The Ring

The Newsletter of the University of Cambridge Computer Laboratory Graduate Association
Governing Council: Chairman: Prof Andy Hopper (TH78)
Members: Stephen Allott (T80), David Colver (CHR80), Peter Cowley (F77), Richard Jebb (DAR88), Lorenzo Wood (CHR93)
Careers Committee Chairman: Peter Cowley
Members: Chris Morgan (JE01)

Ring News

Membership Subscriptions

Cambridge Computer Lab Ring has now been approved by the Board of HM Revenue and Customs under Section 344 of the Income Tax (Earnings and Pensions) Act 2003 with effect from April 6 2005. Members can thus claim tax relief on their annual subscription. The relief is backdated to the start of the tax year, namely April 6 2005, so members can obtain a deduction for their annual subscription in respect of subscriptions paid after April 6 2005.

The Ring
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May issue copy deadline: March 29th 2006

Ring Events

November's **Roundtable Discussion Event** ("An Evening with Professor Andy Hopper") was a sell-out. Twenty four guests attended the lively discussion evening which was held over dinner at St Catharine's College. The meeting was held under the Chatham House rule so The Ring is not in a position to divulge what was discussed! Suffice to say that all enjoyed the evening and wanted to see similar events organised again.

The next Roundtable Event will be held in May 2006. Details will be sent out in the not-too-distant future.

The **2006 Annual Dinner** will be held on March 20th in Queens' College's richly decorated and historically atmospheric Old Hall. The evening will feature the results of the 2006 Hall of Fame awards and we are delighted that they will be presented by guest of honour, Charles Cotton.

Prior to the dinner, there will be an opportunity to catch up with what's going on at the Lab in terms of teaching and research. The Annual Dinner Lecture will start at 5.15pm at the Computer Laboratory.

So, please make a note of the date in your diary. It promises to be a thoroughly lively, informative and

entertaining evening. An invitation form can be found on page 17.

Hall of Fame Awards 2006 – Final Call for Nominations

The highlight of the Annual Dinner (to be held on March 20th 2006) will be the presentation ceremony for the 2006 Ring Awards.

The date for final submissions is January 15th so don't forget to submit your entries.

Winners of the awards receive much kudos, a trophy and the right to use the Ring Awards logo. In addition to publicity on the Ring website, the event also provides winners and nominees with an excellent opportunity to generate a press release.

There are three categories for the 2006 Awards:

1. Company of the Year, open to all Hall of Fame companies.
2. New Product of the Year, open to all Hall of Fame companies
3. Publication of the Year, awarded to the most significant peer-reviewed paper by a Ring member or Lab member published in calendar year 2005.

For the first two awards, please note that:

- The company must be a member of the Ring Hall of Fame, as shown on the Lab Ring website. If a company is eligible for the Hall of Fame but not currently listed, please contact the Ring office to ensure that it is added.

- If applying for the Product of the Year award, the product concerned must have been (or is planned to be) released commercially in the calendar year 2005, and principally developed by the company itself. The product must be hardware, software, licensable technology, or a service.

Nominations can be submitted via the Ring website (www.camring.ucam.org) or by completing the Nomination Form on page 18.

NOTICE
of Annual General Meeting of Cambridge Computer Lab Ring

Monday 20th March 2006
In LT 2, William Gates Building
At 6.10 pm

AGENDA
1. Minutes of 2005 AGM
2. Chairman's Report
3. To receive and approve the audited financial statements
4. Re-appointment of Auditors
5. Any other business

Mentoring Programme

Do you want the VAT man to see your assets? Mentoring could just save you from the embarrassment.

Peter Blackburn (*CTH BA89*)

I have never worked for anyone else. Even before I went up to Cambridge I had always done my own thing. From a career development perspective, being my own boss - working from wherever I have my laptop and cell phone - has brought about opportunities and experiences that, although sometimes exhilarating and financially rewarding, are at times the cause not only of extreme anxiety and near financial ruin, but also occasionally embarrassment on a scale Monty Python would be proud of. These are just part of the ups and downs of running one's own IT consulting business. The hard knocks and experience of life are part of the training course. You can't turn to a more experienced colleague to help solve a problem.

Monty Python diversion? (Oh alright then!)

Imagine jumping out of the bath naked at 8:30am to take an emergency phone call from one of the world's dopiest *(Ahem! I mean esteemed)* clients. You don't have to imagine all that hard. Just remember the last person you told to "press any key" and after a long silence, minutes later they told you that their keyboard had exactly 105 keys and not one of them was an "ANY KEY". Well, that person is a rocket scientist in comparison with the moron who, on a network more than 200 miles away, had trashed the whole network setup and in 30 minutes needed everything up and running so that they could service *their* customers.

So there you are, standing in your makeshift home office with a puddle of bath water circling your feet, eyes firmly shut as you concentrate on giving the exact instructions to the imbecile on the other end of the phone. This conversation goes on for a heck of a long time, but eventually you feel a sense of relief and proud self-satisfaction as you get the remote network operational again through relayed instructions to the imbecile. You say goodbye and replace the telephone handset while uttering expletives that would make even a hardened rugby player blush. Now, imagine that you're there, your eyes shut tight; you breathe a sigh of relief that the crisis has been averted. However, as your domestic filtering system shuts down, you slowly open your eyes. Somewhat less slowly you realise that your wife (and business partner) had told you she was going out and that she would leave the VAT inspector in your office….and that THERE HE IS! And he's been ogling at your birthday suit for most of the telephone call!

