exam.

- With practical work not dependent on DICE facilities, students would be able to use facilities anywhere in the University (eg. KB) as well as more easily use their own machines (eg. Windows).

2 Informatics Computing Facilities
Informatics currently has the following facilities (in Appleton Tower), all running the DICE Linux environment:

<table>
<thead>
<tr>
<th>Room</th>
<th>3.09</th>
<th>4.12</th>
<th>5.04</th>
<th>5.05</th>
<th>5.08</th>
</tr>
</thead>
<tbody>
<tr>
<td>Machines</td>
<td>36</td>
<td>36</td>
<td>38</td>
<td>51</td>
<td>24</td>
</tr>
</tbody>
</table>

3 Central Computing Facilities
Currently, the computing lab in the Hugh Robson building (sometimes called the “Erskine Lab”\(^1\)) appears to be the only (bookable) large facility in the central area\(^2\). This includes two labs of about 80 and 65 machines but the seats face in alternate directions and the room contains no screen or projector, so they are unsuitable for lab sessions involving traditional presentations.

There are three “teaching studios” on the first floor of AT\(^3\) with 24/48/24 seats which may be combined in various ways to give a capacity of 72 or 96 with presentation facilities. This appears to be a good teaching space for group work, but there is only one machine per group of six students (see photo). The ground floor of AT is expected to remain open during the refurbishment.

A number of other labs in the central area are managed by individual Schools, and it may be possible to negotiate the use of these (directly with the School): The Greenfield lab is a nice space with a screen/projector and all seats facing the front. However, this has only 42 stations with no obvious source of extra chairs, and is managed by MVM. High School Yards\(^4\) has 62 machines and is managed by Geography.

4 Software
All of the machines in the public labs run Windows and include a standard set of applications, However,
the published list does not provide details of the versions, or the appropriate contacts.

There is now a machine (plab-hrbb200) in the open area of level 3 in the Forum which is an identical configuration to those available in the public labs of the Hugh Robson building. This can be used to verify and test the available software. Login requires an “Active Directory” password which should (in most cases) be identical to your EASE password. The home directory should be your central IS one (not your Informatics home directory). We need to investigate the most appropriate method transferring/sharing files with DICE systems. The machines in the main library and the Hugh Robson building itself should also be compatible.

We believe that the JRE (Java runtime) will be upgraded to V1.7 very soon (if not already) and the JDK (development kit) to a compatible version shortly afterwards. IE will be upgraded to IE10 (or, at worst IE9), and Firefox to version 17 over the summer.

4.1 Requesting New Software

There is a standard procedure for adding software to this set and managing upgrades/changes:

1. If the necessary software is not already installed:

   - IS require details of the software, including adequate installation instructions, and the name of a contact who will respond promptly to queries and sign-off the installation after testing that it meets requirements.
   - IS will then attempt to package the software (using Windows Application Virtualisation technology if possible) and make it available, liaising with the local contact when necessary.
   - The person requesting the software will then become the “key contact” for this software who may be contacted by other people in the University wanting to use the same software (see below).

2. If there is already a version of the necessary software installed:

   - The existing software installation should be tested for suitability.
   - The existing “key contact” should be contacted to confirm that the current version will be retained (if it is suitable), or that a common upgrade would be acceptable to all users. This is necessary to try and prevent a proliferation of versions where possible - but if there are clear, strong reasons for supporting multiple versions, this may be possible (using the application virtualisation technology).

There are currently no absolute deadlines for requesting software in time for the start of session. However, reasonable notice will need to be given for installation of any new software. The new timetabling system also means that the ITO will need to make requests for central rooms annually in April. So, if the availability of software is likely to affect room bookings, this will need to be confirmed before then. It is not possible to make changes to installed software during the year, except in very extreme circumstances (e.g. urgent security fixes).

Notice that IS themselves are not the “key contact” for most software – this responsibility remains with users who have a better understanding of the applications and the requirements. The local contact is usually a School CO, since they should have the appropriate technical knowledge and contacts within the School. The ability to respond promptly to IS requests for testing or information is important, if we are to expect prompt service from IS.

