Ministry of Justice

Analytics Engineer Apprentice Programme Webinar

4th March 2024

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Justice Digital

A flexible organisation, driven by data and led by users

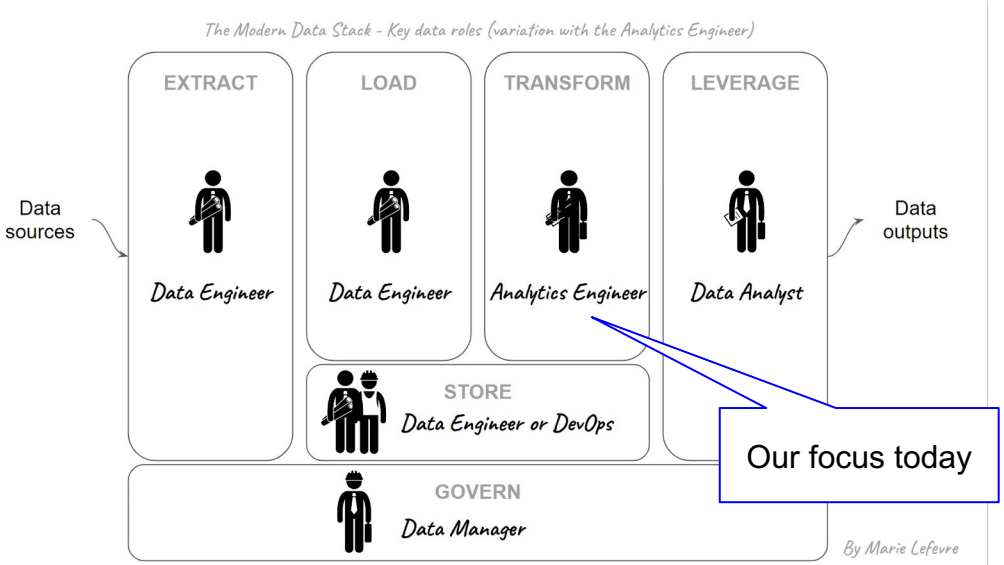
Why are we here today?

To welcome all data enthusiasts to explore the incredible journey for a data career at the Ministry of Justice (MoJ) via our novel analytics engineering apprentice programme.

Who are we and what do we do?

We are a team of 45 data and analytics engineers who play a pivotal role in enabling timely and secure access to data in a standardised format.

We enable and support a large community of data users within and outside MoJ to analyse data and generate meaningful insights from it that drive policy and decision making.



Source: marielefevre.medium.com

Analytics engineer role

Software Engineer

Software engineers build and maintain digital services.

Data is collected and stored in these services. This data can be useful for analysis and data science.

Data Engineer

Data engineers build and deploy data workflows (pipelines) in a consistent format and structure for analytical use.

Analytics Engineer

Analytics engineers work with data users to understand their needs.

They transform data that's ready for analysis.

They maintain data documentation to support people to use data effectively.

Data Analyst or Scientist

Data analysts and data scientists use the transformed data provided by analytics engineers to answer analytical questions and derive insights.

Data Modelling and Engineering Team (DMET)

Apprentice to Analytics engineer journey

The apprentice journey enables you to learn to ride the data bike with minimal bumps and bruises, making you an integral part of our data team

Step 1: Training wheels on: The apprentice programme especially designed by QA in conjunction with MoJ will act as your training wheels, guiding you along your data journey. It will provide the necessary structure, skills, templates, and focus needed in order to learn and meet the analytical engineering requirements.

Step 2: Training wheels off: "We do, You do" model provides the best way for on-the-job and contextual learning. You will join one of our domain teams, allowing you to incrementally build your skills on specific tools and understand the processes. Co-development sessions will enable quick up-skilling while providing a safe environment for experimentation.

Step 3: You're doing it! You're really doing it! We let you plot your learning journey as you are equipped with best practices and tools. We will cheer you as you develop confidence and pick up momentum ensuring success is only a matter of your determination.

What's next?

Let's get you riding as soon as possible because you have places to go and things to achieve.

