

Stephen Wilson is an accomplished innovator, researcher, analyst, consultant, R&D manager and a recognised thought leader in digital identity, privacy and cyber security. He has an outstanding track record in creative, original and penetrating security research, analysis and product development.

Narrative summary

BSc 1983; BE Eng (Hons) 1986; majors in physics, comp. sci. & digital electronics ♦ 1985 **CSIRO Radiophysics Vacation Scholarship** in radio astronomy & image processing ♦ 1987-88 **CSIRO Division of Wool Technology** researching textile image analysis ♦ 1988-1995 medical device pioneer **Telectronics Pacing Systems** in embedded software engineering and R&D management ♦ developed world's most reliable real time software ♦ three years in the USA ♦ transformed under-performing software department ♦ awarded three US patents for implantable defibrillator technology ♦ 1995 moved into cyber security with PKI pioneer **Security Domain**, managing product development ♦ introduced Object Oriented methods ♦ developed corporate quality system ♦ project-managed first Gatekeeper accredited CA ♦ 1997 to 2003 Principal Consultant roles at **KPMG**, **PricewaterhouseCoopers** and **SecureNet Ltd** ♦ created world's first "evergreen" SSL site certificates vetted against regulator databases, now industry standard ♦ created the audit-based model for international PKI ♦ ministerial appointment to National E-Authentication Council ♦ elected Chair three years running, Certification Forum of Australasia ♦ APEC eSecurity Task Group ♦ 2004 founded **Lockstep Consulting** ♦ consulted on PKI in Malaysia, Hong Kong, Singapore, New Zealand, Macau, Indonesia, Kazakhstan ♦ Chair, OASIS PKI Technical Committee ♦ created new probabilistic security ROI model, adopted by US Dept of Defence ♦ 2006 spun off **Lockstep Technologies** ♦ four patents for digital identity and privacy protection ♦ three patents pending for anti-spam, anti-payments fraud, and confidential age proofing ♦ AusIndustry COMET R&D grant to develop anonymous e-health, e-voting, social networking, and payment solutions.

Career summary

2004-now Lockstep Group – Managing Director and Principal Consultant
2001-2003 SecureNet – Chief Security Specialist & Professional Services Manager
1999-2001 PricewaterhouseCoopers beTRUSTed – Director of Strategy & Policy
1997-1999 KPMG Consulting – Associate Director, Certification Authority
1995-1997 Security Domain – Software Development Manager
1993-1995 Telectronics (USA) – Head of Software Engineering
1992-1993 Telectronics (USA) – International Strategic Product Marketing Manager
1987-1992 Telectronics – Senior Software Engineer, Team Leader, Section Head
1986-1987 CSIRO Division of Wool Technology – Experimental Scientist.

Selected consultancies

South Australia Health PKI strategy, policy & key signing ceremony 2008-11 ♦ Australia Post Trust & Privacy Framework; Privacy Impact Assessments 2008-09 ♦ Macau Government Cross recognition framework 2008 ♦ Department of Justice Privacy Engineering Guidelines 2007 ♦ National eHealth Transition Authority PKI Business Case 2007-08 ♦ Australian National Smartcard Framework 2006-08 ♦ Westpac Trust Centre Smartcard product strategy 2006-07 ♦ Kazakhstan National multi-purpose PKI 2006 ♦ Singapore Government National Authentication Framework 2006 ♦ World Bank SE Asia security & smartcard landscape scan 2006

Selected consultancies cont.

Australian Govt Gatekeeper PKI Reform 2004-06 ♦ Medicare Australia PKI 2001-06 ♦ Internet Industry Association Two Factor Authentication Scheme 2005 ♦ OASIS (US) PKI library 2005 ♦ OASIS (US) PKI Return on Investment model 2004 ♦ eASEAN harmonised authentication legal infrastructure 2004-05 ♦ NSW Government Security ROI model 2003-04 ♦ Indonesian National CA 2002 ♦ Standard Chartered Bank Singapore e-signature review 2001 ♦ New Zealand Government PKI position paper 2000-01 ♦ Hong Kong CA Recognition Office 1999.

Academic qualifications

- Bachelor of Science University of Queensland 1982
- Bachelor of Electrical Engineering (Honours) University of Queensland 1986
- MBA *incomplete* (GPA = 3.86 out of 4.00) Macquarie University
- Global Security Essentials Certificate (GSEC) SANS Institute 2002.

