|  |
| --- |
| Peter Mulhearn  **Enterprise Solutions Architect** with over 17 years of experience of designing and changing IT systems for large enterprises across numerous industries. A proven track record of delivering enterprise solutions across a wide range of business scenarios and technologies. Experienced in delivering high-level and low-level-designs, plus full design lifecycle from setting the vision through to final implementation. A motivated and well organised self-starter with excellent communication skills, now seeking a new challenge aligning IT to deliver business outcomes. |

# Expertise

* **TOGAF v9 Certified**
* **Azure Solutions Architecture Expert Certified** (AZ300, AZ301)
* Architecture Vision, Strategy and Roadmaps
* High-Level Designs ▪ Baseline, Target and Transition Architectures ▪ Gap Analysis ▪ Option Papers
* Requirement Specifications ▪ Technical Reviews ▪ Impact Analysis ▪ Proof of Concept ▪ MVP
* Cost models for licenses, cloud subscriptions, professional services ▪ Change Requests
* Engaging with and influencing stakeholders from business and IT
* Management of suppliers and teams ▪ Implementation Planning and Governance
* Leading productive workshops to achieve required outcomes
* Establishing groups and forums that require Architecture governance
* Excellent documentation, presentation and communication skills

Experienced with:

* Cloud, On-Premise, and Hybrid architectures (Azure, SaaS, PaaS, IaaS, VMware, Hyper-V, ExpressRoute)
* Application solution design (N-tier, Presentation, Web, Application, Data tiers, Dot NET, SQL)
* Integration (APIs, Event driven, Publish/Subscribe, Service Bus, SOA, BizTalk, REST, JSON)
* Networking Infrastructure (LAN/WAN, MPLS, Site-Site VPN, SDN-WAN, Meraki, Cellular M2M, Private APN, DMZ, DNS, DHCP)
* Multi-supplier contracts and operating models (e.g. mix of outsourced, internally managed & clouds)
* Scalability, Resilience and Recovery strategies (Auto/elastic scaling, HA, Load balancing, RPO/RTO, DR and site recovery)
* Security (RBAC, CIS, Firewalls, Proxy, WAF, VPN, PKI, GPO, MDM, IPSEC, TLS, MFA, and more)
* Identity and Access Management (SSO, Azure AD, ADFS, SAML, Federation, JML)
* BI and Reporting (Data warehouse, Tabular, Cubes, Data Lake, Structured and unstructured data)

# Key Achievements

* Architected a device management solution utilising Azure, Intune and Windows 10 IoT. A cloud-first architecture with modern management, zero-touch deployment and security hardening. Fully scalable and reusable across global business units. The solution deploys new (or upgrades) digital media players without interaction and results in a digital sign that is commercially operational when the process completes. Business units are now aligned, preparing them for accelerated digital transformation.
* Architected Enterprise Service Bus (ESB) solutions for two customers. Used to integrate large number of business applications, replacing hundreds of tightly coupled integrations, and laying the foundation for SOA services. Defined standards and patterns for integration to ensure development followed IT best practices and information security policies.
* Designed a full Business Intelligence and Analysis platform based on the Microsoft BI stack. Feeding numerous client technologies, plus data analysis and reporting tools including Report Builder, Excel, and Tableau. Data ingest, ETL, processing, modelling and reports are orchestrated and automated. RBAC was added to limit each users scope of view across data warehouse, OLAP and real-time data sources.

# Contract and Employment History

**May 2016 – July 2019** (3 years, 2 months – multiple contract renewals) **Solution Architect, Clear Channel International, London**

