



**Institute for Apprenticeships
& Technical Education**

DIGITAL AND TECHNOLOGY SOLUTIONS PROFESSIONAL

Key information

Reference: ST0119

Version: 1.2

Level: 6

Degree: integrated degree

Typical duration to gateway: 48 months

Typical EPA period: 3 months

Maximum funding: £27000

Route: Digital

Date updated: 01/09/2023

Approved for delivery: 26 March 2015

Lars code: 25

EQA provider: Office for Students

Review: This apprenticeship standard will be reviewed after three years

This apprenticeship has options. This document is currently showing the following option:

All



End-point assessment plan

Introduction and overview

This document explains the requirements for end-point assessment (EPA) for the digital and technology solutions professional degree-apprenticeship. End-point assessment organisations (EPAOs) must follow this when designing and delivering the EPA.

Digital and technology solutions professional apprentices, their employers and training providers should read this document.

A degree-apprenticeship awards a degree with the achievement of the apprenticeship. The degree learning outcomes must be aligned with the knowledge, skills and behaviours (KSBs) in the apprenticeship. The degree must be completed, passed and awarded alongside the digital and technology solutions professional degree-apprenticeship.

The apprentice must complete their training and meet the gateway requirements before starting their EPA. The EPA will assess occupational competence.

A degree-apprenticeship must be delivered by a Higher Education Provider (HEP) that is on both the register of apprenticeship training providers (RoATP) and the register of end-point assessment organisations (RoEPAO). The apprentice's employer must select an HEP who is on both registers.

If the HEP is using a credit framework, the EPA must contribute to the total credit value, and must be delivered in line with this EPA plan. However, the number of credits devoted to EPA may vary across HEP's. The recommended EPA contribution is 30 credits of the total credit value.

A full-time digital and technology solutions professional apprentice typically spends 48 months on-programme (this means in training before the gateway). The apprentice must spend at least 12 months on-programme and complete the required amount of off-the-job training in line with the apprenticeship funding rules.

This EPA should then be completed within an EPA period lasting typically 48 months.

Occupational competence is outlined by the EPA grade descriptors and determined, when assessed in line with this EPA plan, by an independent assessor who is an occupational expert and confirms the overall EPA grade.

Assessment method 1 - project report with presentation, questions and answers:

- fail
- pass
- distinction

Assessment method 2 - professional discussion underpinned by a portfolio:

- fail
- pass
- distinction

The result from each assessment method is combined to decide the overall degree-apprenticeship grade. The following grades are available for the degree-apprenticeship:

- fail
- pass
- merit
- distinction

EPA summary table

<p>On-programme - typically 48 months</p>	<p>The apprentice must:</p> <ul style="list-style-type: none"> • complete training to develop the knowledge, skills and behaviours (KSBs) outlined in this degree-apprenticeship's occupational standard • complete training towards English and mathematics qualifications in line with the apprenticeship funding rules • work towards all required elements of the digital and technology solutions professional degree-apprenticeship except undertaking the EPA. <p>The qualification required is:</p> <p>Digital and Technology Solutions Professional</p> <ul style="list-style-type: none"> • compile a portfolio of evidence
<p>End-point assessment gateway</p>	<p>The apprentice's employer must be content that the apprentice has attained sufficient KSBs to complete the degree-apprenticeship.</p> <p>The apprentice must:</p> <ul style="list-style-type: none"> • confirm they are ready to take the EPA • have achieved English and mathematics qualifications in line with the apprenticeship funding rules • have completed and passed all required elements of the digital and technology solutions professional degree-apprenticeship except the EPA <p>For the project report with presentation, questions and answers, the apprentice must submit a Project title and summary. To ensure the project allows the apprentice to meet the KSBs mapped to this assessment method to the highest available grade, the EPAO should sign-off the project's title and scope at the gateway to confirm it is suitable.</p> <p>For the professional discussion underpinned by a portfolio, the apprentice must submit a portfolio of evidence.</p> <p>The apprentice must submit the gateway evidence to their EPAO, including any organisation specific policies and procedures requested by the EPAO.</p>

<p>End-point assessment - typically 3 months</p>	<p>The grades available for each assessment method are below</p> <p>Project Report with presentation, questions and answers:</p> <ul style="list-style-type: none"> • fail • pass • distinction <p>Professional Discussion underpinned by a portfolio:</p> <ul style="list-style-type: none"> • fail • pass • distinction <p>Overall EPA and degree-apprenticeship can be graded:</p> <ul style="list-style-type: none"> • fail • pass • merit • distinction
<p>Professional recognition</p>	<p>This degree-apprenticeship aligns with:</p> <ul style="list-style-type: none"> • British Computer Society for Registered IT Technician (RITTech)
<p>Re-sits and re-takes</p>	<ul style="list-style-type: none"> • Re-take and re-sit grade cap: merit • Re-sit timeframe: typically 3 months • Re-take timeframe: typically 6 months

Duration of end-point assessment period

The EPA is taken in the EPA period. The EPA period starts when the EPAO confirms the gateway requirements have been met and is typically 3 months.

The EPAO should confirm the gateway requirements have been met and the EPA should start as quickly as possible.

EPA gateway

The apprentice's employer must be content that the apprentice has attained sufficient KSBs to complete the degree-apprenticeship. The employer may take advice from the apprentice's training provider, but the employer must make the decision. The apprentice will then enter the gateway.

The apprentice must meet the gateway requirements before starting their EPA.

They must:

- confirm they are ready to take the EPA
- have achieved English and mathematics qualifications in line with the apprenticeship funding rules
- have completed and passed all required elements of the Digital and Technology Solutions Professional degree-apprenticeship except the EPA
- submit a Project title and summary for the project report with presentation, questions and answers

The apprentice will scope out and provide a summary of what the project will cover and will submit this to the EPAO at the gateway. This should demonstrate that the work-based project report will provide sufficient opportunity for the apprentice to meet the KSBs mapped to this method. The summary is not formally assessed and will typically be no longer than 500 words.

The project proposal needs to include a summary of the project plan, research requirements, an overview of how the project will be planned to include timeframes and the date the work-based project report must be submitted to the independent assessor taking into account the deadlines stipulated within this end-point assessment plan. The EPAO will sign off the project summary within 2 weeks of the Gateway to ensure sufficient scope to meet the KSBs mapped to this assessment method.

- submit a Portfolio of evidence for the professional discussion underpinned by a portfolio
- apprentices must compile a portfolio of evidence during the on-programme period of the apprenticeship
- it must contain evidence related to the KSBs that will be assessed by the professional discussion
- the portfolio of evidence will typically contain 6 discrete pieces of evidence
- evidence must be mapped against the KSBs
- evidence may be used to demonstrate more than one KSB; a qualitative as opposed to quantitative approach is suggested
- evidence sources may include:

- o workplace documentation/records, for example workplace policies/procedures, records
- o witness statements
- o assignments
- o annotated photographs
- o video clips (maximum total duration 10 minutes); the apprentice must be in view and identifiable

This is not a definitive list; other evidence sources are possible.

- Although it is expected that apprentices at degree level will be reflective in their practice, it should be noted that the EPA assesses individuals on evidence of output against the KSBS, not reflective accounts or any methods of self-assessment.
- any employer contributions should focus on direct observation of performance (for example witness statements) rather than opinions
- the evidence provided must be valid and attributable to the apprentice; the portfolio of evidence must contain a statement from the employer and apprentice confirming this
- the portfolio of evidence must be submitted to the EPAO at the gateway

The portfolio of evidence is not directly assessed. It underpins the professional discussion and therefore should not be marked by the EPAO. EPAOs should review the portfolio of evidence in preparation for the professional discussion but are not required to provide feedback after this review of the portfolio.

The apprentice must submit the gateway evidence to their EPAO, including any organisation specific policies and procedures requested by the EPAO.

Order of assessment methods

The assessment methods can be delivered in any order.

The result of one assessment method does not need to be known before starting the next.

Project Report with presentation, questions and answers

Overview

A project involves the apprentice completing a significant and defined piece of work that has a real business application and benefit.

NB - The project may be undertaken pre-gateway, however, the Project Report must be completed after the apprentice has gone through the gateway.

A Digital and Technology Solutions Project may take years and not all projects experience a full life cycle, sometimes being abandoned for cost reasons or change of business strategy. A Digital Technology Solutions Professional may be one of a multidisciplinary team and therefore may not control the timescale of the project. Therefore a project (or part project) cannot be designed or delayed to fit into the EPA timescale nor the specification of the EPAO as results can range from

successful new recommendations on process, product or decommission. This cannot be predicted.

The project must give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

The project must meet the needs of the employer's business and be relevant to the apprentice's occupation and apprenticeship. The EPAO must confirm that it provides the apprentice with the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade. The EPAO must refer to the grading descriptors to ensure that projects are pitched appropriately.

This assessment method has 2 components:

- Project with report
- presentation with questions and answers

Rationale

This assessment method is being used because a project is a fundamental activity within the sectors in which a DTSP works. Every specialism within the DTSP apprenticeship works within a project-based approach and so this is a valid way of measuring competence.

The project may be undertaken pre-gateway, however, the Project Report must be completed after the apprentice has gone through the gateway.

A Digital and Technology Solutions Project may take years and not all projects experience a full life cycle, sometimes being abandoned for cost reasons or change of business strategy. A Digital Technology Solutions Professional may be one of a multidisciplinary team and therefore may not control the timescale of the project. Therefore a project (or part project) cannot be designed or delayed to fit into the EPA timescale nor the specification of the EPAO as results can range from successful new recommendations on process, product or decommission. This cannot be predicted.

Component 1: Project with a project report

Delivery

The project report with presentation, questions and answers must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

The apprentice's project can be based on any of the following:

- a specific problem
- a recurring issue
- an idea or opportunity

To ensure the project allows the apprentice to meet the KSBs mapped to this assessment method to the highest available grade, the EPAO should sign-off the project's title and scope at the gateway to confirm it is suitable.

The project output must be in the form of a report.

The apprentice must start the project report after the gateway. They must complete and submit the to the EPAO by the end of weekreport 12 of the EPA period. The employer should ensure the apprentice has the time and resources, within this period, to plan and complete their project. The apprentice must complete their project and the production of its components unaided.

The apprentice may work as part of a team to complete the project which could include technical internal or external support. However, the project report must be the apprentice's own work and reflective of their own role and contribution. The apprentice and their employer must confirm that the project report is the apprentice's own work when it is submitted.

The report must include at least:

- an introduction
- the scope of the project (including key performance indicators and stakeholder engagement)
- how the outcomes would be achieved
- a project plan
- research and findings
- project outcomes
- recommendations and conclusions.

The project report has a word count of 6000 words. A tolerance of 10% above or below the word count is allowed at the apprentice's discretion. Appendices, references and diagrams are not included in this total. The project report must map, in an appendix, how it evidences the KSBs mapped to this assessment method.

Component 2: Presentation with questions

Delivery

In the presentation with questions the apprentice delivers a presentation to an independent assessor on a set subject. The independent assessor must ask questions following the presentation. This gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

The apprentice must prepare and submit their presentation speaker notes and supporting materials presentation with questions and answers. The independent assessor must ask questions after the presentation. The presentations must include:

- an overview of the project
- the project scope (including key performance indicators)
- summary of actions undertaken by the apprentice
- project outcomes and how these were achieved

The apprentice must prepare and submit their presentation speaker notes and supporting materials to the EPAO at the same time as the report by the end of week 12 of the EPA period.

The apprentice must notify the EPAO, at that point, of any technical requirements for the presentation. During the presentation, the apprentice must have access to:

- presentation software
- a copy of the project report and presentation
- notes
- computer

↓ The independent assessor must have at least 2 weeks to review the project output(s) and presentation speaker notes and supporting materials, to allow them to prepare questions.

