Yes! These slides will be shared afterwards

Some Stats_

- Our industry is growing twice as fast as the rest of the economy
- Digital contributes **3.9 billion** to Scotland's economy and the figures suggest that it will increase 38% between 2018 - 2024
- There are 90,000 employees in Scotland's digital sector; growing sectors include **FinTech, Cyber Security and AI / Machine Learning**
- Scotland is home to a thriving tech ecosystem with over 1,500 companies that contributed £4.9bn Gross Value Added (GVA) to Scotland's economy
- Average market salary (all levels) is **£37,500** which is 30% higher than national average of £28k
- CodeClan graduate starting salaries range from £23-28k (average is **£24-26k**)

What's out there?

What should I do?

Here are the typical roles...

Software Developer - Front End_

Tech

- **Language/Framework:**
- HTML, JavaScript, CSS, React, Angular, Vue, Redux+Flux/Context API+hooks
- **Tools:** Gulp, Grunt, Babel, Webpack

Who you might work with:

- UX/UI and Product Designers
  Product Owners, Marketing teams, API developers

A day in the life might look like:

- Standup with feature / product dev team
- Standup with other front-enders to improve FE tech
- Meet Backend Engineers to design APIs
- Working on solidifying style integrations/ **design systems**
- Take user stories and requirements and develop to them
- Feedback to designer to verify before moving on

Salary for a Junior Developer: £25-28K (average)
Salary for an experienced Developer: £50-80K

Software Developer - Back End_

Tech Stack

Languages & Frameworks:

- Java (Spring, Hibernate, Spark etc), C# (.NET MVC), Python (Django, Flask), Node.js (Express), Ruby (Rails, Sinatra)
- API development
- **Deployment / Cloud**
  Docker, Kubernetes, AWS (Amazon Web Services), Azure Cloud, Heroku
- CI/CD (Continuous Integration / Continuous Deployment) - Jenkins, Travis, SQL (relational databases)
- **Web Scale & Open Source**
  Apache (Samza, Kafka, Spark) or RabbitMQ

A day in the life might look like:

- Standup with product / feature team
- Requirements gathering from Product Owner & Designer and build functionality
- Some DevOps with testing and CI standardisation
- Automation and infrastructure enhancement
- Architecting whole backend application (senior engineers, architects)

Salary for a Junior Developer: £24-26K (average)
Salary for an experienced Developer: £30-40K+

Full Stack_

Pros

- You continue to gain skills & experience across the stack
- End-to-end view of the application
- Can “own” a feature
- More exposure to technologies
- A skills asset to a company & team
    - you can work where the demand is

Cons

- Lack of specialist focus
- Higher dependency on other team members
- More demanding task management

Our advice

Keep an open mind about your learning path, technical exposure, growing skillset and experiencing as much as you can!

Starting salary for a Junior Developer: £24-26K (average)
Experienced Developer: £30-40K+
Senior Developer: £34-50K+

Dev-Ops_

- A software engineering practice and an agile relationship between Software Development teams (**Dev)** and IT Operations teams (**Ops**)
    - shortens the development lifecycle while delivering features, fixes and updates frequently in line with business objectives.
- SysAdmin for Cloud (e.g. Amazon Web Services (AWS, Microsoft Azure)

Dev-Ops_

(Developer Operations)

Tools: bash/batch scripting, **CD** and **CI** (continuous deployment and continuous integration)

- (Jenkins, TravisCI), Networking, Deployment provisioning (Vagrant, Ansible, Salt, Puppet)

PaaS (platform as a service):

- AWS, Azure, GCP, Heroku, Rackspace, (or own hardware)

A day in the life might look like

- You might be on call, or have the emergency phone over-night and expect to answer it and deal with live production infrastructure issues. You'll get paid
- Plan deployment and sometimes test cycles
- Manage hardware
- Ensure efficient use of cloud resources. Plan outages and infra maintenance
- Make sure developers have testing resources (CI and CD help)
- Firefighting (e.g. 24/7 oncall team rota for immediate tech support)

Starting salary for Junior DevOps £25-30K (average)

- ***In many organisations DevOps is an engineering approach rather than a job title***

SRE (Systems Reliability Engineer)

Duties: SREs are software engineers who focus on the reliability and uptime of applications and services not just in the short-term, but with a focus on scalability and long-term use.