Well this really happened to me. Fortunately the VAT inspector had some reassuring words, and heaven knows he had long enough to think of what to say once I'd opened my eyes. "I'm pleased to see, Mr Blackburn, that you appreciate that it is an offence to conceal one's assets from Her Majesty's Customs and Excise, but on this occasion I think you've taken the letter of the law too far!"

So here is where mentoring comes in …. and works. If I worked in a large organisation - or any company at all for that matter - then there would probably be more experienced people to provide guidance (like only meet the VAT man at your accountant's office), training and skills transfer. But I don't. I run my own business. While I make reasonable money, consult and speak at conferences both here and abroad, and author best selling IT books, I've no one to answer to but myself. More importantly, before I joined the mentoring programme, I had no one to take a dispassionate external view, no one who could see the wood from the trees. I'd been too busy getting on with the minutiae to see the bigger picture. Mentoring can be thought of as a continuation of the supervision paradigm. With the right mentor - someone who has been there and done that or been in similar places and done similar things - there is a wealth of experience and advice to draw from.

Peter has been mentored by Peter Cowley. Theirs is one of a number of highly successful mentoring partnerships that have encouraged us to expand the programme. If you would like to be involved as a mentor, or would like to be mentored, please contact Chris Morgan or the Ring office. Further details can also be found on the Ring website (www.camring.ucam.org)

Careers Questionnaire

There's still time to enter the draw for a free ticket to the 2006 Annual Dinner. Simply fill in the online careers questionnaire (www.camring.ucam.org) and you will be entered automatically. The draw will be made on January 31st and the winner notified thereafter.

From Science to Growth
The People Centric Approach

2006 CITY LECTURE
HUGHES HALL

March 6th 2006

Speaker: Stephen Allott, MA (Cantab.), Barrister, Chairman, Trinamo Limited

Investment in scientific research is correlated with economic growth. More science does lead to more growth but how? What exactly are the mechanisms by which one leads to the other? What is the relative impact of "People Centric" mechanisms (entrepreneurs, recruitment by businesses of bachelor graduates and applied development work undertaken by PhDs employed in industry) compared to "Idea Centric" mechanisms (technology transfer via licensing and spin-outs). The economic impact of academic research could be substantially increased by using a focused range of People Centric initiatives to complement existing technology transfer programmes currently being pursued around the UK.

For policy makers, the lecture will outline a simple and structured programme to enhance the economic impact of science. For university leaders and academics in scientific disciplines, the lecture will explain how best to have economic impact and how that varies by subject. Some of the People Centric initiatives are more than self funding. For Business/University interface professionals, the lecture will review some of the relevant academic literature. For business people, the lecture will outline how to obtain value from university interactions.

The event is free and open to all but places are limited. To register please email dawn.scrivin-wood@trinamo.co.uk

Stephen Allott recently took part in BBC Radio 4's In Business, which looked at how universities are being challenged to sweat their assets.

Hall of Fame Profile

Sygneca

In the latest in the series of articles profiling companies founded by Computer Lab graduates, 'The Ring' was delighted to talk to Jon Pretty, founder of Sygneca (www.sygneca.com). Jon is a graduate of Trinity College.

TR: Jon, what motivated you to start your own business?

JP: I always tell people that when I graduated last year, setting up my own business seemed like an easier alternative to getting a 'proper job', though this isn't the whole story:

I always wanted to be in charge of my own career, and knew I had a future in computing, and speaking to James Webb, a friend from college, realised that he was in a similar position. From our previous work, we knew that a large proportion of software was still developed using decades-old methodologies and tools. We concluded that a clean-slate approach using the latest research into development processes and flexible open source technologies could give us a clear advantage over the competition.

The opportunity to develop an ecommerce website for an established flower retailer presented itself last summer, so without hesitation we got started!

TR: Can you tell me about Sygneca and some of the work you are doing developing open-source technologies?

JP: Whenever we start work on a new project, we evaluate the software already out there, open source and commercial, which can help us. With such a large array available (and, if open source, easy to evaluate), this is often a significant step in the development process.

Whilst there's no point reinventing the wheel every time we want to do something new, we often discover that developing our own software is a more constructive investment than learning a third-party API that doesn't fully cater for our needs. This approach has led to our development of four major projects which we will be releasing next year:

Kitten is a general application container, with features geared towards high availability and robustness. The web component of our first alpha release has now been running our website for several months without interruption.

Our web application platform, *Claws*, adds support for higher-level web application development, streamlining our process and providing us with a framework for rapid development of stable systems.

Thicket is our new object-relational mapping solution. It is a comprehensive metaprogramming system which allows us to generate database tables and their corresponding classes from simple schemas. It integrates with *Claws* to provide auto-generated user interfaces for common data manipulation tasks.

Finally, *Honeycomb* is our workflow management engine, closely integrated with *Kitten* and *Thicket*, and provides a versatile operational model for facilitating automated business processes.

TR: Why do think open-source technology is a valuable option for SMEs?