The EPAO must give the apprentices at least 14 days notice of the presentation with questions.

The apprentice must deliver their presentation to the independent assessor on a one-to-one basis.

The independent assessor must ask questions after the presentation.

The purpose of the questions is to explore and verify the apprentice's understanding of their project area in relation to the apprenticeship standard.

The presentation and questions must last 60 minutes. This will typically include a presentation of 30 minutes and questioning lasting 30 minutes. The independent assessor can increase the total time of the presentation and questioning by up to 10%. This time is to allow the apprentice to complete their last point or respond to a question if necessary.

The independent assessor must ask at least 4 questions. They must use the questions from the EPAO's question bank or create their own questions in-line with the EPAO's training. Follow up questions are allowed where clarification is required.

The independent assessor must use the full time available for questioning. The independent assessor must make the grading decision. The project components must be assessed holistically by the independent assessor when they are deciding the grade.

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The independent assessor must keep accurate records of the assessment. They must record:

- the KSBs demonstrated in the report and presentation
- the apprentice's answers to questions
- the KSBs demonstrated in answers to questions
- the grade achieved

Assessment location

The presentation with questions must take place in a suitable venue selected by the EPAO (for example the EPAO's or employer's premises). The presentation with questions should take place in a quiet room, free from distractions and influence.

The presentation with questioning can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO should maintain the security and confidentiality of EPA materials when consulting employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

The assessment specification must be relevant to the occupation and demonstrate how to assess the KSBs mapped to this assessment method. The EPAO must ensure that questions are refined and developed to a high standard. The questions must be unpredictable. A question bank of sufficient size will support this.

The EPAO must ensure that the apprentice has a different set of questions in the case of re-sits or re-takes.

EPAO must produce the following materials to support the project report with presentation, questions and answers:

- independent assessor EPA materials which include:
 - training materials
 - administration materials
 - moderation and standardisation materials
 - guidance materials
 - grading guidance
 - question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation, training, and moderation.

Professional Discussion underpinned by a portfolio

Overview

In the professional discussion, an independent assessor and apprentice have a formal two-way conversation. It gives the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence.

Rationale

This assessment method is being used because:

- breadth of the core of the standard and opportunities to evidence across this throughout the duration of the programme
- allows the opportunity to explore depth of understanding surrounding the relevant specialist KSBs

Delivery

The professional discussion must be structured to give the apprentice the opportunity to demonstrate the KSBs mapped to this assessment method to the highest available grade.

An independent assessor must conduct and assess the professional discussion.

The purpose of the independent assessor's questions will be to explore the following topics and themes:

Theme A: Underlying Principles

Theme B: Technical Solutions

Theme C: Innovation & Response

Theme D: Legal, Ethics & Landscape

The EPAO must give an apprentice 14 days notice of the professional discussion.

The independent assessor must have at least 2 weeks to review the supporting documentation.

The apprentice must have access to their portfolio of evidence during the professional discussion.

The apprentice can refer to and illustrate their answers with evidence from their portfolio of evidence however, the portfolio of evidence is not directly assessed.

The professional discussion must last for 60 minutes. The independent assessor can increase the time of the professional discussion by up to 10%. This time is to allow the apprentice to respond to a question if necessary.

The independent assessor must ask at least 4 questions. Follow-up questions are allowed where clarification is required. The independent assessor must use the questions from their EPAO's question bank or create their own questions in-line with the EPAO's training.

The independent assessor must make the grading decision. The independent assessor must keep accurate records of the assessment. They must record:

- the apprentice's answers to questions
- the KSBs demonstrated in answers to questions
- the grade achieved

Assessment location

The professional discussion must take place in a suitable venue selected by the EPAO (for example the EPAO's or employer's premises).

The professional discussion can be conducted by video conferencing. The EPAO must have processes in place to verify the identity of the apprentice and ensure the apprentice is not being aided.

The professional discussion should take place in a quiet room, free from distractions and influence.

Question and resource development

The EPAO must develop a purpose-built assessment specification and question bank. It is recommended this is done in consultation with employers of this occupation. The EPAO should maintain the security and confidentiality of EPA materials when consulting employers. The assessment specification and question bank must be reviewed at least once a year to ensure they remain fit-for-purpose.

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The EPAO must produce the following materials to support the professional discussion underpinned by a portfolio:

- independent assessor assessment materials which include:
- training materials
- administration materials
- moderation and standardisation materials
- guidance materials
- grading guidance
- question bank
- EPA guidance for the apprentice and the employer

The EPAO must ensure that the EPA materials are subject to quality assurance procedures including standardisation, training, and moderation.

Grading

Project Report with presentation, questions and answers

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
(Core) The Organisational Context K1 K2	<p>Identifies the role digital technology solutions play in gaining a competitive advantage by adapting and exploiting them (K1)</p> <p>Explains the principles of strategic decision making concerning the acquisition or development of digital and technology solutions. (K2)</p>	N/A
(Core) Project Requirements S3 B3	<p>Analyses relevant evidence to produce a proposal for a digital and technology based project in line with legal, ethical and regulatory requirements whilst ensuring the protection of personal data, safety and security (S3,B3)</p>	N/A
(Core) Project Planning and Resources K3 K4 K15 S2 S14	<p>Produces a project plan which estimates risks and opportunities and determines mitigation strategies.' (K3, S2)</p> <p>Evaluates appropriate techniques and approaches that are used in creating a business case (K4)</p> <p>The project applies techniques to estimate cost and time resource constraints.' (K15)</p> <p>Researches information on innovative technologies/approaches and investigates and evaluates them in the development of a digital and technology solution. (S14)</p>	N/A
(Core) Solution	Analyses the business problem behind the project proposal to	Justifies their choice of digital and technology solutions for specific

Proposal S1	identify the role of digital and technology solutions. (S1)	roles in the project proposal. (S1)
(Core) Project Delivery K5 S5 S6	<p>Carries out the identified solution proposal utilising a range of digital tools and standard approaches. (K5, S5)</p> <p>Manages the project delivery to achieve digital and technology solutions. (S6)</p>	Justifies the selection and use of standard processes and methods. (K5, S5)
(Core) Project Evaluation K17 K18 S13	<p>Justifies their methods of research and evaluation which determined the selection of digital and technology solutions identified for the project. (K18)</p> <p>Presents an overview of the project to appropriate stakeholders using appropriate language and style. (K17, S13, B5)</p>	Compares and contrasts their chosen digital technology solution to alternative approaches within their research outcomes. (K18,S13)
(Software Engineer) Technical Solutions K25 K26 K27	<p>Analyses the factors affecting product quality and the approaches controlling them throughout the project development process. (K25/SEK5).</p> <p>Selects and applies software tools appropriate to the Software Engineering project solution. (K26/SEK6)</p> <p>Outlines approaches to the interpretation and use of artefacts. (K27/SEK7)</p>	Evaluates the impact of approaches used to control product quality throughout the project development process. (K25/SEK5)
(Software Engineer) Innovation and Response S16 S17 S18 S19 S22	<p>Identifies and defines a non-routine, unspecified software engineering problem. (S16/SES1)</p> <p>Recommends a software engineering solution that is appropriate for the project brief. (S17/SES2)</p>	<p>Evaluates their choice of software engineering solution for the project brief. (S17/SES2)</p> <p>Justifies their choice of analysis methods approaches and techniques. (S18/SE3)</p>

	<p>Selects and applies analysis methods, approaches and techniques in software engineering projects to deliver an outcome that meets requirements. (S18/SES3)</p> <p>Demonstrates how they implement software engineering projects using appropriate software engineering methods, approaches and techniques. (S19/SES4)</p> <p>Evaluates their selection of approach, methodology, analysis and outcomes to identify both lessons learned and recommendations for improvements to future projects software engineering projects. (S22/SES7)</p>	<p>Compares and contrasts the implementation of their software engineering solution with alternative approaches. (S22/SES7)</p>
<p>(IT Consultant) Underlying Principles K29 K32</p>	<p>Evaluates the principles of different consulting methodologies. (K29/ITK1)</p> <p>Summarises the barriers to solving problems or maximizing opportunities. (K32/ITK4)</p>	<p>N/A</p>
<p>(IT Consultant) Innovation and Response K33 S24 S26 S28</p>	<p>Analyses client needs to advise a strategic approach to improve business processes, provide new ideas and/or technology solutions. (S24/ITS1)</p> <p>Demonstrates presenting recommendations to stakeholders and influencing action, considering risks, costs and benefits. (K33/ITK5, S26/ITS3)</p> <p>Demonstrates how they perform stakeholder analysis to identify, determine and deepen understanding of system</p>	<p>Critically evaluates the impact of methods used to present recommendations to stakeholders. (K33/ITK5, S26/ITS3)</p>

	requirements and develop client relationships. (S28, ITS5)	
(IT Consultant) Ethics and Landscape S30	Evaluates how they ensure legal and ethical requirements are accommodated in the development of digital and technology solutions. (S30/ITS7)	N/A
(IT Consultant) Technical Solutions S31	Demonstrates how they evaluate the success of a new system, process, or initiative. (S31, ITS8)	N/A
(Business Analyst) Technical Solutions S32 S34	Compare and contrast how they use requirements elicitation, analysis and documentation to produce an acceptable solution for business problems or further opportunities. (K37/BAK1,S32/BAS1) Evaluate the impact of Use Cases on all stakeholders of a system. (S33/BAS3)	N/A
(Business Analyst) Legal, Ethics and Landscape K44 S36 S38	Demonstrate how they produce a business case to scope a proposed project including business benefits and recommendations. (S36/BAS5) Evaluates the impact of model selection and how they inter-relate with each other when generating business analytics in line with the project brief. (S38/BAS7) Describes Solution Evaluation, including how to assess the performance of and value delivered by a solution and to recommend improvements on increasing value. (K40/BAK4) Outlines the approaches used for change control and requirements management within the project. (K44/BAK8)	N/A

<p>(Business Analyst) Innovation and Response K40 S39</p>	<p>Applies the principles of Solution Evaluation to assess performance of and value delivered in the project and outlines recommendations on how to increase value in the future. (K40/BAK4)</p> <p>Demonstrates how they recommend and apply software tools to implement Business Analysis tasks and outcomes in the project brief. (S39/BAS8)</p>	<p>Critically analyses their approach to Solution Evaluation has had on project outcomes. (K40/BAK4)</p> <p>Critically evaluates the use of appropriate software tools to implement Business Analysis tasks and outcomes. (S39/BAS8)</p>
<p>(Cyber Security Analyst) Underlying Principles K45 K51</p>	<p>Explains the principles of cyber security tools and techniques as related to the project. (K45/CSK1)</p> <p>Relates the principles of security architectures and methodologies to the project. (K51/CSK7)</p>	<p>N/A</p>
<p>(Cyber Security Analyst) Innovation and Response K52 S42 S46 S47</p>	<p>Describes approaches to deployment of cyber security technology components in digital systems to provide security functionality. (K52/CSK8)</p> <p>Demonstrate how they recommend improvements to the cyber security approaches of an organisation based on research into future potential cyber threats and considering threat trends in the project. (S42/CSS3)</p> <p>Demonstrate how they analyse cyber security requirements in the project against other design requirements for systems or products and identify conflicting requirements and recommend appropriate solutions with clear</p>	<p>Justifies their choice of approach to deployment of cyber security technology components in digital systems to provide security functionality within the project. (K52/CSK8)</p>

