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| **Industrial Year Report** |
| Advisory, Information Services, Aberystwyth University |
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## Introduction

I worked in the Advisory team in Information services from 02/07/2007 to 31/07/2008. Information Services offered 2 places in Advisory and 2 in Desktop Services this year. Information Services places applicants in positions based on their interview. I was offered the Advisory placement after my interview.

## Organisational Environment

Information Services supplies, maintains and supports the University’s Computing and Library Facilities.

The Information Services Department is divided into the following teams:

### Central IT Services

Central IT Services (CITS) is the most technical team. CITS is responsible for all of the UNIX servers and the services that they offer. This includes email, printing, web access, filestores etc. They are also responsible for operating and maintaining the University network. CITS is divided into the following teams however they all work very closely together:

* **Systems Support**

Systems Support has two main system administrators that handle most of the UNIX server work. They generally don’t deal with students or members of staff as customers but occasionally they do if a problem needs to be fixed by them on one of the servers.

* **Network Operations (Operators)**

The operators work in an office just outside of the main server room. They are responsible for filing and restoring backups, refilling printers in remote workstation rooms, monitoring the network for problems and taking fault reports. Fault reports are placed for any problem that can’t be dealt with by Advisory. These jobs usually require someone to visit the customer or for the customer to bring their computer to the workshop. The operators take all fault reports and then assign them to the correct team.

* **Stunet**

Stunet is a small team responsible for maintaining the student networks. They also help students connect to the network from their rooms.

### Management Information Services (MIS)

MIS is responsible for maintaining the University databases. Their main task is maintaining the main user database for students and staff. This database can be accessed through a web interface called Astra. This database exports information to other systems that allow users to log in or use their library cards on the door locks outside workstation rooms etc.

### Desktop Services

Desktop Services has two small teams: The workshop team and the software team. The software team is responsible for the University’s Windows servers including the Exchange server. The workshop fixes hardware faults with computers while the Desktop Services industrial years would fix software errors that could not be fixed at the Advisory help desk.

### Library and Advisory Services

This is the team I was working with. There were 11 Library and Advisory staff members when I started and 6 towards the end before the new industrial year students arrived.

The Advisory service is a customer’s first point of contact with Information Services. Advisory deals with any problem using Information Services systems or general computing problems. Advisory is a free service and can only deal with live queries on the desk, phone or by email. Any problem that requires a visit to the customer’s office/room or for their computer to be kept in for work is referred to the Operators for a fault report.

Library services contained two teams: **Subject Support** and **Lending Services**

Subject support provided specialist support for finding books and electronic resources for specific subjects. Lending services provided support for any library related queries.

## Technical and Application Environments

### In my office

All computers in my office used Windows XP or Windows Vista. All advisors had their own desk and computer. When I was sitting at one of the help desks I would use Remote Desktop to connect to my machine. Most of my time was spent troubleshooting Microsoft office applications like Word and Outlook.

I also spent a large amount of time logged in to Central through SSH using putty. I would use this session to change permissions on user accounts such as allowing CGI/PHP access and run an application called **Reg** to view and edit user accounts (locking, unlocking, password changing).

### Information Services Systems

I used the following applications and systems to keep up-to-date with changes and help users:

* **Reg**

Reg is a UNIX application that runs on central. It is used to manage user accounts.

* **Astra**

Astra is the main user database that feeds information into reg every morning. It controls everything from library cards to door locks. I used this when I required more information about the user then reg provided or when the user’s account had not yet been created in reg.

* **SharePoint**

SharePoint was introduced to Information Services half way through my industrial year. We used it for communication between teams in Information Services. For example; if external access was down, someone from the Systems team or one of the operators would start a topic that would keep track of the event.

It was also used to keep track of bugs found in the Windows Vista build before it went public so advisory could report any problems we found to Desktop Services and they could close the topic when it was resolved.