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Analytics Engineer Apprentice Programme - Analytics Engineering at the Ministry of Justice

Ben Waterfield

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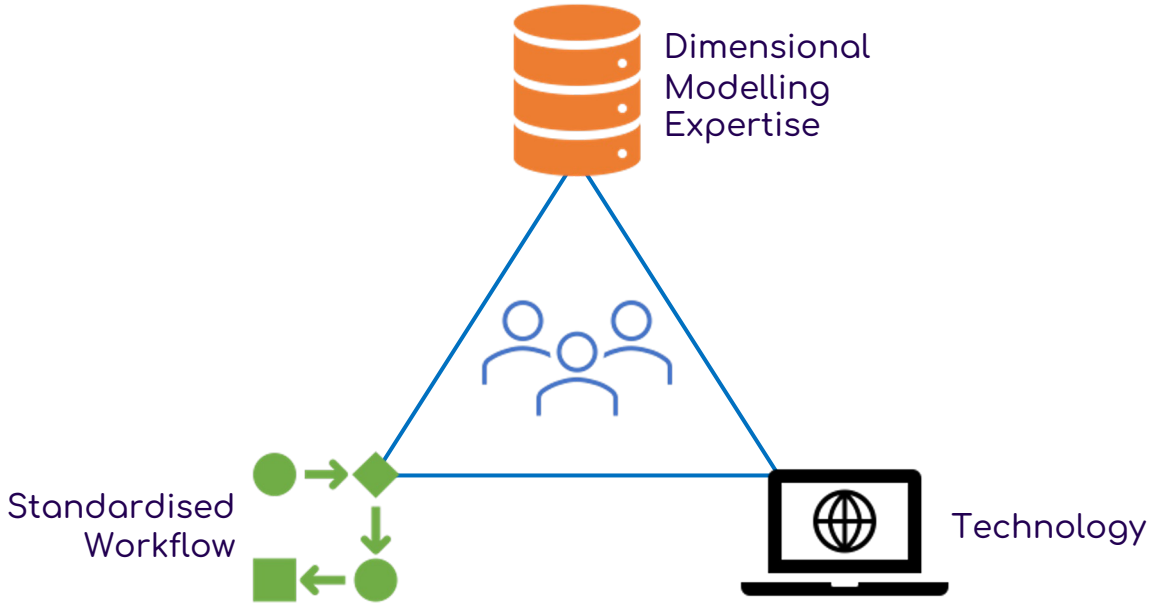
The **Ministry of Justice (MOJ)** is the lead government department responsible for the justice system in England and Wales.

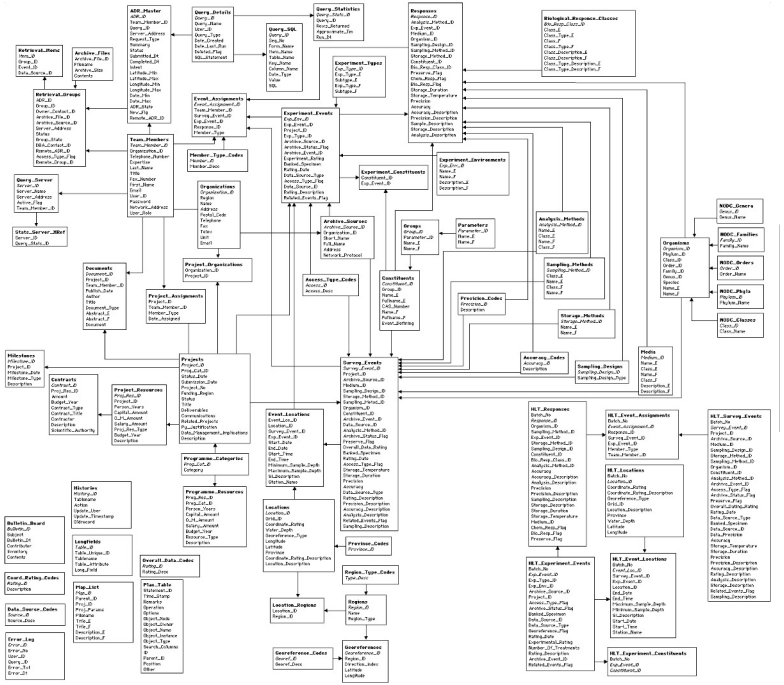
The MOJ collects and analyses a substantial amount of data to inform policy on justice services, including:

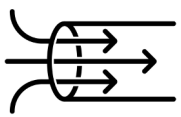
- Courts and tribunals
- Prisons
- Probation services
- Other services to help victims of crime and those seeking access to justice

