

**This session will be
recorded**

Digital and Technology Solutions Specialist: Synoptic Project Brief

January 2024

Introductions:



Dr Diane Hart – IT Strategy



**Dr Nick Costen – Cyber
Security, Software
Engineering and Data
Analytics**



**Dr Paul Flanagan – End
Point Assessment**

AGENDA:

- Welcome and Thank You – Jess East
- Synoptic Project Overview – Dr Paul Flanagan
- Synoptic Project for IT Strategy – Dr Diane Hart
- Synoptic Project for Software Engineering, Cyber Security and Data Analysts – Dr Nicholas Costen
- End Point Assessment – Dr Paul Flanagan

Welcome and Thank You

- Core Units ✓
- Specialist Units ✓
- Project 1 and Project 2 ✓
- Synoptic Project
- End Point Assessment

SYNOPTIC PROJECT:

Apprentices have had a range of teaching sessions covering topics such as:

- Research methods
- Ethics
- Project proposals
- Data collection / analysis

Imminent- proposal pitch (terms of reference)

- You'll be required to sign

SYNOPTIC PROJECT AND EPA KEY DATES:

Dates:

- Synoptic Project Hand-in: 6th September 2024
- Synoptic Project Hand-in: 10th June 2024 (Bupa only)
- End Point Assessment: October 2024 onwards
- End Point Assessment: July 2024 (Bupa only)

Apprenticeship Standard:

- Knowledge, Skills, Behaviours
- Core and Specialism



SYNOPTIC PROJECT:

- Solve a substantial work-based problem related to Specialism
 - 600 hours is typical for 60 credit Masters unit
 - Work based project
- Academic Supervisor & Line Manager
- Employer/Apprentice is responsible for identifying a suitable project (validated by the University) and the provision of equipment etc..
 - Prototype/proof-of-concept work is acceptable
- KSBs brought to bear on solution and evidenced in report (see appendix)
- Meeting : employer/line manager, apprentice, project supervisor, Independent assessor – agree scope
- Terms of reference

