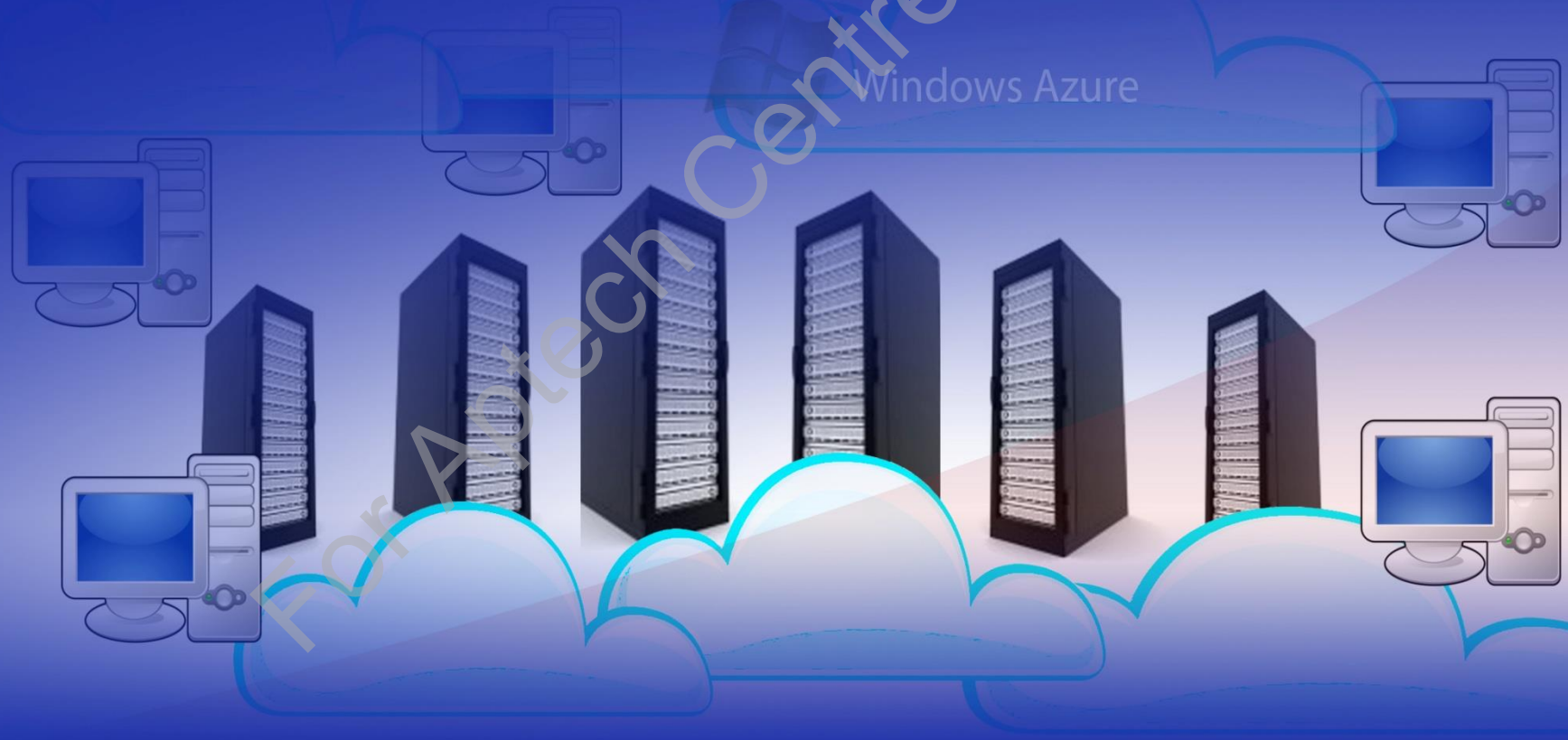


# Enterprise Application Development Using Windows Azure and Web Services

## Session 13

## Application Lifecycle Management



# Learning Objectives



- Explain Application Lifecycle Management (ALM)
- Describe ALM Tooling
- Explain how to manage lifecycle on Windows Azure

# ALM Overview 1-3

- ALM can be defined as product lifecycle management process, which includes the following activities:

**Governance**

**Development**

**Operations**



# ALM Overview 2-3

❑ ALM comprises a number of activities such as:

Application requirements management

Software testing

Software maintenance

Change management

Project management

Release management

# ALM Overview 3-3

- Following are the three core aspects of ALM:



# Governance Model 1-3

## ❑ The Governance Model:

Defines what needs to be developed, which happens through the business case development.