JP: I think that medium-sized businesses have the most to gain from open source software, and this is where we specialize. Open source software fits most comfortably in the market between small businesses, whose most cost-effective solution is usually to use off-the-shelf software, and the larger organisations who at present tend to favour more expensive proprietary solutions.

Open source software, with the value that companies like Sygneca add to it, provides these businesses with bespoke solutions on an affordable budget. That's something an off-the-shelf package can't give you, and does not require the huge budget that developing a completely bespoke solution requires.

TR: What steps would a small business need to take to switch its IT operations over to open source?

JP: I wouldn't recommend businesses without their own IT departments attempt to deploy open source software across the board; currently, open source desktop products tend to lack the gentle learning curve of Windows and Mac OS (they are generally designed by programmers for programmers). This situation is changing, the most notable success being the Firefox web browser. However, where open source software really shines is in the server room.

The nature of open source allows system administrators and consultancies such as ourselves to affordably tailor a company's internal and external IT infrastructure to their individual requirements, and the first step in realising these benefits should be to have a chat with us about it!

TR: What are the biggest challenges in selling small businesses the open source concept?

JP: I suppose the most difficult thing is convincing clients who aren't familiar with the open-source concept that there really are programmers who are actually willing to devote a lot of time to producing high-quality software for free; there is a constant expectation that there is some catch.

TR: What do you think the advantages are of open source versus closed source software?

JP: As a software developer, the advantages are all about ready access: access to the source code often answers most development questions; access to the community and the support it provides; access to the developers who are only ever an email away if a complicated query crops up.

There is also a much greater mutual willingness amongst open-source developers to integrate their projects, leading to a richer pool of code overall. With no rigid corporate release cycles, bugfixes and enhancements become available more frequently.

These benefits all feed through to the end user in development, maintenance and support costs.

TR: What successes are you proud of?

JP: I think it was a great start for us to develop an in-house web application framework and to successfully launch a comprehensive ecommerce website within two months of starting.

More recently we reached a milestone with the first release of Kitten, our application server, and had our first birthday!

TR: What does the future hold?

JP: There is an exciting time ahead: We have the aforesaid open source releases planned for the New Year, and will be going live with our first large-scale deployment based on our platform.

We will also be growing: our first employee will be joining us in the spring.

TR: What advice would you offer to anyone wanting to start their own open source project?

JP: Don't if you can help it – join one of the many projects already out there!

Do the necessary research, and if you're sure that none of the existing projects meet your needs, be prepared to carry the project through its infancy without help, as you can only hope to attract collaborators once you have a wide user community.

You need to be a huge advocate of your own software. The success of an open source project depends on the community that grows around it, and you will need to be prepared to nurture it.

TR: Finally, what is the most important thing that you have learned about business?

JP: That there is no single most important aspect of business. Being good at your core business isn't enough; it demands a broad range of skills: networking, financial planning, project management, and so on…

And making sure you're enjoying yourself along the way!

MAKING THE NUMBERS

by Stephen Allott

In 2003, when I was working full time at the Computer Lab, I got a call from a leading UK VC firm. At the time, the IT industry was in deep winter. Sales in their software portfolio were stagnant. Their large software team was depressed. Things looked bad. They requested me to come and talk to their technology team's offsite, held in Cambridge as it happened, about my experiences in growing a software company. They wanted me to cheer them up by telling them a happy success story. I called it "Making the Numbers".

I readily accepted. Flattered that they were interested in hearing my views, I was keen to help local software companies through them. First I asked each member of their software team to list their problems. Using this problem list, I then spent a day writing a presentation which gave advice on each of their issues and weaved in some of my war stories. This turned into a comprehensive presentation. I also planned to have a session talking through one of their portfolio company's deals as a case example.

On the day, I rode my bike to the venue, thinking that this was the way people went to meetings in Cambridge. With about 15 people in the room, they were eager to listen and ask questions. After my allotted hour was up, we had only reached slide 3. The discussion was

animated. They were really engaged. After a coffee break, they cancelled the rest of their agenda so I could carry on with "Making the Numbers". We didn't finish until tea time. They loved it. As I cycled back to Cambridge station I felt elated. They had clearly found it useful. I love software sales management and had enjoyed spending 6 hours discussing it with a bunch of bright people. And I had shared my experience of global software company management with investors in local companies which might help them do better.

Other people heard about this presentation and asked me to do it again. I did it twice to Full Moon, an association of Cambridge hi tech CEOs named in honour of a 19th century group of Birmingham entrepreneurs who would meet monthly on the night of the full moon when it was easier to travel at night. They were known as the Lunar Men. I delivered it as a Cambridge Enterprise Masterclass. I also delivered it to the portfolio day of a regional VC firm and to the investment executives of another leading UK VC firm. There is clearly strong demand for expertise on software sales management.

The reason is that "Making the Numbers" is important. Orders from customers prove that your product is what people want. Striving to hit quarterly targets forces management innovation and focus. Hitting the numbers in your business plan and budget vindicates your planning process and gives shareholders confidence in your leadership. "Making the Numbers" is different from building a software product and seeing how much of it you sell. Making things happen is different from seeing what happens. "Making the Numbers" is forward looking. Monthly reporting is backwards looking.

Now I am frequently asked to look at a software company and find out why the numbers are disappointing. Too often great products have disappointing sales. The good news is that many times the reasons and solutions are very simple. Three common ones are first; bad sales force compensation plan design, second; wrong fit sales people and third; lack of telesales.