	<p>explanation of costs/benefits. (S46/CSS7)</p> <p>Demonstrate how they lead the design and build of systems in accordance with a security case to address organisational challenges in the project. (S47/CSS8)</p>	
<p>(Cyber Security Analyst) Technical Solutions S40 S44</p>	<p>Demonstrate how they discover, identify and analyse security threats, attack techniques and vulnerabilities using cyber security architectures, methodologies, tools and techniques to recommend mitigation and security controls in the project. (S40/CSS1)</p> <p>Selects and applies cyber security tools and techniques in relation to the risks identified in the context of the project. (K41/CSK1, S44/CSS5)</p>	<p>Critically evaluates how they discover, identify and analyse security threats, attack techniques and vulnerabilities and recommend mitigation and security controls in the project (S40/CSS1)</p>
<p>(Data Analyst) Underlying Principles K54 K56 K58</p>	<p>Critically analyses data sets, using a range of industry standard tools and data analysis methods. (K54/DAK2)</p> <p>Outlines sources of data used for the project. (K56/DAK4)</p> <p>Describes how Data Analytics operates within the context of data governance, data security, and communications in respect of the project. (K58/DAK6)</p>	<p>Summarises the outcomes of analysing, interpreting and evaluating complex information from diverse datasets. (K54/DAK2)</p> <p>Critically evaluates sources of data for the project. (K56/DAK4)</p>
<p>(Data Analyst) Innovation and Response S50 S52 S53 S54 S55</p>	<p>Visualises data to tell compelling and actionable narratives by using the best medium for each audience. (S50/DAS3)</p> <p>Demonstrates how they have applied a range of techniques for analysing quantitative data such as data mining, time series forecasting, algorithms, statistics and modelling</p>	<p>Evaluates their approach to finding, presenting, communicating and disseminating data analysis outputs effectively and with high impact through creative storytelling, tailoring the message for the audience. Compares and contrasts alternative approaches to visualise data to tell compelling and</p>

	<p>techniques to identify and predict trends and patterns in data. (S52/DAS5)</p> <p>Demonstrates how they have applied exploratory or confirmatory approaches to analysing data. and how they have validated and tested stability of the results. (S53/DAS6)</p> <p>Demonstrates how they extract data from a range of sources. (S54/DAS7)</p> <p>Demonstrates how they analyse, in detail large data sets, using appropriate industry standard tools and data analysis methods. (S55/DAS8)</p>	<p>actionable narratives by using the best medium for each audience. (S50/DAS3)</p> <p>Evaluates how they apply a wide range of techniques for analysing quantitative data such as data mining, time series forecasting, algorithms, statistics and modelling techniques to identify and predict trends and patterns in data. (S52/DAS5)</p> <p>Evaluates how they apply exploratory or confirmatory approaches to analysing data and evaluates their approach to in depth validation and testing stability of the results. (S53/DAS6)</p> <p>Evaluates their approach to in depth extraction of data from a range of sources leading making conclusions from the data for decision-making purposes for an internal or external stakeholder.(S54/DAS7)</p> <p>Evaluates their approach to analysing in detail large data sets, using a range of industry standard tools and data analysis methods and suggests how this allows internal or external stakeholders to draw conclusions from the data for decision-making purposes. (S55/DAS8)</p>
<p>(Network Engineer) Underlying Principles K61 K62 K66</p>	<p>Explain the role of physical and/or virtual network component and their impact within a project. (K61/NEK1)</p> <p>Explain network fundamentals concepts (protocols, features etc.) and the relationships between them</p>	<p>N/A</p>

	<p>that are relevant to a specific project undertaken. (K62/NEK2)</p> <p>Describe key security concepts and security programme elements. (K66/NEK6)</p>	
<p>(Network Engineer) Innovation and Response S56 S57 S60 S62</p>	<p>Demonstrate how they identify and collate stakeholder network needs. (S56/NES1)</p> <p>Demonstrate how they plan, design, document and develop network solutions taking into consideration stakeholder requirements and define appropriate operational policies. (S57/NES2)</p> <p>Demonstrate how they implement, test and validate networks from a design, explaining the chosen design and implementation. (S60/NES5)</p> <p>Demonstrate how they research and evaluate emerging network technologies, utilising appropriate sources of evidence, to support an objective recommendation. (S62/NES7)</p>	<p>Critically evaluate how they plan, design, document and develop network solutions taking into consideration stakeholder requirements and define appropriate operational policies. (S57/NES2)</p> <p>Critically evaluate how they research and evaluate emerging network technologies, utilising appropriate sources of evidence, to support an objective recommendation. (S62/NES7)</p>
<p>(Network Engineer) Technical Solutions S63</p>	<p>Demonstrate how security concerns or attacks are investigated and mitigated. (S63/NES8)</p>	N/A

Professional Discussion underpinned by a portfolio

Fail - does not meet pass criteria

THEME KSBS	PASS APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS	DISTINCTION APPRENTICES MUST DEMONSTRATE ALL THE PASS DESCRIPTORS AND ALL OF THE DISTINCTION DESCRIPTORS
(Core) The Organisational Context K7	Reviews the roles, functions and activities relevant to technology solutions within an organisation. (K7)	N/A
(Core) Core Technical Concepts K6 K11 K12 K14 K16	<p>Critically evaluates the nature and scope of common vulnerabilities in digital and technology solutions (K11)</p> <p>Explains core technical concepts for digital and technology solutions, including:</p> <ul style="list-style-type: none"> - The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation's standards and pre-existing tools.(K6) - Data gathering, data management, and data analysis.(K12, K14) - Computer networking concepts. (K16) 	N/A
(Core) Applied Technical Solutions K13 S4 S9 S10 S11 S12	<p>Demonstrates the use of core technical concepts for digital and technology solutions, including:</p> <ul style="list-style-type: none"> - Initiate, design, code, test and debug a software component for a digital and technology solution. (S4) - Security and resilience techniques. (S9) - Initiates, designs, implements and debugs a data product for a digital and technology solution. (S10) 	N/A

	<p>- Plans, designs and manages simple computer networks. (S12)</p> <p>- Applies the principles of data analysis for digital and technology solutions. (K13, S11)</p>	
<p>(Core) Leading and Working Together K8 K9 K10 S7 S8 B4 B6 B7</p>	<p>Explains how teams work effectively to produce a digital and technology solution applying relevant organisational theories using up to date awareness of trends and innovations. (K8, S7, B4,B6,B7)</p> <p>Describes the concepts and principles of leadership and management as they relate to their role and how they apply them. (K9, K10,S8)</p>	N/A
<p>(Core) Social Infrastructure - Legal, Ethical and Sustainability K19 K20 S15 B1 B2 B8</p>	<p>Applies relevant legal, ethical, social and professional standards to digital and technology solutions considering both technical and non-technical audiences and in line with organisational guidelines. (K19, S15, B1, B2, B5)</p> <p>Explains sustainable development approaches within digital technologies as they relate to their role including diversity and inclusion. (K20, B8)</p>	<p>Justifies the application of relevant legal, ethical, social and professional standards to digital and technology solutions. (K19, S15)</p> <p>Evaluates the impact of sustainable digital technology practices of their organisation. (K20)</p>
<p>(Software Engineer) Underlying Principles K21 K22 K23</p>	<p>Describes scenarios covering all stages of a development lifecycle, identifying techniques and methods are applied in each case. (K21/SEK1)</p> <p>Explains the principles of a range of development techniques, for each stage of the software development cycle that produce artefacts and the</p>	N/A

	<p>contexts in which they can be applied. (K22/SEK2)</p> <p>Explains the principles of a range of development methods and approaches and the contexts in which they can be applied. (K23/SEK3)</p>	
<p>(Software Engineer) Technical Solutions K24 K28</p>	<p>Describes how to interpret and implement a design, compliant with functional, non-functional and security requirements. K24/SEK4</p> <p>Describes how tools that support teamwork can be used effectively. K28/SEK8</p>	N/A
<p>(Software Engineer) Innovation and Response S20 S21</p>	<p>Describes how they respond to changing priorities and problems arising within software engineering projects by making revised recommendations, and adapting plans as necessary, to fit the scenario being investigated. (S20/SES5)</p> <p>Explains how they determine, refine, adapt and use appropriate software engineering methods, approaches and techniques to evaluate software engineering project outcomes. (S21/SES6)</p>	<p>Demonstrates how their actions have influenced the creation of appropriate plans within teams and contributed to project outcomes. (S20/SES5)</p> <p>Compares and contrasts how they respond to changing priorities and problems arising within software engineering projects by making revised recommendations, and adapting plans as necessary, to fit the scenario being investigated. (S20/SES5)</p>
<p>(Software Engineer) Legal, Ethics and Landscape S23</p>	<p>Describes how they extend and update software development knowledge with evidence from professional and academic sources by undertaking appropriate research to inform best practice and lead improvements in the organisation. (S23/SES8)</p>	N/A

<p>(IT Consultant) Underlying Principles K30 K31 K34 K35 K36</p>	<p>Explains how consulting interfaces with project management, business analysis and business management. (K30/ITK2)</p> <p>Explains the principles of change management within organisations. (K31/ITK3)</p> <p>Compares and contrasts approaches to analytical and critical thinking to define business problems objectively and create value for the client. (K32/ITK6)</p> <p>Describes questioning strategies and active listening to ensure all requirements are gathered. (K35/ITK7)</p> <p>Explains the ethical and legal requirements in client/provider relationships. (K36/ITK8)</p>	<p>N/A</p>
<p>(IT Consultant) Innovation and Response S25 S27</p>	<p>Evaluates how they effectively communicate value add to the client through a variety of media in a professional setting through performing socio-technical process improvements in a range of environments. (S25/ITS2)</p> <p>Explain how they participate in walk-throughs for IT, to identify, document and evaluate key risks within a client's organisation. (S27/ITS4)</p>	<p>Compares and contrasts how they effectively communicate value add to the client through a variety of media in a professional setting through performing socio-technical process improvements in a range of environments. (S25/ITS2)</p> <p>Critically evaluates how they participate in walk-throughs for IT, to identify, document and evaluate key risks within a client's organisation. (S27/ITS4)</p>
<p>(IT Consultant) Technical Solutions S29</p>	<p>Evaluates how they effect change within an organisation through evaluation of a new system, process or initiative. (S29/ITS6)</p>	<p>N/A</p>

<p>(Business Analyst) Legal, Ethics and Landscape K41 K42 S33</p>	<p>Explains legislation and industry standards relevant to the organisation and sector. (K41/BAK5)</p> <p>Describes the purpose and value of quality assurance techniques. (K42/BAK6)</p> <p>Explains how they conduct Process Analysis, Definition, Mapping and Modelling within a business situation without supervision. (S33/BAS2)</p>	<p>N/A</p>
<p>(Business Analyst) Technical Solutions K38 K43 S37</p>	<p>Evaluate approaches to Requirements Life Cycle Management including how to manage and maintain requirements and design information from inception to retirement of a product. (K38/BAK2)</p> <p>Evaluate a range of Business Analysis investigative techniques. (K43/BAK7)</p> <p>Explains how they use products of analysis in the design and development of a system. (S37/BAS6)</p>	<p>N/A</p>
<p>(Business Analyst) Innovation and Response K39 S35</p>	<p>Explains how they use tools and benchmarking to support modelling and requirements gathering and recommend approaches to team members as required. (S35/BAS4)</p> <p>Explains the principles of Strategy Analysis, including how to identify the business need, address that need, and align the change strategy within the organisation. (K39/BAK3)</p>	<p>Critically evaluates how they use tools and benchmarking to support modelling and requirements gathering and recommend approaches to team members as required. (S35/BAS4)</p>