SYNOPTIC PROJECT: IT STRATEGY

Dr Diane Hart: Senior Lecturer and
Synoptic Project Lead – IT Strategy

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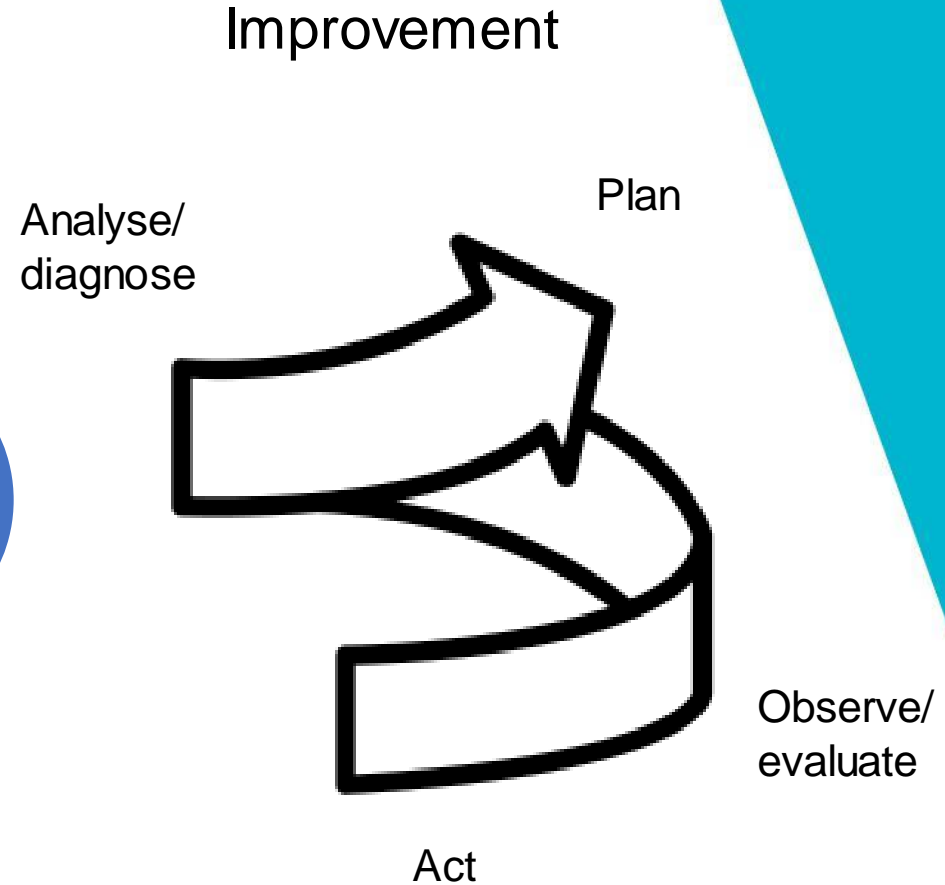
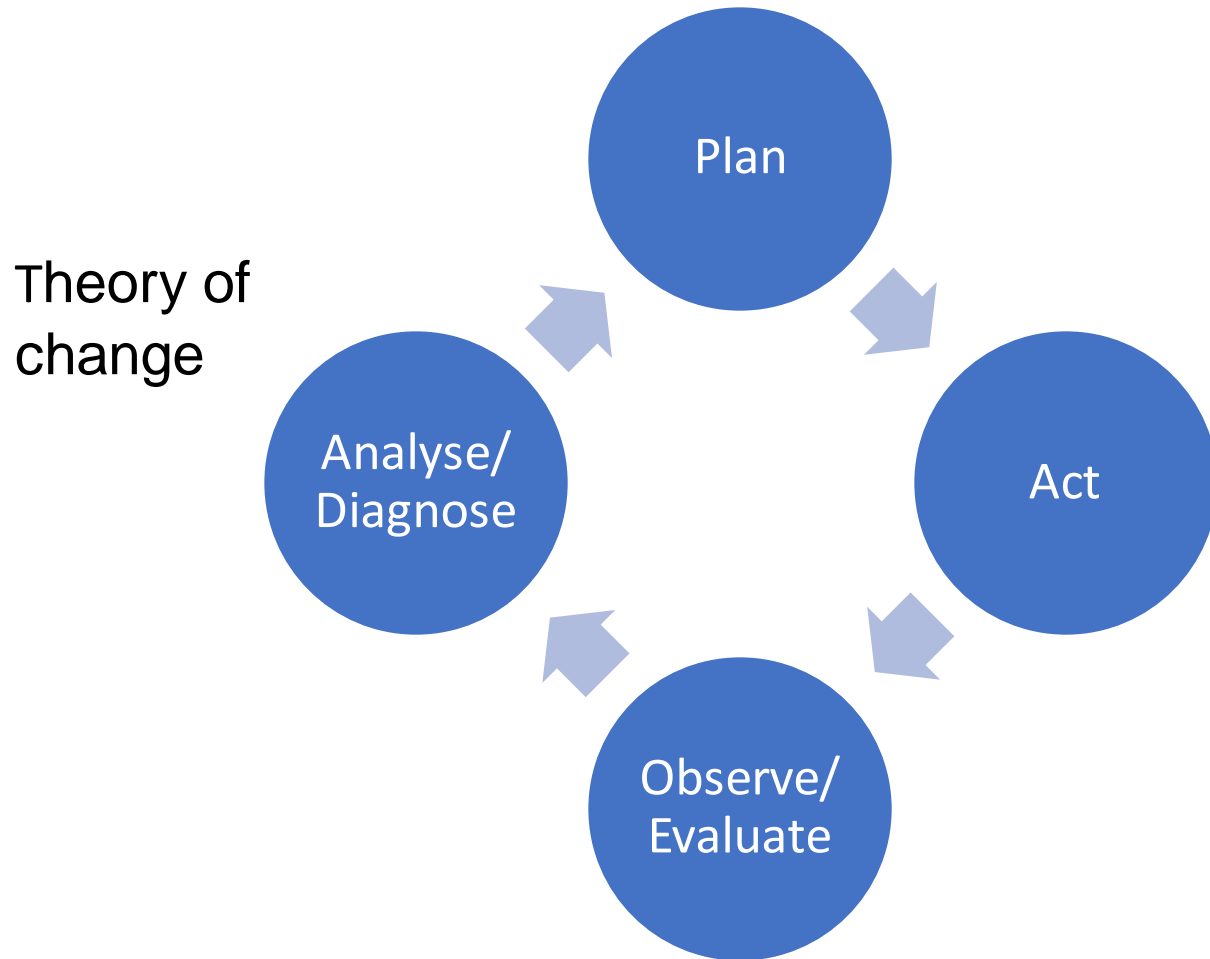
+441612474629