Patents**Awarded: cyber security**

- *System and method for anonymously indexing electronic record systems*
Australian Patent 2005220988; PCT/AU2005/000364; WO2005/088899 (2004)
- *Means and method of using cryptographic devices to combat online institution identity theft*
Australian Patent 2004100268 (2004)
- *Means and method of issuing Anonymous Public Key Certificates for indexing electronic record systems*
Australian Patent 2004201058 (2004)
- *Means and method of registering new users in a system of registered users*
Australian Patent 743570 (2002)

Pending: cyber security

- *Controlling the Distribution of Unsolicited Electronic Communications* PCT/AU2006/000803
- *Verifying a Personal Characteristic of Users Of Online Resources* PCT/AU2008/001392
- *Authenticating electronic financial transactions* PCT/AU2009/000456

Awarded: biomedical technology

- *Device and Method Incorporating Multiple Bradycardia Pacing Rates* US 5,292,339 (1994)
- *Controlling Tachyarrhythmia Confirmation in Response to Patient History* US 5,251,625 (1993)
- *Apparatus and Method for Antitachycardia Pacing* US 5,144,947 (1992).

Lockstep Technologies prizes & recognition

- Asian SESAMES Smartcard Awards Finalist 2010
- Anthill Magazine *Smart 100 Awards* (voted No. 25) 2009
- Finextra (UK) Innovation Showcase 2009
- ABC TV *The New Inventors* program 19 November 2008
- Global Security Challenge, Asian Top Five semi-finalist 2008
- Australian Technology Showcase 2008
- AusIndustry COMET R&D grant 2007
- Anthill Cool Companies Award (Innovation category) Top Three, 2007
- Secrets of Australian ICT Innovation (Security category) 3rd place, 2006.

Committees

- Gatekeeper Policy Committee 2004-now
- National IT Testing Accreditation Advisory Committee 2005-now
- Standards Australia Information Security Committee IT 12-4 2004-now
- Australian Law Reform Commission Developing Technologies Sub-Committee 2007-08
- OASIS PKI Adoption Technical Committee (Chair) 2007-08
- Asia PKI Forum (OASIS Liaison Representative) 2005-08
- Smartcards and Information Security Australia (Co-chair) 2005-07
- Certification Forum of Australasia (Chair) 1998-2001
- National Electronic Authentication Council NEAC 1998-2001
- APEC e-Authentication Task Group 1998-2001
- American Bar Association Information Security Committee 1999-2002
- Federal Privacy Commissioner's PKI Reference Group 2001.

Selected publications & presentations See also www.lockstep.com.au/library**Peer reviewed papers**

- *Identity Evolves: Why Federated Identity is easier said than done*, AusCERT 2011 Security Conference, Gold Coast, May 2011
http://conference.auscert.org.au/conf2011/speaker_Stephen_Wilson.html
- *Anonymity & Pseudonymity in eResearch via smartcards and Public Key Infrastructure*, eResearch Australasia 2009, Sydney, 2009 <http://www.eresearch.edu.au/wilson2009>
- *An easily validated security model for e-voting based on anonymous public key certificates*, AusCERT2008 Security Conference Academic Stream, Gold Coast, 2008
<http://conference.auscert.org.au/conf2008/Proceedings-SETMAPE.pdf>
- *Public Key Superstructure: It's PKI Jim but Not As We Know It*, 7th Symposium on Identity and Trust on the Internet, Gaithersburg, USA, 2008 <http://tinyurl.com/7lqz6q>
- *A new manifesto for smartcards as national information infrastructure*, 5th Homeland Security Conference Canberra, 2006
http://www.lockstep.com.au/library/smartcards/a_new_manifesto_for_smartcard
- *A novel application of PKI smartcards to anonymise Health Identifiers* AusCERT2005 Security Conference Academic Stream, Gold Coast, 2005 <http://tinyurl.com/7tnav4>
- *A Critical Review of PKI RSA* Conference, San Jose, 2002
- *Application-driven cross-recognition* RSA Conference, San Jose, 2002
- *Demystifying international cross-recognition of PKI: we've been barking up the wrong tree* International Security Solutions Europe Conference, London, 2001
- *The galactic radio sources G5.4-1.2 and G5.27-0.90* Caswell, Kesteven, Komesaroff, Milne, Haynes, Stewart & Wilson, Monthly Notices of the Royal Astronomical Soc, V225.329 1987.

Other publications & presentations

- *A bigger threat to patient privacy when doctors use Facebook* E-Letter to Journal of Medical Ethics, 20 Dec 2010 http://jme.bmj.com/content/early/2010/11/07/jme.2010.036293/reply#medethics_el_3625
- *More trouble with Facebook* S. Wilson & A. Johnston, Privacy Law Bulletin, Oct 2010
- *Embedded PKI state of the art* 6th International Asia PKI Symposium, Chengdu China, 2006

Selected publications & presentations cont.

