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New South Wales Department of Education and Training

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For children growing up in the Information Age, it is hard to imagine a world without the Internet. Described as the greatest technological revolution since the telephone, no one doubts the Internet has lead to major changes in society.

According to Internetworldstats.com, Internet usage worldwide is over 1.3 billion people, many of whom are children. What those children do online is the subject of much debate, but most agree that schoolwork, e-mail, games and chat rooms top the list. In fact, schoolwork still reigns as the most common online activity, with nearly 47 per cent of children ages 5 to 9 claiming to do schoolwork online, 76 per cent of those 5 to 9 years old, and 86 per cent of children ages 14 to 17.

The sheer volume of information and resources now available to students via the Internet is unprecedented, yet it is an unregulated medium. With this comes as many challenges as opportunities.

Many express concern regarding access to unsuitable and inappropriate material for children of any age. And Internet communication tools, such as chat rooms, e-mail, and instant messaging may put children at potential risk of encountering online predators. How to keep children safe while providing the benefits of Internet access is acutely important to parents, teachers, government and industry alike.

With the help of Unisys, the New South Wales Department of Education and Training (DET) has been putting online security at the forefront. Since 2003, Unisys has been providing the DET with a hosted Internet learning environment, making secure Internet access available to every student and staff member across Australia's most populous state.

Breakthrough Education Initiative

The DET is Australia's largest single organization, with 1.2 million students and 130,000 staff and administrators. Consistent with Australian national education standards, the NSW government, through the DET, provides publicly funded pre-school education, compulsory education from kindergarten to year 10, and senior secondary education leading to the award of the NSW Higher School Certificate. Additional services include Tertiary and Further Education (TAFE) courses, adult and community education courses, migrant English programs, and post-secondary art courses.

As a fundamental guiding principle, the DET is charged with providing consistency of education delivery to all students, while ensuring all have access to high-quality public education. The DET must also be diligent in its "Duty of Care" responsibilities — a legislative obligation to students in the public education system to provide a secure and supportive environment.

Not only does NSW have more public school students than any other state in Australia, its students are dispersed across 800,642 km^2. Hence, rolling out Internet and e-mail facilities statewide is no small feat. In rural and urban areas alike, the DET wanted to provide reliable, high-quality communication and collaboration services through e-mail and Internet facilities to every student and staff member, with an account that would stay with them for their entire public education lifetime.

"In 2001, the New South Wales DET wanted to be one of the first national public education organisations to provide an Internet-based learning environment for all its students," said Thomas Crawford, Director of Public Sector - East Coast, Global Industries, Unisys Australia. "To do that, the DET required a partner with the ability to custom assemble and build the learning environment, and then engineer the largest hosted Internet environment in Australia, all combined with a sophisticated approach to Internet security."

The First Win

Unisys came out ahead of the pack, due to its proven track record in innovation and its partnership with Microsoft. In late 2001, Unisys was awarded what was then a three-year, $17 million (U.S.) assignment to build and host the learning environment. The system went live in August 2003.

Unisys' approach to security was critical to the win. Security is provided through content filtering, virus scanning and Nortel's Shasta Switch (which effectively serves as a firewall for each online session), with a high-capacity network between the Department and the Unisys Data Centre in Sydney hosting and managing the ISP services.

In proposing the solution, Unisys demonstrated its ability to engineer a highly scalable set of Internet services and its ability to create a customized filtering service to protect users of different ages and interests.

"In 2001, the New South Wales DET wanted to be one of the first national public education organisations to provide an Internet-based learning environment for all its students."

Prior to engaging Unisys, the DET had an early negative experience with an Australian ISP and since then IBM had been working hard to convince the DET to engage a large systems integrator to develop a scalable solution. In the end, Unisys won the business.

"The key for Unisys competitively was our partnership with Microsoft. All of our competitors were offering web mail or proprietary e-mail solutions, and the DET lacked the confidence that those technologies could meet their needs," noted Crawford.