SYNOPTIC PROJECT: IT STRATEGY

- An individual piece of consultancy work that is written up as a project report
- Investigating how IT strategy is working in practice in supporting the business needs of a chosen area of the host organisation
- Lead to recommendations for change or improvement to address the challenges identified

SYNOPTIC PROJECT: IT STRATEGY



SYNOPTIC PROJECT: IT STRATEGY - EXAMPLES

- An investigation of how [organisation's] IT integration strategy meets the needs of the third party supply (3ps) organisation
- Improving NHS it strategy development through enhanced stakeholder engagement
- A critical evaluation of how UK Insurance could transform its technology strategy to evolve and respond to the needs of a changing young customer base
- Improving user engagement and adoption of Information Systems using effective training methods
- Evaluation of [organisation's] Robo Advice Service in the evolving wealth management market

SYNOPTIC PROJECT:

Dr Nicholas Costen: Reader and Synoptic
Project Lead – Software Engineering,
Cyber Security and Data Analytics

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SYNOPTIC PROJECT: SOFTWARE ENGINEERING

As with ITs, an independent piece of work relevant to area and job.

Software Engineers:

- Must negotiate with internal and external stakeholders;
- Must be responsible for software development team's deliverables;
- Need to include evaluation of software delivered.

SYNOPTIC PROJECT: DATA ANALYTICS

Data Analysts:

- Must also negotiate with stakeholders;
- Must report on business opportunities from project tasks;
- Should consider data structure, storage and display.

Both should consider issues of project evaluation:

- Adopt a more traditional “scientific” methodology than ITS
- Anticipate usability or performance analysis for SE, inherent statistical analysis for DA.

SYNOPTIC PROJECT: CYBER SECURITY

Cyber Security specialists:

- Must also negotiate with stakeholders;
- Carry out testing and recommend remediation.

Their project specifications are a little different:

- List a number of disjoint application areas;
 - Not possible to cover them all technically.
- Apprentice should pick a meaningful subset;
 - And consider the others in the introduction.
- Agree subset with supervisor/IA/manager.

SYNOPTIC PROJECT: Technical Examples

- CyS
 - Cybersecurity policy and procedures to minimise the external engineering vendor threat posed to manufacturing organisations.
 - A gap analysis of <redacted>'s Security Pipeline Framework.
- SE
 - Automating access provision for academic staff to the university's VLE.
 - Improving code quality and developer adoption of salesforce analytics dashboarding development
- DA
 - Prediction of Float Glass Contour using Machine Learning techniques
 - Understanding customer views of the transport network in <redacted> using Natural Language Processing

