FOSS in Education at Ulster

A case study of free software produced within a university.

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Outline

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Who?

- Dr Colin Turner - Lead Developer OPUS;
- Dr Gordon Crawford - Lead Developer PDSystem;
- Mr Ron Laird - OPUS practitioner / co founder;
- Mr Damian McGivern - Head of the CDC;
- Dr Peter Nicholl - Lead Developer Magic.

And more, placement students, project students, other staff.

Focus of this Case Study

There are several ways in which the education sector could, and should, work with free software:

1. the usage of free software;
2. teaching of the philosophies, technologies and business models to our students and beyond;
3. and the creation of such software.

This talk mainly focuses upon the creation, In another talk I more fully consider the other possible associations.

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Why we should use free software

Here are just some reasons why we should use it.

Why should we use it?

- it is often cheaper, and just as capable;
- it avoids vendor lock-in, and problems with companies go out of business;
- we can see, and teach how it works, and can improve it if need be.

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What education should be saying about FOSS

What should we be teaching?

- Business Models; everyone affected should understand both proprietary and FOSS software models.
- Ethics and Social Models; FOSS has interesting ethical origins in many cases and is also rich in social dynamics.
- Distributed project management, QA; projects managed over an entire planet have a rather different perspective on these issues.
- Technical Methodologies; following from the above, there are certain technologies that make this all possible.

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Why should we create it?

Like many universities, Ulster has produced a number of custom applications, which are not distributed under license. Two examples were:

- the PDSystem A system designed to record the outcomes of the PDP process, designed initially at a corporate level.
- OPUS A system to manage all aspects of work based placement and its administration, designed initially at a school level.

Over a number of years, as academics do, we went out on conference to discuss how we were improving practice with this software.

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The recurring question was “can we have the software”.

The perception within the academic community was that they were sector leading products withni the UK and beyond.

There was interest in having it even if it was sold under a proprietary license, but we were not at that time able to answer, this was a decision that needed to be taken at institutional level.

The development team was keen to deliver the products as free software because

- we use free software to develop the applications, and build them on top of free software;
- we hoped a community of usage and development would emerge;
- we wanted to minimise the risk from being overtaken by a potentially inferior proprietary product which might become industry standard;
- we didn't want to concentrate on a full blown support operation without additional staff.

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The University saw it as

- a way to demonstrate and improve its esteem nationally and beyond in these areas;
- a low risk, agile method to exploit a product that otherwise, probably would have no exploitation outside the University;
- and therefore able to produce modest consultancy, or support service income, which could be grown if need be.

The decision was taken to make the two applications free software, under the GNU General Public License v2, in September 2006.

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Implementation - The Plan

Releasing code under license did not by any means happen overnight, there was some work to be done first:

- most importantly, an infrastructure had to be put in place which allowed the hosting of code, downloads, related resources, as well bug and other trackers - essentially the requirements for the bazaar style of development.
- a comprehensive security audit of the code was necessary before release, but just for vulnerabilities in the code, but for other materials like system passwords that existed in our original repositories.

These processes, occuring as they did alongside other duties took some time to complete.

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Implementation - The Action

We could have hosted our code on sourceforge or any other similar entity, but we took the decision to install our own environment for hosting development.

1. it serves as a flag in the sand, to hopefully encourage more such projects within the University of Ulster and beyond;
2. it gave us total control of our first attempt at this process;
3. it made the establishment of a brand identity rather simpler;
4. we could host related activities on the same server.

So we installed `http://foss.ulster.ac.uk`, entirely with free software, notably Debian and Savane.

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Implementation - The Action

- We created brand new source repositories, and moved code from our closed ones to the new ones as it was audited;
- We created mailing lists for users and developers;
- We established controls that would allow us to track the contributions of any new contributors, so it would be easy to add new team members.
- We released applications finally in February 2007.

