

Industrial Cyber Security



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Vibert Solutions Ltd. - Cevn Vibert

Industrial Cyber Security Consultants and Advisors

- Consultants, Solutions, Speakers, Trainers, Coaches
- Our Teams advise companies in many countries and in most industry verticals.
- Experienced in Security, Cyber, C2, MES, SCADA, Risk Managament,
 Governance, Compliance, Global Solutions, Industrial Networks, Solutions
 Consultancy and Training.
- 30+ yrs experience in Industrial Information and Control Systems.
- Board Advisors. Directors. Chartered IT Professionals.
- CITP, MIET, MISA, MISSA, MinstMC, MBCS
- Build Communities















What IT, Computers, Networks should be Physically, Cyber and Operationally protected?

What "IT things" in a facility could be compromised?

Office Networks

Office Backups

Computer Server Room

Computer Server Room Fire Suppression Systems

PA Public Address System

Access Control Network

Card Reader and Biometrics devices

Security Control Room

Reception Computer Terminals

Printers everywhere

WiFi repeaters

Door Control systems

TV on-demand networks

CCTV Network

CCTV Cameras

Backup Power Supply Generators Room

UPS Backup Systems

Fire Detection and Alarm Systems

Fire System Network

Building Management Systems

Building Management Network

HVAC Systems

Gate Control Systems

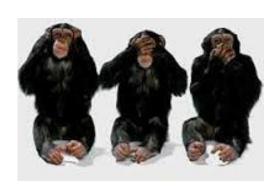
Vehicle Stopper Control Systems

Vending Machines and networks



Security Strategy, Projects and Programmes

- Is Security part of Business-as-Usual for the Board of Directors?
- Remember The Bad Guys don't stop getting better need Strategy...
- How do you start to improve? <u>Security Staircase</u>
- What products, partners and vendors are useful? **Security Jigsaw**
- Who will make the improvements? The <u>Security A-Team</u>





Cyber Security Capabilities

- Surveys and Audits
- Security Framework Developments
- Risk Assessments
- Compliance studies
- Integrity and Access Controls
- Anti-Malware
- Incident Investigations
- Intrusion Monitoring and Prevention (Local and Global Industrial SOCs)
- Command and Control Management (ConOps)
- Vulnerability Management external links
- Training and Briefings
- Simulation and Strategizing
- Maintenance and Controls
-common sense strategies.....





What's your future...?

- How can you improve your security strategy?
- Do you need help?
- What are you going to do next?
- We look forward to being on YOUR <u>Security A-Team</u>.

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Capabilities in Technology

Capabilities & Experience:

Extensive turn-key or ad-hoc capabilities in Technology Consultancy including IT & OT Technology Audits, Technical Requirements Capture, Design, Solutions, Implementation, Training, Support and Maintenance.

Fully encompassing capabilities in the design of communications, industrial OT and IT architectures, hands-on knowledge of a wide range of IT, Organisational and OT methodologies, creation of firewall rules, user and rule policy definitions and audits, call handling, documentation and full project life-cycles, change management, project and program management of IT and OT technology projects.

Cross-functional team technical and social collaboration is key to the success of diverse global programmes and our decades of experience will provide this success.

Our wide ranging Technical capabilities are developed after decades of work on Pharmaceutical, Nuclear, Oil & Gas, Manufacturing, UK and Foreign Government, Energy, Utilities, Transport, Water, CNI, Medical Devices, Telecoms and Financial facilities.



Capabilities in Automation

Capabilities & Experience:

Our extensive turn-key or ad-hoc capabilities in regulated Automation Consultancy including GAxP OT Automation asset and application Audits, Automation Requirements Capture, Automation Design, PLC/DCS/SCADA/IED/MES and Historians Solutions, links to ERP Solutions, full or collaborated Implementation, customised subject Training, and our comprehensive Support and Maintenance capabilities.

Our fully encompassing capabilities in a wide range of automation platforms and industrial cyber defence-in-depth protection and monitoring include OT and IT design of communications, industrial architectures, User Interfaces, and ConOps will be customised to each site's scenarios.

Our hands-on knowledge of a wide range of IT, Organisational and OT international methodologies, reference architectures, segmentation, perimeter protection, asset and architecture inventories, documentation and full project life-cycles, change management, project and program management of IT and OT technology projects will be integrated with site and customer teams on each phase of work..

Multi-site migration planning, and integrating a cross-functional team for full technical and social collaboration is key to the success of diverse global programmes and our decades of experience will provide this success.