* **PCounter**

PCounter is the system that controls the new printing service. It was introduced in August and went live in September. I used PCounter by running an application that was installed on all advisory computers. This was mainly used to refund credit when a printer jammed or to find out why a user’s card wasn’t working when it was swiped at a printer.

We could also use PCounter to recover special printing pin numbers not given to users when they forgot their cards. Typing these pin numbers into the keypads attached to the printers allowed them to print without a card. This was only done when a user had already sent a printing job from their room but forgotten their card. Usually we would simply print from advisory’s account and remove the credit used from the user’s account.

* **Mailing list web pages**

The new mailing list software was written in-house by the Systems team and introduced half way into my industrial year. I accessed this system through some web pages written in PHP.

I would log into this system to answer user questions about their mailing lists. I would sometimes correct the mistakes I found but these were usually just because of incorrectly spelled or formatted email addresses.

* **Sunrise**

Sunrise is a simple database system used to record customer queries. It was only used when a query could not be solved live and needed to be dealt with later. Sunrise was almost always only used while on phone duty to record answerphone messages when the customer was unavailable.

We would also assign queries to other teams if someone else needed to complete them.

* **Outlook**

I spent a large amount of time using Outlook while performing my other duties. All network changes etc arrived in my inbox as soon as they happened and I needed to keep an eye on them to inform users of problems that we were already aware of as they were reported.

I also used exchange calendars very frequently. I mainly edited other people’s calendars when I was in charge of the timetables. I would insert shifts into part time advisor’s calendars so they knew when they needed to be at work.

Keeping Outlook open also had the advantage of notifying me instantly if the Exchange server had gone down.

* **Spam filters**

I accessed the spam filter system through a single web page written in PHP. I navigated to different users and settings by changing values in the URL (It only worked for authorized usernames).

I would use this to investigate for a user why an email they were expecting never arrived and to advise them on how to avoid being blocked in future. I would also whitelist certain addresses for users so that they would never be blocked.

Users used to be able to access their personal spam settings at this page by visiting <http://spam.aber.ac.uk> but it has now been added to the mailing list settings at <http://www.mail.aber.ac.uk>. Any user can log into this page and edit their own mailing list and spam filter settings.

* **Hardcopy searching**

Hardcopy was a command run from Reg that would output certain information to a plain text file. I would then use tools like grep to search the file for the information I was looking for.

This was very useful when I was unable to find a user’s account because their UCAS number or name had been entered incorrectly because I could search for a small part of their name or UCAS number.

I would also search this text file for all records matching certain conditions. For example I once looked up every mailing list owned by the accommodation office and their details to advise them on which list to use to mail block B in Cwrt Mawr. It turned out the reason their usual mailing list didn’t work was because they needed to use a separate mailing list during the summer.

* **Remote assistance**

I used remote assistance to my advantage whenever I could. It was usually used to help users with problems while they were working on certain files or to set up Outlook for them etc.

## The Nature of my work

All of my shifts were timetabled. These were my duties:

## Core Duties

### Hugh Owen Library Help desk (Level E)

I manned the computer help desk on Level E in the Hugh Owen Library twice a week. I would sometimes sit at the desk when another member of staff wasn’t in or if there were meetings or projects the scheduled advisor would have to take part in.

On the desk shift I would sit at the help desk and deal with all queries as they arrived. If I couldn’t solve the problem I would either refer the customer to someone who could (making sure the other member of staff was there and knew my customer was coming) or record the query if it couldn’t be completed at the time.

At this desk I dealt with any query I could without referring the customer to someone else. Most of the queries I received were computer related with the majority of them being about using Information Services systems. These queries were mostly to do with network problems, user accounts, shared office accounts, web accounts, personal websites, departmental websites, using central and a large amount of rare or one-off problems to do with anything on their computers.

I would also deal with any problems with the printers right next to the help desk when they jammed or ran out of paper etc. Users rarely had to report problems with these printers because they would beep loudly and display a bright red light right next to me.

All computer queries were easier to solve at the help desk than the other shifts because the customer would either have brought their computer with them or could talk me through the problem using on the computer at the desk.