Let's start with comp plan design. You start a software company, you win some business. If things go well, you hire your first sales person. You have to give them a comp plan. Some basic advice; the split between basic salary and variable (commission based comp) should be 50:50. Never make the salary more than the variable component of the OTE (on target earnings). Sales people with high basic salaries don't need to work. Make the target quarterly. Don't use annual targets. Time and again I find companies with annual targets for their reps. The influence of UK engineering and export companies is to blame here. Aircraft and powerstation sales justify annual targets. Not software. Annual targets for software are a bad idea. It takes 12 months for you to be able to say that your rep has failed. Virtually no successful companies use annual targets. Have a big bonus if your reps make their quota. Around 40% of their target variable comp. This means their commission rate below quota is much less than the percentage which their variable comp is of the quota. I hope to get the mathematically minded of you interested here. Then give a higher rate than that, over quota. This is called an accelerator. When you are negotiating with a rep, it's a good sign if they are most interested in the rate of the accelerator. It's a bad sign if they negotiate on the rate below quota. It should be obvious to you why. Don't cap their earnings. Finally, put in a condition that commission is only released when you receive cash from your customer. This has many obvious benefits. It also keeps the rep interested in customer satisfaction.

So far, I've assumed you have good sales reps who have a badly designed comp plan. Now I want to talk about hiring the right profile reps. Often I find that companies have great reps but they are the wrong profile. It turns out there are two sorts of reps in the world of software sales. Big company reps and early stage company reps. The latter are called "Sales Naturals". VC funded software companies often use expensive

headhunters to hire top quality reps into their portfolio. They do, but they hire big company reps rather than Sales Naturals. The big company reps then fail having cost you a lot of money and an expensive head hunter fee. The difference between the two types of reps isn't about big company or small company practices. It's about how they go about selling and the maturity of the company's value proposition. In general, big companies have a clear market and value proposition. Reps push that to customers. Features and benefits and so forth. In general, early stage companies can do lots of things flexibly and innovatively. Their reps have to find customers with problems that you can solve. This is totally different from selling Oracle databases. You need to end up with a salesforce composed of Sales Naturals. You can achieve this by natural selection; i.e. hire reps, see if they make the numbers and sack the ones who don't. This is effective but expensive. Or you can try and recruit Sales Naturals from the outset. A book called Customer Centric Selling explains this if you want to know more.

Now I've explained how you hire the right fit reps and how you design their comp plans. The third key thing is telesales. This is cheap and it works. Often I find companies outsource lead generation. I think this is a mistake. You miss the feedback of information about customer reaction. You miss the opportunity to identify something new you hadn't thought of before. You also miss the opportunity to train your telesales person into your next rep. I found that former telesales (or "inside sales") people became the best long term reps. A youth policy is the best policy. Technical founders find it hard to recruit and supervise telesales people. Don't shy away. Get someone knowledgeable to help recruit them, design their comp plans and write their scripts. Put them in the next desk to you and supervise them for yourselves. They'll work closely with your web site. If your software is low value, make sure you can sell it by credit card instantly. Your telesales person might pay for themselves very fast. For niche software products, using telesales to find leads, get meetings or invite suspects to a product seminar is the most productive way to build a sales pipeline.

A final word on the web. For software sales, it changes everything. Handily you can deliver software over the web to any customer anywhere. You can do it from Cambridge or London without having to travel to the customer or hire expensive sales people in America, Germany or Japan. This is a revolution. Of course, it's been obvious to many for a long time but I still meet software companies who could use the web more. Interestingly, many software sales managers from Oracle and Siebel grew up in the pre-web world. When the VCs' expensive headhunters place them into small software companies, they do what worked for them before, direct selling and channel sales, and don't realise that the web can change everything. Just as Abcam (the Amazon.com of laboratory anti-bodies) discovered that you can dominate the US market from the Cambridge Science Park, float on AIM and reach a market cap of £75m without any venture capital, I am meeting more and more software companies with the same model. Sell software for cash (via credit cards) over the web using telesales to close customers. Games developers discovered this a long time ago. The music industry has now cottoned on. Dinosaur software sales directors now need to wake up to the web.

At Micromuse, we worked out how to sell direct and via channels. This is still valuable in hiring the right people for a company's lifestage, designing their comp plans and using telesales to build a pipeline. Now I'm learning about how to use telesales and the web to run global leaders from a UK base. The main thing however is to "Make your Numbers". Good luck!

Stephen is founder of the Ring, is executive chairman of Trinamo Ltd and past President of Micromuse, a London origin software company. Stephen is also a City Fellow of Hughes Hall, Cambridge University and is giving the 2006 Hughes Hall City Lecture on 6

March 2006. The Lecture is entitled "From Science to Growth - what exactly is the mechanism by which investment in academic research leads to economic growth?"

Laboratory Research

Metarouting

Timothy G. Griffin, University Lecturer

SQL radically changed the way we build and use database systems. Before SQL, most databases were constructed in an ad hoc manner and tightly bound up with specific applications. SQL allowed systems and applications to be implemented separately, and allowed applications to be specified in a (relatively) high-level and (mostly) declarative fashion.