END POINT ASSESSMENT: REPORT

Report



Core Skills , Core Knowledge and Core Behaviours to be assessed	Methods of Assessment
Business and change management	
(Skill) Identify, document, review and design complex IT enabled business processes that define a set of activities that will accomplish specific organisational goals and provides a systematic approach to improving those processes;	PR
(Skill) Design and develop technology roadmaps, implementation strategies and transformation plans focused on digital technologies to achieve improved productivity, functionality and end user experience in an area of technology specialism;	PD
(Skill) Deliver workplace transformations through planning and implementing technology based business change programmes including setting objectives, priorities and responsibilities with others in an area of technology specialism;	PD
(Knowledge) The strategic importance of technology enabled business processes, and how they are designed and managed to determine a firm's ability to compete effectively;	PD
(Knowledge) The principles of business transformation and how organisations integrate different management functions in the context of technological change;	PD
(Knowledge) Own employer's business objectives and strategy, its position in the market and how own employer adds value to its clients through the services and/or products they provide;	PD
(Knowledge) How to justify the value of technology investments and apply benefits management and realisation;	PD
Professional competencies	
(Skill) Negotiate and agree digital and technology specialism delivery budgets with those with decision-making responsibility;	PD
(Skill) Develop and deliver management level presentations which resonate with senior stakeholders, both business and technical;	PD
(Skill) Professionally present digital and technology solution specialism plans and solutions in a well-structured business report;	PR
(Skill) Demonstrate self-direction and originality in solving problems, and act autonomously in planning and implementing digital and technology solutions specialist tasks at a professional level;	PR
(Skill) Be competent at negotiating and closing techniques in a range of interactions and engagements, both with senior internal and external stakeholders;	PR
(Knowledge) The role of learning and talent management in successful business operations.	PD
Leadership	
(Skill) Evaluate the significance of human factors to leadership in the effective implementation and management of technology enabled business processes;	PD
(Skill) Develop own leadership style and professional values that contributes to building high performing teams;	PD
(Behaviour) Inspire and motivate others to deliver excellent technical solutions and outcomes	PD
(Behaviour) Establish high levels of performance in digital and technology solutions activities	PD
(Behaviour) Be results and outcomes driven to achieve high key performance outcomes for digital and technology solutions objectives	PD
(Behaviour) Promote a high level of cooperation between own work group and other groups to establish a technology change led culture	PD

PR

Software Engineering Specialist Skills to be assessed	Methods of Assessment
Architect, build and support leading edge concurrent software platforms that are performant to industry standards and deliver responsive solutions with good test coverage;	PR
Drive the technology decision-making and development process for projects of varying scales, considering current technologies including DevOps and Cloud Computing, and evaluate different technology design and implementation options making reasoned proposals and recommendations;	PR
Develop and deliver, distributed or semi-complex software solutions that are scalable and which deliver innovative user experiences and journeys that encompass cross-functional teams, platforms and technologies;	PR
Update current software products, improving the efficiency and functionality, and build new features to product specifications;	PR
Accomplish planned software development tasks that deliver the expected features, within specified time constraints, security and quality requirements;	PR
Be accountable for the quality of deliverables from one or more software development teams (source code quality, automated testing, design quality, documentation etc.) and following company standard processes (code reviews, unit testing, source code management etc.).	PR
Software Engineering Specialist Knowledge to be assessed	Methods of Assessment
The rationale for software platform and solution development, including the organisational context;	PD
The various inputs, statements of requirements, security considerations and constraints that guide solution architecture and the development of logical and physical systems' designs;	PR
The methodologies designed to help create approaches for organizing the software engineering process, the activities that need to be undertaken at different stages in the life-cycle and techniques for managing risks in delivering software solutions;	PR
The approaches used to modularise the internal structure of an application and describe the structure and behaviour of applications used in a business, with a focus on how they interact with each other and with business users;	PR
How to design, develop and deploy software solutions that are secure and effective in delivering the requirements of stakeholders and the factors that affect the design of a successful code;	PR
The range of metrics which might be used to evaluate a delivered software product.	PR