Because the help desk was located in the library I also received small numbers of library related queries. These were mostly about finding books or collections but I also had a few rare or one-off queries just like with the computer queries.

### Advisory computer support phone line

I answered phone enquiries 2-3 times a week. For the last couple of months of my industrial year I was on the phone more often because the permanent advisors were busy training the new industrial years. On days with low staff I would sometimes answer email queries while dealing with customers on the phone.

On the phone shift I would check the answerphone messages and place all of the queries into a calls database called Sunrise. I would then start working my way through sunrise completing as many queries as possible. When the phone rang I would answer it and deal with that query live.

Although the Advisory phone number is mainly for problems with computers or using Information Services systems I also received some computer unrelated queries. This was mainly because the Advisory phone number is one of the most public University phone numbers. These covered absolutely everything from freedom on information requests to information for new students.

The phone was one of the most challenging shifts because you have no way of seeing what the user was doing or what they had been doing before they phoned. You also had very little clue of what they were trying to accomplish most of the time. There were also very few situations where sending remote assistance invitations would have been useful but I took advantage of it when I could.

### Advisory email & msn support

I would be on email shifts 2-3 times a week. As mentioned in the phone shift I would sometimes answer emails while on phone duty if we were short staffed. I also answered emails while at the help desk in the Thomas Parry Library.

On this shift I would log into webmail and Windows Live Messenger as Advisory and answer queries in the order they arrived unless a particular query was urgent.

Almost all emails sent to Advisory were computer related. Most of them were to do with using Information Services systems or account problems.

### Thomas Parry Library help desk

All advisors would spend an afternoon at Thomas Parry once every two weeks. This was a very quiet help desk and most of my queries came from members of staff at the library who wanted to make the most of me while I was there instead of filing fault reports. I would also leave the desk to go and help members of staff with problems on Llanbadarn campus if they had phoned Advisory recently and I knew how to solve it since it was quicker than them filing fault reports.

User queries were mostly the same as the ones at the Hugh Owen Library Help desk but I didn’t have to answer library related queries because there was a library support desk right next to me.

The Thomas Parry desk shift was combined with an email shift because it was quiet enough to do both.

### FAQs

The Advisory service maintains a database of FAQ guides at <http://www.inf.aber.ac.uk/advisory/faqs>. There are roughly 270 FAQs written and maintained by Advisory.

Every advisor has 1-2 FAQ shifts every week. An FAQ shift involves logging in to the FAQ system (known as the **Captain**) and checking which FAQs have been assigned to you. You must then write, edit or check an FAQ. An FAQ is always checked by a different advisor than the one that wrote it.

I wrote over 30 FAQ pages in my industrial year but checked and edited many more written by other advisors. Most of the FAQ pages I wrote were instructional pages for setting up your computer. These included **How to connect to the University Network from Linux**, **How to share more than one calendar on Exchange with different permissions**, **How to connect to more than one Exchange account in outlook** and **How to speed up a slow windows computer**.

### Welcome desk and Information Desks

Every advisor would have one Welcome desk and one Information desk every two weeks.

The welcome desk shift lasted one hour and was located at the library entrance on level D. This involved completing any customer query that arrived at the desk. Most queries were referred to the appropriate person.

The Information desk is a library help desk. Most of the queries at this help desk were library related however a lot of customers recognized me from the computer help desk so I still had a lot of computer queries.

### Late shift (Level D)

Every Advisor would have one late shift every two weeks where they would work until 7:30. When the main help desk on level F closed at 5 the advisor would have a 30 minute break before opening the late desk on level D. Advisors were given time off in lieu for doing this.

Manning this desk usually meant continuing with the queue we had to break up when the main desk closed 30 minutes earlier.

## Other Duties

### Timetables

Every few months an advisor takes their turn to maintain the advisory timetables. These timetables contain every shift that every advisor will be doing as well as the library’s Information desk timetable.