What a trick - it's the magic of abstraction! This is the magic at the heart of Computer Science. When we look at the maturation path of many areas in Computer Science we see remarkable similarity. Areas as diverse as databases, programming languages, operating systems, and cryptography have all progressed along a familiar road. Each field begins in implementation muddle marked by proprietary solutions and a rather messy collection of low-level tricks. Then, slowly, this muddle begins to crystallize around a small number of key abstractions. Many resist, but the advantages of abstractions are too compelling - the benefits of portability and standardization start to outweigh the small gains in efficiency made possible by low-level tricks. A new field is really born when its focus becomes the study of the abstractions and their efficient implementation. What was a muddle is refined into the collection of "smoke-and-mirrors" techniques that allow efficient implementation of the abstractions.

The Metarouting project represents an attempt to apply the magic of abstraction to Internet routing. Routers today come with a fixed number of routing protocols. Network operators and engineers must solve their routing and connectivity problems as best they can with this small set of tools. For IP unicast routing this means that their solutions must use only static routing together with the standardized dynamic routing protocols RIP, OSPF, IS-IS, and BGP or the proprietary EIGRP of Cisco Systems.

That's it - just five protocols. Why is this a problem? As one example, it has become fairly common in large enterprises to use BGP as an intra-domain routing protocol, even though it was designed as an inter-domain routing protocol (to be used between autonomous routing domains). Network operators are a very pragmatic group - they have problems to solve (now!) and they simply do their best with the tools available. In fact, several recent books on BGP provide advice on how best to "break the rules" and use BGP for intra-domain routing. BGP is useful as an intra-domain protocol because it provides more hierarchical structure and enables the implementation of well-defined administrative boundaries - often essential in geographically dispersed and administratively heterogeneous networks. Of equal importance is the fact that traditional intra-domain protocols (the other four protocols) are all based on shortest paths with severe limitations in terms of policy control over routing.

An often unstated reason for "breaking the rules" is related to the difficulty of developing and deploying new routing protocols, or even minor modifications to existing protocols. Beyond the lengthy and demanding standardization process, the fact remains that it is very difficult to develop well-behaved protocols with the sophisticated policy control required by intra-domain routing in many large enterprises.

There are problems with shoe-horning BGP into a network as an intra-domain protocol. The most serious problem is that BGP is not guaranteed to converge, especially when used with complex routing policies.

Metarouting is about developing high-level and declarative languages that define routing protocols. Routers need only implement an interpreter (or compiler) for a routing metalanguage in order to run any protocol so specified. Metarouting allows any network operator to specify a new routing protocol and then to use it. The goal is something like a "YACC for routing protocols."

Metarouting is based on several ideas. First, we clearly separate protocol mechanisms (link-state, path-vector, hard- or soft-state, adjacency maintenance) from routing policy (how routes are described and compared). Second, the theoretical framework of Metarouting is to be found in routing algebras (due to J.Sobrinho) which extend the long tradition of path algebras (semi-rings). That is, the means of describing routes and comparing route preference is captured in algebraic structures having rigorously defined semantics. Third, a key novel component of Metarouting is the use of a language for defining new and more complex algebras from simpler ones - the Routing Algebra Meta-Language (RAML). RAML is a collection of simple base algebras together with a set of operators that take algebras as arguments and return new algebras. In this way, RAML can be used to define a large family of routing algebras. Fourth, RAML is designed so that correctness conditions (is the protocol guaranteed to converge?) can be automatically derived for each expression defining a new algebra. That is, when a network operator defines a new protocol, they will not be required to prove any theorems!

The Metarouting project is just now getting off the ground and much work remains to be done. The project combines theoretical work, practical implementation issues, and exploration of network design for the operator's point of view.

I don't imagine that every network operator will in fact define their own protocols. Instead, I imagine that Metarouting could eventually enable a natural division of labour between the IETF and the network operator community - Metarouting itself could be standardized within the IETF, while Metarouting specifications of routing protocols could be developed and standardized within the operator community. It's still a dream at this stage but I have faith in the magic power of abstraction.

Hall of Fame News

(The full list of companies can be found on www.camring.ucam.org)

ObjectSecurity was co-founded in 2000 by Ulrich Lang during his PhD at the Computer Lab Security Group. The company specialises in IT security for complex, distributed applications, especially in very demanding, heterogeneous environments. It provides services and solutions in the area of centralised security policy management and secure application integration.

Centralised Security Management for Complex, Heterogeneous Networks: OpenPMF

In many larger organisations, the administrative overhead of IT security management increases dramatically over time, because more and more differing networked systems and applications need to communicate securely.

ObjectSecurity's OpenPMF Policy Management Framework is a product solution that streamlines security policy administration for complex distributed systems. Its particular value lies in the centralised management of complex access policies, which offers far better manageability than traditional federated identity and access solutions can offer. In OpenPMF, a uniform security policy is stored in a central repository and automatically enforced on a number of networked systems and interacting applications.

OpenPMF: reduced complexity and cost savings

One of OpenPMF's main benefits is that it reduces the complexity of security policy administration and enforcement in large, heterogeneous IT

environments. This provides real value for your organisation because lower administrative overhead means freed-up resources and cost savings.

* Integrated policy in one place
The security policy is specified, displayed and verified in a single (or optionally federated), uniform, and human-readable view. Expressive policies can be specified for practically any number of differing underlying IT systems and applications. Many syntactic differences and semantic incompatibilities are abstracted away by OpenPMF's innovative plug-in architecture.