Defines a set of requirements for the project, which must be approved.



Defines, assesses, and evaluates an approach for the project to be executed.



Is implemented and managed through the Project Portfolio Management.



# Governance Model 2-3

## ❑ Project Portfolio Management (PPM):

- Is a centralized management of processes, technologies, and methods.
- Is used by the project owners, specifically the project managers, to execute and manage a project.
- Manages and implements the complete governance model through two most recognized ways, they are as follows:

### Assign a Project Manager



- Assign a project manager to the development team.
- The project manager is responsible to manage the complete project.

### Assign a Centralized Team



- Assign this responsibility to a centralized team.
- Known as Project Management Office (PMO).
- An entity responsible to complete management of start-to-end lifecycle of an application.

# Governance Model 3-3

- ❑ After an application is deployed, Application Portfolio Management (APM) is used to:

Provide governance to the developed application.

Implement multiple purposes, such as software inventory and managing software-based services.

Help in generating reports using various scoring algorithms.

Help in analyzing an application. Analysis can include parameters to calculate the application age and its retention period.



# Development Model

## ❑ The Development Model:

- Comes in to effect, after the governance model is completed.
- Is the fundamental step that is necessary in an application development lifecycle.
- Starts after the business cases are completed.



## ❑ The development can be divided into two parts:

Developing the application based on the business cases.



Periodic updates take place. The updates can be either a complete development lifecycle or just minor or major updates depending on the business requirements.



# Operation Model

## ❑ The Operation Model:



Defines how the application is going to be managed and monitored.



After the development of the application is completed, it is then deployed.



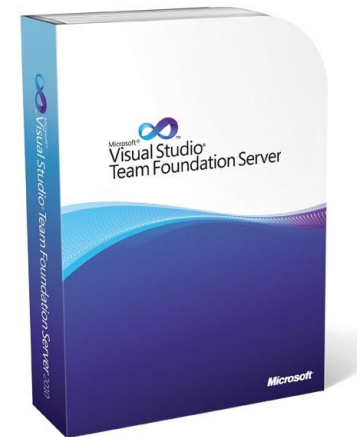
The deployment phase of an application is actually part of the operations.



After the development is completed, the application must be regularly monitored.

# ALM Tooling 1-3

- ❑ The entire ALM process can be managed through various tools.
- ❑ Most of the large organizations either build their own products or buy off-the-shelf ALM tools to manage the ALM process.
- ❑ One of the most popular tools is Visual Studio Team Foundation Server.



# ALM Tooling 2-3

- ❑ Visual Studio Team Foundation Server is one of the most popular ALM tools.
- ❑ A developer can perform the following activities:

Build the application

Test the application

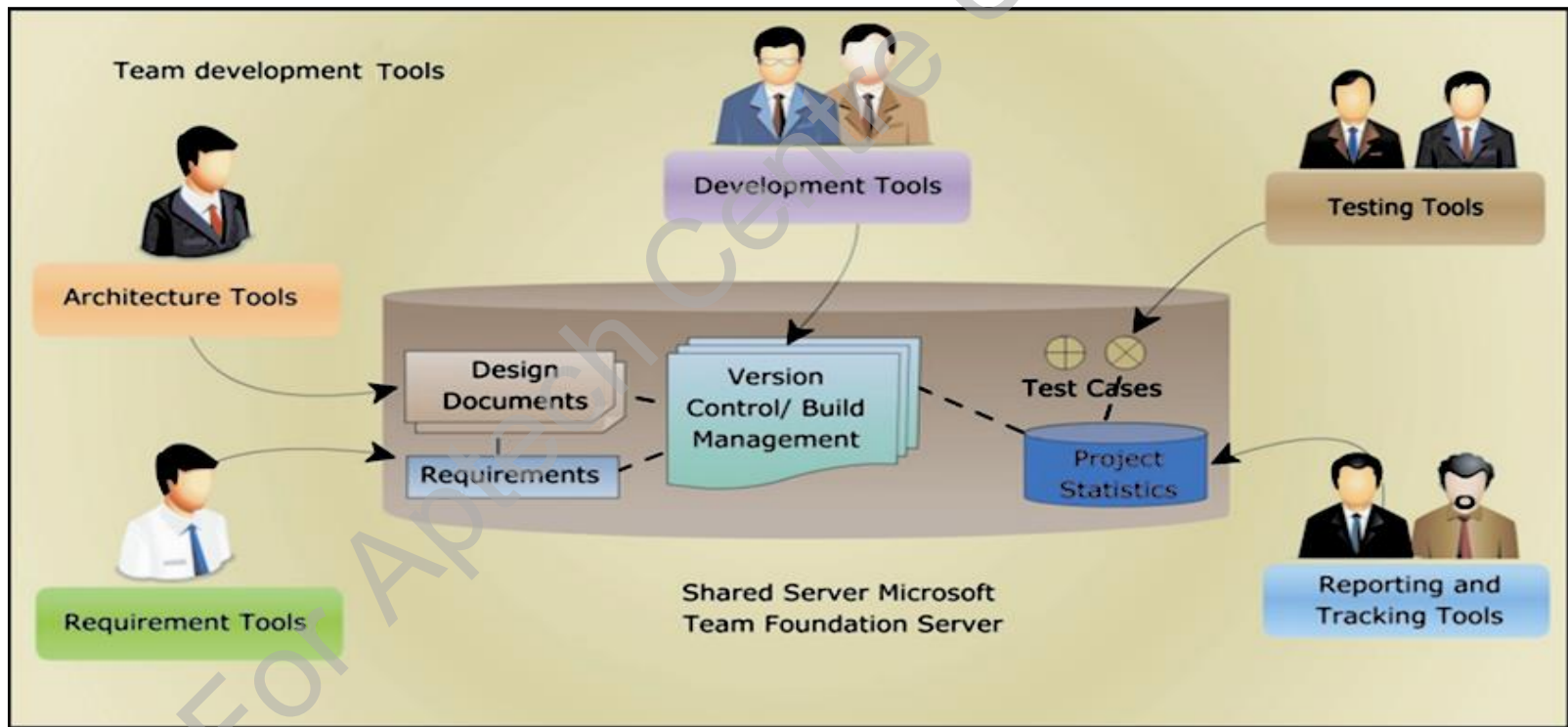
Plan the development cycle

Track activities

Report progress

# ALM Tooling 3-3

- Following figure displays a set of team development tools in Team Foundation Server:



# Tracking Tools 1-3

- ❑ The Visual Studio Team Foundation Server allows a developer to track progress of the application.
- ❑ A developer can track the activities using two different methods:

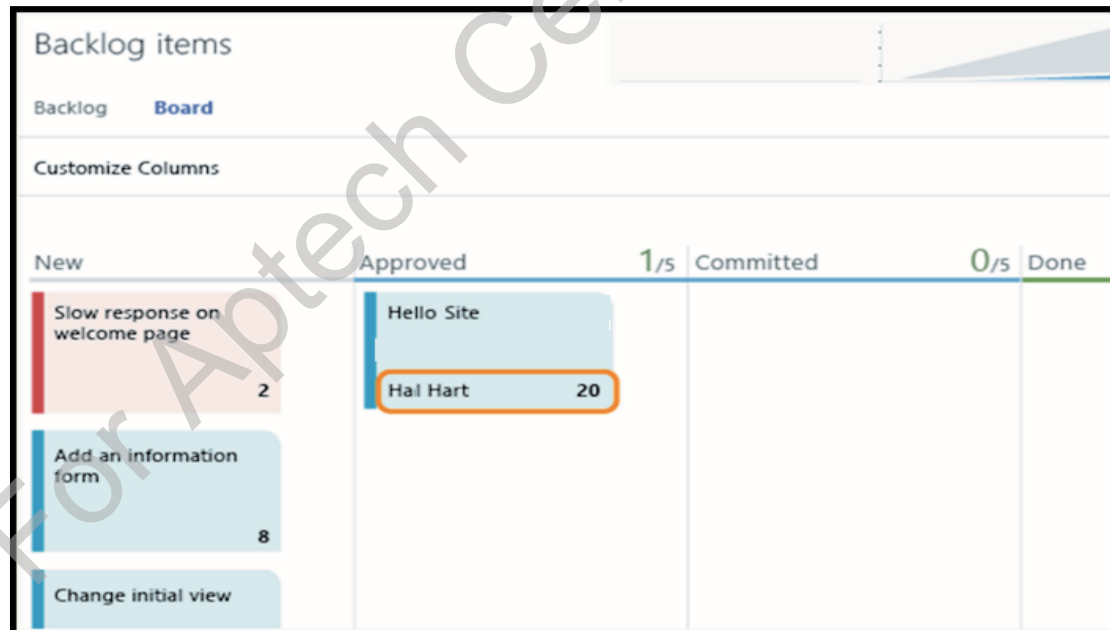
Through Kanban board

Through Task board

# Tracking Tools 2-3

## Kanban board

- ❑ Is a tool to help you with an overview of the current project situation and the tasks.
- ❑ Helps the developer can view the progress of the entire project, the ownership of the tasks, and the completion of the tasks.
- ❑ Following figure displays a sample Kanban board:



# Tracking Tools 3-3

## Task board

- ❑ When using the task board, a developer can perform the same set of activities as Kanban board.
- ❑ Following figure displays a sample task board:





# Profiling 1-3

- ❑ Visual Studio contains a set of profiling tools that a developer can use to measure, evaluate, and check the performance of an application.
- ❑ Using Visual Studio, a developer can perform profiling in two ways:

## Through the Performance Session Wizard



- A developer first needs to create a new performance session and gather the performance data.
- This set of performance data is saved in a .vsp file, which can be viewed within the IDE.