4.2 Other Implications

There are some other implications of using the central Windows machines:

- Filesharing with the informatics systems may not be transparent.

- The different operating system will involve different commands and procedures, which may cause some confusion if students have to move between these systems and DICE. There is even a possibility that students may be sitting programming exams on a different system than the one that they have been using for the labs.

It may be technically possible to use the public lab machines for remote access to software running on DICE servers. However, this would require considerable server resources, and would not have the advantage of supporting a more heterogeneous range of systems.

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Courses

INF1-FP (~250 students): INF1-FP currently holds a daily lab session in 5.05 (51 machines). Students are assigned to a lab group which is compulsory in week 2. After this, the sessions are optional and students may attend any session, on a drop-in basis.

The appropriate software (Haskell/Emacs) was requested in the central labs last year as an investigation into the use of central labs for exams. This is currently still available, but only in some locations\textsuperscript{10}. This has been rechecked and appears to be adequate for INF1-FP lab sessions. However, there is a pending minor improvement\textsuperscript{11}, and we need to confirm that this is still necessary and make some final checks on the packages required for specific exercises. IS will then deploy this on all the public systems.

We were the first to request this software and an Informatics TA (Chris Banks) is currently the key contact. This should probably be changed in line with the proposals below, so that the responsibility does not change from year to year.

INF1-OP (~240 students): INF1-OP currently has a compulsory lab session in 5.05 (51 machines) with students allocated to one of five groups\textsuperscript{12}. It is possible that these sessions will become optional (as for INF1-FP) in 2013-2014.

The necessary software (Java and Eclipse) is already available and Steve Law (CO in Maths) is the key contact. The installed versions are currently rather old (1.6) due to the requirements of certain (central) applications, but we expect these to be updated during the summer (see 4). The installed software needs to be verified against the course requirements. The pending updates, together with any changes that we may require, need to be discussed with Steve Law.

INF1-CG (~95 students): INF1-CG currently holds a single weekly lab session in 5.05 (51 machines) where students work in pairs (two per machine).

Hosting this course elsewhere would be more difficult: the labs require presentation facilities, the teaching team is changing this year, and the required software is still uncertain.

INF1-DA (~240 students): This course has no timetabled lab sessions, but there is some related software and it may be useful for the students to be able to use this in the public labs. There is no single programming language or application essential throughout the course, but there are a handful of tools used in individual tutorial exercises which may or may not be straightforward to port. Where it is not straightforward, it may be possible to identify a suitable equivalent.

INF1-CL (~250 students): This course has no timetabled lab sessions and no special software requirements.

INF1-CP (~80 students): Has not been considered, due to the smaller size.

Proposals

- We should ask a C(S)O to act as a single point contact for all requests for software on the central systems. This person would need to liaise with the individual lecturers to help specify and test the required software.

- The course lecturers for INF1-FP and INF1-OP have been asked to attempt to verify that the software on the central systems is (or could be made) suitable. If so, we should schedule at least one session (perhaps more?) from each of these courses in the Hugh Robson labs if they are available.

- INF1-CG should remain in the AT labs for next academic year, capping the numbers if necessary so that a single lab session (with two students per machine) is sufficient. For the following year, we should investigate the possibility of (a) making the necessary software available in the public labs, (b) increasing the number of students per machine so that the teaching studios could be more easily used, and/or (c) holding two separate lab sessions.

- We should provide TA assistance, if necessary, to help lecturers in identifying and adapting to appropriate software.

- We should ask the CO team to investigate what could be done to minimise the difficulties of students moving between DICE and the central systems. This may involve installing compatible software on DICE, recommending file transfer solutions, providing appropriate documentation, etc.

- The management of the software requirements for the central labs should be incorporated into the existing systems for tracking the DICE software required by each course.
As first year organiser, I would escalate any common issues or specific difficulties directly with IS consultancy.