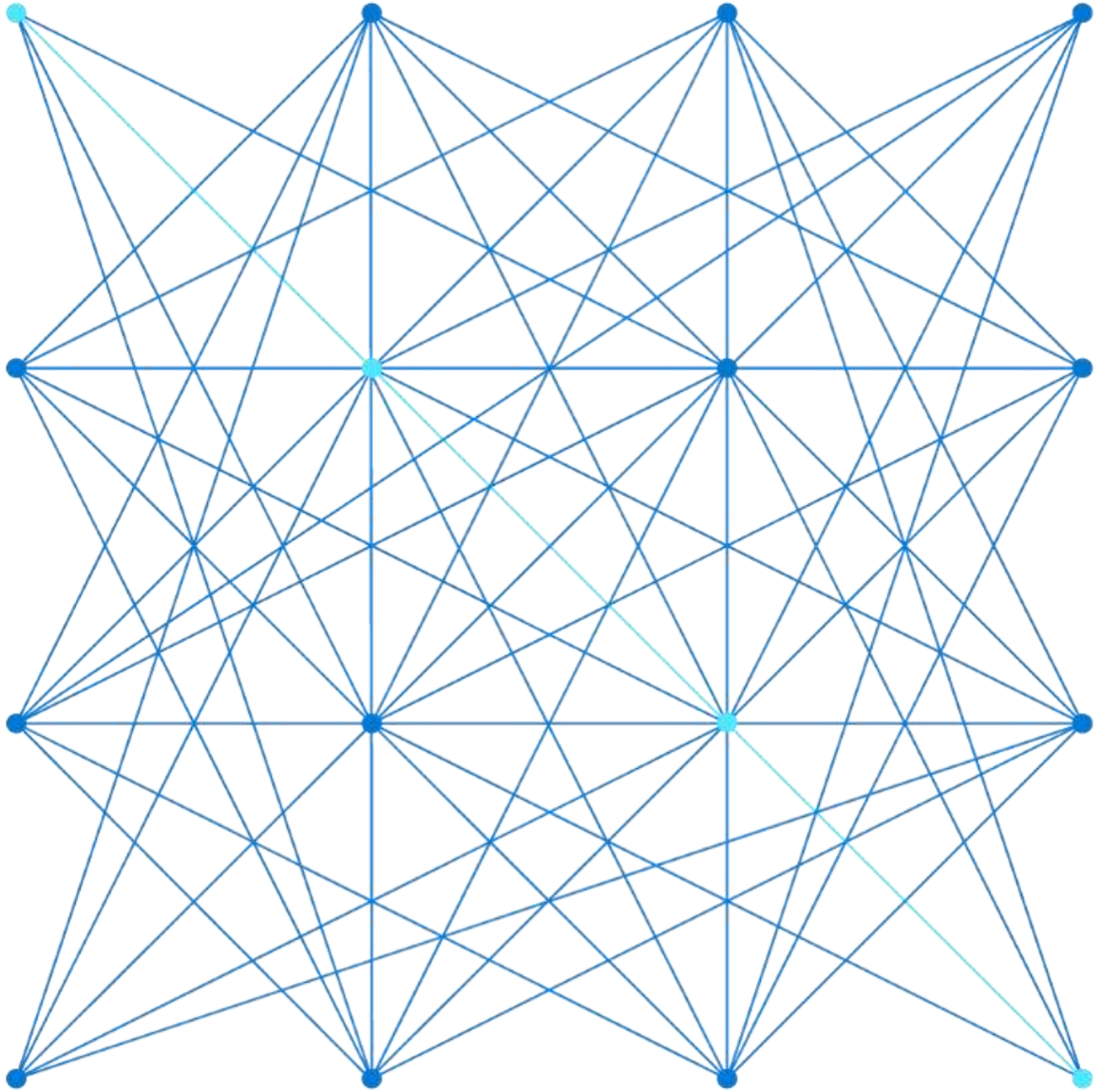
Microsoft Azure

AZ-400.00 Module 1: Planning for DevOps

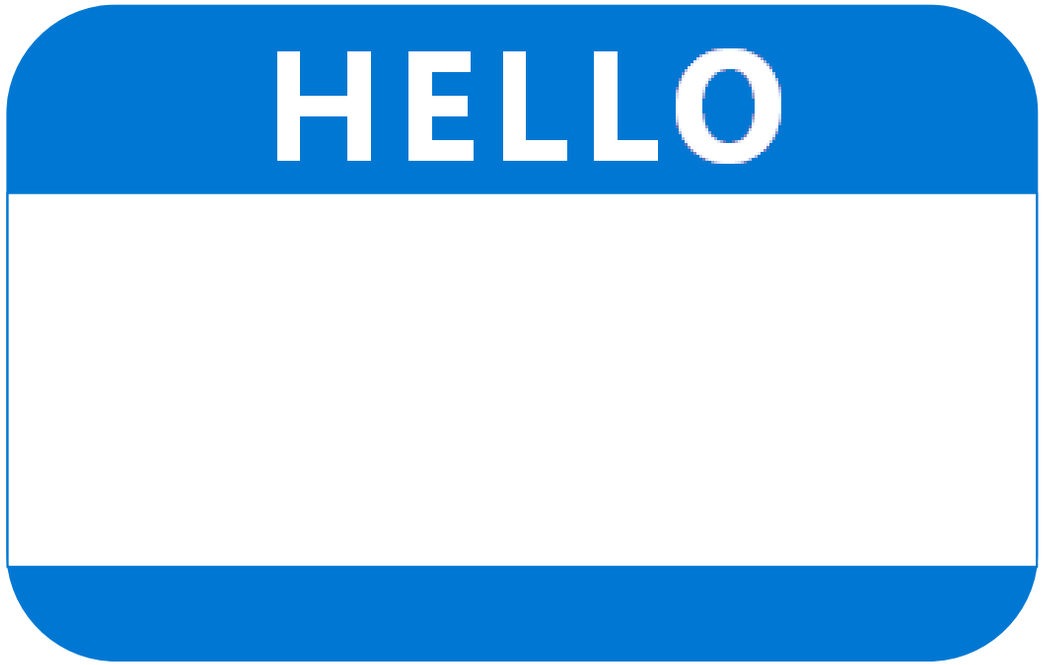


Hello!
Instructor introduction

Instructor: Ravindra Kudache

Azure solution expert

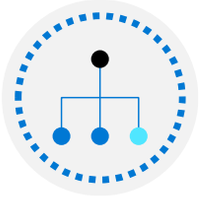
I have more than 12 year exp IT



Lesson 01: Module overview

Module overview

Lesson 1: Module Overview



Lesson 2: Transformation Planning

Lesson 3: Project Selection

Lesson 4: Team Structures

Lesson 5: Migrating to Azure DevOps

Lesson 6: Lab

Lesson 7: Module Review and Takeaways

Learning objectives

After completing this module, students will be able to:

Plan for the transformation with shared goals and timelines

Select a project and identify project metrics and Key Performance Indicators (KPI's)

Create a team and agile organizational structure

Design a tool integration strategy

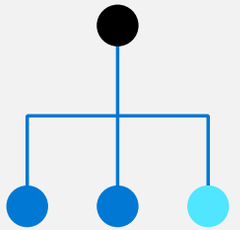
Design a license management strategy (e.g. Azure DevOps users)

Design a strategy for end-to-end traceability from work items to working software