* Clear Channel is a global media owner that is undergoing a digital transformation of their Out-of-Home (OOH) advertising business. The focus of my role was to provide leadership and guide Solution Architectures for a number of digital projects and initiatives, and to help define the Target Operating Model (TOM) for Digital Operations across international business units. I worked in the international HQ business division facing 21 international business units across Europe, Latin America and Asia. I interfaced with digital operations managers and their teams, central IT, procurement, legal counsel, and presented to senior management (CIO level, and departmental heads) in both HQ and business units.
* I set out a 3 year strategy for the modernising the operation of digital sign solutions to simplify and lower costs through standardisation, shared services, greater use of cloud and commodity tech. I presented this strategy to the CIO in HQ after which many of these initiatives became part of the agenda including a regional NOC, standardised monitoring and incident management tools.
* I designed architectures for several new city digital signage projects (1000+ digital signs) across Europe including deployments in Madrid and Brussels, and migrations across Sweden and Denmark. Using strategic sign hardware and software platforms (inc. Broadsign, Azure). These introduced a new Cloud based content management system to manage the content and schedules of advertising campaigns. These projects were all delivered successfully in 2016-2017.
* Designed a cloud-managed Windows 10 IoT LTSC solution for Digital Signage. A cloud-first architecture with modern management, zero-touch deployment and security hardening built in. Scalable to multiple geographies globally, using Azure and Intune. Enabled international business units to easily adopt the new standard and to convert to an IoT architecture preparing them for massive growth. In addition to collecting the business requirements from across European business units, I had to promote the solution into business units by running multiple workshops including POCs. I also had to break down barriers to cloud adoption by dispelling fears and myths and challenging competing views. Included RBAC, MFA, a new Azure AD tenant, TeamViewer, Tenable IO.
* I defined a Reference Architecture for Digital Signage to meet the requirements of the international Target Operating Model. It accommodates strategic and diverse technologies, complex operating models and supply chains. I used TOGAF Architecture Building Blocks (ABB) to describe the architecture, defining requirements and standards. I also provided guidance documentation for BUs and central procurement teams when rolling out new projects or identifying new standard products. The Buliding block model was used to catalogue the baseline of each international business unit and to prioritise the standardisation effort.
* I led a project to integrate a new product from a strategic sign manufacturer with Clear Channels strategic software solution. This included running a 2-day workshop setting out Clear Channels vision, including future direction and requirements, writing the HLD and gaining sign-off by all parties, and later facilitating the integration testing and security assurance. Later I submitted several Change Requests to add a monitoring data feed into an Azure Event Hub, and others that improved operability for operations teams. After 4 initial European deployments of the product I led a software roadmap workshop to agree a joint supplier and customer roadmap setting out required areas of focus for the next 12 months.

**October 2014 – April 2016** (1 year, 6 months – 2 renewals)  **Solution Architect, Hyde Housing, London**

* Solution Architect responsible for specifying Technical Architectures for a number of major new business systems, including two mobile application solutions, a Dynamics CRM 2015 platform and BizTalk 2013 R2 as an ESB.
* Designed the technical architecture for a Contractor Management System with a Windows Phone device. The solution will be used by Gas or Electrical engineers and other operatives carrying out repairs and surveys. The solution allows operatives to be assigned new jobs whilst on the move, record progress and to order spare parts to be delivered to the required location. The solution included a cellular Private APN connection, First Touch mobile software, interNETalia Accuserv CMS, Windows Phones, and integrated with multiple line of business systems. The technical layer is based on Windows Server 2012, SQL 2012 and is fully virtualised, scalable, highly-available and capable of disaster recovery from primary to standby datacentres.
* Designed a Dynamics CRM 2015 platform. The infrastructure is scalable and capable of multi-tenancy for hosting multiple CRM solutions. It will initially host a CRM solution for managing the sales process for the Hyde New Homes department. The solution integrates with an externally hosted website to import details of new customers and prospects.
* Reviewed the existing BizTalk 2009 installation and concluded that it was not flexible enough for satisfying future requirements and supported only a small set of tightly-coupled integrations. Presented the justification and context for procuring professional services to design an Enterprise Service Bus based on BizTalk 2013 R2. This context positioned BizTalk and a Canonical Schema as the foundation of the ESB, allowing Hyde to integrate systems in a way that loosely couples systems and implements services that are re-usable across a number of upcoming projects.

**June 2014 – July 2014** (5 weeks – return visit)  **Technical Architect, University of Oxford, Oxford**

* (Also see Jan2012-Sept2013 for previous contract here)
* Produced an overarching architecture document describing the systems that comprise the new Student Records System. This document encompasses the Core Student Record system (SITS Vision), Data Warehouse and Reporting and Analysis services (SQL 2012 Business intelligence stack). The document links together existing high-level designs for each service, and also provides management-level descriptions of the relationship between the business, service and technology layers.
* Produced six designs for new application interfaces between various systems that hold student data. These detailed designs were used to inform the engineers and developers building the components of each interface. All interfaces utilise the BizTalk Enterprise Service Bus.
* Reviewed the non-functional requirements for the Student Records System against what has currently been deployed. Produced a compliance report for the service manager so that each gap could then be considered and addressed.