Our wide ranging Automation capabilities are developed after decades of work on Pharmaceutical, Nuclear, Oil & Gas, Manufacturing, UK and Foreign Government, Energy, Utilities, Transport, Water, CNI, Medical Devices, Telecoms and Financial facilities.



Capabilities in Quality, Risk & Compliance

Capabilities & Experience:

Our extensive turn-key or ad-hoc QRC leadership, assurance and implementation capabilities in regulated Automation Consultancy include GAxP compliance designs, QMS and technology in GAxP facilities.

Our capabilities include roles as Cyber Technical Leads including Global Standards Compliance and Audits, Risk Analysis and Management and Governance Document provision and will be integrated with each site and customer teams on each phase of work..

Our provision can include developing global frameworks, compliance matrices, audits, gap analysis, development of global Policies and Procedures and Operating Instructions, Risk Assessments and Mitigation/Remediation plans. Our QRC capabilities include full Risk Monitoring and Risk Assessments of OT and IT systems, Training and staff development for a security culture, creation of security innovation teams and vendor capability/compliance assessments.

Our wide ranging QRC capabilities are developed after decades of work on Pharmaceutical, Nuclear, Oil & Gas, Manufacturing, UK and Foreign Government, Energy, Utilities, Transport, Water, CNI, Medical Devices, Telecoms and Financial facilities.



Industrial Cyber Security Enhancements - The Perfect Plan... (1)

Assist CISO to define an overall number of business. (Goals) Agree Program of Projects to successfully achieve the aims. (The Staircase to success). Create an A-Team core group including 3rd parties, senior Customer rep., nominated change leader from selected sites, etc. (Cross-Functional buy-in). Create the core Framework with site representative full involvement (no surprises). Carry out initial audit/assessments for each site with site involvement (site understand the aims). Create framework compliance and gap reports and any details of closure plans(The Now and the Future). Assist with Risk Assessments to define Risk Gaps according to Impacts and Risk Appetite of CISO. Review Gaps and Plans and re-work the aims/goals and the Program/Project to suit the business. Rough design Cyber Security Improvement templates/Solutions with IT and OT Operations people. Build initial designs for each element of the Solutions including 3rd party and internals (The Jigsaw).



Industrial Cyber Security Enhancements - The Perfect Plan? (2)

Security Designs to include Operation Sites, Management Sites and Local SOCs and Global SOCs.

Create Governance Policies and Procedures and Ols to meet the framework and best practices.

Ensure regular Design and Progress review with the A-Team. (No big bangs!)

Assist /Provide Training programs including the A-Team as backers. (Champions)

Re-run the audits/assessments for each site after primary gap filling is complete and report status.



Industrial Cyber Security Engagement Strategy (example)

Phase1: Initial Engagement Assistance Study:

- Team work with Client to understand initial business goals or to help define them.
- Team work to engage Customer's wider team and to create a core A-Team going forward.
- Team and CISO define and agree the scope of engagement and success criteria and rough plan of projects and program to achieve success.
- A number of small Working Groups engage each of the chosen sites and understand the core architectures, vendors, systems and status of governance.
- Define the projects and programmes to sufficient detail for any fixed price work.
- Define the scope, governance and commercial/financial boundaries for the ongoing
 6month/12month/Xmonth programs and budgets agreed for the ongoing assistance work.
- Customer agrees any quotes and T&M budgets and places any orders needed.

Phase 2:

- Team engaged for governance of the programme, also the evangelist, trumpet, enabler and steering group.
- The coalesced group assists with or actions managing Vendors, Site's activities, Corporate IT liaison, and carrying out all framework, assessment, audit, and design work. The Team can also carry out Training, Support, Compliance with other standards such as GDPR/NIS-Directive/ISO2700x, etc.



Business Benefits of Industrial Cyber Security

- Increases performance better visibility, faster responses, improves asset/operations management.
- Achieve Compliance with International Standards = de-risks business operations.
- Create standardisations improves site migrations/coalescences/integration/comprehension.
- Asset Management improves documentation of assets, asset monitoring, asset efficiencies.
- System Monitoring Improves system availability, reduces impacts, system and licence documentation.
- Governance improves visibility of compliance, increases transparency and accountability.
- Information Better information informs better decision making.
- Access Management improves accountability and overall asset management and security defences.
- Intrusion Monitoring Increases visibility of intrusions, alarm and event conditions and reduces risks.
- Securing the future assists with Business Continuity, future expansions and adaptions.
- Improves morale better security is better business and safer business.
- Health and Safety Improving Security improves the integrity of safety systems, building management systems and physical security systems and more...
- Vulnerability awareness monitoring can provide extensive vulnerability awareness for the board.
- Global standards recognise Cyber Security as being a cornerstone in corporate governance: ISO2700x, NIST CSF, BS31111, etc.

















