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## **Andrew K. Johnston B.Sc. – Enterprise and Solution Architect**

I am a consultant specialising in the development of strategies, enterprise and solution architectures which allow businesses to get the maximum benefit from their IT resources. Deploying a unique combination of managerial, commercial and technical skills, I can help to deliver high quality, cost-effective business solutions whether developed, procured or derived from existing assets. My track record includes several innovative designs which have delivered significant business benefit or cost savings.

I have created or contributed to the architecture of many complex systems, often integrating elements across several different platforms. A skilled architect, trouble-shooter and developer, I have practical experience of several generations of tools and technologies.

Business managers, IT managers and developers all find it easy to work and communicate with me. Having worked for both suppliers and purchasers of bespoke software, I can help to establish an equitable contractual and project control regime, and can effectively represent my clients in both technical discussions and commercial negotiations.

More than 25 years experience covers real-time, administrative and financial systems, in domains including enterprise asset management, field force automation, charging and billing, dealing rooms, property management, shipping, treasury management and retail back-office. In recent years my focus has been on integrating and rationalising systems and data using Knowledge Management, Enterprise Application Integration and Business Intelligence technologies.

A detailed understanding of the processes of software development backs up my practical experience, and I can help to define, establish and improve standards and development practices. My book “A Hacker’s Guide to Project Management” is specifically targeted at developers entering project management for the first time.

My keywords are *pragmatism* and *practicality*. I look for practical solutions which solve real problems but avoid dramatic changes wherever possible. I also make sure that whatever is required can actually be done - I never expect a developer to do something I can’t do myself!

To best use my skills I will have an active input into the strategy, architecture and design for one or more systems. I usually work as a Solution Architect, or in IT Strategy, but can also be involved in the management, support and assurance of software development.



## Key Skills and Knowledge

### Strategy and Analysis

- ✓ Development and communication of corporate IT strategy and Enterprise Architecture
- ✓ Matching of system capabilities to business goals
- ✓ Reviews, audits and explanation of computing provision and its capabilities
- ✓ Definition and implementation of strategies for knowledge & document management
- ✓ Strategy development for application integration and business intelligence
- ✓ Analysis and definition of requirements for systems
- ✓ Maintenance and development of corporate IT standards
- ✓ Choice and implementation of modelling and development tools

### Architecture and Design

- ✓ Design and development of enterprise-level and individual system architectures
- ✓ Development and review of EAI integration schemes
- ✓ Trouble-shooting architectural, performance and reliability problems
- ✓ Reviews and audits of designs and supporting documentation
- ✓ Data architectures and application integration schemes
- ✓ Training developers in object-oriented methods and design best practices
- ✓ User interfaces and user interface standards
- ✓ Design standards, including for complex multi-tier architectures
- ✓ Evaluation and selection of hardware, operating systems and development tools

### Procurement

- ✓ Preparation of Invitations to Tender
- ✓ Evaluation of possible solutions, tenders, and supplier quality practices
- ✓ Negotiation and drafting of supply and licensing contracts
- ✓ Support for project management during contract execution

### Testing and Quality Assurance

- ✓ Developer training in testing
- ✓ Test standards, choice and implementation of test tools
- ✓ Definition of the development process and quality checking procedures
- ✓ Technical reviews and quality audits
- ✓ Creation of supporting tools, including templates and inspection aids
- ✓ Choice and implementation of version control tools and practices

### Training and Documentation

- ✓ Delivery of training, with existing course material for testing, analysis and design
- ✓ Review and definition of training programmes, and creation of training materials
- ✓ Development of user documentation, training materials and help systems
- ✓ Selection and implementation of documentation and knowledge management tools
- ✓ Specification and development of intranet and internet sites



## IT Experience

### Recent Highlights

- ✓ Solution architectures for major business and IT change programmes at National Grid
- ✓ Creation of the acclaimed “Roadmaps” for National Grid’s IT strategy
- ✓ An innovative process for modelling Enterprise Data Architectures
- ✓ Design and development of an innovative retail back office system
- ✓ Creation of an inexpensive proprietary messaging system for application integration
- ✓ The architecture and design for a multi-tier client-server asset management system
- ✓ Standards for the analysis and design of component-based systems
- ✓ Design of a monitoring scheme for a multinational Unix network