<p>(Cyber Security Analyst) Legal, Ethics and Landscape K46 K48 K50 S45</p>	<p>Explains the principles of quantitative and qualitative risk management theory including the role of risk stakeholders. (K46/CSK2)</p> <p>Describes the key legislative frameworks and the regulatory landscape for cyber security. (K48/CSK4)</p> <p>Explains the ethical principles and codes of good practice of at least one significant cyber security professional body and the ethical responsibilities of a cyber security professional. (K50/CSK6)</p> <p>Describes how they lead cyber security awareness campaigns and evaluate their effectiveness. (S45/CSS6)</p>	<p>N/A</p>
<p>(Cyber Security Analyst) Technical Solutions K47 K49 S41 S43</p>	<p>Evaluates concepts and approaches to cyber security assurance. (K47/CSK3)</p> <p>Evaluates approaches to incident response and management including escalation and investigation of cyber security breaches and their root cause. (K49/CSK5)</p> <p>Explains how they undertake security risk assessments for complex systems without direct supervision and propose a remediation strategy relevant to the context of the organisation. (S41/CSS2)</p> <p>Explains how they manage cyber security risk. (S43/CSS4)</p>	<p>Critically evaluates how they undertake security risk assessments for complex systems without direct supervision and propose a remediation strategy relevant to the context of the organisation. (S41/CSS2)</p> <p>Critically evaluates how they manage cyber security risk. (S43/CSS4)</p>
<p>(Data Analyst) Underlying</p>	<p>Describes the barriers that exist to effective data analysis between</p>	<p>N/A</p>

Principles K53 K55 K57	<p>analysts and their stakeholders and how to avoid or resolve these. (K53/DAK1)</p> <p>Explains data formats, structures, architectures and data delivery methods including “unstructured” data. (K55/DAK3)</p> <p>Explains approaches to data processing and storage, database systems, data warehousing and online analytical processing, data-driven decision making and the good use of evidence and analytics in making choices and decisions. (K57/DAK5)</p>	
(Data Analyst) Technical Solutions K59	Describes how Data Analytics can be applied to improve an organisation’s processes, operations and outputs. (K59/DAK7)	Evaluates how data analytics can be applied to improve an organisation’s processes, operations and outputs. (K59/DAK7)
(Data Analyst) Legal, Ethics and Landscape K60	Describes how data and analysis may exhibit biases and prejudice. Describes how ethics and compliance affect Data Analytics work, and the impact of international regulations. (K60/DAK8)	N/A
(Data Analyst) Innovation and Response S48 S49 S51	<p>Describes how they define Data Requirements and perform Data Collection, Data Processing and Data Cleansing. (S48/DAS1)</p> <p>Describes how they apply different types of Data Analysis, as appropriate, to drive improvements for specific business problems. (S49/DAS2)</p> <p>Describes how they have encountered barriers to effective analysis both by analysts and their</p>	<p>Evaluates how they define Data Requirements and perform Data Collection, Data Processing and Data Cleansing. (S48/DAS1)</p> <p>Evaluates how they apply different types of Data Analysis, as appropriate, to drive improvements for specific business problems. (S49/DAS2)</p> <p>Evaluates how they identify barriers to effective analysis encountered both by analysts and their</p>

	stakeholders within data analysis projects. (S51/DAS4)	stakeholders within data analysis projects. (S51/DAS4)
(Network Engineer) Technical Solutions K63 K67 K68 S58 S61	<p>Explains the benefits and risks of cloud computing and the common integration deployments (private, public, hybrid) including the benefits and risks of virtualisation as a concept; key features of virtualisation and current cloud platforms available. (K63/NEK3)</p> <p>Explains Software Defined Networking and Network Function Virtualisation Core Principles. (K67/NEK7)</p> <p>Describe the key elements of mobile networks including some specific key functions and communication concepts. (K68/NEK8)</p> <p>Explains how they undertake network performance monitoring, including capacity management and auditing of IP addressing. (S58/NES3)</p> <p>Explains how they secure network systems, apply security policies, access and firewalls. (S61/NES6)</p>	<p>Critically provide a comparative analysis between different cloud models stating their risks, strengths and weaknesses, considering their organisational needs. (K63/NEK3)</p> <p>Critically evaluates how they undertake network performance monitoring, including capacity management and auditing of IP addressing. (S58/NES3)</p>
(Network Engineer) Underlying Principles K64 K65	<p>Describe key factors that affect network performance and provide some mitigation strategies to increase quality of service. (K64/NEK4)</p> <p>Explains the principles of failure modes in protocols and how they could be addressed. (K65/NEK5)</p>	N/A

(Network Engineer) Innovation and Response S59	Explain approaches for investigating, troubleshooting and resolving network faults. (S59/NES4)	Compare and contrast approaches for investigating, troubleshooting and resolving network faults. (S59/NES4)
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Overall EPA grading

Performance in the EPA determines the overall grade of:

- fail
- pass
- merit
- distinction

An independent assessor must individually grade the project report with presentation, questions and answers and professional discussion underpinned by a portfolio in line with this EPA plan.

The EPAO must combine the individual assessment method grades to determine the overall EPA grade.

If the apprentice fails one assessment method or more, they will be awarded an overall fail.

To achieve an overall pass, the apprentice must achieve at least a pass in all the assessment methods. To achieve an overall EPA merit, the apprentice must achieve a pass in either assessment method and a distinction in the remaining method. To achieve an overall EPA distinction, the apprentice must achieve a distinction in both assessment methods.

Grades from individual assessment methods must be combined in the following way to determine the grade of the EPA overall.

PROJECT REPORT WITH PRESENTATION, QUESTIONS AND ANSWERS	PROFESSIONAL DISCUSSION UNDERPINNED BY A PORTFOLIO	OVERALL GRADING
Fail	Any grade	Fail
Any grade	Fail	Fail
Pass	Pass	Pass
Pass	Distinction	Merit
Distinction	Pass	Merit
Distinction	Distinction	Distinction

Re-sits and re-takes

If the apprentice fails one or more assessment methods they can take a re-sit or a re-take at their employer's discretion. The apprentice's employer needs to agree that a re-sit or re-take is appropriate. A re-sit does not need further learning, whereas a re-take does.

The apprentice should have a supportive action plan to prepare for a re-sit or a re-take.

The employer and EPAO agree the timescale for a re-sit or re-take. A re-sit is typically taken within 3 months of the EPA outcome notification. The timescale for a re-take is dependent on how much re-training is required and is typically taken within 6 months of the EPA outcome notification.

If the apprentice fails the project assessment method, they must amend the project output in line with the independent assessor's feedback. The apprentice will be given 4 weeks to rework and submit the amended report.

Failed assessment methods must be re-sat or re-taken within a 6-month period from the EPA outcome notification, otherwise the entire EPA will need to be re-sat or re-taken in full.

Re-sits and re-takes are not offered to an apprentice wishing to move from pass to a higher grade.

The apprentice will get a maximum EPA grade of merit for a re-sit or re-take, unless the EPAO determines there are exceptional circumstances.

Roles and responsibilities

ROLES	RESPONSIBILITIES
Apprentice	<p>As a minimum, the apprentice should:</p> <ul style="list-style-type: none"> • complete on-programme training to meet the KSBs as outlined in the occupational standard for a minimum of 12 months • complete the required amount of off-the-job training specified by the apprenticeship funding rules as arranged by the employer and training provider • understand the purpose and importance of EPA • prepare for and undertake the EPA including meeting all gateway requirements
Employer	<p>As a minimum, the apprentice's employer must:</p> <ul style="list-style-type: none"> • select the EPAO (and therefore training provider) • work with the training provider (where applicable) to support the apprentice in the workplace and to provide the opportunities for the apprentice to develop the KSBs • arrange and support off-the-job training to be undertaken by the apprentice • decide when the apprentice is working at or above the the occupational competence and is ready for EPA • ensure the apprentice is prepared for the EPA • ensure that all supporting evidence required at the gateway is submitted in accordance with this EPA plan • confirm arrangements with the EPAO for the EPA (who, when, where) in a timely manner • provide access to any employer-specific documentation as required, for example company policies) • ensure that the EPA is scheduled with the EPAO for a date and time which allows appropriate opportunity for the apprentice to meet the KSBs. • ensure the apprentice is given sufficient time away from regular duties to prepare for, and complete the EPA • ensure that any required supervision during the EPA period, as stated within this EPA plan, is in place • ensure the apprentice has access to the resources used to fulfil their role and carry out the EPA for workplace based assessments • remain independent from the delivery of the EPA

	<ul style="list-style-type: none"> • pass the certificate to the apprentice upon receipt from the EPAO
EPAO (HEP)	<p>As a minimum, the EPAO must:</p> <ul style="list-style-type: none"> • conform to the requirements of the register of end- point assessment organisations (RoEPAO) • conform to the requirements of this EPA plan and deliver its requirements in a timely manner • conform to the requirements of the external quality assurance provider (EQAP) • understand the degree-apprenticeship, including the occupational standard, EPA plan and funding • make all necessary contractual arrangements, including agreeing the price of the EPA • develop and produce assessment materials including specifications and marking materials (for example mark schemes, practice materials, training material) • maintain and apply a policy for the declaration and management of conflict of interests and independence which ensures, as a minimum, no personal benefit or detriment is received by those delivering the EPA or from the result of an assessment and covers: <ul style="list-style-type: none"> • apprentices • employers • assessors • the HEP's role as a training provider • any other roles involved in delivery or grading of the EPA • have quality assurance systems and procedures that ensure fair, reliable and consistent assessment and maintain records of IQA activity for external quality assurance (EQA) purposes • appoint independent, competent and suitably qualified assessors in line with the requirements of this EPA plan • where required to facilitate the EPA, appoint administrators, invigilators and any other roles • deliver induction, initial and on-going training for all assessors, and if used administrators and invigilators and any other roles involved in delivery or grading of the EPA specified within this EPA plan. This should include how to record the rationale and evidence for grading decisions where required

	<ul style="list-style-type: none"> • standardise all assessors, before allowing them to deliver EPAs and: <ul style="list-style-type: none"> • when the EPA is updated • at least once a year • moderate their decisions once EPAs have begun • monitor the performance of all assessors and provide re-training where necessary • develop and provide assessment recording documentation to ensure a clear and auditable process is in place for providing assessment decisions and feedback to all relevant stakeholders • use language in the development and delivery of the EPA that is appropriate to the level of the degree- apprenticeship • arrange for the EPA to take place in a timely manner, in consultation with the employer • provide information, advice and guidance documentation to enable apprentices, employers and training providers to prepare for the EPA • confirm all gateway requirements have been met • host and facilitate the EPA or make suitable alternative arrangements • maintain the security of the EPA including, but not limited to, verifying the identity of the apprentice, invigilation, security of materials • where the EPA plan permits assessment away from the workplace, ensure that the apprentice has access to the required resources and liaise with the employer to agree this if necessary • confirm the overall EPA grade • arrange the certification of the degree-apprenticeship
Independent assessor	<p>As a minimum, an independent assessor must:</p> <ul style="list-style-type: none"> • be independent, with no conflict of interest with the apprentice, their employer or training provider, specifically, they must not receive a personal benefit or detriment from the result of the assessment • not be employed by the same organisation as the apprentice or drawn from an organisation on IfATE's directory of professional and employer-led bodies that supports external quality assurance. • be current and active in the occupation, for example be sourced from the industry or a professional body

	<ul style="list-style-type: none"> • have, maintain and be able to evidence up-to-date knowledge and expertise of the occupation • have authority to represent the professional body where the EPA is acting as the professional body's assessment process (if necessary and permitted in the EPA plan) • have the competence to assess the EPA and meet the requirements of the IQA section of this EPA plan • understand the degree-apprenticeship (occupational standard and EPA plan) • attend induction and standardisation events before they conduct an EPA for the first time, when the EPA is updated, and at least once a year • use language in the delivery of the EPA that is appropriate to the level of the degree-apprenticeship • work with other personnel, including additional assessors where used, in the preparation and delivery of assessment methods • conduct the EPA to assess the apprentice against the KSBs and in accordance with the EPA plan • make all final grading decisions on an apprentice's occupational competence in accordance with grading descriptors in this EPA plan • if an assessor panel is used, the independent assessor must chair and make final grading decisions • record and report all assessment outcome decisions for each apprentice • comply with the IQA requirements of the EPAO
Training provider (HEP)	<p>As a minimum, the training provider must:</p> <ul style="list-style-type: none"> • conform to the requirements of the register of apprenticeship training providers (RoATP) • ensure procedures are in place to mitigate against any conflict of interest • work with the employer and support the apprentice during the off-the-job training to provide the opportunities to develop the knowledge, skills and behaviours as outlined in the occupational standard • deliver training to apprentices as outlined in their learner agreement • monitor the apprentice's progress during any training provider led on-programme learning

- ensure the apprentice is prepared for the EPA
- advise the employer, upon request, on the apprentice's readiness for EPA

Reasonable adjustments

The EPAO must have reasonable adjustments arrangements for the EPA.