"So the big differentiator was our offer to build them a stand-alone environment — specifically for them, meeting all their security,

technology, and integration requirements. And, one we would build using Microsoft technologies as the basis for the learning environment," said Crawford.

This was to be the first win of several follow-on renewals, challenges and unanticipated issues that would extend the Unisys-DET relationship well beyond the original contract life.

Securing Internet Operations

The key security aspect of Unisys e-mail and web filtering service is its stringent protection of students from access to inappropriate Internet content, uninvited e-mails, inappropriate e-mail content, language and attachments, cyber bullying and inappropriate Internet or e-mail contact with adults and unknown third parties. With many different ages accessing the DET system – from kindergarteners, to college students, to educators and administrators – the winning solution had to provide different users with differing levels of access.

The Unisys solution includes a range of security measures enabling users to access only age-appropriate Internet content, while at the same time allowing interaction with other users within the same e-mail system, and where appropriate, in departmental sharing forums and chat rooms.

The Unisys team developed the "Duty of Care" filtering service, which can be configured by year, subject, school, and role, and is one of the most flexible filtering systems ever built. Features of the system also extend to intrusion detection, authenticated access, anti-virus, anti-spam, content filtering, teacher moderation of chat sessions and discussion forums, and a full audit trail of all system activity.

The web filtering service is based on an application developed by Secure Computing with custom developed enhancements by Unisys to meet the Department's specific filtering rules. It protects students by categorising web sites and dynamically assigning an appropriate profile of blocked categories to each user.

Through a single log-on to a specially designed portal, students and educators access all services authorised by their profiles, though teachers can authorise specific access for an education task at hand. The secure solution has a corporate filter as well as 15 individual levels of protection based on the age group for each school year. Younger students (e.g. kindergarten age) are subjected to a higher level of protection than older students (e.g. TAFE or other tertiary students).

> "What we've achieved for the Department is a balance of safety and access. It enforces their responsibility to protect students, but it isn't a censorship model because it's not a one-size-fits-all approach."

"It also prevents students from going into an unmoderated chat session, ensuring a student can't be harassed by other chat session participants or accessed by somebody who isn't an authorised user of the system," Crawford added.

"But at the same time, it allows access to literally millions of sites," Crawford noted. "It really is extraordinarily comprehensive, probably the world's most secure and comprehensive filtering service.

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Pushing the Boundaries

Unprecedented given the scope and size of the DET service, Unisys is responsible for managing the largest network of e-mail accounts and Internet services in Australia – making Unisys the country's largest Internet service provider (ISP).

In addition, this Unisys service is both the largest rollout of Microsoft Exchange and the largest single application of Microsoft Active Directory in the world. "To put it into context, the average Microsoft Exchange environment runs about 1,000 users – this one is running close to 1.3 million," noted Crawford. "It was the largest at the time of implementation and it still is. That gives a sense of how significant the challenges were for us in implementing these technologies, since even today, six years later, it's still the largest single implementation of Exchange for multiple users," noted Crawford.

The Unisys team also used another Microsoft technology called ISA for the Internet access. "And, again, I think our ISA Exchange is one of, if not the largest, implementations of that technology in the world. We really were breaking new ground consistently over a two to three-year period with every one of the multiple technologies we were implementing," he said.

To help meet the challenge, Unisys brought in specialist Microsoft expertise with the skills, experience and daring to deliver such an innovative solution. That original team has shown real commitment, remaining on the project for over six years. Today, the team forms the backbone of the region's Microsoft Communication & Collaboration practice within the HPC.

In addition to meeting the challenges of implementing ground breaking technology, the team had to deal with the usual challenges of differing technologies, system integration, geography and logistical administration across the DET.

Consider the varied technology environment of the DET. "You have people using Apples, people using PCs of all different brands, you have people using Internet browsers of all different types and versions. Add to that the challenges of simply integrating with the DET's own technology – made for a very dynamic and changing environment," he said.