- *The importance of PKI today* China Communications, Dec 2005
<http://www.china-cic.org.cn/english/digital%20library/200512/3.pdf>
- *Relationship Certificates* 5th International Asia PKI Symposium, Beijing, 2005
- *Guidelines on how to determine Return on Investment in PKI* OASIS White Paper June 2005
<http://idtrust.xml.org/guidelines-how-determine-return-investment-pki>
- *Patient Privacy and Security – Not a zero sum game!* Wilson, Connolly and Denney-Wilson, Journal of the Australian Epidemiology Association V12.1, April 2005
- *PKI lessons from Australia* Asia PKI Forum, Tokyo, 2005
- *PKI without Tears* Voice & Data Vol 2 No. 9, 2003
- *Mapping Privacy requirements onto the IT function* Privacy Law & Policy Reporter, July 2003
- *Rethinking PKI – the electronic business card* SC Magazine, June 2003
- *Electronic Authentication – Issues relating to its selection and use* (contributor)
APEC Business Facilitation Steering Group eSecurity Task Group, 2002
- *Comparison of Authentication Technologies in E-business* Asia Business Law Review, July 2001
- *Trust in Online Healthcare* ISSA World Market Series Business Briefing on InfoSec, 2001
- *Leveraging external accreditation to achieve cross-recognition* Attorney Generals Privacy & Security conference, Melbourne, 2001
- *PKI and the Acceleration of B2B* European-American Business Journal, Spring 2001
- *Will Biometrics Obsolete PKI?* American Bar Assoc. Bulletin of Law, Science & Tech, June 2001
- *New models for the management of public key infrastructure and root certification authorities.*
Proceedings of 7th IFIP Conference Info Security, Amsterdam 1999
- *Privacy positive aspects of PKI* Privacy Law & Policy Reporter, Vol 5.10, 1999
- *Current issues in the rollout of a National Authentication Framework* Information Industry Outlook Conference, Canberra 1998
- *Some limitations of web of trust models* Information Management & Computer Security, Vol. 6, No. 5, 1998 (Highly Commended Award winner).

Selected non-technical papers

- *Google, wifi and the gulf between IT and privacy*, International Association of Privacy Professionals, Aus-NZ Chapter (iappANZ) Member Bulletin No. 12, May 2010
- *Patient privacy: polarising or possible?* iappANZ Member Bulletin No. 10, March 2010
- *An uphill battle for online privacy* Sydney Morning Herald, Opinion column, 17 Feb 2010
<http://smh.com.au/opinion/society-and-culture-o8rp.html>
- *Give PCI The Bullet* Online Banking Review, June 2009
- *Biometric Banking?* Online Banking Review, April 2009
- *Me Myself and I* Online Banking Review, December 2007
- *Clear Heads Needed for Federated ID* Online Banking Review, December 2005
- *Online Fix to Identity Crisis* Online Banking Review, Oct 2005
- *Identity theft IS a technology issue!* Online Banking Review, June 2004
- *Privacy takes IT by surprise* Online Banking Review, April 2004
- *Position Statement on PKI of the Australian Security Industry* Aus IT Security Forum, 2003.

Employment history

Lockstep Group

www.lockstep.com.au

In 2004 Stephen established the independent Lockstep Consulting, now one of Australia's leading specialist advisory firms dedicated to digital identity and privacy. Sister company Lockstep Technologies researches and develops novel privacy and identity theft solutions.

Managing Director & Principal Consultant

2004 to now

Major consulting clients include:

- Queensland Health – Privacy tools development for multiple e-health programs, 2010
- South Australia Health – Enterprise PKI strategy, operations documents, 2008-2010
- Dept of Foreign Affairs & Trade – Online Passports Privacy Impact Assessment, 2010
- Victorian Department of Health – HealthSMART program PIA, 2009
- Australia Post – Trust & privacy framework, PIAs, Security Assessments 2008-10
- Macau Bureau of Telecomms Regulation – PKI cross recognition strategy, 2008
- Victorian Department of Justice – Privacy Engineering Guidelines, 2007
- NeHTA – business case for National Authentication Service for Health (NASH), 2007
- AGIMO – strategic reform & implementation of Gatekeeper PKI framework, 2004-06
- AGIMO – drafted the Australian National Smartcard Framework, 2005-06
- Westpac Trust Centre – smartcard product strategy, 2006-07
- Kazakhstan Ministry of Internal Affairs 2006 – national multi-purpose PKI, 2006
- Singapore Infocomm Devt Authority – National Authentication Framework, 2006
- Medicare Australia – innovative *Known Customer* healthcare PKI, 2006
- NSW Office of ICT – entirely new statistical ROSI model, adopted by US DOD, 2004
- OASIS (US) – created new PKI Return on Investment model, 2004
- eASEAN – harmonised authentication legal infrastructure across SE Asia, 2004-05.