The timetables are created in a web page development application such as FrontPage, Expressions or SharePoint designer and then uploaded to Advisory’s public\_html folder to be viewed by other advisors.

The timetabler is also responsible for creating space for meetings; approving leave and finding appropriate cover if a member of staff is not available for a shift.

This shift is not usually given to industrial year students but I took over for a full time Advisor that left while he was in charge of the timetables.

I maintained the timetables for two months.

### Clinics

Clinics are 30 minute time slots that customers can book by email with an advisor. These are personal training sessions that usually deal with problems the customer is having with a certain file or application.

I ran four clinics in my industrial year. All four were for advice about building websites and setting permissions on files.

### Unscheduled (Project) Shifts

Once all core shifts had been assigned, the left over slots on the timetable would be Unscheduled. In these shifts Advisors would use the time to catch up on work or to continue with personal projects. There were usually 2 unscheduled shifts per week.

I used my unscheduled shifts for the following projects:

* **Automatic network setup script**

I wrote this script with another industrial year student in desktop services (Dayle Rees) in a Windows scripting language called autoit and it used the Windows API to modify connection settings. I worked on it between August 2007 and February 2008 although I have been making minor changes ever since.

Dayle and I wrote the script in our own time outside of work for a while until we could demonstrate a complete and working solution. Once it was demonstrated in my office I was allowed to work in it during my Advisory time.

This script would automatically set up network connections to work with the University’s 802.1x authentication settings. It worked with all versions of Windows XP and Vista in all languages. As well as actually changing your settings it also detected installed service packs and conflicting software etc to warn the user if they needed to install a new service pack or un-install a piece of software that would interfere with their network connection.

This network setup script was tested very thoroughly on hundreds of laptops in fresher’s week 2007 and had a very high success rate. Only a small number of cases could stop it from setting up the connection correctly but it always reported this.

My script never made it onto the network setup disk because the stunet team were never interested in looking at it but it was highly appreciated in the Advisory team where I worked.

* **PC Repair Kit**

The PC repair kit is a set of free tools that I put together to keep on a USB drive in the Advisory office to solve some of our most common problems that need downloaded software to fix. It only took a couple of afternoons to put together but was based on 8 months of experience with the problems we frequently encountered at the help desk.

The toolkit contained all types of utilities to recover deleted files, identify and remove certain spyware that most virus and spyware scanners couldn’t remove etc but the most useful were the product removal tools. These tools were designed to remove products such as Norton360, Mcafee and Sophos that fail to uninstall quite frequently and cause a lot of problems. It also contained things like antivirus installers, service packs and web browsers.

After a while the toolkit had become infected with viruses from the laptops that we were plugging the USB drive into. To solve this I requested a write-protected folder on the help desk folder from Desktop Services that would contain a clean version of the toolkit. I then wrote a batch file to wipe the USB drive and restore the clean copy from the help desk machine. Running this batch script is now standard procedure when opening the help desk every morning.

* **Email Scheduler**

The email scheduler is a script for creating tasks for the Windows Task Scheduler. The script was written in autoit. It does this by creating an XML file and running a command line argument to create the task for the Windows Task Scheduler.

It was created so and email reminder can be sent to the Advisory email inbox at a certain date to remind and advisor to do something on that date. An example would be an email to remind someone to unlock a user’s account on an agreed date so that they can log in and back up their emails.

* **Clinics Database**

The clinics database is a website written in PHP with an MSSQL database to allow users to book 30 minute time slots with an Advisor for advice or training with a certain file or software. It uses the University’s LDAP server to validate users for login.

The clinics database is not live. I finished all functionality and have passed the project down to one of the new advisors to finish. The final touches are mostly CSS tweaks to make sure everything lines up in all browsers.

* **Many small scripts**

I wrote a lot of small PHP and batch scripts when I had time to automate some of our most frequent tasks. For example I wrote a PHP page where users can request PHP and CGI access on their computing accounts. The page can be found at <http://www.inf.aber.ac.uk/advisory/faq/154>

### Summer 2007 Public Service Workstation Upgrades

In the summer of 2007 I spent a week with Desktop Services as an extra pair of hands to help them set up the new Dell machines in workstation rooms.