Design an authentication and access strategy

Design a strategy for integrating on-premises and cloud resources

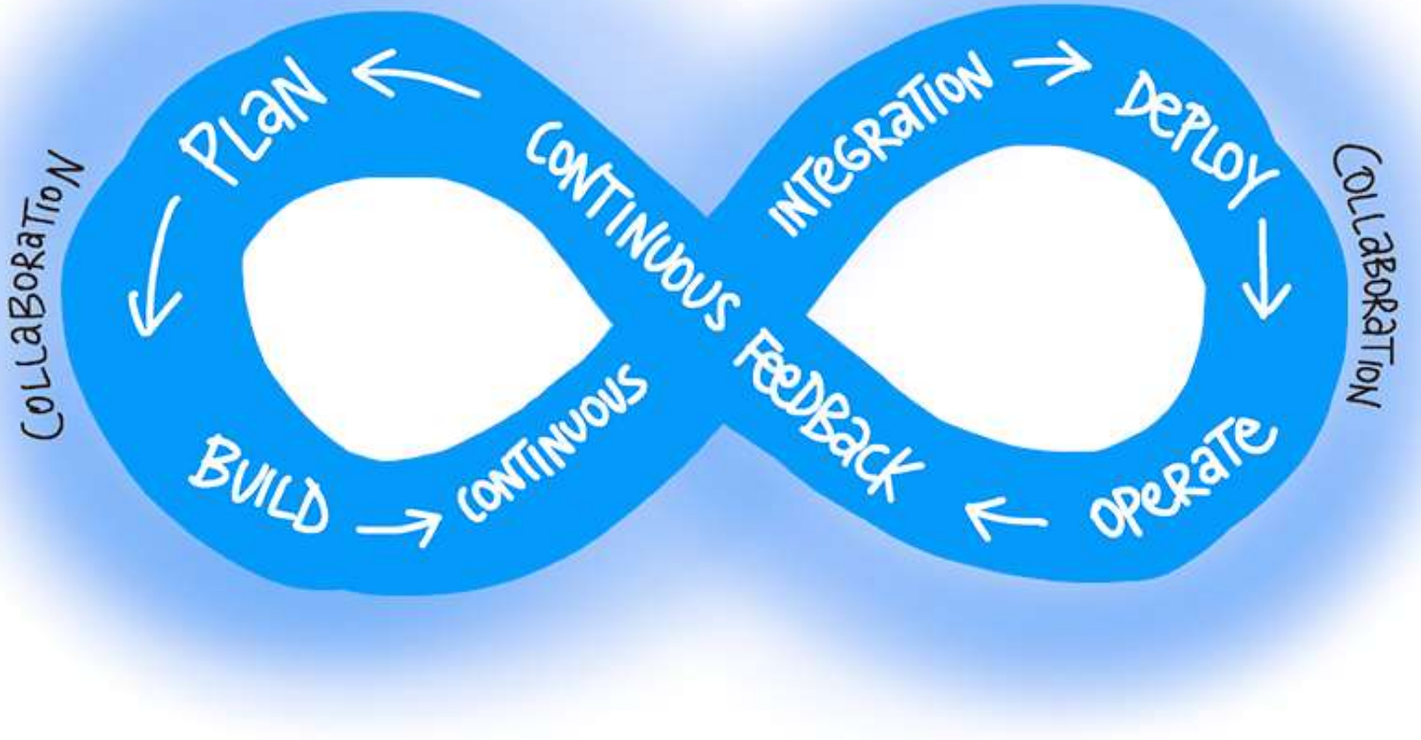
Lesson 02: Transformation planning



What is DevOps?