Where?

- cloud services, SaaS, PaaS companies whose clients rely on them to keep those services available 24/7/365

<u>A day in the life might look like</u>

- Writing software automation code
- investigating, mitigating, and root-causing whatever problems that came up
- programming of systems to measure, monitor or improve reliability, or to automate other system tasks
- Set up Virtual Private Networks
- Maintaining cloud systems and Load balancing
- Balancing the needs of the development teams and the needs of the business stakeholders

Starting salary for Junior SRE £20-30K (average)

- ***This role Is finding its footing as DevOps practices take hold in IT departments***

SRE (Systems Reliability Engineer)

Some links to work through if you're interested

Setup a Virtual Private Network for EC2
https://docs.aws.amazon.com/vpc/latest/userguide/what-is-amazon-vpc.html

Setup an EC2 instance in the VPC
https://docs.aws.amazon.com/AWSEC2/latest/UserGuide/get-set-up-for-amazon-ec2.html

Setup an auto scaling self healing instance
https://docs.aws.amazon.com/autoscaling/ec2/userguide/what-is-amazon-ec2-auto-scaling.html

Put EC2 behind a Load Balancer
https://docs.aws.amazon.com/elasticloadbalancing/latest/classic/introduction.html

Use Cloudformation to define the manual steps above as code (Infrastructure as code)
https://docs.aws.amazon.com/AWSCloudFormation/latest/UserGuide/GettingStarted.html

Test (QA)_

Tech

- **Tools:** Bash, Batch, Selenium, Jest, Cypress, Cucumber, various programming languages (e.g. Python)

Who you might be working with:

- Product Owner, Product Manager, Back End Developers, Front End Developers

A day in the life might be:

- Standup in the Product team
- 3 Amigos! (PO, Dev, Tester)
- Working with other testers to improve tooling

Why Consider a Tester role?

- Can earn good salaries!
- Design & develop automation scripts
- Perform all levels of testing (system, integration (end to end) and regression testing
- Good chance to learn Automation

Typical starting salary for a Junior Tester: £24-25K

Salary for an experienced Tester: £25-50K (level dependent)