Industrial Cyber Security Experience – Vibert Solutions

Extensive Industrial
Automation, Manufacturing
Information and Execution, CIP,
Compliance, Multisite/Global,
Governance, Physical Security
and Industrial Cyber Security
Experience.

Worked on projects for most industries and verticals creating first MES system including senior management consulting projects.

Extensive growing testimonials from colleagues and customers in Food, Water, Nuclear, Nuclear Reprocessing, Energy, Transport, O&G, Pharmaceuticals, Chemicals, Cement, Rail, Medical Devices, etc. in UK and Overseas.

Widely known in Automation, MES, Industrial Cyber Security industries in UK and overseas.

14k+ LinkedIn contacts.
Frequent Chair, Speaker and Panellist at Industry Events and Conferences. Institute Education Officer.



Lifetime Enhancement – Nuclear Generation



Customer

EDF Energy (UK Nuclear Fleet)

Our Solution

- ✓ Perform role of Industrial Project/Technical Lead.
- Review and updates to lifetime enhancement Framework
- Review and updates to the technical architectures.
- Creation and updates to an Overall Design lifetime enhancement and documentation.
- Creation and Updates to timelines and Schedules.
- ✓ Global Vendor Liaisons as Customer Champion.
- ✓ Process Technical Team Global Liaisons
- ✓ IT and Project Teams Global Liaisons

Business Need

Client realised the need to improve lifetime capability on all their Nuclear generation plants. Client required our assistance to provide Technical Leadership for project including governance, liaisons and experience.

- Integration and co-operation across Vendors, Global sites and Departments
- Integration of technologies and standardization for functional fit.
- Standardized vendor compliance management across the organization
- Demonstrate compliance to global industrial lifetime enhancement Framework.



Protecting the Process

Customer

One of the world's leading Oil Chemical Companies

Our Solution

- ✓ Perform role of Industrial Cyber Technical Lead.
- Review and updates to a global Cyber Security Framework
- Review and updates to the Cyber Security technical architectures.
- Creation and updates to an Overall global Cyber Security GSOC Design and documentation.
- Creation and Updates to Go-Live Schedules.
- ✓ Global Vendor Liaisons as Customer Champion.
- ✓ Process Technical Team Global Liaisons
- ✓ IT and Project Teams Global Liaisons
- ✓ Project Lead stand-in provision
- Design methodologies and Framework to NIST 80-153, IEC 62443 and ISO2700x.

Business Need

Client realised the need to improve Cyber Security on all their manufacturing plants. Client required our assistance to provide Technical Leadership for Cyber Security project including design, governance, liaisons and experience.

- ✓ Integration and co-operation across Vendors, Global sites and Departments
- Integration of technologies and standardization for functional fit.
- Standardized vendor compliance management across the organization
- Demonstrate compliance to global industrial cyber Framework.



Governance of Security

Customer

One of the world's leading Oil Chemical Companies

Our Solution

- ✓ Perform role of Industrial Cyber Technical Lead.
- Assisting the client in developing policies and procedures and Operating Instructions in line with the global framework
- Creation and updates to an Overall global Cyber Security GSOC Design and documentation.
- √ Process Technical Team Global Liaisons
- Governance compliance in accordance with NIST methodologies, IS2700x and IEC62443.

Business Need

Client realised the need to improve Cyber Security on all their manufacturing plants. Client required our assistance to provide Technical Leadership for Cyber Security project including design, governance, liaisons and experience.

- Standardized global policy and procedures compliance management across the organization
- Opportunities for site variations to fit within global policy and procedures
- Demonstrate compliance to global industrial cyber Framework.



Critical National Infrastructure Protection Facility

Customer

One of the world's leading CNI Prime Integrators

Business Need

Requirement was for a multi-faceted Demo, Training and Development Facility to assist the business to with their Critical National Infrastructure Protection programmes.

