PERSONAL INFORMATION

Name: Keith Chew Seng Ling
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Date of Birth: 16 February 1976
Place of Birth: Malaysia (Permanent Resident in NZ)

EDUCATION

1995 – 1997
University of Auckland
Bachelor of Electrical and Electronic Engineering (Graduated with 1st Class Honours)
Direct entry into 2nd year (i.e. skipped 1st year)
Straight A's for all subjects in all years (Ranked 3rd in Faculty of E&E Engineering)

1994
International College, Malaysia
New South Wales Higher School Certificate = 98.46%

1990 – 1993
Penang Free School, Malaysia
Average grade for government exams = A

SPORTS AND ACADEMIC ACHIEVEMENTS

Represented Penang Free School in tennis, volleyball, athletics, long jump, triple jump, and high jump.
Awarded best athlete of the year in 1992.
Attained 17 awards and certificates from 1991 – 1997. Some include:
ACENZ Best Practical Work Report award (1997)
Prize for Top Grade in 4th Year Project: sponsored by RS Components (1997)
Runner-up for Best 4th Year Image Processing Project (1997)

WORK EXPERIENCE

e3solutions Ltd [www.e3solutions.net] (2005 – present)
Managing Director

e3solutions was established as a software development house focusing on developing intelligent messaging & mapping applications. The company's goal is to produce innovative products that will improve the way people do things and add value either by saving them time or money.

Through private funding, e3solutions has engaged in heavy R&D for the initial months of business operation. As a result, the company has developed its flagship product MapNav (www.mapnav.net). To establish a hardware channel for the business, e3solutions created an online e-commerce store (www.itx.co.nz) specialising in Mini-ITX systems.

Based on the flagship product, Keith invented a new business application and filed a provisional PCT patent for the invention. The invention is based on location based advertising, which allows MapNav to function as a multimedia content management and distribution system. This includes content authoring, transcoding, compression of all major video formats. The product was further enhanced to include CCTV surveillance, digital content (eg news & weather), TXT campaign and real-time Bus Stop information. A trial is currently being conducted on the LINK buses operated by Stagecoach (www.stagecoach.co.nz). Other key stakeholders in this project include TVNZ (www.tvnz.co.nz), ARTA (www.arta.co.nz) and iSite (www.isitemedia.co.nz).

Keith is also active in providing software consultancy. Recently, Keith helped Trade & Exchange architect their new website (www.te.co.nz). Keith led a development team of 5 and also worked closely with the infrastructure team to streamline the deployment process. The website was deployed in a cluster of servers for maximum reliability, load balancing and failover. To ensure the website was kept strongly aligned with the business, Keith participated in weekly meetings with the both the operation and management teams.

Before working with Trade & Exchange, Keith spent 8 weeks working on Vodafone's Australia Heroes 3G VLive project. His primary role was being the team lead, liaising with other tech leads and developers from Vodafone's content partners. Keith is familiar with Vodafone's VLive deployment process, Partner Markup Language (PML), development/staging/preprod/prod environments. He also worked closely with other Vodafone teams such as the Content Delivery Team, Media Streaming & Download Team, Media Production Facility Team to ensure there are no technological barriers to the project.

Synergy [www.synergy.co.nz] (2002 – 2005)
Consultant (Architect/Senior Software Developer/Mentor/Team Leader)

Keith was involved in one of Vodafone's most prominent VLive projects, Mobile Topup. This project was developed for Vodafone to allow customers to perform financial transactions from their handset, eg check bank balance, topup account, etc.

This system is highly secure, and conforms to NZ's banking standards. It runs on a 2-node Weblogic cluster along with a 2-node Oracle RAC database cluster. It is built to be efficient, reliable and robust, achieving an availability of 99.99% uptime. The security is of the highest standard on all levels, ie class, application, J2EE container, operating system and data center.

Keith was one of the key resources in architecting, designing and implementing the system. Here were some specific areas of knowledge attained:

Application Security	Familiar with majority of the components in the JCE framework (Cipher, Key Generator, MAC, MessageDigest).
Banking Security	Implemented a JCE Provider that communicates with the Racal/Thales Host Security Module (HSM). Banks throughout the world use HSM for industry standard cryptography. Majority of the HSM functions were implemented, which included key generation, key translation, encryption/decryption, etc.
Application Server Security	Implemented custom security providers for Weblogic's Enterprise Security Framework. These providers are conformant with their SPPI specifications.
Financial Transaction Security	Familiar with the ISO8583 standard that is used by systems that want to transfer financial transactions in a secure manner.
Disaster Recovery	Familiar with the process of managing and rebuilding of LMKs in the event of a security breach, eg espionage, lost of database, etc.
Social Engineering Security	Familiar with the banking security procedures such as key custodians, authorized HSM operator, etc. Also familiar with the process of exchanging keys such as ZMKs and KEKs.
OTA Specifications	Implemented an OTA server according to the STK2.1 specifications and Java 0348 specifications. This component is used to send encrypted OTA messages to the SIM card.
SMSC	Implemented a highly robust SMS gateway according to the MMAP/SMAP specifications. It wraps vendor specific APIs, eg Noctor and Logica.
High Availability	All server components were developed with high availability in mind. Applications are run in a clustered mode, with automatic recovery processes in place.
Robustness	All server components were developed with the assumption that the process can be interrupted at any time. State machine technology is used to allow state recovery at all times.
Single Sign On	Web applications are built with single sign on capabilities. It uses custom encrypted tokens to carry user information from the central logon server to the individual web servers. This is similar to Weblogic's Identity Assertion architecture, or other technologies like SAML.

Apart from Mobile Topup, Keith has completed a self-study program to the Certified Ethical Hacker (CEH) course. He is still planning to sit for the 312-50 CEH examination.

JungleDrum Messaging System Ltd [www.jungledrum.co.nz] (2001 – 2002)
Software Architect (Team Leader)

Prior to joining the company, Jungledrum has a suite of products that were developed and deployed separately. As the Senior Software Developer, some of the responsibilities include:
- Implement an application framework to integrate all existing products, and allow easy introduction of new products.
- Oversee the design, implementation, testing, and documentation of the products.
- Work closely with 2 other senior developers and lead a team of 6 developers.
- Advance the company's technical standards through developing high quality, re-usable code.
- Develop technical solutions that meet client requirements.

New methodologies and technologies that I introduced include:
UML methodology and Code Standards
- Together Soft (refactoring and prototyping) & Rational Rose (designing)
- Common design practices and patterns

J2EE Technology
- Back-end servers using Jboss and Weblogic
- Integration of JMS using Message Driven Beans (EJB and non-EJB environment)
- Front-end architecture using Struts MVC pattern
- Highly scalable and flexible architecture (all servers are clustered)

Database technologies
- Relational and Object Data Modeling
- O/R Mapping
- Oracle, Sybase EAS, MSSQL Server, PostgreSQL, mySQL

Billing & Provisioning Architecture:
- Real-time tracking of user's account balance
- Online credit card payments via BNZ

Proceduralised software development environment
- Flexible directory structure
- Automated build, test and deploy process

Summary of additional skills attained:
J2EE: Up to date with latest specifications (including EJB2.1, JMS1.1), expert in J2EE design pattern, familiar with differences between different application-servers, understand when to use Session/BMP/CMP persistence.
Mobile Technologies: SMS/C, MMS/C, WAP, J2ME (PDA, cellphone)
AI Technology: Rule-based programming using Rete algorithm
Web Services: Axis (SOAP 2.0)
XML Technology: XMLT (achieve device independence - handheld, browser, cellphone)
RFCs: SMTP (RFC821), iCalendar (RFC2445, RFC2446, RFC2447), vCard (RFC2425, RFC2426, RFC2739)
Open Source: James, Castor, JESS, Mandarax, RuleML, Lucene, Struts, Barracuda, Tapestry, Cocoon, Quartz, Avalon, XDoclet, log4j, Ant, AGMS, Turbine, OpenLDAP, MVCSoft.

Achievements:
To date, the company has adopted many processes and design practices that Keith adheres to. Keith was a mentor to the developers, helping them write better code, refactor often and integrate daily. As a result, the overall productivity of the developers increased tremendously, allowing the company to decrease the time to market.

The products are now well version controlled and the build process is all automated. Maintenance is no longer a nightmare and using the "separation of concerns" pattern, bugs are easier to find and resolved.

Keith was involved with the major projects deployed to all of the clients, including local and international telcos: Telecom, Vodafone, EdgeWireless, Telstra, etc. Many of them involved high volume message transactions performed by a cluster of servers.

Zeacom Ltd [www.zeacom.com] (2000 – 2001)
Senior Software Developer (Technical Lead)
Keith was the Senior Software Developer in the Internet division of Zeacom. He focused mainly on R&D, working on new technologies and ultimately expanding Zeacom's market into the Internet arena. At the beginning of 2000, Zeacom had no Internet based products. A year later, the company introduced 3 new products that are well integrated with the legacy system: WebCallback, WebChat and Email Queuing. Keith was one of the key players in the development of this suite of Internet products.

Keith programs in both Java (primary language) and C++ (secondary language). He is familiar and keeps up to date with most of Java's and Microsoft's Internet technologies. Essentially, he is proficient in any field related to enterprise solutions.