Lockstep Technologies researches and develops novel uses of PKI in smart authentication devices to enhance privacy and identity security. Applications include Card Not Present fraud prevention, anonymous e-health records, e-voting and proof of age, and protection of online social networking profiles and avatars against theft. See *Patents and Prizes and recognition* above).

SecureNet

SecureNet Limited was Australia's leading provider of managed security services.

Chief Security Specialist & Professional Services Manager

2001 to 2003

Led a national department of 30 identity management consultants and engineers based in Sydney, Canberra & Melbourne. Consulted to selected clients on IdM strategy, policy and architecture, especially in managed service environments. Major accomplishments included:

- Led a 60-strong blended professional services team of consultants and developers through the SecureNet-Baltimore merger
- Principal Consultant and Account Manager for Medicare's Health eSignature Authority
- developed the Indonesian National CA strategy, business case and architecture.

Employment history cont.**PricewaterhouseCoopers beTRUSTed**

beTRUSTed was PricewaterhouseCoopers' biggest single investment in e-business, and the most sophisticated managed PKI service in the world at the time.

Director of Strategy & Policy**1999 to 2001**

Reported to the global CEO. Responsible for early business strategy, global cryptographic product management, and major strategic and regulatory consulting engagements.

- Key member of the 20 person global management team overseeing the build of the world's most sophisticated managed PKI operation, based in Baltimore USA and London
- led the research & development of the Identrus *Starterpak* system
- led the Asia Pacific chapter of the PwC Cryptographic Centre of Excellence, the world's largest private sector cryptography think tank
- for Standard Chartered Bank Singapore, undertook a survey and impact analysis of e-signature laws and regulations across 20 countries.

Other clients included Cybersign Malaysia, and the New Zealand Bankers Association.

KPMG Consulting

KPMG was the first Big Five services firm to set up a commercial Certification Authority.

Associate Director**1998 to 1999****Senior Manager****1997**

A senior member of KPMG Australia's start-up Certification Authority business.

- Initiated the *Enshrine* SSL CA business, the first with automatic vetting against company registries, and two-year evergreen certificates – now standard worldwide
- led the international consulting team engaged by the Hong Kong government to establish the Certification Authority Recognition Office
- elected unopposed as founding chair of the Certification Forum of Australasia
- appointed by the federal Minister for Communications, IT & the Arts to the National Electronic Authentication Council (NEAC).

Other clients included the Australian Medical Association and the ASX.

Security Domain

Security Domain was a world pioneer in public key security systems and PKI services.

Software Development Manager 1995 to 1997

Line manager for 15 software engineers working on cryptographic security products. Introduced Object Oriented methods, 4th generation programming languages, and new software development processes. Responsible for a new product development quality management system. Managed the start-up of Australia's first commercial Certification Authority, Certificates Australia Pty Ltd (aka "CAPL").

Employment history cont.**Telectronics Pacing Systems****Denver, USA**

Telectronics Pacing Systems, the flagship of the Nucleus biomedical group, was the world's third biggest manufacturer of cardiac pacemakers, and a pioneer in implantable defibrillators. The firm employed over 100 R&D engineers at its two main sites, Sydney and Denver, Colorado.

Head of Software R&D**1993 to 1995**

Internally headhunted after transferring to the US headquarters to turn around what was an under-performing software department. Line manager responsible for 17 engineers working on embedded pacemaker software and related test systems. Also responsible for ISO-9001 and US FDA regulatory compliance. Member of the company's international World Class Product Development Steering Committee.

- Brought all projects on or ahead of budget within 18 months of starting the role
- project managed the port of a medical instrument software to a 'Wintel' OEM platform
- led a cross-functional Product Development Process reengineering team
- optimised the company's software design processes and testing standards.

Telectronics Pacing Systems**Sydney****Section Head, Implantable Software R&D****1991 to 1992**

Directed nine engineers; responsible for budgeting, staff development, internal coding standards, and technical consulting to clinical, regulatory and intellectual property departments.

Team Leader, Implantable Defibrillator Software**1989 to 1992**

Led a team of five writing embedded software for a new implantable defibrillator, model 4211.

- Specially responsible for the System Functional Specification
- wrote the software system architecture
- acted as Project Manager from time to time, directing a multi-disciplined team of 20
- awarded three US patents for cardiac implant technology.

Senior Software Engineer**1987 to 1989**

In a team of seven writing the world's first implantable defibrillator software for model 4210.

- Personally developed 6,000 lines of real-time C code, proven fault-free after >1000 run time years (the most reliable real-time software in the world at the time).

CSIRO Division of Wool Technology**Sydney****Experimental Scientist****1986 to 1987**

Developed image analysis software and hardware to automate raw wool appraisal, including novel algorithm development and digital signal processing.