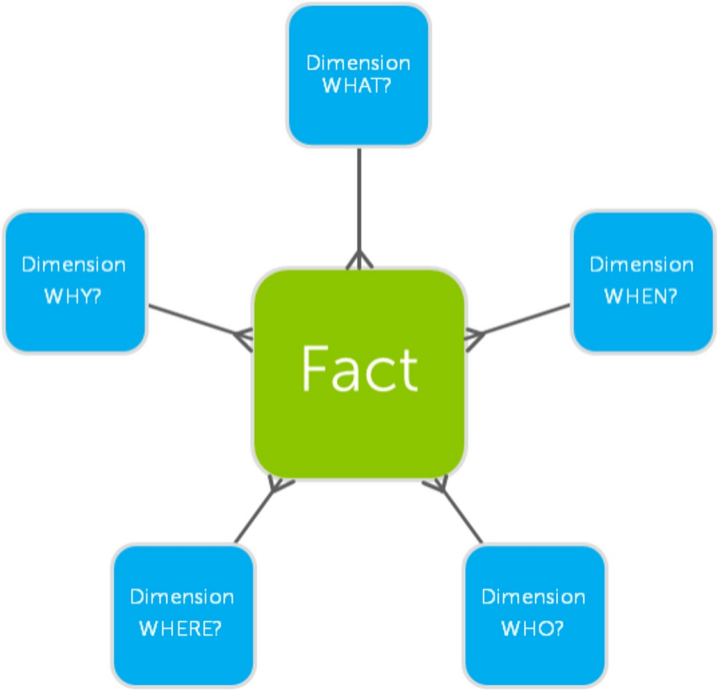
Analytics Engineering Framework



Dimensional Modelling







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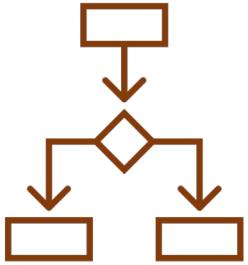
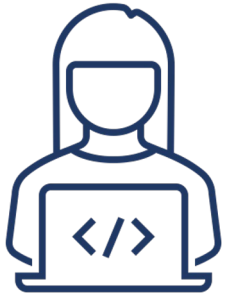
A Day in the Life

Requirements gathering & user engagement



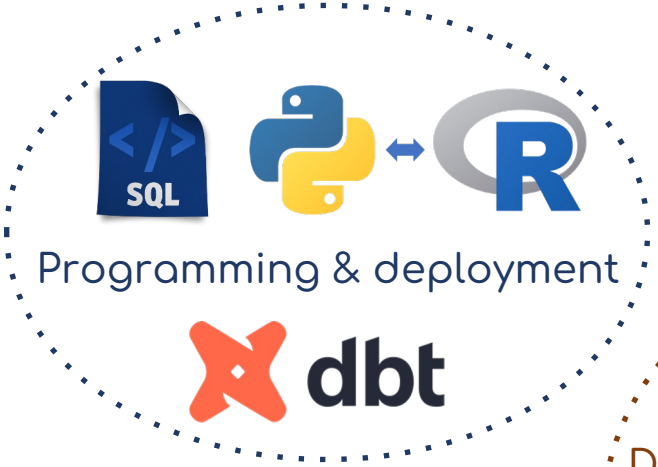
Model design



Programming & testing

Documentation & guidance

Technology



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Analytics Engineer Apprentice Programme - Support, supervision and management

Holly Furniss / Phil Hall / Oliver Critchfield

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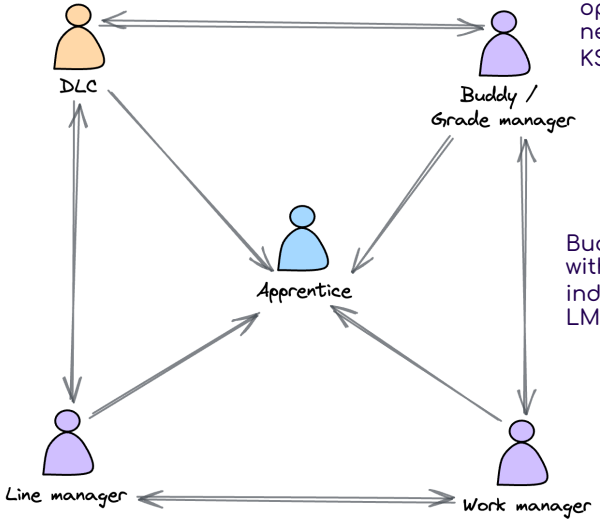
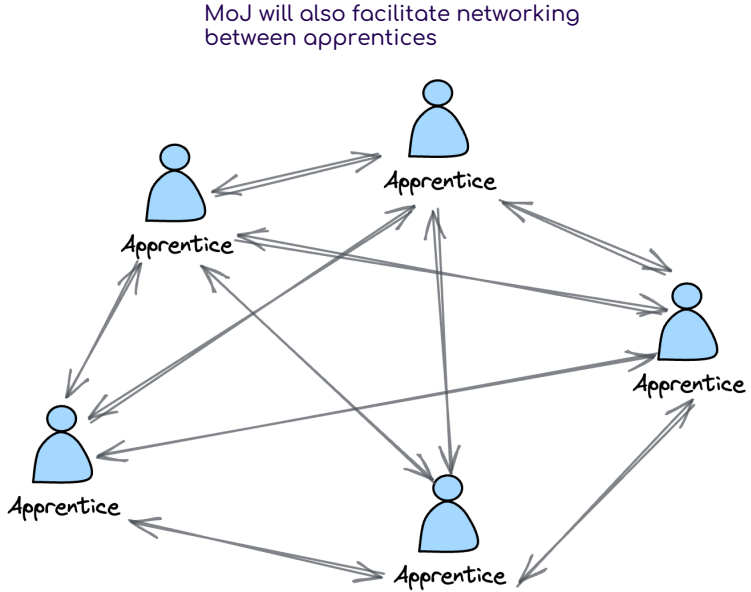
Support, supervision and management





