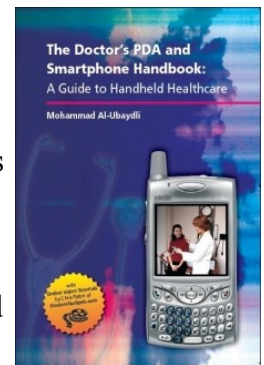


Biography

Mohammad Al-Ubaydli is a doctor and programmer who uses IT to improve healthcare. He graduated as a medical doctor from the University of Cambridge and is now a researcher at the National Center for Biotechnology Information at the National Institutes of Health in the USA. He is the author of four books, including “Doctor’s PDA and Smartphone Handbook” and “Handheld Computers for Doctors”, and co-founder of Medical Futures, Ltd. He is on the Executive Committee of the UK Health Informatics Society; the Royal Society of Medicine Young Fellow Committee; and the editorial board of the International Journal of Surgery. See <http://www.handheldsfordoctors.com> for articles and book information.



Case studies

Dr Robert Gerl (robert_gerl@web.de or +49-89-28808269) studied at the University of Regensburg, his PhD thesis on Tibetan medicine. He graduated as a medical doctor in 2003 completed his PRHO year at the Red Cross Hospital Munich. He has taught evidence-based medicine courses at the Institute of Clinical Economics at the University of Ulm and managed the mobility project for the Red Cross emergency medicine team at Oktoberfest. He now works at the Askon Consulting Group’s Department for E-Health.

Dr Amir Mehrkar (amir@mehrkar.com or 07968800859) recently started his GP Vocational Training Scheme in the Wessex region having qualified from Cambridge University in 2004. To date he has demonstrated that PDAs can be successfully used for IV drug infusion management in the Paediatric ICU setting; phase 2 involves bedside implementation of this system. He is also managing an on-call acute surgical handover system where PDAs will be used for documenting the initial patient clerking before printing off an access report of this clerking and a complete on-call patient list. See www.mehrkar.com for further information.

Security

Recommended software is TealLock Corporate edition (www.tealpoint.com) for Palm Powered devices and SafeGuard PDA (www.utimaco.com) for Pocket PCs. Both allow numeric keypads for passwords and encryption of specific files (eg HandBase files).

Five steps to analyse security systems

- 1 - What assets are you trying to protect?
- 2 - What are the risks to those assets?
- 3 - How well does the security solution mitigate those risks?
- 4 - What other risks does the security solution cause?
- 5 - What costs and trade-offs does the security solution impose?

NHS Information Authority Security Toolkit

The toolkit is available from Tom Lillywhite tom.lillywhite@nhsia.nhs.uk, version 3.0 has just been released. A good (ie short) introduction to the UK Government's Risk Analysis and Management Method (CRAMM) is available at <http://www.gamssl.co.uk/topics/hot5.html>.

Risk Analysis

Risk is normally defined as the chance or likelihood of damage or loss. In CRAMM this definition is extended to include the impact of damage or loss. That is, it is a function of two separate components, the likelihood that an unwanted incident will occur and the impact that could result from the incident.

Risk Analysis involves identifying and assessing risks to data and the information system and network which support it. Typical risks include:

- data being lost, destroyed or wiped
- data being corrupted
- data being disclosed without authority
- data being interfered in various ways during transmission.

The processes involved in risk analysis are identifying assets, valuing the assets, threats and vulnerabilities, and then calculating the risk.

1. Assets – Physical assets; End user services; Software assets; Data assets

2. Threat and vulnerabilities

- Masquerading of User Identity (by insiders; by contracted service providers; by outsiders)
- Unauthorised use of an application
- Introduction of damaging or disruptive software
- Misuse of system resources
- Communications infiltration; interception; manipulation; failure
- Repudiation
- Embedding of malicious code
- Accidental mis-routing
- Technical failure of host; storage facility; print facility
- Technical failure of network distribution component; gateway; management or operation host; interface; service
- Power failure
- Air conditioning failure
- Application software failure
- Operations error
- Maintenance error (software; hardware)
- User error
- Fire; water damage; natural disaster
- Staff shortage
- Theft by insiders; outsiders
- Willful damage by insiders; outsiders
- Terrorism

3. Countermeasures

Databases

HanDBase is a fully featured relational database. The “relational” bit means it can elegantly handle complex information, and is the standard for database programs on PCs. It can efficiently handle data creation, storage and searching. Through the infrared beam, beaming, synchronizing and printing are also possible.