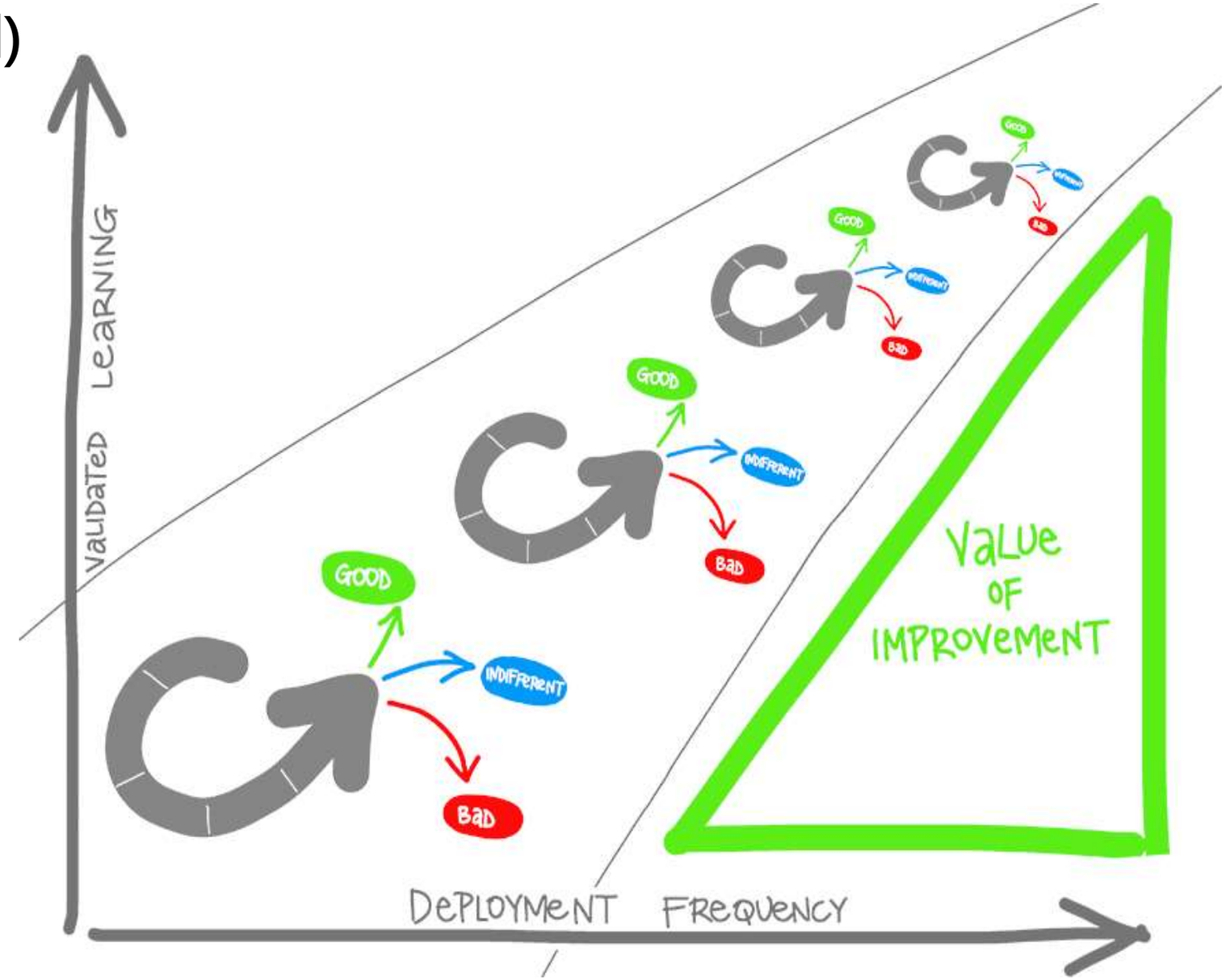
"DevOps is the union of people, process, and products to enable continuous delivery of value to end users."

– Donovan Brown, [What is DevOps?]



What is DevOps? (continued)

- Understand your cycle time
  - Observe, Orient, Decide, Act (OODA) loop
- Become data-informed
- Strive for validated learning
- Shorten your cycle time
- Optimize validated learning



The DevOps journey

- Continuous Integration
- Continuous Delivery
- Version Control
- Agile/lean
- Monitoring and logging
- Cloud
- Infrastructure as Code (IaC)
- Microservices
- Containers
- DevOps may hurt at first

https://docs.microsoft.com/en-us/azure/devops/learn/what-is-devops

Separating transformation teams

There are several challenges when creating teams:

- Availability of staff
- Disruption of current procedures and processes

To overcome the challenges, create a team that is:

- Focused on the transformation
- Well respected in their subject areas
- Internal and external to the business

A transformation project can conflict with ongoing business needs

Defining shared goals

Projects must have a clearly-defined set of measurable outcomes, like:

- Reduce the time spent on fixing bugs by 60%
- Reduce the time spent on unplanned work by 70%
- Reduce the out-of-hours work required by staff to no more than 10% of total working time
- Remove all direct patching of production systems

One of the key aims of DevOps is to provide greater customer value, so outcomes should have a customer value focus

Setting timelines for goals

Measurable goals should have timelines that challenging yet achievable

Timelines should be a constant series of short-term goals – each clear and measurable

Shorter timelines have advantages:

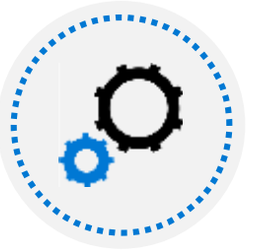
- Easier to change plans or priorities when necessary
- Reduced delay between doing the work and getting feedback
- Easier to keep organizational support when positive outcomes are apparent

Lesson 03: Project selection

Greenfield and brownfield projects defined

Greenfield software projects develop in a totally new environment.

Brownfield software projects develop in the immediate presence of existing software applications/systems.