Regardless of programming language, Keith emphasises on good software design. In all his work, Keith uses UML (Unified Modelling Language) to model, design and refactor the software architecture. This will provide:
- A good architecture foundation to the product
- Easy maintenance of the product
- Easy collaboration with other software developers

Summary of skills attained:
Telephony Technologies: VoIP, Chat, Callback, PBX (software & hardware) functionality, IP Phones
Versioning Control System: Concurrent Versioning System (CVS)
Automated Build, Test and Deploy of Projects: Jakarta-Ants, JUnit, CruiseControl
IDE: Microsoft Visual C++, Visual Café, Forte (main IDE), Visual Age, JBuilder
Object Oriented Design (OOD): Designing system architecture with reusable objects (TogetherSoft)
Design Patterns: Familiar with and apply common UML patterns (GOF)
Middleware Messaging System: Distributed messaging based on custom C++ and Java's JMS
Enterprise Design, Deployment and Distribution: Apache, Tomcat, Fireworks, Dreamweaver
Java's J2EE standards: Implemented and extended various standards
Backend Database Integration: JDBC/ODBC, MSAccess, MySQL, PostgreSQL
3rd party Application Servers: Trialed various servers (JBoss, Enhydra)
Internet Security: Firewall setup (both custom Linux box or 3rd party Watchguard firewalls)
Web Hosting: Installing WWW server, DNS server, Email server (both Linux and Windows)
E-commerce Technologies: Online shopping cart, credit card gateway, XML, JavaBeans, EJBs

Cecam Consultancy Ltd (1997 – 2000)
Software Engineering
Global Positioning System (GPS)
Author of GPSMapper (Delphi)
This is a region mapping software for Auckland, New Zealand. It allows the user to assign custom area codes to different regions on the map. In addition, it also tracks taxi vehicles and displays them on the screen. GPS information is received via serial port.

Telephony
Keith has also branched into the realm of telephony. He is experienced in areas relating to Computer Telephony Integration (CTI), Interactive Voice Response (IVR), Voicemail, telephone systems, Private Branch Exchange (PBX), Call Centers.

Keith is the author of WinIVR (Delphi), a program capable of designing complex Interactive Voice Response (IVR) systems. He developed the software from ground up to a matured commercial product. It has received outstanding response from developers all around the globe. WinIVR is currently being used/trialed by users for:
- Home automation (controlling appliances in homes)

- Hospitals (e.g. Middlemore Hospital in New Zealand)
- Database applications (taxi companies)
- Robotics
- Telemarketing
- Phone orders
- Voicemail in homes and small businesses

For more information on WinIVR, visit http://www.winivr.co.nz

Hardware Engineering
Keith was involved in building a fully integrated digital taxi system. This system is used in companies like Alert Taxis, Corporate Cabs, Eastern Taxis, South Auckland Taxis, Rotorua Taxis, Regency Cabs, Choice Cabs. Most of the work involved hardware design and assembly language, focusing mainly of data communications protocols.

Summary of skills attained:
- Integrated system was based on a "Modular" scheme, where multiple microprocessors (peripherals) are controlled by a central processing unit.
- Developed custom network protocol (data rate 230 kbps) similar to CAN Bus system
- Integrated system with Tait RT radios
- Integrated system with multiple serial inputs (eg Swipe Card reader, Printer, GPS unit) and transmit information to PC via serial port

Summary of skills attained:
Cryptography - digital signatures, encryption/decryption (RSA, MD5, Elliptic Curve, DES)
Multimedia - low level Windows Multimedia APIs, voice compression
Inter Communication Process (IPC) - file mapping, semaphores, mutexes, file locking
Database - single tier multi-user database concepts
Automation - threads and timers
Installation and Deployment - registration techniques (shareware), CD distribution
ActiveX, COM, OLE
Product Maintenance - version upgrades and automatic backups
Programming Concepts - Object Oriented Programming (OOP) and Design (OOD) concepts
Internet – automatic Email retrieval (SMTP)
Modems - serial port, AT Commands
Microsoft Protocols - Telephony API (TAPI), Speech API (SAPI), Messaging API (MAPI)
Management Skills - Internet marketing, sales strategy, web design and e-commerce

MS Access Database
Author of Old Orders Database. Taxi companies use this software to generate management and accounting reports. It was fully coded in Visual Basic. Database skills attained:
- Multi-user file locking
- Database security
- SQL statements
- Version upgrades
- Auto archive, backups
- Accounts transactions and reports

Summer job at Fisher & Paykel (1996)
Involved in microprocessor development, electrical and electronic assembly, engineering design and project management. I was recruited for the P42 Refrigerator Project Team. This team is one of three teams involved in the development and launching of the first digitally controlled refrigerator by Fisher & Paykel.

REFEREES

Available upon request