**December 2013 – June 2014** (6 months) **Infrastructure Technical Architect, ATOS (Ministry of Justice account), Central London**

* Technical Architect role for Managed IT Services (new business), producing formal high-level designs (HLD), bill of materials (BOM) and migration plans for managed infrastructure solutions for the Ministry of Justice. Each design became part of a fully costed proposal with supplier contract changes. Work included designs for new solutions and also enhancements driven by changes to the MOJ business model. Architecture work followed a tailored version of the TOGAF, capturing both Baseline and Target architectures, gap analysis and any relevant transition architectures. Migration planning for this large enterprise involved planning out work across multiple Atos technical towers, subcontractors and 3rd parties to install hardware and software, perform upgrades, develop and test software customisations, and perform various on-site changes.
* Designed new managed infrastructure platforms for applications including: Facilities management service desk application (HEAT), Qualitative analysis software for HMIP (Nvivo), and legal forms (IRIS Laserform). Each design utilised existing virtual infrastructure investment, and followed ATOS CTO standards and solution building blocks for server and client deployment, and tools such as backups and monitoring.
* Produced a technical impact analysis and options paper for the Single Family Court law changes implemented in Easter of 2014. This involved multiple changes to business and application architectures that had a significant impact on the technical architecture due to a legacy application placing constraints on the Active Directory and multi-function printer estates.
* Integrated a G-cloud III SaaS application with the MoJ desktop environment and messaging infrastructure. This service is based on the Microsoft Dynamics CRM 2013 Cloud platform.
* Improved the resilience of critical MOJ business applications hosted across 41 regional courts and one large London Estate office. Introduced a rack-mount UPS design for improving application server resilience, included full monitoring integration with central HP Operations Manager and auto-tickets with USD. An automated shutdown feature was included for application servers to preserve data integrity during power interruptions. Also re-located two highly critical legacy applications from a small London server room to the central Tier-3 datacentre facility. The solution also involved re-platforming the applications from legacy and unsupported DEC Alpha hardware and virtualising onto resilient x86 platforms with Alpha hardware emulation software.

**January 2012 – September 2013** (1 year, 9 months - 4 extensions) **Technical Architect, University of Oxford, Oxford**

* Technical and solution architect role, responsible for producing high level designs and architectures for several business applications and public websites. Specified three new systems (BI, ESB and ERP) and redesigned two CRM systems. Obtained non-functional requirements for each system using own template that was tailored to the ICT technology and support landscape. Produced high-level architectures allowing early estimation of hardware, software and resource costs, followed by low-level design, including as-is/baseline and to-be/target architectures, producing gap analysis where needed. Specified full hardware and software requirements, re-using existing hardware and software assets where possible. Also responded to architecture change requests, assisted with implementation and migration plans, data centre capacity planning and analysis of issues found during testing.
* Re-designed two CRM systems: MS Dynamics 2011 (On-premise) and Blackbaud CRM (for fundraising). MS Dynamics 2011 needed to be migrated from a small PoC platform to a scalable multi-tenanted platform used as a back-end for several LOB applications. Blackbaud CRM had reached the technical scalability limits and needed to be redesigned to accommodate the migration of many isolated fundraising systems, and tens of new fundraising websites. Both systems feature a fully redundant N-tiered virtual architecture split across two datacentres with multi-site failover clustering for the SQL data tier.
* Designed a Business Intelligence platform based on Microsoft products: SQL Server 2012, Analysis Services and Reporting services. Initial client architecture includes Tribal SITS and Unity, and a number of data analysis and reporting tools including Report Builder, Excel, and Tableau. Also organised and scoped a RBAC security model and engaged a specialist BI consultancy to deliver this.
* Shortened the Recovery Time Objective (RTO) for physical SQL database tiers by introducing multi-site failover-clustering as a new standard. Using EMC RecoverPoint to provide hot-standby availability and automated recovery across datacentres.
* Defined a full ESB technology architecture using BizTalk Server to integrate enterprise systems ranging from Oracle Financials R12, CORE HR, SITS e:Vision, Dynamics CRM, Agresso ERP, EPOS and others. Defined design standards and guidelines for initial and future interfaces covering web service, db-link and file type transports, together with constraints for traversal of firewalls and network boundaries. A DMZ B2B proxy layer was also established for web service and file transports between the ESB and external systems or 3rd parties, including HMRC via AS2 for EDI. Transports included Oracle EBS, ODAC, SQL, SOAP, REST, SFTP, SMB and NFS. Also defined the Agile NFR specification template for integrations via the BizTalk ESB, ensuring that significant requirements are captured for business critical interfaces that often transmit sensitive data (e.g. financial, HR, payroll, student and research data) across network boundaries.
* Technologies used: MS Dynamics CRM 2011, Agresso Business World (ERP), Blackbaud Enterprise CRM, SQL 2012, SSRS, SSAS, BizTalk Server 2010, IIS 7.5, Windows Server 2008 R2, VMware VSphere, EMC VNX SAN and NAS, SAML, ADFS