Choosing greenfield and brownfield projects

Greenfield projects:

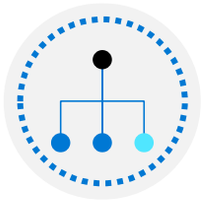
- Appears to be an easier starting point
- A blank slate offers the chance to implement everything the way you want.

Brownfield projects:

- Comes with the baggage of existing code bases, existing teams and often a great amount of technical debt
- Spending time maintaining existing Brownfield applications, limits the ability to work on new code.

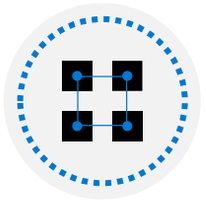
There is a common misconception that DevOps suits greenfield projects better than brownfield projects, but this is not the case.

Choosing systems of record versus systems of engagement



Systems of record:

- Emphasize accuracy and security
- Provide the truth about data elements
- Historically evolve slowly and carefully

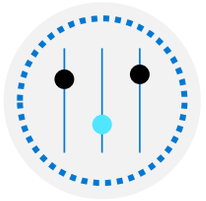


Systems of engagement:

- Are more exploratory
- Use experimentation to solve new problems
- Are modified regularly
- Prioritize making changes quickly over ensuring that the changes are correct

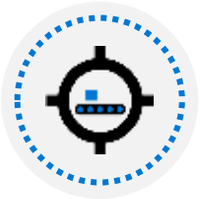
Both types of systems are important

Selecting groups to minimize initial resistance



Different types of staff members:

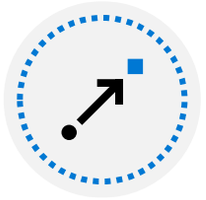
- **Canaries** voluntarily test bleeding edge features
- **Early adopters** voluntarily preview releases
- **Users** consume the products after canaries and early adopters



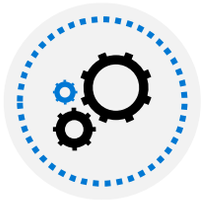
Ideal Target Improvements:

- Can be used to gain early wins
- Are small enough to be achievable in a reasonable time-frame
- Have benefits that are significant enough to be obvious to the organization

Identifying project metrics and Key Performance Indicators (KPIs)



Faster outcomes – Deployment frequency, deployment speed, deployment size, and lead time



Efficiency – Server to admin ratio, staff member to customers ratio, application usage, and application performance

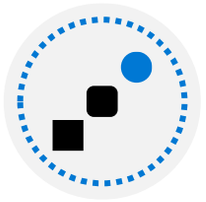
Quality and security – Deployment failure rates, application failure rates, mean time to recover, bug report rates, test pass rates, defect escape rate, availability, service level agreement (SLA) achievement, and mean time to detection

Culture – Employee morale and retention rates

Goals must be specific, measurable, and time-bound

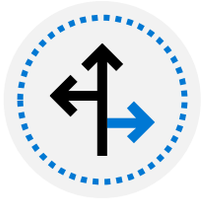
Lesson 04: Team structures

Agile development practices defined



Waterfall approach:

- Define, analyze, build and test, and deliver
- Hard to accurately define requirements, which can change over time, including during development
- Requires change requests and additional cost after delivery



Agile approach:

- Emphasizes constantly adaptive planning, and early delivery with continual improvement
- Development methods are based on releases and iterations
- At the end of each iteration, should have tested working code
- Is focused on shorter-term outcomes