This should include:

- how an apprentice qualifies for reasonable adjustment
- what reasonable adjustments may be made

Adjustments must maintain the validity, reliability and integrity of the EPA as outlined in this EPA plan.

Internal quality assurance

Internal quality assurance refers to the strategies, policies and procedures that EPAOs must have in place to ensure valid, consistent and reliable end-point assessment decisions.

EPAOs for this EPA must adhere to all requirements within the roles and responsibilities table and:

- appoint independent assessors who also:
 - have relevant experience of the occupation to at least occupational level 6 gained in the last 3 years

Value for money

Affordability of the EPA will be aided by using at least some of the following:

- utilising digital remote platforms to conduct applicable assessment methods
- using the employer's premises
- conducting assessment methods on the same day

Professional recognition

This degree-apprenticeship aligns with:

- British Computer Society for Registered IT Technician (RITTech)

KSB mapping table

KNOWLEDGE	ASSESSMENT METHODS
<p>K1: Core. How organisations adapt and exploit digital technology solutions to gain a competitive advantage.</p>	Project Report with presentation, questions and answers
<p>K2: Core. The principles of strategic decision making concerning the acquisition or development of digital and technology solutions. For example business architecture approaches such as capability models and target operating models.</p>	Project Report with presentation, questions and answers
<p>K3: Core. Principles of estimating the risks and opportunities of digital and technology solutions.</p>	Project Report with presentation, questions and answers
<p>K4: Core. Techniques and approaches involved in creating a business case for new digital and technology solutions. For example journey, product and capability mapping and value chains.</p>	Project Report with presentation, questions and answers
<p>K5: Core. A range of digital technology solution development techniques and tools.</p>	Project Report with presentation, questions and answers
<p>K6: Core. The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation's standards and pre-existing tools.</p>	Professional Discussion underpinned by a portfolio
<p>K7: Core. The roles, functions and activities within digital technology solutions within an organisation.</p>	Professional Discussion underpinned by a portfolio
<p>K8: Core. How teams work effectively to produce digital and technology solutions.</p>	Professional Discussion underpinned by a portfolio
<p>K9: Core. The concepts and principles of leadership.</p>	Professional Discussion underpinned by a portfolio
<p>K10: Core. Management techniques and theories. For example, effective decision making, delegation and planning methods, time management and change management.</p>	Professional Discussion underpinned by a portfolio

<p>K11: Core. The nature and scope of common vulnerabilities in digital and technology solutions. For example, the risks of unsecure coding and unprotected networks.</p>	Professional Discussion underpinned by a portfolio
<p>K12: Core. The role of data management systems within Digital and Technology Solutions.</p>	Professional Discussion underpinned by a portfolio
<p>K13: Core. Principles of data analysis for digital and technology solutions.</p>	Professional Discussion underpinned by a portfolio
<p>K14: Core. A range of quantitative and qualitative data gathering methods and how to appraise and select the appropriate method.</p>	Professional Discussion underpinned by a portfolio
<p>K15: Core. Principles of estimating cost, and time resource constraints within digital and technology solutions activities.</p>	Project Report with presentation, questions and answers
<p>K16: Core. Fundamental computer networking concepts in relation to digital and technology solutions. For example, structure, cloud architecture, components, quality of service.</p>	Professional Discussion underpinned by a portfolio
<p>K17: Core. Reporting techniques, including how to synthesise information and present concisely, as appropriate to the target audience.</p>	Project Report with presentation, questions and answers
<p>K18: Core. Techniques of robust research and evaluation for the justification of digital and technology solutions.</p>	Project Report with presentation, questions and answers
<p>K19: Core. Relevant legal, ethical, social and professional standards to a digital and technology solution. For example, Diversity, Accessibility, Intellectual Property, Data Protection Acts, Codes of Practice, Regulatory and Compliance frameworks.</p>	Professional Discussion underpinned by a portfolio
<p>K20: Core. Sustainable development approaches as applied to digital and technology solutions such as green computing.</p>	Professional Discussion underpinned by a portfolio

<p>K21: software engineering professional. How to operate at all stages of the software development life cycle and how each stage is applied in a range of contexts. For example, requirements analysis, design, development, testing, implementation.</p>	Professional Discussion underpinned by a portfolio
<p>K22: software engineering professional. Principles of a range of development techniques, for each stage of the software development cycle that produce artefacts and the contexts in which they can be applied. For example UML, unit testing, programming, debugging, frameworks, architectures.</p>	Professional Discussion underpinned by a portfolio
<p>K23: software engineering professional. Principles of a range of development methods and approaches and the contexts in which they can be applied. For example Scrum, Extreme Programming, Waterfall, Prince2, TDD.</p>	Professional Discussion underpinned by a portfolio
<p>K24: software engineering professional. How to interpret and implement a design, compliant with functional, non-functional and security requirements including principles and approaches to addressing legacy software development issues from a technical and socio-technical perspective. For example architectures, languages, operating systems, hardware, business change.</p>	Professional Discussion underpinned by a portfolio
<p>K25: software engineering professional. The factors affecting product quality and approaches for how to control them throughout the development process. For example security, code quality, coding standards.</p>	Project Report with presentation, questions and answers
<p>K26: software engineering professional. How to select and apply a range of software tools used in Software Engineering.</p>	Project Report with presentation, questions and answers
<p>K27: software engineering professional. Approaches to the interpretation and use of artefacts. For example UML, unit tests, architecture.</p>	Project Report with presentation, questions and answers
<p>K28: software engineering professional. Approaches to effective team work and the range of software development tools supporting effective teamwork. For example, configuration management, version control and release management.</p>	Professional Discussion underpinned by a portfolio

<p>K29: IT consultant professional. Principles of different consulting methodologies. For example issue-based, and hypothesis based.</p>	Project Report with presentation, questions and answers
<p>K30: IT consultant professional. How consulting interfaces with project management, business analysis and business management.</p>	Professional Discussion underpinned by a portfolio
<p>K31: IT consultant professional. Principles of change management within organisations.</p>	Professional Discussion underpinned by a portfolio
<p>K32: IT consultant professional. The barriers to solving digital and technology problems or maximising opportunities.</p>	Project Report with presentation, questions and answers
<p>K33: IT consultant professional. Approaches to presenting recommendations to stakeholders and influencing action.</p>	Project Report with presentation, questions and answers
<p>K34: IT consultant professional. Approaches to analytical and critical thinking to define business problems objectively and create value for the client.</p>	Professional Discussion underpinned by a portfolio
<p>K35: IT consultant professional. Questioning strategies and active listening to ensure all requirements are gathered.</p>	Professional Discussion underpinned by a portfolio
<p>K36: IT consultant professional. The ethical and legal requirements in client and provider relationships.</p>	Professional Discussion underpinned by a portfolio
<p>K37: business analyst professional. Elicitation and Collaboration approaches, including how to prepare for and conduct elicitation activities and confirm the results.</p>	Project Report with presentation, questions and answers
<p>K38: business analyst professional. Approaches to Requirements Life Cycle Management including how to manage and maintain requirements and design information from inception to retirement of a product.</p>	Professional Discussion underpinned by a portfolio
<p>K39: business analyst professional.</p>	Professional Discussion underpinned by a

Principles of Strategy Analysis, including how to identify the business need, address that need, and align the change strategy within the organisation.	portfolio
K40: business analyst professional. Solution Evaluation, including how to assess the performance of and value delivered by a solution and to recommend improvements on increasing values.	Project Report with presentation, questions and answers
K41: business analyst professional. Legislation and industry standards relevant to Business Analysis in the organisation and sector.	Professional Discussion underpinned by a portfolio
K42: business analyst professional. The purpose and value of quality assurance techniques.	Professional Discussion underpinned by a portfolio
K43: business analyst professional. A range of Business Analysis investigative techniques.	Professional Discussion underpinned by a portfolio
K44: IT consultant professional, business analyst professional. Approaches to change control and requirements management.	Project Report with presentation, questions and answers
K45: cyber security professional . Principles of cyber security tools and techniques.	Project Report with presentation, questions and answers
K46: cyber security professional . Principles of quantitative and qualitative risk management theory including the role of risk stakeholders.	Professional Discussion underpinned by a portfolio
K47: cyber security professional . Concepts and approaches to cyber security assurance.	Professional Discussion underpinned by a portfolio
K48: cyber security professional . Key legislative frameworks and the regulatory landscape for cyber security including Data Protection Act 2018 , Network Information System Directive 2018, Regulation of Investigatory Powers Act 2000, ISO 27001.	Professional Discussion underpinned by a portfolio
K49: cyber security professional . Approaches to incident response and management including escalation and investigation of cyber security breaches and their root cause.	Professional Discussion underpinned by a portfolio

<p>K50: cyber security professional . Ethical principles and codes of good practice of at least one significant cyber security professional body and the ethical responsibilities of a cyber security professional.</p>	Professional Discussion underpinned by a portfolio
<p>K51: cyber security professional . Principles of common security architectures and methodologies.</p>	Project Report with presentation, questions and answers
<p>K52: cyber security professional . Approaches to deployment of cyber security technology components in digital systems to provide security functionality. For example hardware and software to implement security controls.</p>	Project Report with presentation, questions and answers
<p>K53: computing data analyst professional. The barriers that exist to effective data analysis between analysts and their stakeholders and how to avoid or resolve these.</p>	Professional Discussion underpinned by a portfolio
<p>K54: computing data analyst professional. How to critically analyse, interpret and evaluate complex information from diverse datasets.</p>	Project Report with presentation, questions and answers
<p>K55: computing data analyst professional. Data formats, structures, architectures and data delivery methods including “unstructured” data.</p>	Professional Discussion underpinned by a portfolio
<p>K56: computing data analyst professional. Sources of data such as files, operational systems, databases, web services, open data, government data, news and social media.</p>	Project Report with presentation, questions and answers
<p>K57: computing data analyst professional. Approaches to data processing and storage, database systems, data warehousing and online analytical processing, data-driven decision making and the good use of evidence and analytics in making choices and decisions.</p>	Professional Discussion underpinned by a portfolio
<p>K58: computing data analyst professional. How Data Analytics operates within the context of data governance, data security, and communications.</p>	Project Report with presentation, questions and answers
<p>K59: computing data analyst professional.</p>	Professional Discussion underpinned by a