Our Solution

- Perform role of Industrial Cyber Subject Matter Expert
- ✓ Perform role of Customer Engagement Manager.
- Perform role of CNI Application Development Manager.
- Creation and Management of a CNI Protection Facility.
- Architected overall Facility.
- Vendor Liaisons and Customer Liaisons.
- Innovation Design projects.
- ✓ Physical Security and Cyber Security
- ✓ ICS, Automation, DCS, SCADA, Historians, etc.
- Command and Control Systems.
- ✓ Cyber Security, Forensics, Communications, Trust and multi-innovation led technologies.
- Training and Development.

- Customer Engagement Capability.
- ✓ Business Development Opportunities.
- System and Solution Demonstrations.
- Sales and Marketing Aid.
- System and Integration de-risking through trials and testing.
- ✓ Project de-risking.
- Exploration and discovery of innovative systems, applications and methods.
- Internal and External Training Learning.



Reducing the Risks

Customer

One of the world's leading Oil Chemical Companies

Our Solution

- ✓ Perform role of Industrial Cyber Technical Lead.
- Creation and updates to an Overall global Cyber Security Risk Management Methodology.
- Creation and updates to an Overall global Cyber Security Risk Management Tool.
- ✓ Process Technical Team Global Liaisons.
- Risk Methodologies to IEC62443, NIST and ANSSI.

Business Need

Client realised the need to improve Cyber Security on all their manufacturing plants. Client required our assistance to provide Technical Leadership for Cyber Security project including design, governance, liaisons and experience.

- Standardized Global Risk Management Methodology
- Standardized Global Risk Management Tool
- Standard Risk Records for future data mining.



Security through Compliance

Customer

One of the world's leading Pipeline Companies

Our Solution

- Perform role of Industrial Cyber Technical Design Authority.
- Creation of an Industrial Cyber Security Risk Management Project Methodology.
- ✓ Architected overall Cyber Security Project Plan.
- ✓ Process Technical Team Liaisons.
- ✓ End-Customer Technical Liaisons.
- Compliance Methodologies to IEC62443, NIST and IS2700x.

Business Need

Client required Industrial Cyber Security applied to their Automation, SCADA and Telemetry Designs. Client required our assistance to provide Technical Authority including design, governance, solutioneering, experience and compliance.

- ✓ Compliant risk management methodology
- Compliant information management methodology
- Compliant cyber security design approach.
- Clarity of Cyber Project step-by-step execution.



Taming the Genie in the bottle

Customer

One of the world's leading Nuclear sites

Our Solution

- Perform role of Industrial Cyber Subject Matter Expert for 6month 20man programme.
- ✓ Creation of an Industrial Cyber Security Risk Management Project Methodology.
- Architected overall Cyber Security Project Plan.
- ✓ Process Technical Team Liaisons.
- End-Customer Technical Liaisons.
- Compliance Methodologies to IEC62443, NIST, ANSSI, IS1, IRAM and IS2700x.

Business Need

Client required Industrial Cyber Security scalable and repeatable and standardized methodologies applied to their Automation, DCS, SCADA installations.

- Accepted methodologies suitable for 100+ different systems of wide ranging ages.
- √ Compliant risk assessment methodology
- Compliant information management methodology



Critical National Infrastructure Protection Facility

	Customer	Business Need
Global Cyber Security Vendor		Requirement was for an independent Industrial Cyber Technical Adviser to survey the market, advise on tactical approaches, develop marcomms material and review product compliance to 62443.
	Our Solution	Business Benefit
✓ Vendor✓ Custom✓ Product✓ Technic✓ Technic	Industrial Cyber Consultancy. Liaisons er Technical Liaisons. and Market Surveys. al Assessments. al Compliance Studies. on of Market Material.	 ✓ Market Trends Awareness ✓ Product Impact Awareness ✓ Sales benefits of standards compliance. ✓ Market positioning awareness ✓ Independent product review





Operational Monitoring

Manufacturing

GSK Dartford

Solution

- Operational Monitoring
- Information Analysis and Design
- Installation
- Implementation
- Testing
- Resilient OPC Data Servers

Technology Landscape

AspenTech Products

- OPC Servers
- IP21
- IPBatch

Value Delivered

- Batch Information
- Instrumentation Information
- Combined Batch and Process Reporting
- Scientific Data Reports
- Batch, Daily, Weekly Management Reports
- Process Efficiency Reports
- OT Systems Monitoring

- Thousands of Process
 Data Points logged and batch reported.
- Time-based combineddata reporting.
- Multi-Batch overlay visibility.