Product Owner_

Tools & Techniques

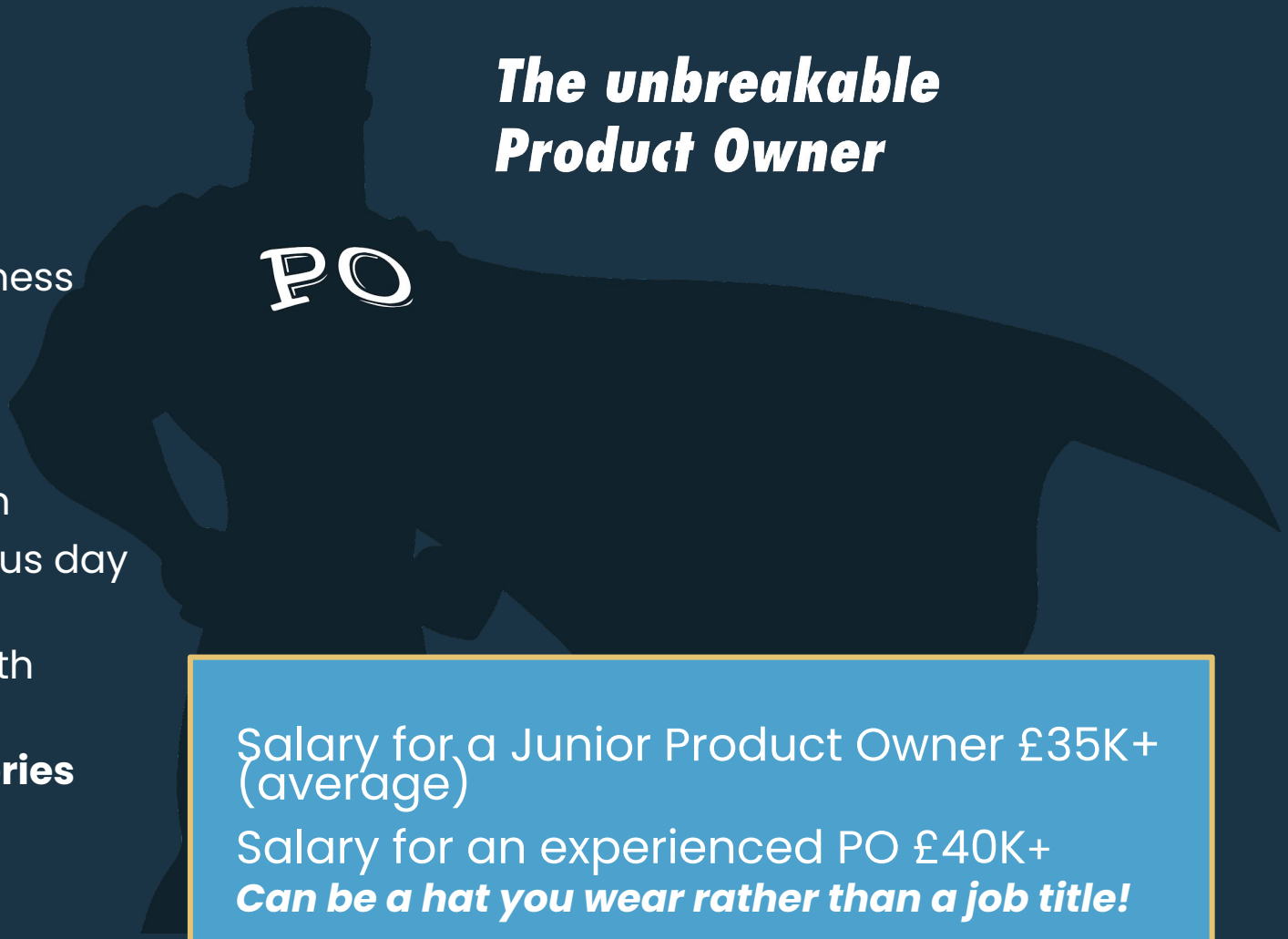
- User story mapping, BDD, Jira

Who you'll work with

- All Product Development teams, Business stakeholders: Customers, Operations

A day in the life might look like

- Standup in the product dev team
- Results & challenges from previous day and focus for the day
- Understanding users problem with UX/Designer
- Break requirements into **User Stories**



The unbreakable Product Owner

Salary for a Junior Product Owner £35K+ (average)

Salary for an experienced PO £40K+

Can be a hat you wear rather than a job title!

UX_

Tools & Techniques

- Service Blueprint, Consumer Journey Map, Personas
- Value Proposition
- Stakeholder Interviews
- Key Performance Indicators
- User Story Mapping

Working with:

- Users, Customers, Stakeholders, Dev, PO

A day in the life might look like:

- Interviewing users
- Journey Mapping current workflow
- Understanding the users problem
- Prototyping solutions
- Validating needs

Salary for a UX Designer £25 - £32K (average for a new UX)

Experienced UX Designer £30 - 40K

MYTHBUSTERS: “Designers make better UXers”

Microsoft Technologies_

- Although developing on Macs is extremely popular, Microsoft also offers a suite of products for development.
- Often, a business will commit to using either a Microsoft stack or a more open-source focused stack which will usually involve developing software on Macs.
- It's important to know that you might get a job with a company using predominantly Microsoft technologies.