How Data Analytics can be applied to improve an organisation's processes, operations and outputs.	portfolio
K60: computing data analyst professional. How data and analysis may exhibit biases and prejudice. How ethics and compliance affect Data Analytics work, and the impact of international regulations. For example, General Data Protection Regulation, Data Protection Act 2018.	Professional Discussion underpinned by a portfolio
K61: network engineering professional. The role and function of virtual or physical network components and functions and typical topologies and service architectures.	Project Report with presentation, questions and answers
K62: network engineering professional. The main network protocols in use, their purpose, features and relationship to each other. For example, Ethernet, IP (Internet Protocol), TCP (Transmission Control Protocol), OSPF (Open Shortest Path First).	Project Report with presentation, questions and answers
K63: network engineering professional. The benefits and risks of cloud computing and the common integration deployments (private, public, hybrid). Including the benefits and risks of virtualisation as a concept; key features of virtualisation and current cloud platforms available.	Professional Discussion underpinned by a portfolio
K64: network engineering professional. The main factors that affect network performance, and how to mitigate these on network performance by implementing changes to QoS. For example, Traffic Shaping, Policing, Queuing, Topology (physical and logical), and Network Policy (Traffic Analysis, DPI (Deep Packet Inspection).	Professional Discussion underpinned by a portfolio
K65: network engineering professional. Principles of failure modes in protocols. For example, why a protocol may 'hang' and the effect of data communication errors and approaches to addressing failures to optimise network performance.	Professional Discussion underpinned by a portfolio
K66: network engineering professional. Key security concepts. For example threats, vulnerabilities, exploits, detection and mitigation techniques, and security program elements such as user awareness, physical access control, multi-layer defence models.	Project Report with presentation, questions and answers

<p>K67: network engineering professional. SDN (Software Defined Networking) and Network Function Virtualisation Core Principles. For example, Control Plane Separation, flexibility, overlay networks, disassociation of software and hardware layers.</p>	Professional Discussion underpinned by a portfolio
<p>K68: network engineering professional. Key elements of mobile networks. For example RAN (Radio Access Network), EPC (Evolved Packet Core), IMS (IP Multimedia Subsystem) including some specific key functions such as S/P/U-Gateways and the concepts in communicating over free-space media such as interference, ground bounce, encryption and in mobile endpoint platforms such as tracking user location and roaming.</p>	Professional Discussion underpinned by a portfolio

SKILL	ASSESSMENT METHODS
<p>S1: Core. Analyse a business problem to identify the role of digital and technology solutions.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S2: Core. Identify risks, determine mitigation strategies and opportunities for improvement in a digital and technology solutions project.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S3: Core. Analyse a business problem in order to specify an appropriate digital and technology solution.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S4: Core. Initiate, design, code, test and debug a software component for a digital and technology solution.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S5: Core. Apply relevant standard processes, methods, techniques and tools. For example, ISO Standards, Waterfall, Agile in a digital and technology solution project.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S6: Core. Manage digital and technology solutions projects. For example, identifying and resolving deviations from specification, applying appropriate Project Management methodologies.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S7: Core. Work effectively within teams, leading on appropriate digital technology solution activities.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S8: Core. Apply relevant organisational theories. For example, change management principles, marketing approaches, strategic practice, and IT service management to a digital and technology solutions project.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S9: Core. Apply relevant security and resilience techniques to a digital and technology solution. For example, risk assessments, mitigation strategies.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S10: Core.</p>	<p>Professional Discussion underpinned by a</p>

Initiate, design, implement and debug a data product for a digital and technology solution.	portfolio
S11: Core. Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions.	Professional Discussion underpinned by a portfolio
S12: Core. Plan, design and manage simple computer networks with an overall focus on the services and capabilities that network infrastructure solutions enable in an organisational context.	Professional Discussion underpinned by a portfolio
S13: Core. Report effectively to colleagues and stakeholders using the appropriate language and style, to meet the needs of the audience concerned.	Project Report with presentation, questions and answers
S14: Core. Research, investigate, and evaluate innovative technologies or approaches in the development of a digital and technology solution.	Project Report with presentation, questions and answers
S15: Core. Apply relevant legal, ethical, social and professional standards to a digital and technology solution.	Professional Discussion underpinned by a portfolio
S16: software engineering professional. Identify and define software engineering problems that are non-routine and incompletely specified.	Project Report with presentation, questions and answers
S17: software engineering professional. Provide recommendations as to the most appropriate software engineering solution.	Project Report with presentation, questions and answers
S18: software engineering professional. Use appropriate analysis methods, approaches and techniques in software engineering projects to deliver an outcome that meets requirements.	Project Report with presentation, questions and answers
S19: software engineering professional. Implement software engineering projects using appropriate software engineering methods, approaches and techniques.	Project Report with presentation, questions and answers

<p>S20: software engineering professional. Respond to changing priorities and problems arising within software engineering projects by making revised recommendations, and adapting plans as necessary, to fit the scenario being investigated.</p>	Professional Discussion underpinned by a portfolio
<p>S21: software engineering professional. Determine, refine, adapt and use appropriate software engineering methods, approaches and techniques to evaluate software engineering project outcomes.</p>	Professional Discussion underpinned by a portfolio
<p>S22: software engineering professional. Evaluate learning points arising from software engineering work undertaken on a project including use of methods, analysis undertaken, selection of approach and the outcome achieved, in order to identify both lessons learnt and recommendations for improvements to future projects.</p>	Project Report with presentation, questions and answers
<p>S23: software engineering professional. Extend and update software development knowledge with evidence from professional and academic sources by undertaking appropriate research to inform best practice and lead improvements in the organisation.</p>	Professional Discussion underpinned by a portfolio
<p>S24: IT consultant professional. Analyse client needs and determine how to advise them strategically through improved business processes, new ideas, or technology solutions.</p>	Project Report with presentation, questions and answers
<p>S25: IT consultant professional. Effectively communicate value add to the client through a variety of media. For example, presentations, written reports, Storytelling in a professional setting through performing socio-technical process improvements in a range of environments.</p>	Professional Discussion underpinned by a portfolio
<p>S26: IT consultant professional. Make evidence based recommendations taking into account risks, costs, and benefits.</p>	Project Report with presentation, questions and answers
<p>S27: IT consultant professional. Participate in walk-throughs for Information Technologies, to identify, document and evaluate key risks within a client's organisation.</p>	Professional Discussion underpinned by a portfolio

<p>S28: IT consultant professional. Perform stakeholder analysis to identify, determine and deepen understanding of system requirements and develop client relationships.</p>	Project Report with presentation, questions and answers
<p>S29: IT consultant professional. Effect change within an organisation through evaluation of a new system, process or initiative.</p>	Professional Discussion underpinned by a portfolio
<p>S30: IT consultant professional. Ensure legal and ethical requirements are accommodated in the development of digital and technology solutions.</p>	Project Report with presentation, questions and answers
<p>S31: IT consultant professional. Evaluate the success of new systems, processes, or initiatives.</p>	Project Report with presentation, questions and answers
<p>S32: business analyst professional. Use requirements elicitation, analysis and documentation to produce an acceptable solution for business problems or further opportunities.</p>	Project Report with presentation, questions and answers
<p>S33: business analyst professional. Conduct Process Analysis, Definition, Mapping and Modelling within a business situation without supervision.</p>	Professional Discussion underpinned by a portfolio
<p>S34: business analyst professional. Produce Use Cases which are of value to all stakeholders of a system.</p>	Project Report with presentation, questions and answers
<p>S35: business analyst professional. Use tools and benchmarking to support modelling and requirements gathering and recommend approaches to team members as required.</p>	Professional Discussion underpinned by a portfolio
<p>S36: business analyst professional. Produce a business case to scope a proposed project including business benefits and recommendations.</p>	Project Report with presentation, questions and answers
<p>S37: business analyst professional. Use products of analysis in the design and development of a system.</p>	Professional Discussion underpinned by a portfolio

<p>S38: business analyst professional. Evaluate the impacts of model selection and how they inter-relate with each other when generating business analytics.</p>	Project Report with presentation, questions and answers
<p>S39: business analyst professional. Recommend and use appropriate software tools to implement Business Analysis tasks and outcomes.</p>	Project Report with presentation, questions and answers
<p>S40: cyber security professional . Discover, identify and analyse security threats, attack techniques and vulnerabilities and recommend mitigation and security controls.</p>	Project Report with presentation, questions and answers
<p>S41: cyber security professional . Undertake security risk assessments for complex systems without direct supervision and propose a remediation strategy relevant to the context of the organisation.</p>	Professional Discussion underpinned by a portfolio
<p>S42: cyber security professional . Recommend improvements to the cyber security approaches of an organisation based on research into future potential cyber threats and considering threat trends.</p>	Project Report with presentation, questions and answers
<p>S43: cyber security professional . Manage cyber security risk.</p>	Professional Discussion underpinned by a portfolio
<p>S44: cyber security professional . Use appropriate cyber security technology, tools and techniques in relation to the risks identified.</p>	Project Report with presentation, questions and answers
<p>S45: cyber security professional . Lead cyber security awareness campaigns and evaluate their effectiveness.</p>	Professional Discussion underpinned by a portfolio
<p>S46: cyber security professional . Analyse cyber security requirements against other design requirements for systems or products, identify conflicting requirements and recommend appropriate solutions with clear explanation of costs and benefits.</p>	Project Report with presentation, questions and answers
<p>S47: cyber security professional . Lead the design and build of systems in accordance with a security case to address organisational challenges.</p>	Project Report with presentation, questions and answers

<p>S48: computing data analyst professional. Define Data Requirements and perform Data Collection, Data Processing and Data Cleansing.</p>	Professional Discussion underpinned by a portfolio
<p>S49: computing data analyst professional. Apply different types of Data Analysis, as appropriate, to drive improvements for specific business problems.</p>	Professional Discussion underpinned by a portfolio
<p>S50: computing data analyst professional. Find, present, communicate and disseminate data analysis outputs effectively and with high impact through creative storytelling, tailoring the message for the audience. Visualise data to tell compelling and actionable narratives by using the best medium for each audience, such as charts, graphs and dashboards.</p>	Project Report with presentation, questions and answers
<p>S51: computing data analyst professional. Identify barriers to effective analysis encountered both by analysts and their stakeholders within data analysis projects.</p>	Professional Discussion underpinned by a portfolio
<p>S52: computing data analyst professional. Apply a range of techniques for analysing quantitative data such as data mining, time series forecasting, algorithms, statistics and modelling techniques to identify and predict trends and patterns in data.</p>	Project Report with presentation, questions and answers
<p>S53: computing data analyst professional. Apply exploratory or confirmatory approaches to analysing data. Validate and and test stability of the results.</p>	Project Report with presentation, questions and answers
<p>S54: computing data analyst professional. Extract data from a range of sources. For example, databases, web services, open data.</p>	Project Report with presentation, questions and answers
<p>S55: computing data analyst professional. Analyse in detail large data sets, using a range of industry standard tools and data analysis methods.</p>	Project Report with presentation, questions and answers
<p>S56: network engineering professional. Identify and collate stakeholder needs in relation to computer network requirements, plans and designs.</p>	Project Report with presentation, questions and answers
<p>S57: network engineering professional.</p>	Project Report with presentation, questions