### Languages, Databases and Environments

- ✓ Visual Basic and VB.NET (all versions)
- ✓ XML, XSD (XML schema), XSLT, and their use in EAI
- ✓ Java and various java-based technologies including JMS, JAXB and others
- ✓ VBA, VBScript, Active Server Pages, ASP.NET, PHP
- ✓ EAI tools including JCAPS, BizTalk, JMS, MSMQ and bespoke messaging
- ✓ Oracle, including distributed databases and various tools (SQL\*Forms, PL/SQL)
- ✓ Unix, including C, Bourne Shell, Perl, Awk and X-Windows
- ✓ Windows, including the 16-bit, 32-bit and .NET APIs

### Communication Skills

- ✓ Publishing credits include “A Hacker’s Guide to Project Management” – light-hearted project management advice, now in its second edition
- ✓ Papers include “The Benefits of EAI” (Enterprise Architecture Conference 2011), “Agile Architecture” (Enterprise Architecture Conference 2006), “Modelling the Enterprise Data Architecture”, “Communicating the Enterprise Architecture”, “The Pragmatic Approach to Quality” and “Getting the System Sizing and Performance Testing Right”
- ✓ I offer training courses in testing and object-oriented analysis and design
- ✓ A highly experienced user of tools such as Microsoft Office and others for electronic and paper-based document delivery, including Intranet development
- ✓ A good working knowledge of French
- ✓ I maintain a fully-equipped office, and a wide-ranging IT library
- ✓ I run the AgileArchitect.org website exploring the use of agile methods in architecture, and the role of the architect in agile developments

### Education and Affiliations

A Founding Member of the World Wide Institute for Software Architects



1979 - 1982: Lancaster University. B.Sc. (Hons) 1st Class in Physics.

1972 - 1979: Chepstow School. 10 'O' Levels, A Grades at 'A' Level in Mathematics, Further Mathematics, Physics and Chemistry, including a distinction on the Physics special paper.



## Curriculum Vitae and Customer Profiles

Since 1994 I have been working as an independent consultant, trading as Questa Computing Ltd. In addition to a number of short assignments for private clients, I have supported several major clients in a range of capacities.

### National Grid Plc. (February 1997 – present)

At National Grid (NG), I have worked in a wide-ranging role contributing to the group's IT Strategy, technology development, merger activities, and individual system architectures. I have contributed to changing the technical basis of their systems, the methods and techniques they use, and the IS role in National Grid.

For several years I worked with successive IS Strategy Managers to develop the formal IT Strategy, aiming to deliver increased business value while reducing inefficiency, fragmentation and duplication. I innovated popular ways to document and communicate the strategy - the acclaimed "roadmap" representation was my own invention.

As National Grid has grown by acquisition, I have been involved in various pre- and post-merger activities, including moves towards a unified IT Strategy, streamlined technical governance, and a group-wide Internet structure. NG use various IT sourcing options, and I have been involved in preparing ITTs, evaluating suppliers and solutions, assisting managers new to the systems procurement process, and providing technical supervision to suppliers.

In late 2002, working with external consultants and the business, I articulated a new vision for the systems supporting the Transmission business's asset and work management. This was based around a central asset repository, with an integrated document management system, a field force solution, and a comprehensive data warehouse with Business Intelligence tools, all integrated by a shared EAI backbone.

This has now been almost fully implemented through a major programme of IS and business change, and is delivering business value. In my role as Solution Architect for that £34M programme I provided guidance and supervision to internal and external service and solution providers, maintaining a "hands on" approach. In particular I have been actively involved in the analysis, solution design and resolution of a number of integration, performance and reliability issues.