EPA

Project
Report

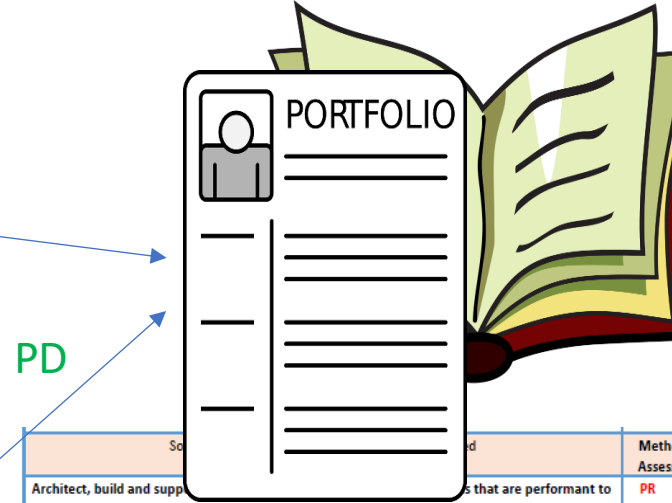
Professional
Discussion

END POINT ASSESSMENT: REPORT

- Executive summary: This is no more than one side - which summarizes the content of the report. It must be comprehensible to someone who has not read the rest of the report.
- Introduction: The scope or hypothesis of the project and terms of reference, setting the scene for the remainder of the report.
- Background: A review chapter, describing the background work or research undertaken at the beginning of the project period.
- Work undertaken: Several chapters describing the work that has been undertaken.
- Outputs: A chapter describing the outputs, deliverables or artefacts that have been produced as a result of the project.
- Further work: A chapter describing possible ways in which the work could be continued or developed.
- Conclusions: A statement of conclusions relating to the work done, and outputs produced to the initial hypothesis and terms of reference.

EPA – PROFESSIONAL DISCUSSION:

Core Skills , Core Knowledge and Core Behaviours to be assessed	Methods of Assessment	
Business and change management		
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(Skill) Design and develop technology roadmaps, implementation strategies and transformation plans focused on digital technologies to achieve improved productivity, functionality and end user experience in an area of technology specialism;		PD
(Skill) Deliver workplace transformations through planning and implementing technology based business change programmes including setting objectives, priorities and responsibilities with others in an area of technology specialism;		PD
(Knowledge) The strategic importance of technology enabled business processes, and how they are designed and managed to determine a firm's ability to compete effectively;		PD
(Knowledge) The principles of business transformation and how organisations integrate different management functions in the context of technological change;		PD
(Knowledge) Own employer's business objectives and strategy, its position in the market and how own employer adds value to its clients through the services and/or products they provide;		PD
(Knowledge) How to justify the value of technology investments and apply benefits management and realisation;		PD
Professional competencies		
(Skill) Negotiate and agree digital and technology specialism delivery budgets with those with decision-making responsibility;		PD
(Skill) Develop and deliver management level presentations which resonate with senior stakeholders, both business and technical;		PD
(Skill) Professionally present digital and technology solution specialism plans and solutions in a well-structured business report;	PR	
(Skill) Demonstrate self-direction and originality in solving problems, and act autonomously in planning and implementing digital and technology solutions specialist tasks at a professional level;	PR	
(Skill) Be competent at negotiating and closing techniques in a range of interactions and engagements, both with senior internal and external stakeholders;	PR	
(Knowledge) The role of learning and talent management in successful business operations.		PD
Leadership		
(Skill) Evaluate the significance of human factors to leadership in the effective implementation and management of technology enabled business processes;		PD
(Skill) Develop own leadership style and professional values that contributes to building high performing teams;		PD
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Software Engineering Specialist Knowledge to be assessed	Methods of Assessment	
Architect, build and support software solutions that are performant to industry standards and deliver responsive solutions with good test coverage;	PR	
Drive the technology decision-making and development process for projects of varying scales, considering current technologies including DevOps and Cloud Computing, and evaluate different technology design and implementation options making reasoned proposals and recommendations;	PR	
Develop and deliver, distributed or semi-complex software solutions that are scalable and which deliver innovative user experiences and journeys that encompass cross-functional teams, platforms and technologies;	PR	
Update current software products, improving the efficiency and functionality, and build new features to product specifications;	PR	
Accomplish planned software development tasks that deliver the expected features, within specified time constraints, security and quality requirements;	PR	
Be accountable for the quality of deliverables from one or more software development teams (source code quality, automated testing, design quality, documentation etc.) and following company standard processes (code reviews, unit testing, source code management etc.).	PR	
Software Engineering Specialist Knowledge to be assessed		
The rationale for software platform and solution development, including the organisational context;		PD
The various inputs, statements of requirements, security considerations and constraints that guide solution architecture and the development of logical and physical systems' designs;	PR	
The methodologies designed to help create approaches for organizing the software engineering process, the activities that need to be undertaken at different stages in the life-cycle and techniques for managing risks in delivering software solutions;	PR	
The approaches used to modularise the internal structure of an application and describe the structure and behaviour of applications used in a business, with a focus on how they interact with each other and with business users;	PR	
How to design, develop and deploy software solutions that are secure and effective in delivering the requirements of stakeholders and the factors that affect the design of a successful code;	PR	
The range of metrics which might be used to evaluate a delivered software product.	PR	