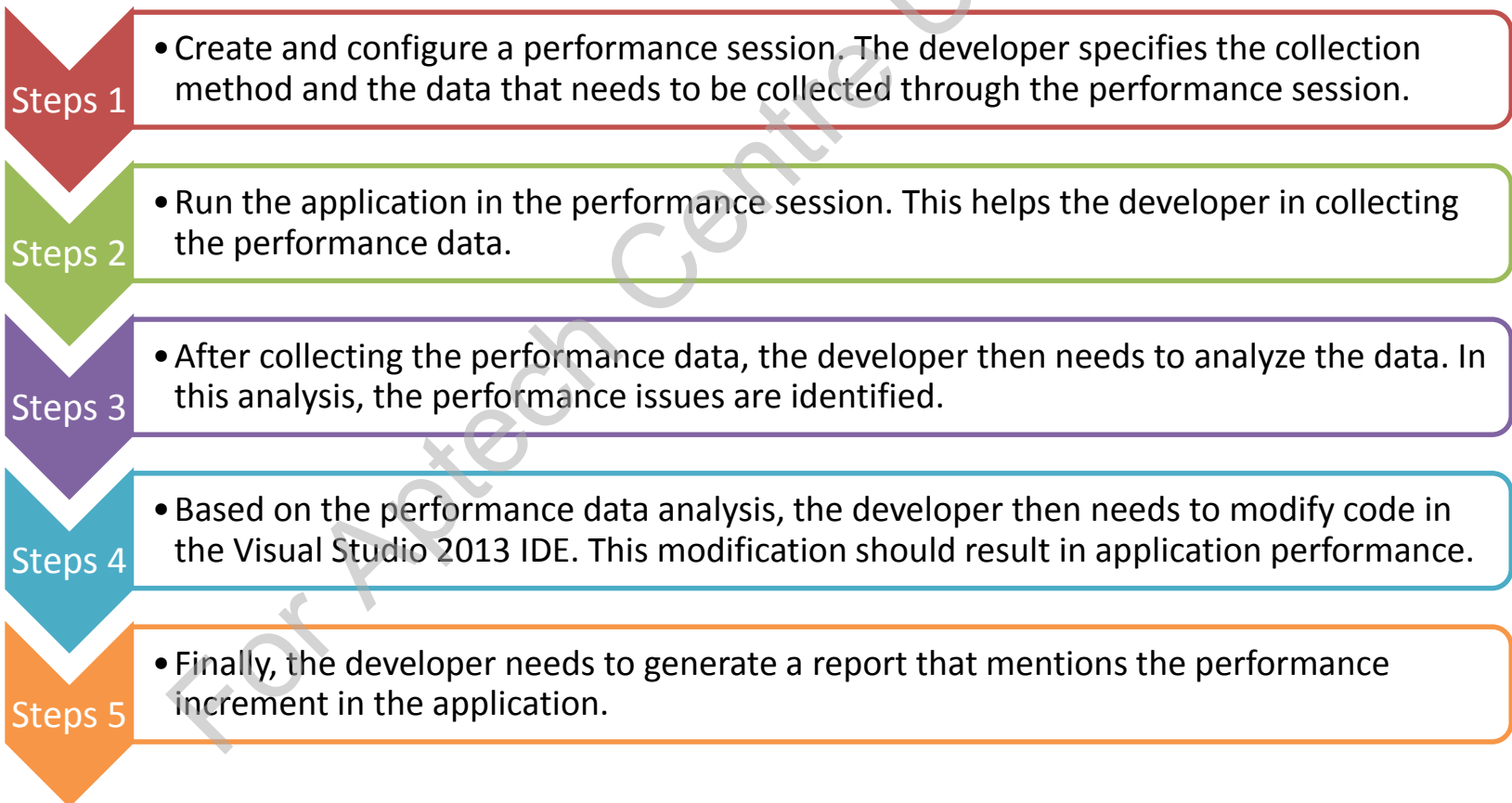
## Through the Command-line



- A developer can use the command-line to gather performance data through the automated scripts.

# Profiling 2-3

- ❑ Using the profiling tools, a developer needs to perform the following steps:



# Profiling 3-3

- ❑ A developer can use Team Foundation Build (TFBuild) to manage the build processes.
- ❑ A developer can perform the following tasks using TFBUILD:

Define the build process

Trigger the build

Test the build

Manage and monitor the builds

Diagnose the issues in the build

# Managing Lifecycle on Windows Azure

- ❑ When using ALM, a developer typically performs a number of tasks.
- ❑ These are sequential tasks that are performed to ensure smooth ALM operations.
- ❑ Some of these tasks include building, deploying, and releasing a build.



# Team Development

## ☐ As a team, a developer:

Gets a list of features that have to be implemented in an application.

Ensures that these features are implemented.

Builds test cases, which are executed using Microsoft Test Manager (MTM).

Develop the application in an emulated storage environment, which simulates the Windows Azure environment.

## ☐ When completed, the application can be moved from the emulated storage environment to Windows Azure storage.

# Testing and Building 1-2

- ❑ The application is deployed in the staging environment, which is the simulated setting of the production environment:

## Staging Environment

- Is not visible to the end user and is mainly used for deploying and testing the application.

## Production Environment

- Is the 'final' environment where the application is hosted and is visible to the user.

# Testing and Building 2-2

- ☐ The application is deployed on the staging environment after building.
- ☐ The deployment of the application can be either through the build tasks or through PowerShell scripts.
- ☐ After the application is deployed, tests are conducted and if results are successful, the application is deployed in the production environment.

# Release Drop

- ❑ In the Windows Azure environment, you can:

Separate the environments for both staging and production.

Limit the access of one department in the company to one specific environment.

- ❑ On the staging environment:

- A number of tests can be performed using Microsoft Test Manager (MTM).
- After executing the tests successfully, the release is then manually dropped on the production environment.



# Operations

- ❑ After the application is successfully deployed, the operations' team monitors the applications.
- ❑ Each application project has a set of SLAs defined that are used by the customer to ensure that performance benchmarks are as requested in the initial requirements of the project.
- ❑ The application is monitored against the defined SLAs.
- ❑ If there is a deviation from the defined SLAs, then the operations' team is informed for taking suitable actions.

# Summary 1-2

- ❑ ALM is defined as the product lifecycle management, which includes governance, development, and operations of applications.
- ❑ There are three aspects of ALM, namely, Governance, Development, and Operations.
- ❑ In the governance model, a governance structure is defined.
- ❑ The development model comes into effect after the governance model is completed. The development starts after the business cases are completed.

# Summary 2-2

- ❑ The operation model defines how the application is going to be managed and monitored.
- ❑ The Visual Studio Team Foundation Server allows a developer to track progress.
- ❑ Visual Studio contains a set of profiling tools that a developer can use to measure, evaluate, and check the performance of an application.
- ❑ A developer can use TFBUILD to manage the build processes. Using TFBUILD, the developer can automate application build compiling process and also test the builds.