Another challenge is geography. "Our service has to be provided in remote, rural areas of NSW. Providing the bandwidth and the access points is a challenge for the Department and for Unisys, though the DET physically owns and operates the infrastructure for those schools," Crawford noted.

Another challenge is simply getting the service rolled out to every school and technical college. "There's a fair amount of administration required to set up the users on the service by nature of the security and other provisions built in," Crawford indicated. "Unisys does a lot to automate that, helping get students enrolled in the right schools, with the right access to the right levels of service.

"The scale of service here is enormous," he concluded. "It took a substantial implementation project to begin with and at the end of that initial three-year contract, we were successful in getting a two-year contract renewal, which was effectively the operational phase of the system."

Political and Cultural Issues

Yet, despite a successful Phase I implementation, more unanticipated challenges arose. While an operational version of the system was running from August 2003, by mid 2004 it had met with limited success due to issues beyond the actual technology or system itself.

"There were major problems within the Department because the teachers felt the technology was being imposed on them without appropriate support and training, so they took industrial union action to prevent the full rollout of the service," explained Crawford.

Then, the delays created further challenges. "Though we'd previously proven we could meet the need for high-performance connectivity, people using the Internet in 2001 were fairly light users. By the time Department had negotiated a full roll out for 2006, we had figures we never expected in terms of size of downloads, volumes of traffic, and so forth," outlined Crawford, explaining how they again had to load test and prove performance with maximum capacity throughout the system.

DET negotiations with the Teachers Federation meant some delay, as well as other adjustments. "We also had to decouple a lot of the individual services and re-establish those as standalone services," explained Crawford, "a standalone e-mail service, standalone Internet services, and so forth. They broke the learning environment into pieces, partially to avoid further industrial action."

Finally, the industrial dispute was resolved in late 2005 and in April 2006 Unisys and the Department began to roll out services to all NSW public schools – more than 2,400 in total. The rollout was largely completed by December 2006. Then over the period of July to December 2007, Unisys services were extended to 248 public technical colleges across NSW.

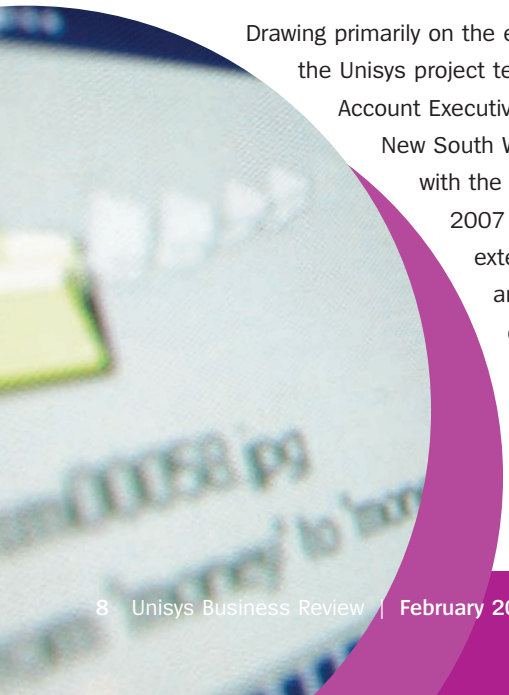
But once again, timing complicated things.

More Renewals and Restructuring

In late 2005, with the Teachers Federation ban lifted, Crawford approached the Department with a proposal to extend the contract by one year. Realising it would take all of 2006 to roll out the service, Crawford knew the Department wouldn't want to terminate the service so soon after making it available.

Working closely with the CIO, Unisys helped the Department navigate a complex set of approvals, which took eight months and included the signatures of two senior government ministers, and a sitting of the State Contracts Control Board. By late June 2006, Unisys was granted an extraordinary extension of its five-year contract, moving the Unisys-DET relationship into a sixth year.