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Analytics Engineer Apprentice Programme - application stages and tips

Holly Furniss / Phil Hall / Oliver Critchfield

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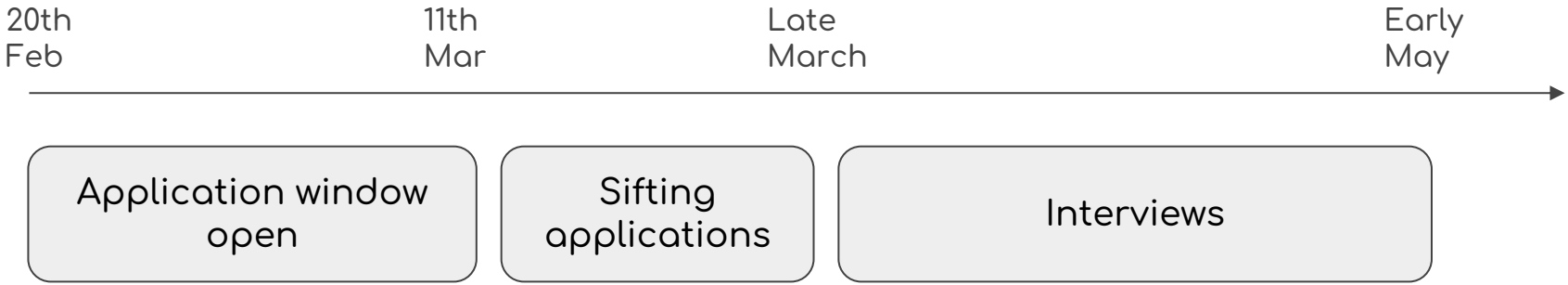
Recruitment process



How to apply

Upload an anonymised CV, including career and education history, responsibilities, and achievements

Answer the three questions (250 words each):

- Why are you interested in the role, and why should you be considered?
- Why is an apprenticeship the chosen career path for you?
- What skills and experience do you possess which are relevant to the person specification, or what experience demonstrates your potential to develop these skills?

Person Specification

We welcome applications from anyone with the potential to make a good Analytics Engineer. We'll enable you to build your knowledge and skills in areas below.

- SQL
- Python and R
- Dimensional modelling, including designing and populating star schemas
- Business intelligence tools such as Power BI, Qlikview, Tableau
- Improving data quality
- Document-oriented data storage formats such as JSON, XML
- Version control tools, such as Git
- Working in a team
- Forming effective relationships with data users
- Translating the needs of users into technical requirements.

You may have experience in some of these areas, and please tell us about these if you do but we will help you achieve and develop these skills: Two of the key attributes needed are **curiosity and willingness to learn** and we value and prioritise learning and development.

The interview process

A technical exercise, which will last one hour and involve problem solving activities (no preparation necessary)

An interview, with questions about:

The choices you made in the technical exercise

Working Together: Your experience of forming effective relationships within teams, especially those with a range of diverse interests and opinions

Delivering at Pace: Your experience of delivering high quality and complex pieces of work individually or as part of a team and the approach you take to maintain a high level of performance in these instances

Interview and application tips

Use the STAR approach

Prepare
Listen to the question
Think of an event
Plan (5-10 secs)

Short summary

S – Situation
Provide context and background

T – Task
Describe what you needed to do

A – Action
Explain what you did and how you did it

R – Result
Explain what happened and what you learned

Prepare using the Civil Service Success Profiles behaviours

Use real life examples from your **work, study or personal life.**

Be **concise and highly specific**

Explain **why** you made certain decisions, **how** you implemented these and **why** certain outcomes took place.

