Curriculum Vitae: Ben Barker MIET

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Highly motivated electronic engineer with experience ranging from system design and specification, through contract management and hardware production

Academic Qualifications

Date	Role
2004	**BEng (2:1) Electrical and Information Sciences** Cambridge University
2005	**MEng (Merit) Electrical and Information Sciences** Cambridge University
2006	**MPhil (Merit) Electrical and Information Sciences** Cambridge University MPhil thesis dealing with novel materials for high temperature superconductors – which entail both theoretical modelling, and experimental observation of, various materials magnetic behaviours at differing temperatures (thesis linked to above)
2008	**MA** Cambridge University
	Working on application for CEng, expected to complete 2014

Technical Skills

Skills
Video encoding and decoding techniques, both software and hardware
Network design and implementation– particularly relating to multicast video transmission
Experience in developing **solutions** to monitor both **software and hardware** systems, and act on results – both via SNMP using tools such as nagios, and via customized scripts and hardware monitoring tools
PCB design and manufacture, from schematic and board design to manufacture and testing, using industry standard tools
Requirements capture and technical specification / contract drafting
Contract management and stakeholder engagement
Oracle 10g Development certified professional

PHP and JavaScript, including their use with various databases (Oracle / MySQL / Postgresql)
Experienced in standard document-processing tools (**MS Office, LibreOffice** etc)
Experience with various operating systems, including **Windows** and various flavours of **Linux**

Project Skills

Skills
Experience in **managing contractors**, either for ad-hoc work, or as part of ongoing contracts
Experience in **requirement capture**, and technical specification writing
Experience large scale **procurement** - from tender writing and evaluation through to contract drafting
Good **communication skills**, both written and verbal, ensuring that the approach and level of detail ensures **stakeholders** in question are fully engaged
Comfortable working to financial and time-based **deadlines**

Key achievements

Wrote technical specification for the CCTV terminals used by TfL to access CCTV images. Was responsible for initial stakeholder engagement and requirement capture, following this through to detailed specs and contract drafting, system design and testing, and finally delivery.
Designed and implemented system for capturing and publishing images to the public from the TfL traffic cameras
Responsible for the operation of the TfL CCTV system operation during the 2012 Olympics
Wireless hardware and software based home energy monitoring system, the output of which can be seen here – including creating PCBs to measure mains voltage and current safely, then process and output the results, and capable of calibration against provider supplied electricity meter to a high degree of accuracy. Far more accurate than most domestic units, due to measuring of voltage and power factor (rather than assuming 240v and unity pf)
Created hardware “clicker” based upon re-purposed keyboard circuitry to allow for BBC presenters to easily advance through cameras when using the TfL CCTV system on air
Designed and created an raspberryPi RFID based door lock system in response to internal requirements, documented here
Implemented and managed admin front-end for the new TfL CCTV system, dealing with addition and management, through to critical system monitoring and control. Developed in collaboration with key stakeholders, ensuring delivered product met expectations and requirements. A combination of technologies are used to monitor health of the system, and either allow real-time or historical investigation, or if desired pro-actively inform relevant staff, through the

use of SMS and/or email alerts. Estimated to have saved TfL at least £25k in development costs (based on commercial rates)
Non-work related web development can be found here: http://bbarker.co.uk/computing/computing.php Examples of work include a site to monitor train and bus arrivals via a Smartphone, and a storage vault for GPS tracks. Also various "useful" mashups like this and this

Summary of employment

Summary of employment given below. Further details available on request

Date	Role
2013-Present	**Principal Traffic Technology Engineer** **Transport for London – Development and Research** *Technical liaison for various "Cooperative Systems" trials across TfL, working with industry to create fusions of TfL and external data feeds to the benefit of Londoners.* *Responsible for specifying requirements, and evaluating tenders for, new CCTV system support and maintenance contracts.* *Designed, tested, manufactured, and populated multi-layer PCBs to interface between legacy traffic control systems on-street and newer IP based technology. This involved a number of different designs to comply with the various technologies in use.* *Created hardware "clicker" based upon re-purposed keyboard circuitry to allow for BBC presenters to easily advance through cameras when using the TfL CCTV system on air*
2012 (Summer)	**Olympic CCTV (3 months)** **Shift based 24/7 BAU Management of TfL CCTV system during Games** *Working shifts to ensure detailed technical expertise on TfL CCTV system was available 24/7 for the duration of the Games.* *Built linux-based server to stream multicast video from each of the freeView muxes, enabling Olympic coverage to be delivered via IP multicast across the TfL estate.* *Provided 24/7 second/third line support as required to ensure systems remained operational, responsible for a number of RedHat based servers across two data centres providing CCTV services to TfL, Police, and Government.*