"With the first extraordinary extension in place and the rollout to schools complete, 2007 was the first year we had a fully operational service for all users in every school in NSW," said Crawford. "The next challenge was that we'd exceeded the government-prescribed five-year timeframe for the implementation and operation of an outsource service. So the government was pushing hard for the DET to go back out to market for new bids just after we'd successfully rolled out the service."



Drawing primarily on the expertise and assistance of the Unisys project team, Lis Miller, Client Account Executive (CAE), Public Sector - New South Wales, began negotiations with the Department in August of 2007 for a second extraordinary extension. The goal, to get another full year of operational value out of the investment the Department had made to date.

"Knowing the contract dates, we'd been working with the client CIO for a while on the structure of the renewal and how they'd like that to look. The main thing they were looking for was a move to a fee-for-usage pricing scheme," said Miller.

Moving through the Client Business Plan process for a Top 500 Client, Miller worked the Unisys team through the Targeted Account Selling assessment, ensuring all on the team understood the risks and opportunities, and covered all key buyers within the client's organisation.

"They wanted to remove the need to pay up front for infrastructure and software licenses. So, we effectively stripped out all of the fixed costs and we changed the way service was billed to the client to be more like a traditional, managed-service approach," explained Miller.

Using managed services as a model, the team tapped into the power of One Unisys. "Globally, our Transportation Industry practice is strong, and in Asia-Pacific, it's very strong. They do a lot of work with government and they do a lot of managed services deals for things like baggage handling services – which gave us some pretty clear ideas about, what government would be willing to engage in, and how to structure and operate these models for our use," said Miller.

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"Though none of the Transportation people were direct members of our team, they really educated us on managed services arrangements and offered a clearer picture of how these models work," Crawford noted.

In addition, to enable the second, extraordinary one-year renewal of the contract, Unisys committed to upgrade the technology environment to Sharepoint and Exchange 2007. "We brought the senior person from our Communication and Collaboration practice to Australia to meet with the client and further increase their confidence that the technologies and models we were deploying were state-of-the art," said Crawford.

Setting the Stage for Success

It then became a question of working with the DET to structure a deal that would meet the requirements of the Department of Commerce, the government's oversight procurement agency and key stakeholder in approving the deal.

The Unisys team set the stage, doing a lot of pre-work before putting the actual renewal on the table. "At that time, we were walking them through the risks of not renewing. And, having had prior experience working with the NSW government, we were helping to educate the DET on the renewal process; meeting with senior people in Commerce and in Treasury to indicate the value of service continuity," Crawford added.

Finally, to initiate the renewal, the Unisys team put a softly-worded letter out to the customer. "We didn't put an offer on the table straight away, which would have been considered a hard sell," explained Crawford. "We simply asked, 'What if we were to offer you a renewal? What would you want from that renewal process to make it acceptable to you?'"

Continuing the soft sell, the team went to work in the background again. The Unisys team knew a large part of the reason for wanting to go back to market was based on remnants of non-use from the teachers' industrial action. "The customer wanted a guarantee that as service usage increased, they would pay more, but as service usage decreased, around vacation periods and periods of low usage by school and technical college staff and students, they would actually pay a lower amount – all the way down to potentially a zero amount if those services weren't being used," noted Crawford.

Again, the team's history of service and client intimacy paid off. "By the time we put a formal letter offer on the table, the CIO was already engaged, actively working with Commerce to persuade them to accept the renewal," noted Crawford. "And, we'd done a great job of addressing their major concerns."

The result was a second extraordinary extension of the original contract, with a minimum value of $7 million (AUD), signed off by the Minister of Education, the Minister of Commerce, and the State Contracts Control Board.

> "By the time we put a formal letter offer on the table, the CIO was already engaged, actively working with Commerce to persuade them to accept the renewal."