I then led the replacement of the mobile PC platforms for the various field force solutions, replacing several disparate solutions with a solution family based on a common software architecture. As part of this programme I persuaded National Grid to take an agile approach to introducing a PDA "point of work" inspection solution, which helped deliver solid business benefit much more quickly and cheaply than the normal waterfall method would have done.

Since 2007 National Grid have been engaged in a major programme of systems replacement and rationalisation, starting with their core Asset and Work Management system and now extending to almost the entire landscape. This has included refreshing the integration architecture and building comprehensive integration with a new SAP "back office". I have



worked as Lead Solution Architect and Design Authority throughout this continuing programme, and can claim to have driven design decisions which have delivered innovative value or substantially reduced costs, risks and business impact. In particular by exploiting and extending the strong integration architecture developed earlier we have now managed at least five major system replacements with almost zero impact on other systems at each stage.

Most recently my focus has been on developing a Strategy and Architecture for “Strategic Asset Management”. This programme aims to create an environment in which traditional asset data can be combined with data collected directly from assets in near real time, subject to novel analyses and presented through graphical composite applications to enable a move to condition, risk and criticality-based asset maintenance and replacement planning. As such it will form a major plank of Transmission’s strategy to meet their obligations between now and 2020. The initial stage has delivered an enabling communications and security layer, and I am now developing the data management and application architecture which will exploit this.

I work closely with a number of senior business managers, to develop and communicate the planned IT changes and ensure they meet the business aims. My success in defining and executing the Solution Architect role has been recognised by NG, who have made it the template for architects throughout the organisation.

#### British Energy Power and Energy Trading (February – June 2007)

BEPET were in the process of refreshing many of their trading systems. In this short engagement I helped define the requirements, future architecture and project direction for the Retail Spine, which handles the commercial processes for around 10% of Britain’s electricity, supplied to some of its largest corporate consumers.

#### Addison Wesley (January 2003 – present)

I regularly review book proposals and manuscripts for this major technical publisher.

#### Legal Marketing Systems Ltd. (January – July 2004)

LMS proposed a major innovation in their core business process, remortgage conveyancing. I assessed whether their existing systems could support the revised process and what changes would be required. I then provided consultancy as this moved into the implementation phase.

#### Marks and Spencer Plc (May 1999 – June 2002)

Marks and Spencer had an urgent business requirement for a new back office system, for which several previous projects had failed. It was subject to a number of severe and conflicting constraints limiting timescales, the delivery of new software, and available WAN bandwidth. I designed a solution which met the very tight deadlines, used roughly 1% of the previous communications bandwidth, and exploited the existing Microsoft Office/Exchange infrastructure to deliver substantial functionality without any new components at the desktop. The solution reduced a key business process necessary to keep goods on sale from over 14 days to a few hours.



I provided technical leadership for two years, as the design was substantially extended in scope, including multi-country and multilingual support. Complex business and formatting rules were moved from code to a rule database, and the system migrated to a component-based architecture.

Marks and Spencer cited me as co-inventor (with the key business manager) in a patent application covering several important concepts from this system, and I continued to provide consultancy for its development including the later development (in just ten days) of a working thin-client version of the system using Microsoft .NET technology.

#### Faith Footwear Ltd. (May 2000 – November 2001)

In Summer 2000 I undertook a short fixed-price study to assess Faith's existing IT provision, and possible ways in which it might evolve to support new business models such as collaborative working with suppliers using eCommerce technology.

This led in 2001 to my involvement in a project to establish a Management Information database, and support for new business models. I developed a proprietary transport-independent EAI messaging system running between the stores and head office supporting data warehousing, software distribution, application integration and distributed near-real-time processing.

#### Barclays Sales Financing Ltd. (January - June 1999)

During this short assignment, I provided support for both the development of the system architecture and supporting standards, and also for the development of an intranet-based toolset for document distribution and control within the development team.

#### Oracle UK (June 1998 – March 1999)

Oracle's Interactive Services Project was developing the platform for British Interactive Broadcasting's interactive digital television service. I undertook a review of the design to assess its likely reliability, which included the development of a novel Fault Tree Analysis technique for such systems. In addition, I supported the development of system test plans and technical strategies for aspects such as error handling.