<p>Plan, design, document, and develop the relevant elements of a computer network within an organisation or between organisations, taking into account customer requirements (performance, scale), constraints (budget, equipment availability), and define policies for their use.</p>	<p>and answers</p>
<p>S58: network engineering professional. Monitor performance and ensure networks are configured correctly and perform as expected by designers or architects. Undertake capacity management and audit of IP addressing and hosted devices.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S59: network engineering professional. Investigate, troubleshoot and resolve data network faults in local and wide area environments, using information from multiple sources, Physically or Remotely by console connection. Recommend and implement short term fixes to restore service and, or, quality of experience and recommend longer term changes to prevent recurrence or reduce impact of future occurrences.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S60: network engineering professional. Implement computer networks from a design including testing and validation. This includes populating variables in configurations, for example, IP addresses and subsequent application of configuration to equipment such as routers, switches, firewalls.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S61: network engineering professional. Secure network systems by establishing and enforcing policies, and defining and monitoring access. Support and administer firewall environments in line with IT security policy.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>S62: network engineering professional. Research and evaluate emerging network technologies and assess relevance to current network requirements. Provide an objective opinion on how new features and technologies may be incorporated as required by the organisation.</p>	<p>Project Report with presentation, questions and answers</p>
<p>S63: network engineering professional. Investigate security concerns or attacks. For example, Distributed Denial of Service (DDOS), port scanning, assessing key metrics and indicators, evidencing the chosen steps to mitigate.</p>	<p>Project Report with presentation, questions and answers</p>

BEHAVIOUR	ASSESSMENT METHODS
<p>B1: Core. Has a strong work ethic and commitment in order to meet the standards required.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>B2: Core. Reliable, objective and capable of both independent and team working.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>B3: Core. Acts with integrity with respect to ethical, legal and regulatory requirements ensuring the protection of personal data, safety and security.</p>	<p>Project Report with presentation, questions and answers</p>
<p>B4: Core. Commits to continuous professional development; maintaining their knowledge and skills in relation to developments in digital and technology solutions that influence their work.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>B5: Core. Interacts professionally with people from technical and non-technical backgrounds. Presents data and conclusions in an evidently truthful, concise and appropriate manner.</p>	<p>Project Report with presentation, questions and answers</p>
<p>B6: Core. Participates in and shares best practice in their organisation, and the wider community for aspects relevant to digital and technology solutions.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>B7: Core. Maintains awareness of trends and innovations in the subject area, utilising a range of academic literature, online sources, community interaction, conference attendance and other methods which can deliver business value.</p>	<p>Professional Discussion underpinned by a portfolio</p>
<p>B8: Core. Champions diversity and inclusion in their work ensuring that digital technology solutions are accessible.</p>	<p>Professional Discussion underpinned by a portfolio</p>

Mapping of KSBs to grade themes

Project report with presentation, questions and answers

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
(Core) The Organisational Context K1 K2	<p>How organisations adapt and exploit digital technology solutions to gain a competitive advantage. (K1)</p> <p>The principles of strategic decision making concerning the acquisition or development of digital and technology solutions. For example business architecture approaches such as capability models and target operating models. (K2)</p>	None	None
(Core) Project Requirements S3 B3	None	Analyse a business problem in order to specify an appropriate digital and technology solution. (S3)	Acts with integrity with respect to ethical, legal and regulatory requirements ensuring the protection of personal data, safety and security. (B3)
(Core) Project Planning and Resources K3 K4 K15 S2 S14	<p>Principles of estimating the risks and opportunities of digital and technology solutions. (K3)</p> <p>Techniques and approaches involved in creating a business case for new digital and technology solutions. For example journey,</p>	<p>Identify risks, determine mitigation strategies and opportunities for improvement in a digital and technology solutions project. (S2)</p> <p>Research, investigate, and evaluate innovative technologies or approaches in the</p>	None

	<p>product and capability mapping and value chains. (K4)</p> <p>Principles of estimating cost, and time resource constraints within digital and technology solutions activities. (K15)</p>	development of a digital and technology solution. (S14)	
<p>(Core) Solution Proposal</p> <p>S1</p>	None	Analyse a business problem to identify the role of digital and technology solutions. (S1)	None
<p>(Core) Project Delivery</p> <p>K5</p> <p>S5 S6</p>	A range of digital technology solution development techniques and tools. (K5)	<p>Apply relevant standard processes, methods, techniques and tools. For example, ISO Standards, Waterfall, Agile in a digital and technology solution project. (S5)</p> <p>Manage digital and technology solutions projects. For example, identifying and resolving deviations from specification, applying appropriate Project Management methodologies. (S6)</p>	None
<p>(Core) Project Evaluation</p> <p>K17 K18</p> <p>S13</p>	Reporting techniques, including how to synthesise information and present concisely, as appropriate to the target audience. (K17)	Report effectively to colleagues and stakeholders using the appropriate language and style, to meet the needs of the audience concerned. (S13)	None

	Techniques of robust research and evaluation for the justification of digital and technology solutions. (K18)		
(Software Engineer) Technical Solutions K25 K26 K27	<p>The factors affecting product quality and approaches for how to control them throughout the development process. For example security, code quality, coding standards. (K25)</p> <p>How to select and apply a range of software tools used in Software Engineering. (K26)</p> <p>Approaches to the interpretation and use of artefacts. For example UML, unit tests, architecture. (K27)</p>	None	None
(Software Engineer) Innovation and Response S16 S17 S18 S19 S22	None	<p>Identify and define software engineering problems that are non-routine and incompletely specified. (S16)</p> <p>Provide recommendations as to the most appropriate software engineering solution. (S17)</p> <p>Use appropriate analysis methods, approaches and techniques in</p>	None

		<p>software engineering projects to deliver an outcome that meets requirements. (S18)</p> <p>Implement software engineering projects using appropriate software engineering methods, approaches and techniques. (S19)</p> <p>Evaluate learning points arising from software engineering work undertaken on a project including use of methods, analysis undertaken, selection of approach and the outcome achieved, in order to identify both lessons learnt and recommendations for improvements to future projects. (S22)</p>	
(IT Consultant) Underlying Principles K29 K32	<p>Principles of different consulting methodologies. For example issue-based, and hypothesis based. (K29)</p> <p>The barriers to solving digital and technology problems or maximising opportunities. (K32)</p>	None	None
(IT Consultant) Innovation and Response K33 S24 S26 S28	Approaches to presenting recommendations to stakeholders and	Analyse client needs and determine how to advise them strategically through improved business	None

	influencing action. (K33)	<p>processes, new ideas, or technology solutions. (S24)</p> <p>Make evidence based recommendations taking into account risks, costs, and benefits. (S26)</p> <p>Perform stakeholder analysis to identify, determine and deepen understanding of system requirements and develop client relationships. (S28)</p>	
(IT Consultant) Ethics and Landscape S30	None	Ensure legal and ethical requirements are accommodated in the development of digital and technology solutions. (S30)	None
(IT Consultant) Technical Solutions S31	None	Evaluate the success of new systems, processes, or initiatives. (S31)	None
(Business Analyst) Technical Solutions S32 S34	None	<p>Use requirements elicitation, analysis and documentation to produce an acceptable solution for business problems or further opportunities. (S32)</p> <p>Produce Use Cases which are of value to all stakeholders of a system. (S34)</p>	None

<p>(Business Analyst) Legal, Ethics and Landscape K44 S36 S38</p>	<p>Approaches to change control and requirements management. (K44)</p>	<p>Produce a business case to scope a proposed project including business benefits and recommendations. (S36)</p> <p>Evaluate the impacts of model selection and how they inter- relate with each other when generating business analytics. (S38)</p>	<p>None</p>
<p>(Business Analyst) Innovation and Response K40 S39</p>	<p>Solution Evaluation, including how to assess the performance of and value delivered by a solution and to recommend improvements on increasing values. (K40)</p>	<p>Recommend and use appropriate software tools to implement Business Analysis tasks and outcomes. (S39)</p>	<p>None</p>
<p>(Cyber Security Analyst) Underlying Principles K45 K51</p>	<p>Principles of cyber security tools and techniques. (K45)</p> <p>Principles of common security architectures and methodologies. (K51)</p>	<p>None</p>	<p>None</p>
<p>(Cyber Security Analyst) Innovation and Response K52 S42 S46 S47</p>	<p>Approaches to deployment of cyber security technology components in digital systems to provide security functionality. For example hardware and software to implement security controls. (K52)</p>	<p>Recommend improvements to the cyber security approaches of an organisation based on research into future potential cyber threats and considering threat trends. (S42)</p>	<p>None</p>

		<p>Analyse cyber security requirements against other design requirements for systems or products, identify conflicting requirements and recommend appropriate solutions with clear explanation of costs and benefits. (S46)</p> <p>Lead the design and build of systems in accordance with a security case to address organisational challenges. (S47)</p>	
<p>(Cyber Security Analyst) Technical Solutions</p> <p>S40 S44</p>	None	<p>Discover, identify and analyse security threats, attack techniques and vulnerabilities and recommend mitigation and security controls. (S40)</p> <p>Use appropriate cyber security technology, tools and techniques in relation to the risks identified. (S44)</p>	None
<p>(Data Analyst) Underlying Principles</p> <p>K54 K56 K58</p>	<p>How to critically analyse, interpret and evaluate complex information from diverse datasets. (K54)</p> <p>Sources of data such as files, operational systems, databases,</p>	None	None

	<p>web services, open data, government data, news and social media. (K56)</p> <p>How Data Analytics operates within the context of data governance, data security, and communications. (K58)</p>		
<p>(Data Analyst) Innovation and Response</p> <p>S50 S52 S53 S54 S55</p>	None	<p>Find, present, communicate and disseminate data analysis outputs effectively and with high impact through creative storytelling, tailoring the message for the audience. Visualise data to tell compelling and actionable narratives by using the best medium for each audience, such as charts, graphs and dashboards. (S50)</p> <p>Apply a range of techniques for analysing quantitative data such as data mining, time series forecasting, algorithms, statistics and modelling techniques to identify and predict trends and patterns in data. (S52)</p> <p>Apply exploratory or confirmatory approaches to analysing data.</p>	None

		<p>Validate and and test stability of the results. (S53)</p> <p>Extract data from a range of sources. For example, databases, web services, open data. (S54)</p> <p>Analyse in detail large data sets, using a range of industry standard tools and data analysis methods. (S55)</p>	
<p>(Network Engineer) Underlying Principles K61 K62 K66</p>	<p>The role and function of virtual or physical network components and functions and typical topologies and service architectures. (K61)</p> <p>The main network protocols in use, their purpose, features and relationship to each other. For example, Ethernet, IP (Internet Protocol), TCP (Transmission Control Protocol), OSPF (Open Shortest Path First). (K62)</p> <p>Key security concepts. For example threats, vulnerabilities, exploits, detection and mitigation techniques, and security program elements such as user awareness, physical access</p>	None	None

	control, multi-layer defence models. (K66)		
(Network Engineer) Innovation and Response S56 S57 S60 S62	None	<p>Identify and collate stakeholder needs in relation to computer network requirements, plans and designs. (S56)</p> <p>Plan, design, document, and develop the relevant elements of a computer network within an organisation or between organisations, taking into account customer requirements (performance, scale), constraints (budget, equipment availability), and define policies for their use. (S57)</p> <p>Implement computer networks from a design including testing and validation. This includes populating variables in configurations, for example, IP addresses and subsequent application of configuration to equipment such as routers, switches, firewalls. (S60)</p> <p>Research and evaluate emerging network</p>	None

		technologies and assess relevance to current network requirements. Provide an objective opinion on how new features and technologies may be incorporated as required by the organisation. (S62)	
(Network Engineer) Technical Solutions S63	None	Investigate security concerns or attacks. For example, Distributed Denial of Service (DDOS), port scanning, assessing key metrics and indicators, evidencing the chosen steps to mitigate. (S63)	None