"Just in the three-month period since negotiating the contract, we've already seen about 10 to 15 percent increase in usage. With growth like that, we expect by the end of 2008, we'll be close to, or exceed revenues of the previous $10 million (AUD) contract," explained Crawford. "Yet we still allowed the customer to negotiate a lower price point and get a raw discount of substantial savings to them," he added.

"And we were able to offer them something that suited them a lot better and provided a template for what they are now going out to market with," added the CAE. Which makes Unisys even better prepared to complete in the next round of bids with the DET.

Delivering: Unisys People and One Unisys

The DET is a great success story for Unisys. The solution today has the capacity to process in excess of five million e-mails per day. It can easily integrate with other IT initiatives the Department chooses to execute, extending the return on investment. And, in terms of scalability, it's proven with 1.6 million user accounts.

Yet, sometimes the problem with success is that it looks too easy. "Everything works so well that I have to keep reminding the client it really isn't that easy – we just make it look that way," said Miller.

"When you're running a service that's been as reliable as ours, you need to make sure everybody understands it works because you've got a very clever team who genuinely knows what they're doing and work very hard to maintain service levels and keep it stable," Miller added. "You need to make sure the customer understands that, especially in a long-term contract."

The delivery of such a reliable service is testament to how an industry-led team can pool the various capabilities of Unisys together to benefit a customer. "We have an ES7000 in this deal. We used innovative storage models. There's some S&T in there. We are part of the Microsoft Communication and Collaboration program. Security is integral as well. It was our team's job to work with all the elements of Unisys to bring together a solution and make it deliver a good outcome for the customer," Crawford said.

"Yes, there were challenges out in the field, but Unisys' performance over the last six years has been extremely good, especially over the last few years," stated Miller. "The customer survey results for this year, for example, gave the team an average of nine out of ten. With the same team dealing with the same customer for six years, that's a pretty impressive score in its own right," she added.

"The renewal and all those things just would not have happened without the team's efforts – implementing and delivering a service that worked perfectly well, but wasn't being used two years ago," continued Miller. "Now it's become very much a part of the Department — a part of students and teachers' lives and that's a huge credit to the team that's been there, plugging away for a very long time."

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Lessons Learned: Listen and Adapt

The clear lesson from the work with the DET is being agile and adaptable to the client's changing environment — which ultimately means you need to know your client very well and be keenly responsive to their issues.

"Fundamentally, we changed how things looked in order to meet their needs," said Miller recalling how the team changed the technology configuration, the pricing model and the contract structure, all while closely communicating with the client through some turbulent times.

Complex, changing situations require strong, flexible relationships. Intimate knowledge of the customer — their problems and concerns, the people and the processes involved — can only be achieved with

Confluence of Unisys Competencies Offer Unique Value for CODIS

Secure Business Operations

- Comprehensive Web and e-mail filtering
- Web site categorising and blocking
- E-mail filtering for spam, viruses and inappropriate language
- Chart room, forum collaboration filtering
- Per-session firewall
- Automated administration support

High Performance

- Single log-on
- Extreme scalability
- High availability in complex computing environment
- Flexibility to meet widely-heterogeneous technology environment
- Bandwidth and access points to large geographic region
- Integration with dynamic technology environment
- Reliable, secure network communications

Innovation

- Host and manage Australia's largest ISP
- Largest implementation of Microsoft Exchange
- Largest application of Microsoft Active Directory
- Largest application of Microsoft ISA Exchange

Differentiator:
Real-Time Infrastructure

Differentiator:
Open Source

Differentiator:
3D Blueprinting

a customer-focused team made up of people who listen, communicate and adapt.

"It's a tribute to the team across the board, the roughly 10 people who've been with us now for six years — down to every member of our delivery staff working with the customer every day. It's that customer intimacy and responsiveness, and that passion to deliver for the customer that has put us in such a strong position to get these renewals. Without that, I think it would have been a very different scenario.