<http://www.handheldsfordoctors.com/learn/organisation/handbase3review.htm>

Database fields

<i>Text</i>	<i>Integer</i>	<i>Float</i>	<i>Pop-Up</i>	<i>Check-Box</i>
<i>Unique</i>	<i>Image</i>	<i>Date</i>	<i>Time</i>	<i>Heading</i>
<i>Link</i>	<i>Linked</i>			

Example form

How would you design these in HandDBase?

1. Patient details: name, date of birth, ID, sex, ward, bed, etc.
2. Blood results: RBC, Hb, MCV, WCC, date, time, etc.

Surgical logbook

"Handheld computers for surgical logbooks", *International Journal of Surgery*, 2004 vol 2 issue 1.
<http://www.handheldsfordoctors.com/learn/organisation/surgicallogbook.htm>

Training users

- Palm OS Simulator - <http://www.palmos.com/dev/tools/simulator/>
- dotPocket - <http://www.dotpocket.com/>
- Palm Graffiti Alphabet printout – http://www.palmone.com/us/products/input/graffiti2_alphabet.pdf

Handover project

Professor Derek Gallen (Derek.Gallen@lnrhwd.nhs.uk) has been Postgraduate Dean in LNR for 2 years. He was previously GP Director in the Oxford Deanery and a practising GP in Northamptonshire for 15 years. Since becoming Dean he has developed the research division of the Deanery and raised the profile of the Deanery at national and international conferences, presenting papers on quality improvements in medical education and training.

He is currently leading a scoping project for Connecting for Health (NPfIT) on the role of PDAs in supporting safe handover in the NHS. He is a seconded advisor to the Department of Health's Modernising Medical Careers Team and leads on Foundation programmes. He was recently elected Vice-Chair for Foundation Training, Conference of Postgraduate Medical Deans of the UK.

Further reading

- QEH hematology department – chapter 12 of “Handheld computers for doctors” and as a paper: Mohammad Al-Ubaydli, Laura Deans: Introduction Of Handheld Computers Into The Haematology Department Of A District General Hospital. *The Internet Journal of Pediatrics and Neonatology*. 2003. Volume 3 Number 1.
<http://www.mo.md/id155.htm>
- QEH family practice – chapter 13 of “Handheld computers for doctors”. We discussed with the GPs instances when the practice's reliance on paperwork was most irritating to the doctors. Three areas became apparent: 1 - The personal development plan; 2 - Tracking of expenses; 3 - The cataloguing of useful clinical literature.
<http://www.handheldsfordoctors.com/book/text/chapter13.htm>
- QEH internal medicine department – chapter 14 of “Handheld computers for doctors”. Like many hospitals in the UK, this one has been trying to cope with the reduction in junior doctors' hours. Reducing hours means increasing reliance on the shift system; more shifts mean more handovers; and handovers carry with them the risk of reducing continuity of care. The consultants asked whether handhelds could assist in providing this continuity.
<http://www.handheldsfordoctors.com/book/text/chapter14.htm>

- Aziz O, Panesar SS, Netuveli G, Paraskeva P, Sheikh A, Darzi A. Handheld computers and the 21st century surgical team: a pilot study. BMC Med Inform Decis Mak. 2005 Aug 18;5:28. <http://www.pubmedcentral.gov/articlerender.fcgi?tool=pubmed&pubmedid=16109177>
- Arpadi medical translation software - www.arpadi.de/index_e.html.
- Beyond Fear, by Bruce Schneier. Springer, 2003. A security book that manages to be entertaining bedtime reading. The five-step process of analysing a security situation is well worth remembering. <http://www.schneier.com/>
- Security Engineering: A Guide to Building Dependable Distributed Systems, by Ross Anderson. John Wiley & Sons Ltd, 2001. Excellent textbook on all aspects of security peppered with hilarious anecdotes. Chapter 3 on passwords and chapter 8 on the BMA security model are particularly useful for clinicians. <http://www.cl.cam.ac.uk/~rja14/book.html>
- HanDBase tutorials at <http://www.ddhsoftware.com/support.html>
- DatePak allows you to share calendars with the rest of your team. <http://www.handheldsfordoctors.com/learn/organisation/datepak.htm>
- RepliGo is good for storing read-only documents on a handheld computer. This is ideal for local guidelines and protocols. <http://www.handheldsfordoctors.com/learn/ebooks/repligo.htm>
- Offline web browsers allow you to download a website for later reading on your handheld computer. The commercial iSilo is available for Palm Powered and Pocket PC devices (www.isilo.com) while Plucker is freely available for Palm Powered devices (www.plkr.org).
- Software – <http://www.handango.com>