Operational Monitoring

Manufacturing

GSK Worthing

Solution

- Requirements Analysis
- Operational Monitoring
- Compliance Data and Reporting
- Information Analysis and Design
- Installation
- Implementation
- Testing

Technology Landscape

Wonderware Products

- OPC and DDE Servers
- InTouch SCADA
- SQL Server

PACSCOM Radio SCADA Systems

Value Delivered

- Product Storage Information
- Instrumentation Information
- Validation Reporting
- Scientific Data Reports
- Daily Management Reports
- Process Control Efficiency Reports
- OT Systems Monitoring
- Validation Data Storage

- Critical Chemistry

 Facility Instrumentation
 Data Points logged and reported.
- Time-based secure data reporting to 21CFRpt11 compliance.
- Performance visibility.





Operational Monitoring



Manufacturing

Contact Lens Manufacturer.

Solution

- Consultancy
- Requirements Analysis
- Operational Monitoring
- Compliance Data and Reporting
- Information Analysis and Design
- Installation
- Training
- Implementation
- Program Management
- Governance
- Vendor Management
- Testing

Technology Landscape

Automation Services

SCADA

MES

Wonderware Products

- OPC and DDE Servers
- InTouch SCADA
- IndustrialSQL Historian
- InTrack MES
- SQL Server

Rockwell/Allen Bradley PLC Systems

Highly-Resilient Systems

Value Delivered

- Consultancy and Implementation Projects for several years
- Process Information
- Instrumentation Information
- Operational Reporting
- Network Management
- Validation Reporting
- Scientific Data Reports
- Daily Management Reports
- Process Control Efficiency Reports
- OT Systems Monitoring
- Validation Data Storage

- Process Data Points logged and reported.
- Time-based secure data reporting to 21CFRpt11 compliance.
- Performance visibility.
- 1st InTrack MES in UK
- Customer delighted





P&G

Operational Monitoring

Manufacturing

Proctor and Gamble Dartford.

Solution

- Consultancy
- Requirements Analysis
- Operational Monitoring
- Compliance Data and Reporting
- Information Analysis and Design
- Installation
- Implementation
- Testing
- Training
- Project Management

Technology Landscape

SCADA

MES

Wonderware Products

- OPC and DDE Servers
- InTouch SCADA
- SPC MES
- SQL Server

Statistical Process Control

Value Delivered

- Consultancy and Implementation Projects for several years
- Process Information
- Instrumentation Information
- Operational Reporting
- Network Management
- Validation Reporting
- Scientific Data Reports
- Daily Management Reports
- Process Control Efficiency Reports
- OT Systems Monitoring
- Validation Data Storage

- Process Data Points logged and reported.
- Time-based secure data reporting to P&G Standards compliance.
- Performance visibility.
- 1st SPC MES in UK
- Customer delighted





Food Manufacturing

Operational Monitoring



Manufacturing

Ginsters - Cornwall.

Solution

- Consultancy
- Requirements Analysis
- Operational Monitoring
- Compliance Data and Reporting
- Information Analysis and Design
- Installation
- Implementation
- Testing
- Training
- Project Management

Technology Landscape

SCADA

MES

Wonderware Products

- OPC and DDE Servers
- InTouch SCADA
- IndustrialSQL Historian
- SQL Server

WebReporting Services

Value Delivered

- Consultancy and Implementation
- Process Information
- Instrumentation Information
- Operational Reporting
- Network Management
- Validation Reporting
- Scientific Data Reports
- Daily Management Reports
- Process Control Efficiency Reports
- OT Systems Monitoring
- Validation Data Storage

- Process Data Points logged and reported.
- Time-based secure data reporting for audit compliance.
- Performance visibility.
- Customer delighted





Food Manufacturing

Operational Monitoring



Manufacturing

Ryvita - Poole.

Solution

- Consultancy
- Requirements Analysis
- Operational Monitoring
- Compliance Data and Reporting
- Information Analysis and Design
- Installation
- Implementation
- Testing
- Training
- Project Management
- Convert 40Mb xls into MES

Technology Landscape

SCADA

MES

Wonderware Products

- OPC and DDE Servers
- InTouch SCADA
- IndustrialSQL Historian
- SQL Server

WebReporting Services

Value Delivered

- Consultancy and Implementation projects over several years
- Process Information
- Instrumentation Information
- Operational Reporting
- Network Management
- Validation Reporting
- Scientific Data Reports
- Daily Management Reports
- Process Control Efficiency Reports
- OT Systems Monitoring
- Validation Data Storage

- 90% reduction in manual inputs
- Improvements in efficiency, accuracy, transparency and reporting
- Process and Operational Data Points logged and reported.
- Time-based secure data reporting for audit compliance.
- 1st Citect Ampla MES in UK
- Performance visibility.
- Customer delighted





Sample resource profile 1

VIBERT SOLUTIONS

- During the last 20 years this resource has worked across a wide Cyber Security spectrum; including, UK
 Government, Foreign Government, Critical National Infrastructure, Physical Security, Space, Aviation, Utilities,
 Manufacturing, Nuclear and Research.
- This resource has also been employed in a variety of roles including Cyber Security Subject Matter Expert
 (SME), Cyber Lead, Head of Security, UK CLAS Consultant, Security Engineer, Information Assurance Lead, IT
 Security Officer and Auditor.
- This resource is an experienced Cyber security professional who is a former UK Government Security and Intelligence Advisor who is well respected in the Cyber Security field. This resource has authored many papers on behalf of the UK Government in respect of the Critical National Infrastructure.
- This resource has extensive experience in dealing on a personal nature with agencies including commercial, public, local and national and foreign government.
- This resource is well versed in all communications mediums, including satellite and radio, data networks and processor-controlled systems over protected networks and service orientated architectures. This resource has extensive theoretical and practical knowledge on Computer Security, TEMPEST, Information Technology, Communications Security, Key Management, Data Protection, FOI, RIPA, PCI DSS, ISO27001/2, Security Policy Framework, JSP440, NIST, ISF, SANS, IEC62443 Suite, NIS, Risk Assessment and other legislative requirements including commercial and international.
- This resource is an expert in the field of whole life Information Assurance (from requirements through to support; covering design, security testing, integration and delivery), security stakeholder management and the evaluation and accreditation of security products and systems.
- This resource is well versed in all areas of Cyber security and the application of practical and relevant security to align with specific business and stakeholder risks and requirements within the corporate, enterprise, consortium and system / product environment.

Sample resource profile 2

- During the last 18 years this resource has been fortunate to have worked across a wide spectrum of industries including, UK Government, Foreign Government, Financial Services, Utilities, Nuclear, Critical National Infrastructure, Safety, Travel and Hospitality, Telecommunications, Manufacturing, Rail, Healthcare, Higher Educational Sector and Research & Development.
- This resource has also has been employed in a variety of roles including but not limited to Risk Management and Compliance SME, Data Modelling Expert, Cyber Business and Digital Transformation Expert, Cyber Business and Technical Change Manager, COTS products and implementation SME, Procurement Analyst, Cyber Business and Technical Requirements Analyst, Process Re-engineering SME, GDPR Expert, PCI-DSS Expert, Business Insights and Analytics SME Programme and Project Manager including Cyber, Governance Expert, Organisational design and change SME.
- This resource has extensive experience in dealing on a personal nature with agencies including commercial, public, local and national and foreign government.
- This resource has excellent theoretical and practical knowledge in Prince 2, Agile, Six Sigma, Microsoft BI, ISO 27001, SDLC frameworks and other legislative and International Standards.
- This resource has a successful track record of delivering and implementing technical and business programmes Finance, Finance Reporting and Analytics, Risk management frameworks and multi-IT projects and developed ideas into practical solutions. This resource is excellent at quickly re-prioritizing in a climate of changing priorities, work volumes and resources and has proven ability to develop and maintain exceptional client engagement and business relationships.



Sample resource profile 3

- During the last 10 years this resource has been fortunate to have worked across range of industries including Critical National Infrastructure, Utilities, Research and Development, Manufacturing and Telecommunications.
- This resource has also been employed in a variety of roles related to Cyber, including but not limited to Solution Design and Enterprise Architect, Product and System Architect, System Integrator, Risk Management and Compliance Expert, System Engineer, Digital Transformation Expert, Network Inventory Management (NIM) and Service Fulfilment Expert, Operation Support System (OSS) SME, Wireframing SME Process Modelling and Methodologies SME Cloud Computing, SME Unit and Functional Testing SME PCI DSS expert, COTS Products expert and System Component Developer.
- This resource has global certifications on TM Business Process Framework, TM Forum Information Framework, Technical Certified Professional-IP, TOGAF 9.1, NIIT, CC and C Solutions.
- This resource has superior skills and expertise in all areas of Enterprise and Solution Architecture and the implementation of the design in line with the requirements from stakeholders within the corporate, enterprise, consortium and system / product environment.