The Tech

- **.NET** is an open source developer platform, created by Microsoft, for building many different types of applications
- **C#** is a simple, modern, object-oriented and type-safe programming language. It's very similar to Java
- **SQL Server** is a relational database management system, or RDBMS, developed and marketed by Microsoft.
- **ASP.NET** is an open-source server-side web application framework designed for web development, developed by Microsoft
- **Visual Studio** is an integrated development environment (IDE) from Microsoft. Similar to IntelliJ.
- https://docs.microsoft.com/en-us/learn/browse/

Outside the “normal” dev-team family_

Specialist Fields

Data Analyst

- Big Data Analyst
- Information Analyst
- Machine Learning

Games Developer

- Graphics Programming

Mobile Development

- iOS / Android / React Native
- Low level technology
- Embedded (microprocessors)
- Compiler Development

Blockchain

- Cryptocurrency

Security Specialists

- Penetration Tester / Ethical Hacker
- Cyber Security
- Product / Ops Security

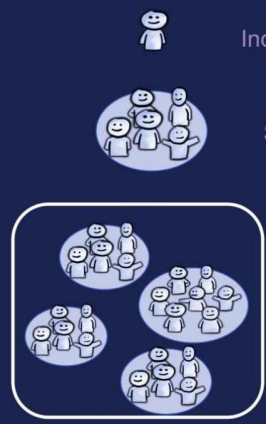
Modern Engineering Culture_
Tribes & Squads Model_