EPA

Project Report

Professional Discussion

END POINT ASSESSMENT: PROFESSIONAL DISCUSSION

- This element of the EPA is informed by the Professional Development Unit that has been running throughout the whole programme.
- It is made up of evidence that has been collected from two projects that the apprentice has been working on / involved with.
- Support and advice on this element has been provided through Review Meetings and the Skill Coach
- The PDs will take place from early October (BUPA – July). There will be a mock EPA session for students early in the summer.
- The interviews will last for 90 mins, based on 4 themes from The Apprenticeship Standard:
 - Business and Change Management
 - Professional Competencies
 - Leadership
 - Technology Management

Appendix

KSBs

IT STRATEGIST SKILLS - PROJECT

- Assess an organisation's technology operations and their continued capability to deliver the organisations technology based products and services, through defining, delivering, and supporting strategic plans for implementing digital technologies and revising as required;
- Perform strategic analysis of organisational information systems, their structure and current effectiveness, in order to make systems rationalisation, systems integration and other improvement proposals:
- Engage with business units to produce technical solution proposals for different technology domains such as infrastructure, cloud, application and storage platforms aligned with business demand;
- Develop and implement technology lifecycle roadmaps, assessing different technical options and developing technology strategies aligned with business priorities and agreeing the case for change from senior management;
- Plan and manage technology change delivery and migration programmes, ensuring successful implementation of the chosen technology, smooth delivery of related consultancy services to clients and verifying application results using audits;
- Analyse and assess complex digital business problems through collecting and reviewing business data and formulating technology based design solutions.

IT STRATEGIST KNOWLEDGE - PROJECT

- The contribution of contemporary IT architectures (including cloud deployment) as well as software platforms and applications appropriate to the context of IT consultancy;
- The importance of clearly identifying the client issue, applying a structured approach and selecting appropriate analytical tools and techniques;
- The diversity of IT consultancy interventions and approaches and the importance of scoping interventions effectively and agreeing clear contracts with clients;
- How to apply a range of simple, recognised data gathering, problem solving and analytical tools and techniques to achieve agreed outcomes, presenting and communicating the results of research in reports and presentations to senior stakeholders;
- The importance of client relationship, methods of establishing engagement with the client and the importance of communication, consultation and negotiation in managing clients.

SOFTWARE ENGINEER SKILLS - PROJECT

- Architect, build and support leading edge concurrent software platforms that are performant to industry standards and deliver responsive solutions with good test coverage;
- Drive the technology decision-making and development process for projects of varying scales, considering current technologies including DevOps and Cloud Computing, and evaluate different technology design and implementation options making reasoned proposals and recommendations;
- Develop and deliver, distributed or semi-complex software solutions that are scalable and which deliver innovative user experiences and journeys that encompass cross-functional teams, platforms and technologies;
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- Be accountable for the quality of deliverables from one or more software development teams (source code quality, automated testing, design quality, documentation etc.) and following company standard processes (code reviews, unit testing, source code management etc.)

SOFTWARE ENGINEER KNOWLEDGE - PROJECT

- The various inputs, statements of requirements, security considerations and constraints that guide solution architecture and the development of logical and physical systems' designs;
- The methodologies designed to help create approaches for organizing the software engineering process, the activities that need to be undertaken at different stages in the life-cycle and techniques for managing risks in delivering software solutions;
- The approaches used to modularise the internal structure of an application and describe the structure and behaviour of applications used in a business, with a focus on how they interact with each other and with business users;
- How to design, develop and deploy software solutions that are secure and effective in delivering the requirements of stakeholders and the factors that affect the design of a successful code;
- The range of metrics which might be used to evaluate a delivered software product.