Professional discussion underpinned by a portfolio

KSBS GROUPED BY THEME	KNOWLEDGE	SKILLS	BEHAVIOUR
(Core) The Organisational Context K7	The roles, functions and activities within digital technology solutions within an organisation. (K7)	None	None
(Core) Core Technical Concepts K6 K11 K12 K14 K16	<p>The approaches and techniques used throughout the digital and technology solution lifecycle and their applicability to an organisation's standards and pre-existing tools. (K6)</p> <p>The nature and scope of common vulnerabilities in digital and technology solutions. For example, the risks of unsecure coding and unprotected networks. (K11)</p> <p>The role of data management systems within Digital and Technology Solutions. (K12)</p> <p>A range of quantitative and qualitative data gathering methods and how to appraise and select the appropriate method. (K14)</p> <p>Fundamental computer networking concepts</p>	None	None

	in relation to digital and technology solutions. For example, structure, cloud architecture, components, quality of service. (K16)		
(Core) Applied Technical Solutions K13 S4 S9 S10 S11 S12	Principles of data analysis for digital and technology solutions. (K13)	<p>Initiate, design, code, test and debug a software component for a digital and technology solution. (S4)</p> <p>Apply relevant security and resilience techniques to a digital and technology solution. For example, risk assessments, mitigation strategies. (S9)</p> <p>Initiate, design, implement and debug a data product for a digital and technology solution. (S10)</p> <p>Determine and use appropriate data analysis techniques. For example, Text, Statistical, Diagnostic or Predictive Analysis to assess a digital and technology solutions. (S11)</p> <p>Plan, design and manage simple computer networks with an overall focus on the services and capabilities that network infrastructure</p>	None

		solutions enable in an organisational context. (S12)	
(Core) Leading and Working Together K8 K9 K10 S7 S8 B4 B6 B7	<p>How teams work effectively to produce digital and technology solutions. (K8)</p> <p>The concepts and principles of leadership. (K9)</p> <p>Management techniques and theories. For example, effective decision making, delegation and planning methods, time management and change management. (K10)</p>	<p>Work effectively within teams, leading on appropriate digital technology solution activities. (S7)</p> <p>Apply relevant organisational theories. For example, change management principles, marketing approaches, strategic practice, and IT service management to a digital and technology solutions project. (S8)</p>	<p>Commits to continuous professional development; maintaining their knowledge and skills in relation to developments in digital and technology solutions that influence their work. (B4)</p> <p>Participates in and shares best practice in their organisation, and the wider community for aspects relevant to digital and technology solutions. (B6)</p> <p>Maintains awareness of trends and innovations in the subject area, utilising a range of academic literature, online sources, community interaction, conference attendance and other methods which can deliver business value. (B7)</p>
(Core) Social Infrastructure - Legal, Ethical and Sustainability K19 K20 S15 B1 B2 B8	<p>Relevant legal, ethical, social and professional standards to a digital and technology solution. For example, Diversity, Accessibility,</p>	<p>Apply relevant legal, ethical, social and professional standards to a digital and technology solution. (S15)</p>	<p>Has a strong work ethic and commitment in order to meet the standards required. (B1)</p>

	<p>Intellectual Property, Data Protection Acts, Codes of Practice, Regulatory and Compliance frameworks. (K19)</p> <p>Sustainable development approaches as applied to digital and technology solutions such as green computing. (K20)</p>		<p>Reliable, objective and capable of both independent and team working. (B2)</p> <p>Champions diversity and inclusion in their work ensuring that digital technology solutions are accessible. (B8)</p>
<p>(Software Engineer) Underlying Principles K21 K22 K23</p>	<p>How to operate at all stages of the software development life cycle and how each stage is applied in a range of contexts. For example, requirements analysis, design, development, testing, implementation. (K21)</p> <p>Principles of a range of development techniques, for each stage of the software development cycle that produce artefacts and the contexts in which they can be applied. For example UML, unit testing, programming, debugging, frameworks, architectures. (K22)</p> <p>Principles of a range of development methods and approaches and the</p>	None	None

	<p>contexts in which they can be applied. For example Scrum, Extreme Programming, Waterfall, Prince2, TDD. (K23)</p>		
<p>(Software Engineer) Technical Solutions K24 K28</p>	<p>How to interpret and implement a design, compliant with functional, non-functional and security requirements including principles and approaches to addressing legacy software development issues from a technical and socio-technical perspective. For example architectures, languages, operating systems, hardware, business change. (K24)</p> <p>Approaches to effective team work and the range of software development tools supporting effective teamwork. For example, configuration management, version control and release management. (K28)</p>	None	None
<p>(Software Engineer) Innovation and Response</p>	None	Respond to changing priorities and problems arising within software engineering projects	None

S20 S21		<p>by making revised recommendations, and adapting plans as necessary, to fit the scenario being investigated. (S20)</p> <p>Determine, refine, adapt and use appropriate software engineering methods, approaches and techniques to evaluate software engineering project outcomes. (S21)</p>	
(Software Engineer) Legal, Ethics and Landscape S23	None	Extend and update software development knowledge with evidence from professional and academic sources by undertaking appropriate research to inform best practice and lead improvements in the organisation. (S23)	None
(IT Consultant) Underlying Principles K30 K31 K34 K35 K36	<p>How consulting interfaces with project management, business analysis and business management. (K30)</p> <p>Principles of change management within organisations. (K31)</p> <p>Approaches to analytical and critical thinking to define business problems objectively and</p>	None	None

	<p>create value for the client. (K34)</p> <p>Questioning strategies and active listening to ensure all requirements are gathered. (K35)</p> <p>The ethical and legal requirements in client and provider relationships. (K36)</p>		
<p>(IT Consultant) Innovation and Response</p> <p>S25 S27</p>	None	<p>Effectively communicate value add to the client through a variety of media. For example, presentations, written reports, Storytelling in a professional setting through performing socio-technical process improvements in a range of environments. (S25)</p> <p>Participate in walk-throughs for Information Technologies, to identify, document and evaluate key risks within a client's organisation. (S27)</p>	None
<p>(IT Consultant) Technical Solutions</p> <p>S29</p>	None	Effect change within an organisation through evaluation of a new system, process or initiative. (S29)	None
<p>(Business Analyst) Legal, Ethics and</p>	Legislation and industry standards relevant to Business	Conduct Process Analysis, Definition, Mapping and	None

Landscape K41 K42 S33	Analysis in the organisation and sector. (K41) The purpose and value of quality assurance techniques. (K42)	Modelling within a business situation without supervision. (S33)	
(Business Analyst) Technical Solutions K38 K43 S37	Approaches to Requirements Life Cycle Management including how to manage and maintain requirements and design information from inception to retirement of a product. (K38) A range of Business Analysis investigative techniques. (K43)	Use products of analysis in the design and development of a system. (S37)	None
(Business Analyst) Innovation and Response K39 S35	Principles of Strategy Analysis, including how to identify the business need, address that need, and align the change strategy within the organisation. (K39)	Use tools and benchmarking to support modelling and requirements gathering and recommend approaches to team members as required. (S35)	None
(Cyber Security Analyst) Legal, Ethics and Landscape K46 K48 K50 S45	Principles of quantitative and qualitative risk management theory including the role of risk stakeholders. (K46) Key legislative frameworks and the regulatory landscape for cyber security including Data Protection Act 2018 ,	Lead cyber security awareness campaigns and evaluate their effectiveness. (S45)	None

	<p>Network Information System Directive 2018, Regulation of Investigatory Powers Act 2000, ISO 27001. (K48)</p> <p>Ethical principles and codes of good practice of at least one significant cyber security professional body and the ethical responsibilities of a cyber security professional. (K50)</p>		
<p>(Cyber Security Analyst) Technical Solutions K47 K49 S41 S43</p>	<p>Concepts and approaches to cyber security assurance. (K47)</p> <p>Approaches to incident response and management including escalation and investigation of cyber security breaches and their root cause. (K49)</p>	<p>Undertake security risk assessments for complex systems without direct supervision and propose a remediation strategy relevant to the context of the organisation. (S41)</p> <p>Manage cyber security risk. (S43)</p>	None
<p>(Data Analyst) Underlying Principles K53 K55 K57</p>	<p>The barriers that exist to effective data analysis between analysts and their stakeholders and how to avoid or resolve these. (K53)</p> <p>Data formats, structures, architectures and data delivery methods including “unstructured” data. (K55)</p>	None	None

	Approaches to data processing and storage, database systems, data warehousing and online analytical processing, data-driven decision making and the good use of evidence and analytics in making choices and decisions. (K57)		
(Data Analyst) Technical Solutions K59	How Data Analytics can be applied to improve an organisation's processes, operations and outputs. (K59)	None	None
(Data Analyst) Legal, Ethics and Landscape K60	How data and analysis may exhibit biases and prejudice. How ethics and compliance affect Data Analytics work, and the impact of international regulations. For example, General Data Protection Regulation, Data Protection Act 2018. (K60)	None	None
(Data Analyst) Innovation and Response S48 S49 S51	None	Define Data Requirements and perform Data Collection, Data Processing and Data Cleansing. (S48) Apply different types of Data Analysis, as appropriate, to drive improvements for	None

		<p>specific business problems. (S49)</p> <p>Identify barriers to effective analysis encountered both by analysts and their stakeholders within data analysis projects. (S51)</p>	
<p>(Network Engineer) Technical Solutions K63 K67 K68 S58 S61</p>	<p>The benefits and risks of cloud computing and the common integration deployments (private, public, hybrid). Including the benefits and risks of virtualisation as a concept; key features of virtualisation and current cloud platforms available. (K63)</p> <p>SDN (Software Defined Networking) and Network Function Virtualisation Core Principles. For example, Control Plane Separation, flexibility, overlay networks, disassociation of software and hardware layers. (K67)</p> <p>Key elements of mobile networks. For example RAN (Radio Access Network), EPC (Evolved Packet Core), IMS (IP Multimedia Subsystem) including</p>	<p>Monitor performance and ensure networks are configured correctly and perform as expected by designers or architects. Undertake capacity management and audit of IP addressing and hosted devices. (S58)</p> <p>Secure network systems by establishing and enforcing policies, and defining and monitoring access. Support and administer firewall environments in line with IT security policy. (S61)</p>	<p>None</p>

	<p>some specific key functions such as S/P/U-Gateways and the concepts in communicating over free-space media such as interference, ground bounce, encryption and in mobile endpoint platforms such as tracking user location and roaming. (K68)</p>		
<p>(Network Engineer) Underlying Principles K64 K65</p>	<p>The main factors that affect network performance, and how to mitigate these on network performance by implementing changes to QoS. For example, Traffic Shaping, Policing, Queuing, Topology (physical and logical), and Network Policy (Traffic Analysis, DPI (Deep Packet Inspection)). (K64)</p> <p>Principles of failure modes in protocols. For example, why a protocol may 'hang' and the effect of data communication errors and approaches to addressing failures to optimise network performance. (K65)</p>	None	None
<p>(Network Engineer) Innovation and Response</p>	None	Investigate, troubleshoot and resolve data network faults in local and wide area	None

S59		environments, using information from multiple sources, Physically or Remotely by console connection. Recommend and implement short term fixes to restore service and, or, quality of experience and recommend longer term changes to prevent recurrence or reduce impact of future occurrences. (S59)	
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Version log

Version	Change detail	Earliest start date	Latest start date	Latest end date
1.2	Standard, end-point assessment plan and funding band revised	01/09/2023	Not set	Not set
1.1	The funding band for this standard has been reviewed as part of the apprenticeship funding band review. The new funding band is £25000	13/05/2019	31/08/2023	Not set
1.0	Approved for delivery	26/03/2015	12/05/2019	Not set

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