"If we had done any less, they probably would have pushed to go to market regardless. And, we would have found ourselves in a situation where they would've rolled services back rather than fight for two additional extraordinary extensions beyond the first renewal.

"Ultimately, our people have great relationships with the Department," concluded Crawford. Which is a very good thing considering the only thing the team can be sure of with the DET is more change.

NSW DET Procurement Cycle

Customer intimacy and responsiveness lead to "extraordinary extensions"

Jan 2001
- DET seeks partner in providing Internet-based learning environment

Dec 2001
- Unisys awarded three-year assignment to build and host internet learning environment
- System development/ implementation begins

Aug 2003
- Operational phase of system rolled out to 5,000 users in 7 sites
- Teachers' Federation action stalls full implementation

Dec 2004
- Original Unisys contract ends
- Two year extension to original contract awarded

Nov 2005
- Teachers Federation ban overturned
- E-mail and internet services decoupled from learning environment
- Performance and load testing take place

July 2006
- First one year extraordinary renewal of contract granted

Dec 2006
- Fully operational service rolled out to every school in NSW

July 2007
- Unisys services rolled out to 248 public technical colleges across NSW

Dec 2007
- Second extraordinary extension negotiated

Currently with over 1.3 million registered e-mail accounts, the Microsoft Exchange service is in the process of being migrated to Microsoft Exchange 2007 to provide even richer collaboration functionality for DET users. The solution's boundaries are being further extended thanks to a pilot collaboration initiative based on Microsoft Sharepoint 2007 technology, part of the Department's new wave of investment in collaboration services.

And, thanks to Unisys, the DET is achieving its vision of enhancing educational outcomes with online communication and collaboration that complements the classroom environment. All the while keeping Internet access safe for children across New South Wales and breaking new ground in the world of digital education.

> "Ultimately, our people have great relationships with the Department."

Microsoft Exchange 2007: Sophisticated Yet Simple

As internet usage continues to grow, substantial new requirements are continually put on organisations to keep communications secure. Messaging and collaboration solutions need to keep pace as well. Outlook 2007 and Exchange 2007, provide sophisticated tools that are simple to use and meet the security needs of today's organisations.

Security:

- Outlook E-mail Postmark: Outlook postmarks e-mail and Exchange checks these tokens and assess mail's legitimacy
- Multi-pronged anti-spam solution
- Phishing warnings

Compliance:

- Managed E-Mail Folders
    - Users organize their e-mail in folders created by their company
    - E-mail in these folders gain the retention, archive, and expiration policies associated with the folder
    - After a set period of time messages can be automatically deleted or journaled (for example to SharePoint)
- Cross-Mailbox Search: Administrator can search across mailboxes to identify compliance violations

Performance:

- Partial Item Synchronization
    - Flagging a message won't cause it to be completely re-downloaded
    - Changes for properties, body, attachments tracked and synchronized separately
- Cached Mode improvements
    - Can cache folders of other users
    - Delegates can manage e-mail and schedules while offline

Availability Web Service: Deployment

- Deployed with E2007 Client Access role
- Discovered by Outlook through Auto Account Setup
- Outlook 2003 and previous still use public folders for free/busy

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Exchange 2007 Trigger Events

Exchange 2007 opens multiple opportunities for Unisys. Here are some triggers to think of the different ways to initiate discussion:

- **Functionality** - supports a broad spectrum of mobile and communication technologies. (Direct Push, improved OWA, Outlook Anywhere, and voice interfaces to e-mail and calendar services.
- **Regulation** - greater control of e-mail by allowing all messages (outbound or inbound) to be interrogated prior to delivery and archive capabilities for compliance.
- **Interest** in new VoIP/PBX solution or replacing an existing, more costly solution
- **Consolidation** of systems geographically or acquired through mergers and acquisitions. (also Notes to Exchange Migrations)
- **Sunsets** - Support for Exchange 2000 ended in 2006, with extended support ending in 2011.

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