I helped to plug them in and apply the Windows XP images from a network store using Norton Ghost.

## Training

I completed the following training course during my industrial year with Information Services:

* **Microsoft Certified Technology Specialist (MCTS): Vista Client Configuration**

After my first few months in the Advisory office I was offered the chance to study for a Microsoft Certification of my choice.

The other advisory industrial year and the two Desktop Services industrial years were also offered this. We chose to start with an MCTS and then do a second exam for an **MCITP (Microsoft Certified IT Professional)**

All of the industrial year students studied for the MCTS exam for 3 months before we were ready. There was a delay in booking the exam and we sat the exam in April. Out of five students only 3 of us passed. I passed with 93%, the highest score.

The MCITP exam was never booked but Information Services has secured funding for me and one other industrial year student to do it whenever we like to repay us for our work throughout the year.

* **Systems training**

A systems training session was held every Friday from 10am until 12pm. In these sessions a member of the systems team would come to the advisory office to answer any questions we had. They would answer any question we had if they could. They would tell us anything we wanted to know about the University network or server setups as well as answer general computer science questions. Sometimes they would arrive with a topic they thought we should know about like PHP security or how our email servers worked.

The PHP security talk lasted three sessions. We started with general topics to help us understand why supporting PHP scares the systems team and then moved on to security holes in common PHP applications.

After the first two sessions Alun Jones from the systems team set up a Gentoo server running apache with an example PHP website on it. We were allowed to try and hack this website and the server it was running on and do anything we wanted to it. If we broke it he would simply reset it for us. In the third session Alun talked us through every security hole he knew existed on the server and took us from simply defacing the website to getting full root access.

These Systems training sessions made me aware of many issues I had never heard of.

* **Visual Awareness training**

I took part in a visual training day with RNIB Cymru. This training involved:

* + Understanding the experiences of the blind and how they can work within an organisation
  + Visual awareness training including information on eye conditions and how to guide
  + Services available when working with someone with a sight problem and the Disability Discrimination Act 1995 requirements
  + Guidance on how to support people with sight loss, both in and out of the office
* **Data protection, Freedom of Information and Dealing with customers**

I spent three days training in August to fully understand the data protection act, freedom of information act and how to deal with customers.

## Critical Evaluation

Overall, I enjoyed my industrial year very much. I took great satisfaction in solving problems for both students and members of staff.

I was also surprised by the amount of faith in my skills in the office. As soon as I had finished training and proved myself on duty other members of Information Services staff were more than happy to ask for my advice. I was given the exact same access to all systems as the full time advisors.

This year has given me a good idea of what types of jobs are available in a department like Information Services and what I think I could do. Before I started my industrial year I had no idea how much a Systems Administrator job appealed to me.

I have also gained my MCTS from this year and have funding to complete my MCITP which I would like to study for and complete of the Christmas break.

Another two industrial years and I have been offered part time work for advisory this year which I have accepted. I have already been working through fresher’s week to help connect students to the network.

# Appendix A: Information Service Organisational Chart

organisational-chart

# Appendix B: Description of Reg

Reg is a UNIX application with a MySQL database backend. It handles every user’s access to Information Services computing facilities. Reg contains almost all information about a user including their password. The only things it doesn’t store are the user’s address and registration details.

Astra feeds through new and edited records to Reg every morning starting at 07:15. Reg then uses this information to lock or unlock accounts.

Every 30 minutes (at xx:15 and xx:45) Reg runs an update and pushes changes out to other University systems. For example when a user changes their password, it will be sent to blackboard, the Windows domain controllers and every other system so the user can log in with their new password.

One of Reg’s most important functions is to manage permissions. Reg controls a user’s access to almost all University systems. Using Reg it is possible to revoke rights to publish web pages, connect to VPN, use the printers and more.