Remember, we want to know about what **you** did, not what your team or group did.

The STAR approach

Give me an example of when you faced a problem at work. How did you handle it?

Situation - Provide context and background

I was working in a florist shop with the manager and we were arranging an order of flowers for 2 weddings. The manager, who had taken the order, had mixed up the customers' addresses and the flowers were delivered to the wrong venues.

Task - Describe what you needed to do

I had to get the flowers to the right place and apologise to the customers.

Action - Explain what you did and how you did it

I told my boss that I would deal with the mistake, leaving her to take care of the shop. I spoke to both customers on the telephone to explain, and reassured them that we would put things right straight away. I drove to both venues, swapped the flowers in time and apologised in person. I gave both customers a voucher for a bouquet as compensation.

Result - Explain what happened and what you learned

The customers were grateful that we had acted quickly. Later on, they both came back to the shop to spend their vouchers and have since recommended us to their friends.

** Example taken from the National Careers Service website

Success Profiles Behaviours

Delivering at Pace

Regularly review the success of activities in the team to identify barriers to progress or challenging objectives. Identify who and what is required to ensure success, set clear goals and areas of responsibility and continually assess workloads considering individual needs. Follow relevant policies, procedures and legislation to complete your work. Ensure colleagues have the correct tools and resources available to them to do their jobs. Have a positive and focused attitude to achieving outcomes, despite any setbacks. Regularly check performance against objectives, making suggestions for improvement or taking corrective action where necessary. Ensure that colleagues are supported where tasks are challenging.

** Example taken from the National Careers Service website

POWERING POTENTIAL

DATA ANALYST L4 FRONTLOADED APPRENTICESHIP

AGENDA

- QA's Partnership With MoJ
- DA Frontloaded programme
- How We Support You
- End Point Assessment
- Learner case study

QA's Partnership with MoJ and Civil Service

Long and proud history of supporting the Civil Service

National provider for 2 Lots on the Apprenticeship Contract by the Cabinet Office (CSR/128)

Over 4300 Civil Service learners enrolled from **71** departments

97% achievement rate with **79%** completing with merit or distinction.

Data Analyst Level 4

Principles of Data

- Legislation, Security and Ethics
- The Data Lifecycle
- Structured & Unstructured Data
- Data Tools
- Introductions to SQL, Python & Miro Boards

Customer Focus & UX

- Introduction to UX
- UX and the Data Analyst
- Persona Mapping
- User Journey Mapping
- Create User Stories
- Requirements Engineering
- Stakeholder Mapping
- Quality of Data in UX
- Risk Management

Data Manipulation & Visualisation

- Populations & Sampling
- Hypothesis Testing
- Data Analysis in Excel
- Charts and Visualisations in Excel
- Hypothesis Testing by Simulation in Excel
- Analysing for Hypothesis
- Importing Excel in to PowerBI
- Relationships and Visualisations in PowerBI
- Introduction to Python

Data Modelling and Machine Learning

- Data Modelling Types
- Data Models and Business Requirements
- Applying Normalisation Techniques
- SQL Language
- Analytical Techniques
- Machine Learning Algorithms and Methodologies

Data Architecture and Cloud

- Intro to Data Architectures
- What is Cloud Computing
- Data Flows in Azure
- Databricks and Data Lake Storage
- Data Warehouses with SQL & PowerBI
- Creating Tables in SSIS
- Privacy by Design
- Modelling for OLAP and BI/DW

Data Analysis and Statistics

- Data Analysis Techniques
- Introduction to Statistics
- Statistical Methodologies
- Correlation Coefficient
- Linear & Non-Linear Regression
- SLR & MLR
- Data Analysis with PowerBI
- Statistical Analysis with PowerBI
- Statistics in Python & R

QA Accelerated Apprenticeships Workflow

(1) Bootcamp – 10 weeks – Full time

This accelerated workflow will allow learners to develop their knowledge foundation and practise their new skills upfront. This means that learners will find the Discover and Practise components of each module. The Apply component of each module will be postponed to take place at the Workplace Application stage, below.