* Automatic policy enforcement
The single, uniform security policy is automatically enforced by OpenPMF for multiple differing IT systems and applications on the network. OpenPMF uses a highly flexible plug-in architecture to integrate with most systems and applications.

* Single sign-on & identities

* Access policies and QoS policies
Unlike traditional federated identity solutions that focus only on single-sign-on, OpenPMF also consolidates complex access policies and policies for other "non-functional" properties, such as Quality of Service (QoS).

* Simplified compliance checking
Because the security policy is available in a single format and in one location for all protected systems, compliance can be verified more easily than in traditional systems.

OpenPMF: more effective security
OpenPMF's second main benefit is that it improves the effectiveness of your organisation's security policies. It helps prevent specification and enforcement errors in the security policy, and inconsistencies can be found and dealt with more easily.
* Better understanding of policies
To assist the security administrator, the central repository and the unified view make larger policies for many different systems more understandable.
* Higher level of abstraction
Policies are specified at a higher level of abstraction than the policies on the actual protected systems and applications. They can therefore be more easily matched with the organisation's security policy.

* Rich and extensible security policies
OpenPMF's policy language can express feature-rich security policies. It supports a comprehensive set of features, including roles, groups, target clusters, and several delegation modes. It uses technology-neutral identifiers (such as initiator, intermediate, target, operation, action) which reduces complexity and enables single sign-on. Both the language and the repository have been designed to be extensible. New keywords can be added, and arbitrary (predefined) operations can be executed.

* Model Driven Architecture (MDA) integration
To facilitate the policy definition in large-scale distributed systems, OpenPMF is tightly integrated with the OMG Model Driven Architecture (MDA), which allows the generation of policies from the application's UML model.

* Single, consistent security architecture
A single security architecture is used to protect all applications and systems, which prevents many inconsistencies and mismatches. The benefit is especially great if OpenPMF is used together with ObjectSecurity's distributed application development suite (e.g. SecureMiddleware, ObjectWall, MICO CORBA).

* Policies can be optimised
Because the entire policy is in one place, unnecessary redundancies and inconsistencies can be easily prevented or resolved.

* Compliance detection is easier
OpenPMF includes an engine which detects policy violations on the protected systems.

Use OpenPMF with any technology
OpenPMF's plug-in architecture has been designed to integrate with many varieties of applications and most IT

systems available today. Both new and legacy systems can be integrated, and security-aware applications can interface with OpenPMF directly. Pre-developed plug-ins are available for CORBA, CCM, PKI, PMI, LDAP, J2EE, firewalls; more plug-ins are developed on demand.

Other ObjectSecurity technologies
* ObjectWall is an application layer firewall that fully supports the IIOP communications protocol used by CORBA and Enterprise Java Beans. It is more reliable than traditional firewalls because it is itself a CORBA application and therefore leverages the robustness and maturity of existing CORBA products.
* SecureMiddleware is a secure, model-driven, component-based CORBA Component Model (CCM) application development and deployment platform
* MICO CORBA is a mature, secure open source CORBA platform that also uses OpenPMF to enable central security administration. ObjectSecurity provides highly responsive and cost effective technical support services for MICO COBRA.

Ulrich Lang can be contacted at ObjectSecurity's Head Office, which is based in Cambridge (see objectsecurity.com)

Congratulations to **Amrivox** who have secured investment funding from CREATE in Running the Gauntlet, the East of England Development Agency's competition for entrepreneurs. Boyd Mulvey, CEO of CREATE, pledged to lead a syndicate of investors. Amrivox, a provider Voice over IP solutions, will also receive £10,000-worth of financial management services from Grant Thornton, £10,000-worth of legal advice from Taylor Vinters and the services of BSG Team Ventures to help recruit a chief executive.

Artimi has won the Frost & Sullivan 2005 Technology Innovation of the Year Award in the field of short-range high bandwidth wireless technologies. According to Frost & Sullivan, the award was presented to Artimi for the quality and depth of the company's research and development program as well as the vision and risk-taking that enabled it to undertake such an endeavour.

"**Level 5 Networks'** recent $30 million series B funding round clearly signifies our EtherFabric product line is breakthrough technology with strong interest from top tier customers." So said Level 5 Networks President and CEO, Dan Karr. Level 5 Networks' EtherFabric high-speed server interconnect products maintain software and hardware compatibility with the existing environment while reducing the number of servers required by up to 50 per cent. This reduction in capital and operating expense is a direct result of EtherFabric requiring fewer computing resources from the host server CPU to transfer network data, while also enabling the communication between servers to occur more quickly and at high speeds. This lets servers respond more quickly to client requests and get more processing done in less time.

Targeted at all Fortune 2000 companies, with accentuated utility in data-intensive industries such as bio-IT, gas and oil, financial services, and e-commerce, EtherFabric supports the trends towards data centre consolidation, grid computing, utility computing, on-demand computing, and high-performance computing.

Linguamatics and the Cambridge Genetics Knowledge Park (CGKP) are to collaborate in a two year project to expand the current understanding of gene-disease associations through effective mining of the scientific and other literature. CGKP will work with Linguamatics to apply and develop Linguamatics' I2E text-mining system for epidemiological applications.