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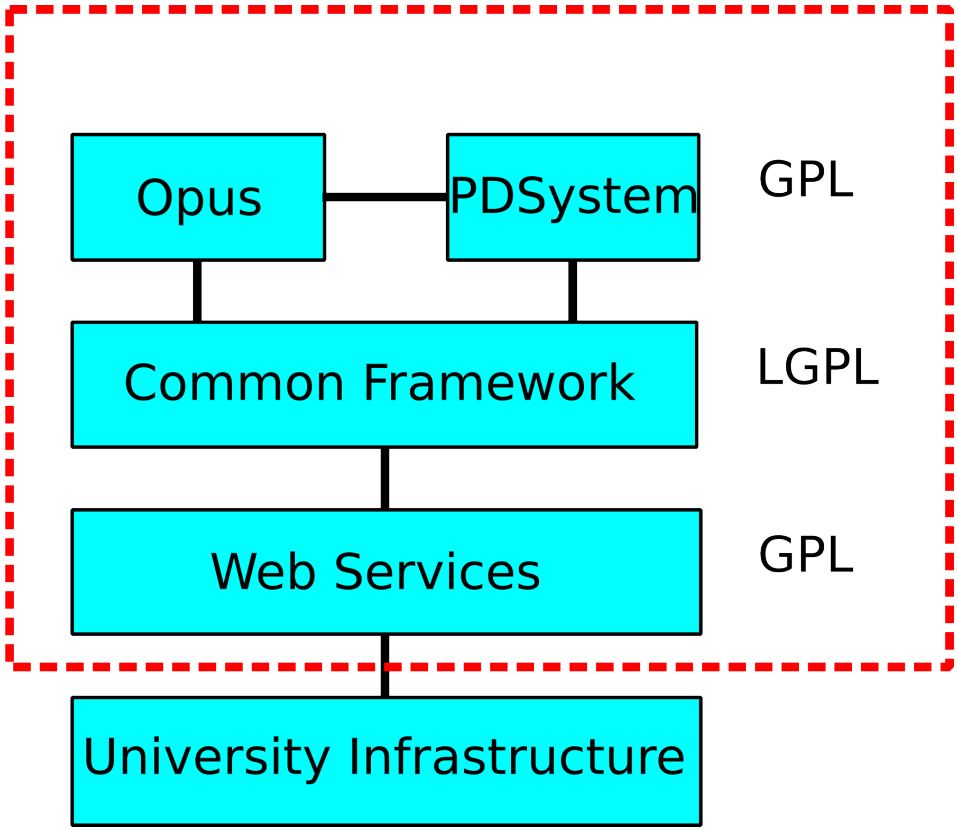

The main packages, implemented on the LAMP stack.

Results

Benefits

- income for customized versions (TEPNI for the PDSystem);
- greatly improved, more streamlined, facilities for our own development;
- internal customers have benefited from improved code quality, and all the facilities we have implemented for external customers;
- national endorsement of our products (e.g. OPUS endorsed by ASET);
- very considerable interest from other insitutions, literally around the world, with installations in Australia and Hong Kong.

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Results

Benefits

- greater impetus for improved software quality (gift culture);
- material on foss is directly useful for teaching, and allows students to build projects from scratch or on top of other technologies.

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What is next?

- release of our version 4 products is imminent, installations and consultancy is to follow this;
- dual stranded consultancy; training and technical;
- continued work on improvement of existing applications by staff, project and placement students;
- improved documentation which can be produced by non technical practitioners;
- other existing products to become free;
- application for funding to undertake similar work built on the same technologies;

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What else can be done

- we have a new application on the drawing board with a current code name of map that will track learning achieved by a student and help them in new choices, as well as providing fine level management tools for teaching staff and senior officers;
- this can sit right on top of a lot of our existing technology, and so be highly portable;
- we would like to run long term projects with individual students contributing to layers of existing code to build large applications that are not feasible for a single student project, for example, a better free software CAD solutions.

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Capstone Projects

Benefits to student working on FOSS

- Understanding of social and ethical considerations;
- Real world problems provide opportunities for deep learning and real achievement;
- Deeper understanding of key technologies and methodologies;
- Opportunities to network with “real” employers and employees.

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http://foss.ulster.ac.uk

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