(2) Workplace Application Preparation Stage

Here, learners will plan the best strategy to transfer value to the workplace. This stage will get learners to:

1. Create a **Workplace Application Plan**, with the prioritised sequence of Apply activities.
2. Complete a **Apply Readiness Check** and create a **Professional Development Plan** (inc. Add-on Skills Bundle).
3. Attend a **Tripartite Discussion** leading to the Workplace Application Planning sign-off.

(3) Workplace Application Stage

At this stage, learners will go through their Workplace Application Plan. This means that they will complete these activities in the order specified in their plan, which will have been aligned to their workplace activities or tasks.

A SIMPLIFIED, INTEGRATED APPROACH

Highly Skilled Digital Talent. Faster.

How We Support You

Digital By Design (DxD)
The learner-centric **blended** learning approach

Help on-hand
Rapid support via online chat. **75%** of queries answered in **1** minute!

Digital Learning Coach
A go-to expert for **1:1** support

Cloud Academy – Uniquely Incomparable

Unlimited cutting-edge content via the **world-leading** digital learning platform.

Courses

Hands-on Labs

Practice Exams

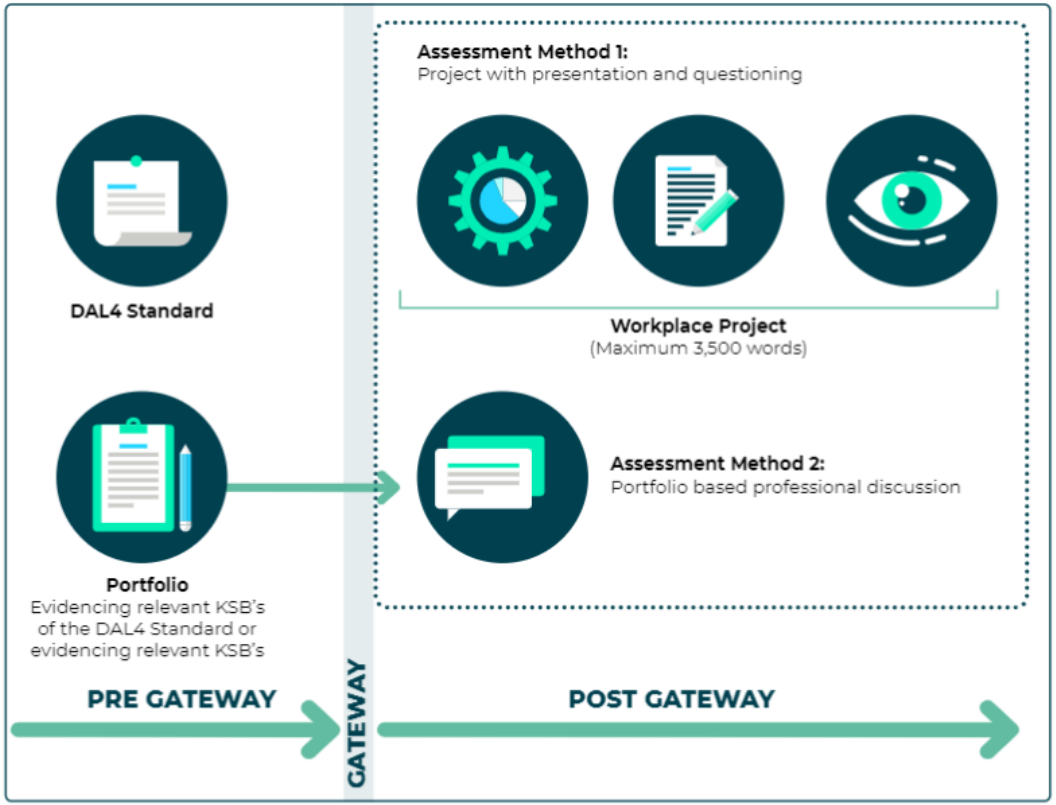
Quizzes

Lab Challenges

Certificates

CloudAcademy

How to get ready for the End-Point Assessment (EPA)



What You Will Achieve

Qualifications

- IfATE Standard: Data Analyst Level 4 Apprenticeship
- Microsoft Power BI Data Analyst (PL-300)
-
- **Optional:** Maths and English Functional Skills

Skills Developed

- R programming language, Python, Microsoft SQL Azure and Excel
- Data modelling (conceptual, logical, and physical)
- Data architectures

Making The Difference – Learner Story

Video link: https://www.youtube.com/watch?v=MTeNx-wmk4M

Thank you

Questions

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