**December 2010 – October 2011** (11 months) **Technical Architect, Hewlett Packard (Defence), Reading**

* Technical architect role for a large-scale technology refresh programme. Focussed on designing infrastructure solutions architectures for a highly secure defence network environment.
* Designed the Microsoft Volume Activation 2.0 infrastructure required to service hundreds of sites globally, running Windows Server 2008 R2, Windows 7 and Office 2010, with site links ranging from reliable, periodically-offline and unreliable connectivity. The solution includes an additional layer of authentication added to the underlying protocols to meet mandated security requirements.
* Reduced cost of ownership across 600+ small tier sites by designing a multifunction site server solution for file and print, replacing an older and more costly multi-server solution. Reduced the number of physical hosts with a mixture of consolidation and virtualisation, and created a DFS-R design pattern for replicating data to the central tier, replacing a more expensive Veritas solution whilst maintaining WAN efficiency.
* Designed a versatile object-auditing security model for detecting and recording malicious attempts to steal, modify or delete customer data. The solution was driven mainly by customer security requirements, but also the requirement to be agnostic of various platforms such as Windows Server 2003, 2008 R2 file servers and NAS appliances.
* Technologies used: Windows Server 2008 R2, DFS-R, DFS-N, VMware VSphere, Advanced audit policies, System access control lists (SACLs)

**March 2010 – July 2010** (4 months) **Microsoft Mediaroom Consultant, Microsoft (BT Vision), Ipswich and Reading**

(Also see earlier contract for BT Vision)

* Provided consultancy on the upgrade process for the ‘BT Vision’ platform upgrade to Microsoft Mediaroom SP3.2. This upgrade was required to enable new functionality and to increase system performance and reliability.
* Zero-downtime rolling upgrade of the ~230 server multi-tier environment and ~35 databases in 8 separate increments spread over 4 weeks. Completed on schedule and without incident.
* Upgrade process was aggressively tested and validated through functional test, system test, and scale test server environments before sign off for pre-production and production upgrades.
* Technologies used: Mediaroom, Win Server 2003, SQL, IIS, VMware ESX, HP Blades, PowerShell, .NET 3.0

**June 2009 – Feb 2010** (9 months – 2 extensions) **Infrastructure Consultant, QBE Europe (Insurance), City of London**

* Senior infrastructure engineer role working as a project resource on Interface and BI projects for an insurance LOB application (based on Xchanging GENIUS). Working with the development team to design and implement new interface and BI solutions. Also responsible for releasing general reporting and SSIS changes to non-production BI environments.
* Implemented a remote user access solution for 3rd party insurance brokers to access the underwriting platform. Used Citrix Access Gateway/AAC to provide access to the web portal.
* Technologies used: Windows Server 2003, SQL 2005 IS and RS, Xchanging GENIUS, AIA ITP (Intelligent Text Processing), PowerShell, IIS 6, .NET, Altiris, VMware ESX 3.5, Citrix Access Gateway

**Oct 2008 – Mar 2009** (6 months)  
**Infrastructure Consultant, 1E LTD, London**

* Designed and implemented a clustered Hyper-V solution to support critical systems including source control, helpdesk and bug database, and 36 development and test environments. Presented the solution proposal to key stakeholders to win investment for a SAN to support failover clustering.
* Deployed SCVMM 2008 to manage Hyper-V, Virtual Server 2005 and VMware platforms. Snapshots and automation were also used to accelerate test-cycles. Included the SCVMM Self-Service portal and VM Template Library to allow developers and testers to self-provision virtual machines on demand.
* Technologies used: Windows Server 2008, Hyper-V, System Center VMM 2008, SCOM 2007, Dell iSCSI SAN, Dell iSCSI TOE HBAs, Clustering.