2010-2013	**Senior Traffic Technology Engineer** **Transport for London – Development and Research** *Wrote contract for GUI and hardware codecs for digital CCTV system covering ~1500 cameras and ~800 users* *Managed project to deliver 3G video to TfLs users for use in "Rapid Deployment" cameras* *Key member of team of three responsible for testing and development of digital CCTV system, from requirements gathering and design through to deployment and maintenance, signing off on all stages of acceptance testing.* *Implemented API for various CCTV equipment to create testing and validation tools for the CCTV system being developed at that time. Tools used various languages, including bash scripts, php, and python.* *Identified need for, and then coded and implemented, a system to allow users to capture snapshots from the TfL CCTV system that would then be automatically sent to their email account, ensuring suitable audit trail was maintained.* *Developed a software management interface for digital CCTV system, allowing everyday admin and maintenance tasks to be carried out easily, as well as allowing for real-time monitoring of system usage.* *Frontend was primarily javascript/ajax and php, with backend functionality provided by a Postgresql database and various cronjobs using python, perl, and php.* *In response to need to monitor TfL systems, wrote a system to send SMS and email alerts in the event of critical system events. These alerts could be triggered via periodic cron checks of system status, or via SNMP.* *Designed and built the TfL "JamCam" system, providing a software interface between TfL's online presence and the new digital CCTV system, and allowing for the number of public JamCams to be more than tripled, whilst also producing a new management console allowing for these published images to be audited. Also wrote code to overlay TfL logos onto afore-mentioned published images.*
2010	**Development Engineer** **Transport for London** *Implementation of proprietary TfL CCTV camera control protocol in software, both GUI and backend, as part of proof of concept for future digital CCTV project* *Management and implementation of changes to TfL branding across legacy (analogue based) JamCam system* *Designed methodology for, and subsequently managed roll-out of, security PINs to users of analogue CCTV system, prior to its replacement by the new digital system.*

	Implemented a system to periodically capture all CCTV presets and present them via a web GUI, as part of a drive to ensure all such presets were appropriate. This involved writing code to interface to the legacy system, designing hardware to make this interface possible, then testing and deploying the same. *Wrote code to extract and present periodic audit reports from the logging systems of the legacy CCTV system (such as usage figures), ensuring decisions were taken to save TfL money were possible by decommissioning redundant equipment.*
2006-2009	**Graduate Electronic Engineer** **Transport for London** *Secondment across various departments, notable deliverables include:* • *Design and manufacture of miniature VMS (LED matrix sign driven via a micro-controller) for software development, including PCB design and manufacture* • *Development and cross-TfL deployment of H&S monitoring system for staff, including web-front-end and SMS/email alert system*
2004	**Student Consultant** **Lloyd's Register Rail** *Various work, including PHP and ASP development, and gaining knowledge of railway signalling processes and systems. Also worked on P-Way, and gained PTS qualification.*

Awards

H&S award presented by TfL Surface Transport MD for the development of staff whereabouts monitoring system, which allows for numerous web based location boards to be set up, flagging up those employees who have failed to return, and, if desired, sending them or their managers alerts.
Internal “bronze” award for the development and deployment of a TV streaming system over the TfL LAN, including Subtitles and audio, for use during the games period, to ensure that all staff could view Olympics and monitor news channels from any CCTV workstation.
Internal “silver” award for developing, testing, and deploying a system to shut down TfL desktop machines when certain criteria were met, saving significant sums annually on electricity usage and machine wear/tear.

References

Available upon request