Strong autonomous teams

with clear missions

and supporting leadership

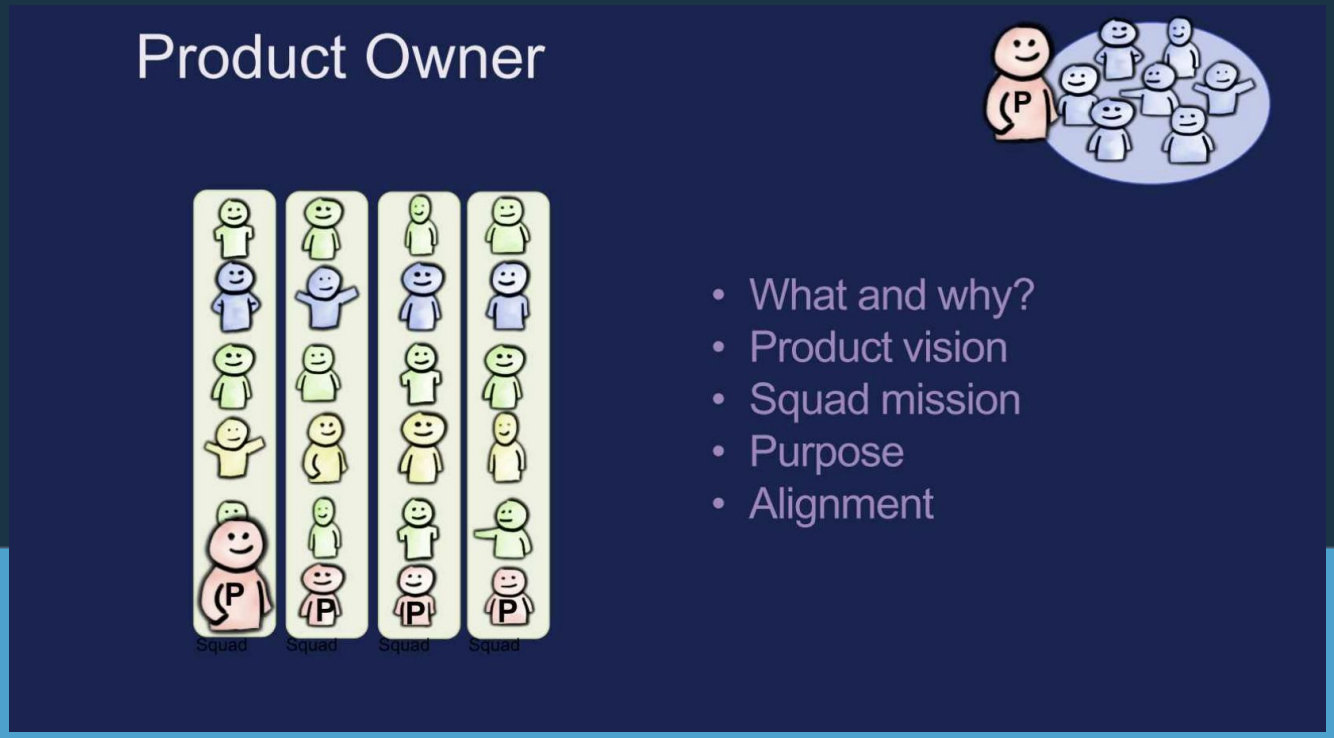
Agile coach

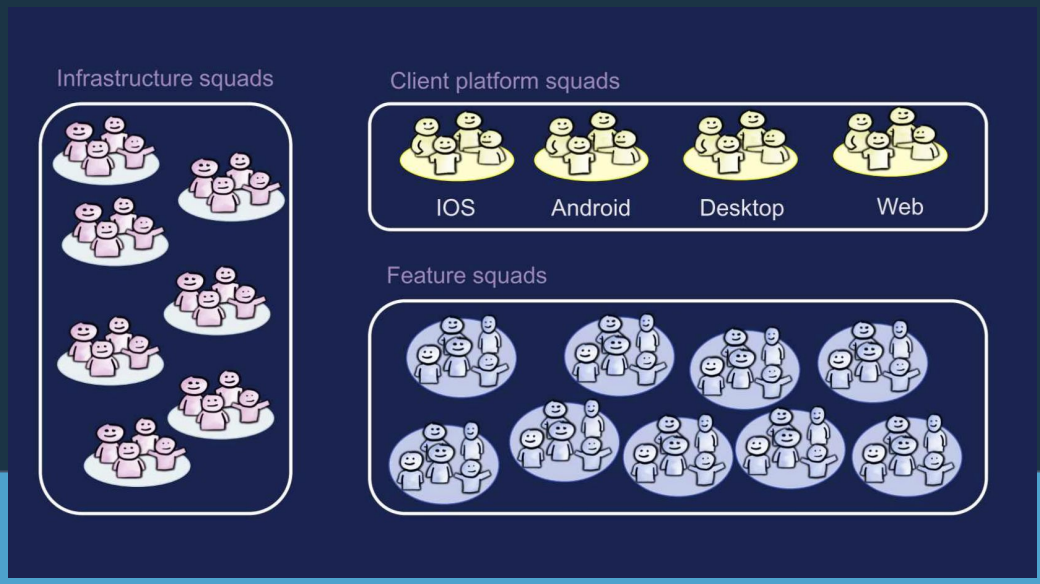


- High performing teams
- Continuous improvement
- Ways of working
- Collaboration
- High performing organization

Modern / Agile Engineering Culture_

Tribes & Squads Model_





Modern Engineering Culture_

Agile Approach in Tribes & Squads Model_

- ★ Small cross functional teams
- ★ End to end responsibility for delivery
- ★ Self-organising & autonomous
- ★ Experimentation (A/B Testing)
- ★ Sit together
- ★ Have a long term goal or mission
- ★ Experts in their area / T-shaped
- ★ Deploy code autonomously, quicker and often multiple times per day
- ★ Plan, collaborate and deliver like mini start ups

- ★ **They Fail Fast and Fail Forward!**

Benefits of Autonomous & Fast-Paced Engineering Teams_

- ★ Autonomous teams experiment and have their own mission
- ★ They continually deploy code
- ★ They fail fast & embrace failure (failing forward)
- ★ Focused on continuous improvement
- ★ Focused on scalable solutions
- ★ User-first solutions

Any Questions?

Do you have specific areas of interest?