**Apr 2006 – Sept 2008** (2.5 years)  **Lead Infrastructure Engineer,** **Microsoft (BT Vision Project), Reading**.

* Numerous roles throughout the project, including: Infrastructure Engineer, Lead Infrastructure Engineer, Environment and Release manager. Led a team of 5 engineers, building, operating and managing the configuration of 6 non-production environments. The team also defined procedure documentation that would be used by BT to deploy, rollback, etc. Later I helped transition operations to BTs offshore partner, working with their local and offshore teams.
* Engineered key parts of the IPTV infrastructure, middleware and interfaces. The BT Vision platform supports a complex MS Mediaroom IPTV application with custom middleware integration using SOA and message bus architectures. The solution was secured with IPsec, Group Policy, and PKI / certificates.
* Developed a successful platform migration and network cut-over process (see front page), used to move the BT Vision service overnight between two 150 server environments supporting 45,000 households.
* Technologies deployed include: Windows Server 2003, Failover Clustering, SQL 2005, IIS/.NET, CSF, .NET Web services, SOAP/XML, MOM 2005, SMS 2003, HP ProLiant + blades, HDS SAN

**Mar 2006 – Apr 2006** (2 months) **Infrastructure Consultant, Microsoft (CEOP Project), Reading**

* Designed and implemented a Microsoft based office environment for the start-up of the UK governments’ Child protection division. OS/Software provisioning was automated with ADS/APF for servers and RIS for workstations and laptops.
* Technologies Deployed: Windows Server 2003, Win XP, SQL 2005, LCS 2005/Communicator, SharePoint Portal 2003, MOM 2005, SMS 2003, Clustering, ISA 2004, VS 2005, Dell Servers, Dell/EMC SAN, Brocade

**Feb 2005 – Mar 2006** (1 year)  
**Lead Infrastructure Engineer, Microsoft (HMV Digital Project), Reading**

* Designed and installed the production and non-production environments for HMVs Digital Download music store. The infrastructure hosted a .NET storefront, integrating directly with HMVs store catalogue and user account database. The production environment spanned two datacenters providing high-availability and full redundancy. SQL 2005 with mirroring was used to provide fast recovery of service during hardware failover and maintenance windows.
* Technologies deployed: Windows Server 2003, SQL 2005, .NET, ISA 2004 EE, WMS, IBM Websphere, MOM 2005, IPSEC network security, Group Policy, IBM xSeries

**Aug 2004 – Feb 2005** (6 months)  
**Infrastructure Consultant, Microsoft (NHS North East & East Midlands project), Reading**

* Fully automated a slow, costly and error prone server build process for all data and application tier servers from bare-metal using ADS & Automated Purposing Framework. Reduced total provisioning time of a standalone physical servers to 30 mins, and a 4 node SQL cluster builds from a week to just 5 hours.
* Technologies used: Win 2003, IIS 6, SQL 2000, VERITAS, ADS + APF, HDS SAN, Emulex, HP Proliant

**2001 – 2004**

**Infrastructure Specialist, EDS (Electronic Data Systems), UK**

* For Rolls-Royce, Derby (2003 – 2004) – Exchange 2003 mail migration and automated server builds
* For Department of Work and Pensions (DWP), Lancashire (2001 – 2003) – Exchange 2000 mail migration

# Education

**Professional Qualifications and Training**

* TOGAF 9.1 Certified
* Azure Solutions Architecture Expert Certified (AZ-300, AZ-301)
* Hyper-V certified (MCTS)
* VMware vSphere 4 (course)
* Microsoft MCSE (2003)
* ITIL Foundation certified

**University and School**

* Masters Degree - MSci Physics (2:1) - University of Nottingham
* 4 A-levels, 8 GCSEs

# Other Information

* Full clean UK driving license
* Security Clearance History – BPSS in Dec 2013, SC in Dec 2010 (now expired.)
* Previously written industry articles published in *Server Management* magazine.
* References available on request