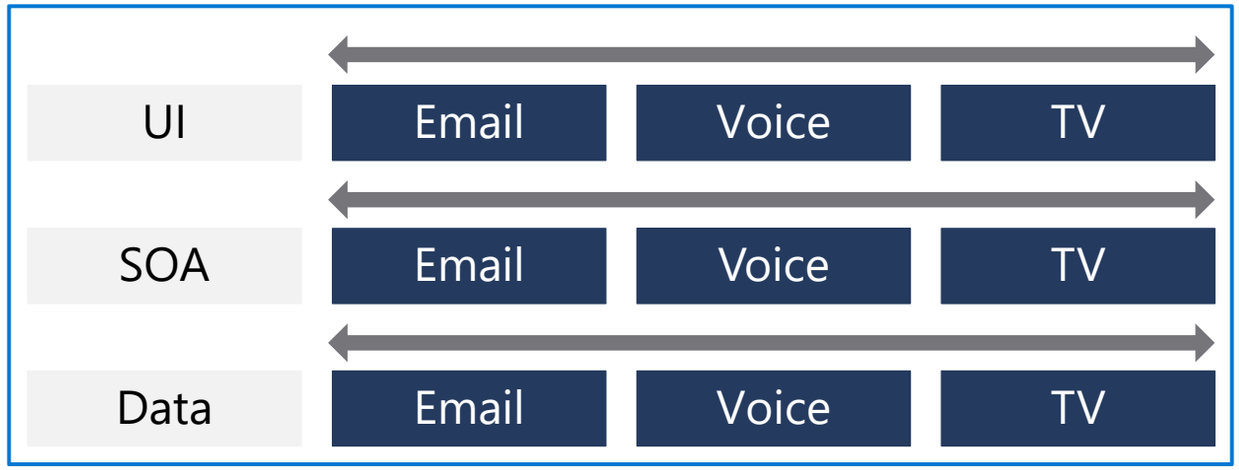
Principles of agile development

1. Satisfy the customer through early and continuous delivery of valuable software
2. Welcome changing requirements
3. Deliver working software frequently
4. Work together throughout the project
5. Build projects around motivated individuals
6. Use face-to-face conversation
7. Measure progress through working software
8. Agile processes promote sustainable development
9. Continuous attention to technical excellence and good design
10. Simplicity - the art of maximizing the amount of work not done
11. Use self-organizing teams
12. Reflect on how to become more effective

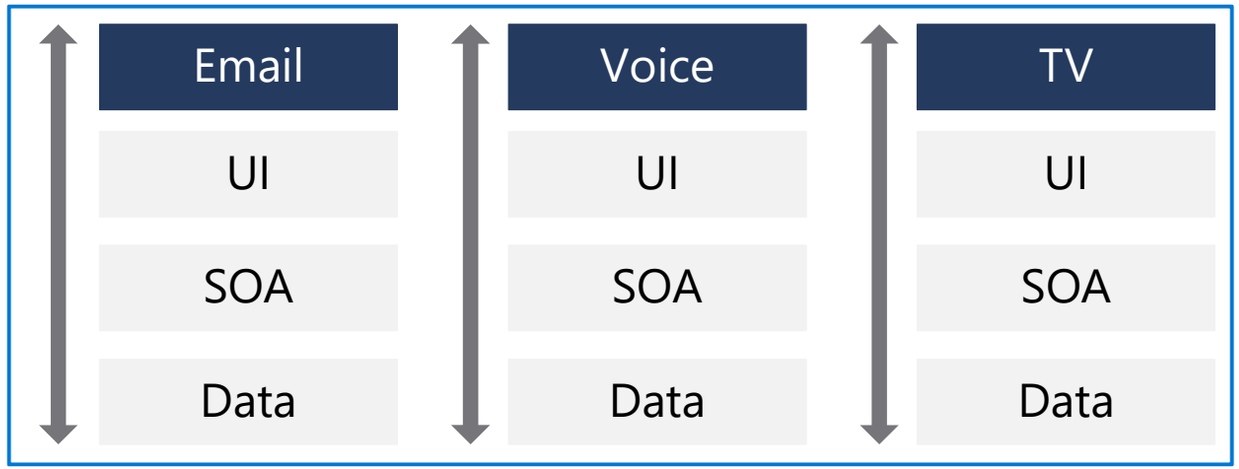
Source: https://www.agilealliance.org/agile101/12-principles-behind-the-agile-manifesto/

Creating organizational structures for agile practices

Horizontal team structures divide teams according to the software architecture.



Vertical teams span the architecture and are aligned with product outcomes, and scaling can occur by adding teams.



Vertical teams have been shown to provide stronger outcomes in Agile projects

Ideal DevOps team members

- Think there is a need to change and have shown an ability to innovate
- Are well-respected and have broad knowledge of the organization and how it operates
- Ideally, already believe that DevOps practices are what is needed

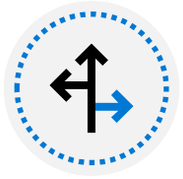
Mentoring team members on agile practices

Many teams hire external agile coaches or mentors

Agile coaches have teaching and mentoring skills

Agile coaches tend to be both trainers and consultants

Some coaches are technical experts



Some coaches are focused on agile processes

Team members must learn as they work, and acquire skills from each other