MessageLabs has agreed to acquire Omnipod Inc, a privately held, leading provider of enterprise instant messaging services based in New York. The move expands MessageLabs portfolio to now provide a comprehensive suite of managed email, web and instant

message services for customers to help ensure the security, compliance and availability of all electronic communications over the Internet.

MessageLabs and **Sophos** were both nominated for Security Vendor of the Year at the CRN Channel Awards.

nCipher has agreed to buy Chicago-based Abridean, a leading vendor of user management and provisioning solutions.
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Newnham Research (founded by Ring member Quentin Stafford-Fraser), a Cambridge-based startup, recently secured $8m in funding from two of the leading global venture capital firms: Atlas Venture and Benchmark Europe. "Newnham's technology lets you connect computers to displays over general-purpose data networks such as ethernet and USB", said Dr Stafford-Fraser, "but at a significantly higher performance and lower cost than any other solution we've seen in the market". Newnham has been in discussions with several large companies and will be announcing its first major mass-production agreement shortly.

Newnham is recruiting and is keen to talk to Ring members who might be interested in joining the team. More information can be found on the Newnham website at www.newnhamresearch.com

Operis has appointed Paul Myers, a graduate of the Computer Lab, as Director of Operis Business Engineering Limited, the main operating subsidiary of Operis Group Plc. Paul joined Operis from the Computer Lab as a graduate recruit in October 1998.

Sophos has strengthened its presence in the Beleux region by establishing Sophos Benelux, a regional distributor based in Gorinchem, the Netherlands. It will serve Sophos products and services to customers in Belgium, The Netherlands and Luxembourg.

Sophos has also announced its membership of the Internet Watch foundation, the authorised UK organisation that combats illegal internet content.

Sygneca was chosen to provide web-based facilities by the European Partnering and Investment Conference. All 250 delegates were provided with Sygneca's partnering request management software and web-based front end. This allowed over 1000 meeting requests to be organized into a busy timetable of meetings for the delegates.

Ubisense, the leading provider of high accuracy indoor location technology, has secured 60 new customers in just nine months since earning approval from the US Federal Communications Commission for its advanced UWB technology. This technology offers the most cost-effective, precise indoor location tracking commercially available. It is being used across many different industries to analyse and improve processes, space utilization and security.

XenSource has been named winner of Open Source Initiative of the Year and Infrastructure Technology Product of the Year in the 2005 CNET Networks UK Technology Awards. Other finalists for the Open Source Initiative of the Year were Cutter Project Ltd., JBoss Inc., OpenAdvantage and Open-Xchange Inc. ClearCub Technology, IBM UK, Red Hat, and Zeus Technology were finalists for the Infrastructure Technology Product of the Year.

Who's Who

Toby Austin (*JE BA05*) has joined ANGLE, an international Consulting, Management and Ventures company that focuses on the commercialization of technology and the development of technology-based industry.

David Barker (*Q BA80*) is a senior manager, Platforms, at Talis.

James Brunning (*JE MPhil05*) is doing a PhD at the Department of Engineering, Cambridge.

Melvin Carvalho (*CAI Dip96*) is programming in Java for a SME working in the internet space. What makes this interesting is that Melvin lives in Germany and his client is in Silicon Valley. He does everything over the network using remote desktop sharing.

Laura Crockett (*Q BA05*) is an actuary at EMB Consultancy.

Jason Davies (*JN BA05*) is a freelance web designer and developer specializing in database-driven, dynamic Web sites.

Paul Durrant (*JE MA94*) is a software engineer at Level 5 Networks.

Anthony Finbow (*DOW MA91*) has joined Trinamo Ltd as a consultant. He was previously Managing Director EMEA at MetaSolv Software Inc.

Chris Galley (*CHR BA87*) is in the process of relocating to France. He is continuing as the CEO of Alivox Ltd, which develops Language Identification software, and is currently commuting on a regular basis to Edinburgh.

Roger Hale (*T BA79, PhD90*) is Chief Operating Officer at Linguamatics Ltd, a company he co-founded with 3 other Lab graduates. Linguamatics develops software products based on Natural Language Processing. Their I2E text mining tools enable knowledge-assisted search in areas such as bioinformatics and commercial intelligence. They are the leader in text-mining for the life science industry.

Laura James (*CC PhD05*) has just completed a PhD in Optical Networking.

Alex King (*F MA97*) is now at Hg Capital.

Chiho Kitahara (*ED Dip04*) is a research assistant at The Judge Institute.

John Kleeman (*T BA81*), founder and Chairman of Question*mark,* is among the authors featured in a new book that offers suggestions and advice from experts in the field of online assessment and measurement. John co-wrote a chapter on "Delivering Computerised Assessments Safely and Securely".

CJ Lee (*HH BA05*) is a freelance web developer in Malaysia.

Lin Mei (*W MPhil04*) is doing a PhD at Imperial College, London in Surgical Imaging and Graphics.

Rizwan Moledina (*SID BA05*) has joined the IT Graduate Development Programme at UBS.

Mark Richer (*CTH MA85*) is Chairman of Codian, a company he co-founded with 2 other Computer Lab graduates.

Yunus Saatci (*SE BA05*) is a Research Assistant at the University of Cambridge Computer Laboratory.

Sam Stokes (*R BA05*) is working as a software developer for Symbian.