#### Livingston Rental (as an Associate of Sema Group) (March 1995 – January 1997)

This project centred around porting the Livingston Group's rental systems from a legacy Data General architecture to a more flexible Unix/Oracle base.

I defined the overall architecture for the new system. Performance benchmarking and prototyping exercises saved the client several hundred thousand pounds by allowing the use of lower-specification hardware. The performance prediction work led to a paper for the EUROStar '96 testing conference.

A leading role in commissioning the new infrastructure included setting up the Sun servers, defining a disaster recover plan and operational procedures, sorting out LAN communications and establishing new configuration control tools. I also set up a Wide Area Network between several European sites, using ISDN and the Suns as WAN routers.



Thereafter I specified, designed and implemented the following:

- ✓ A system to replicate stock information between the British, French and German sites, using Oracle database services and a client-server front-end.
- ✓ A scheme for remotely monitoring numerous aspects of system performance on the various Unix and NT servers and Oracle databases, relaying potential alerts back to a single point for system administrator attention via a graphical front-end.
- ✓ A tool to automate translation so that English, French and German versions of the Rental system (written in a Unix-based legacy 4GL) could use common source code.

### National Power (July 1994 - March 1995)

I supported the introduction of Windows-based code control and automated test tools, and helped define repeatable system testing for the project. To control delivery of complex software infrastructure components, I specified, designed and built a PC-based configuration tool using a component database. I also led a project to update, index and promote the development method and standards, to encourage developers to adopt and follow them.

## Previous Experience

### Development Support Manager / Quality Manager with Eurotunnel Plc. (1989 - April 1994)

As Eurotunnel moved from construction towards operation, I helped formalise system development and procurement for this unique binational and bilingual entity.

Specifically, I defined, and managed the subsequent use of:

- ✓ Programming and user interface standards.
- ✓ A development method extended to include support for procurement, formalised system testing and creating user documentation and training material.
- ✓ A method, standards and procedures for testing, which included breaking new ground in the effective testing of systems with poorly-defined user requirements, and those written in Fourth Generation Languages.
- ✓ An integrated development environment to supplement proprietary offerings.
- ✓ The processes of quality review and inspection for the application systems.
- ✓ The training programme for the development team.

I was also actively involved in the procurement process for several application systems (of values between £100k and £2M), including contract negotiation, and subsequent management of formal contract and project control processes.

### Managing Systems Engineer with Digitus Ltd. (1986 - 1989)

Digitus Ltd. was a small but successful software house in London, concentrating on the creation of complete systems based on open operating systems. My project leadership and quality management roles on several major projects included:

- Inchcape Plc.** An integrated shipping management system for the various shipping companies within the Inchcape group. I helped to define standards, operate the QA function and provided wide-ranging technical support.



**British Airways** Development of their treasury system, which had previously had several false starts. I was one of two project leaders managing a team of both Digitus and BA personnel who delivered successfully.

**Petrogulf** Creation of a trading room environment for this small company of oil traders. I analysed and developed the systems and established a number of business opportunities Digitus later exploited.

### **Senior Engineer with Racal-Decca Advanced Developments Ltd. (1982 - 1986)**

I joined Racal's fledgling Satellite Systems Division as a graduate trainee. We undertook a variety of study and development projects for the European Space Agency (ESA) and the International Maritime Satellite Organisation (INMARSAT), among others. These included:

**Codec** I led the development of signal processing software for mobile satellite communications capable of transmitting data at relatively high speeds in a noisy environment.

**LAMOCOSAMIS** I managed the Racal contribution to a study into possible interfaces between satellite communications and cellular telephones, including Racal's then unique experience of actual mobile operation (Vodaphone).

**INMARSAT** I was project co-ordinator on a study to investigate the next generation of Maritime Satellite Communications, bringing together Racal contributions ranging from naval electronics to electronic warfare.

**Navsat** I was involved in both technical research, and also preparing various project reports on this proposed global satellite navigation system.