DATA ANALYTICS SKILL - PROJECT

- Identify and select the business data that needs to be collected and transitioned from a range of data systems; acquire, manage and process complex data sets, including large-scale and real-time data;
- Undertake analytical investigations of data to understand the nature, utility and quality of data, and developing data quality rule sets and guidelines for database designers;
- Formulate analysis questions and hypotheses which are answerable given the data available and come to statistically sound conclusions;
- Conduct high-quality complex investigations, employing a range of analytical software, statistical modelling & machine learning techniques to make data driven decisions solve live commercial problems;
- Document and describe the data architecture and structures using appropriate data modelling tools, and select appropriate methods to present data and results that support human understanding of complex data sets;
- Scope and deliver data analysis projects, in response to business priorities, create compelling business opportunities reports on outcomes suitable for a variety of stakeholders including senior clients and management.

DATA ANALYTICS KNOWLEDGE - PROJECT

- How key algorithms and models are applied in developing analytical solutions and how analytical solutions can deliver benefits to organisations;
- The principles of data driven analysis and how to apply these. Including the approach, the selected data, the fitted models and evaluations used to solve data problems;
- The properties of different data storage solutions, and the transmission, processing and analytics of data from an enterprise system perspective. Including the platform choices available for designing and implementing solutions for data storage, processing and analytics in different data scenarios;
- How relevant data hierarchies or taxonomies are identified and properly documented;
- The concepts, tools and techniques for data visualisation, including how this provides a qualitative understanding of the information on which decisions can be based.

CYBER SECURITY SKILL - PROJECT

- Identify, document, review and design complex IT enabled business processes that define a set of activities that will accomplish specific organisational goals and provides a systematic approach to improving those processes.
- Professionally present digital and technology solution specialism plans and solutions in a well-structured business report
- Demonstrate self-direction and originality in solving problems, and act autonomously in planning and implementing digital and technology solutions specialist tasks at a professional level;
- Evaluate the significance of human factors to leadership in the effective implementation and management of technology enabled business processes.
- Plan and carry out a variety of security testing strategies on IT infrastructures (fixed and wireless), middle-ware and applications, to identify new issues and recommend remediation and enhancements to security policies and information technology procedures;
- Perform cyber threat intelligence analysis to research, analyse and evaluate technical threats by reviewing open source and other information from trusted sources for new vulnerabilities, malware, or other threats that have the potential to impact the organisation;

CYBER SECURITY SKILL - PROJECT

- Identify, investigate and correlate actionable security events, including performing network traffic analysis using a range of techniques relevant to the security of communication networks to assess security risks and escalating where appropriate;
- Identify, investigate and correlate actionable security events, including performing network traffic analysis using a range of techniques relevant to the security of communication networks to assess security risks and escalating where appropriate;
- Conduct a vulnerability assessment, to identify and report on vulnerability issues and possible solutions arising, including recommending cost-effective mitigations comprising careful combinations of technical, procedural and administrative controls;
- Select and apply cyber security forensic tools and techniques for attack reconstruction, including forensic analysis and volatile data collection and analysis;
- Conduct analysis of attacker tools providing indicators for enterprise defensive measures including classifying and identifying attack patterns.

CYBER SECURITY KNOWLEDGE - PROJECT

- The principles of threat intelligence, modelling and assessment. The range of modern attack techniques and how and where to research emerging attack techniques to inform the development of improved security controls, countermeasures and policies and standards.
- How to use human factor analysis in the assessment of threats, including the motivations and methods adopted by a wide range of human threat actors.
- How to select and apply tools and techniques to carry out a variety of security testing strategies including vulnerability scanning, penetration testing and ethical hacking, recognising that security testing itself cannot guarantee security and only reveal gaps in security provisioning.
- How to develop and implement security event response programmes, security event handling, and operational security activities;
- The different types of cyber security controls that can be implemented, the main principles of secure configuration of security components and devices, including firewalls and protective monitoring tools and how to apply them.

QUESTIONS