William Walker (*CTH Dip04*) is a consultant at Detica.

Dapeng Wang (*W MPhil05*) is a Technical Management Trainee at Trinamo Ltd.

Ben Whitworth (*M BA05*) has joined Trinamo Ltd as a Commercial Management Trainee.

Andrew Wild (*JE BA05*) is working for Codian Ltd as a development engineer.

Computer Laboratory News

Honours and Distinctions

Professor Robin Milner has been awarded a Royal Gold Medal by the Royal Society of Edinburgh "for his outstanding contributions to software engineering which have changed the face of modern computer science."
Professor Milner has also been elected a foreign member of the Académie des Sciences (Institut de France).

Professor Andy Pitts has been appointed second Deputy Head of Department.

Computer Lab Students Win IBM UK "Thinkpad Challenge"

The Cambridge undergraduate team was the overall winner of the 2005 IBM UK "Thinkpad Challenge" competition held at IBM Hursley. The Cambridge entry had been selected as best among last year's second-year group projects, on the basis of their Logo interpreter implementation.

Cambridge has become the first university, among the 18 that compete, to win the Thinkpad Challenge twice.

Congratulations to the team of Robert Bradford, William Fisher, Davey Jose, Charles Mollison, Christopher Williams, Jonathan Worthington and Helen Yeung.

Computer Laboratory's Supporters' Club

The Supporters' Club recruitment fair took place on November 30th 2005 in the Computer Laboratory.

There was bumper participation with 37 exhibitors taking part.

If your company is looking to recruit graduates, or has summer placement opportunities, and is interested in hearing how the Supporters' Club can help, please contact the Supporters' Club at: supporters-club-organiser@cl.cam.ac.uk

Job Bulletin Board Postings

(to post a job just go to www.camring.ucam.org and the Business & Professional link. Then just click on Job Bulletin Board)

Software Engineer	Granta Design Limited
Fraud Analyst	Envisional
C++/AJAX Software Developer	Envisional
Anti-Piracy Analyst	Envisional
Project Manager/Software Architect	Envisional
Software Engineer/Senior Software Engineer	Linguamatics Ltd
Creative technology people	Lastminute.com
Software Test Analyst	Progress Software Corp
Web Application Developer	Sygneca
Account Manager – Rail	Kizoom Ltd
Graduate XP Java Developer	Kizoom Ltd
XP Java Developer	Kizoom Ltd
Database Manager	Kizoom Ltd
Technical Writer	Codian Ltd
Sales Engineer	Codian Ltd
Software Engineer	Codian Ltd
Test & Support Engineer	Codian Ltd
Hardware Engineer	Codian Ltd
Financial Controller	Tideway Systems
Level 2 Support Engineer	Tideway Systems
User Interface Developers	Tideway Systems
Pre-Sales Engineers	Tideway Systems
Director of Research and Innovation	Capgemini Consulting
Software Engineer: USB Protocols/device expert	Artimi Ltd
Software Engineer: Wireless MAC Software	Artimi Ltd
RF Analog ASIC Engineer	Artimi Ltd
Software Engineer: Bluetooth Protocol Specialist	Artimi Ltd
UNIX/C Software Developers	CacheLogic Ltd
Linux Kernel and Systems Developer(s)	XenSource Inc

LABORATORY UPDATE, AGM

and

ANNUAL DINNER

Monday 20th March 2006

17:15 Lab Update and AGM, William Gates Building

19:00 Reception Queens' College
19:30 Dinner Queens' College

Guest of Honour: Charles Cotton

Dress: Jacket and tie

The dinner is open to Ring members. To book your ticket, please send a cheque for £47.00 (made payable to Cambridge Computer Lab Ring) along with this form to:

Cambridge Computer Lab Ring
William Gates Building
JJ Thomson Avenue
Cambridge
CB3 0FD

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I would like ……. ticket(s) to the Annual Dinner.
Please find enclosed a cheque (made payable to Cambridge Computer Lab Ring) for £……. (£47 per ticket)

Name: ……

College: …… Graduation Year:…….....

Email: ……

Contact telephone: ……

Special Dietary Requirements: …….....

Hall of Fame
2006 Awards Nominations

Following on from the success of the 2005 Ring Awards, the highlight of the 2006 Ring Dinner will be the presentation ceremony for the 2006 Ring Awards.

There will be three categories for the 2006 Awards in addition to the student prizes.

1. **Company of the Year**, open to all Hall of Fame companies
2. **New Product of the Year**, open to all Hall of Fame companies
3. **Publication of the Year**, awarded to the most significant peer-reviewed paper by a Ring member or Lab member published in calendar year 2005.

For the first two awards, please note that:

- The company must be a member of the Ring Hall of Fame, as shown on the Lab Ring website. If a company is eligible for the Hall of Fame but not currently listed, please contact the Ring office to ensure that it gets added.
- If applying for the Product of the Year award, the product concerned must have been (or is planned to be) released commercially in the calendar year 2005, and principally developed by the company itself. The product must be hardware, software, licensable technology, or a service.

Nominations for 2006 Lab Ring Awards

Full Name

Job Title

Email Address

Telephone Number

Nomination for Company of the Year:

Please explain why you have nominated this company:

Nomination for Product of the Year:

Please explain why you have nominated this product:

Nomination for publication of the Year: