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Agile Project Management Using Team Foundation Server 2015

In today's fast moving software landscape, teams that can adapt quickly, deliver incremental value, and maintain high quality are the ones that succeed. Agile project management has become the go to approach for many organizations, and Microsoft's Team Foundation Server 2015 (TFS 2015) offers a powerful platform that supports Agile practices from planning to deployment. This guide will walk you through how to harness TFS 2015 for Agile project management, covering everything from setting up your environment to running successful sprints, managing backlogs, and ensuring continuous delivery.

Why Agile and TFS 2015?

Agile emphasizes collaboration, flexibility, and rapid delivery of working software. It aligns closely with the capabilities built into TFS 2015:

- Integrated backlog and sprint planning tools that support Scrum and Kanban boards.
- Version control (TFVC or Git) for source code management.
- Build and release pipelines for continuous integration (CI) and continuous delivery (CD).
- Reporting and dashboards that provide real time insights into velocity, burn down charts, and more.

By combining Agile principles with TFS 2015's robust tooling, teams can streamline workflows, reduce bottlenecks, and deliver value faster.

Setting Up Your TFS 2015 Environment for Agile

1. Install and Configure TFS 2015

Begin by installing the Team Foundation Server 2015 on a dedicated Windows Server. The installation wizard guides you through selecting the database, configuring the web services, and enabling the necessary components. After installation:

1. Launch the TFS Administration Console.
2. Configure the Security and Permissions to reflect your organization's roles.
3. Set up the Build Service Accounts for CI pipelines.
4. Enable Azure DevOps Services if you plan to integrate with the cloud.

2. Create an Agile Project Template

During project creation, TFS offers several templates. For Agile, choose the **Scrum** or **Agile**template. These templates preconfigure work item types (User Story, Task, Bug, etc.), workflow states, and dashboards.

Steps to create an Agile project:

1. Open Team Explorer in Visual Studio.
2. Select New Project and choose the Scrum or Agile template.
3. Name the project and set the default workspace.

4. Finish the wizard and let TFS create the project structure.

3. Define Your Team Structure

Agile thrives on small, cross functional teams. In TFS, you can create multiple teams within a single project, each with its own backlog and board.

- Navigate to Project Settings > Teams.
- Click Add Team, name it (e.g., “Front End Team”), and assign members.
- Configure team settings: iterations, areas, and backlog levels.

Building an Agile Backlog in TFS 2015

1. Capturing Requirements

Backlogs in TFS are populated with work items. The most common type for user stories is **User Story**, but you can also use **Product Backlog Item (PBI)** in newer templates.

When capturing requirements:

- Use INVEST criteria (Independent, Negotiable, Valuable, Estimable, Small, Testable).
- Attach mockups, acceptance criteria, and relevant documentation.
- Tag items with keywords for easier filtering (e.g., “UI”, “API”, “Security”).

2. Prioritizing the Backlog

Prioritization is key to Agile. TFS allows you to rank items by dragging and dropping.

1. Open the Product Backlog view.
2. Drag items to reorder them based on business value and urgency.
3. Use the Priority field to indicate importance.

3. Estimating Work Items

Estimation can be done using story points or ideal hours. TFS supports **Planning Poker** and **Velocity charts**.

- Assign story points via the Points field.
- Use the Velocity report to gauge team capacity.
- Adjust estimates during the sprint if necessary.

Planning and Running Sprints

1. Setting Up Sprints (Iterations)

Define the sprint length (commonly 2 weeks) and schedule:

1. Go to Project Settings > Iterations.
2. Click Add, name the iteration (e.g., “Sprint 1”), and set the start and finish dates.
3. Repeat for each sprint in the product roadmap.

2. Sprint Planning

During sprint planning, the team selects items from the backlog to commit to.

- Open the Sprint Backlog view.
- Drag user stories into the sprint.
- Break stories into tasks and assign effort estimates.
- Use the Task Board to visualize progress.

3. Daily Stand Ups

Stand ups keep the team aligned. TFS's **Kanban board** or **Task board** can be used to quickly review status.

- Review each task's state: New, In Progress, Completed, or Blocked.
- Update blockers and reassign tasks if necessary.
- Log time spent on tasks for accurate reporting.

4. Sprint Review and Retrospective

At the end of each sprint:

1. Conduct a Review to demo completed work to stakeholders.
2. Use the Burn Down Chart to compare planned vs. actual progress.
3. Hold a Retrospective to identify improvement opportunities.
4. Update the backlog based on feedback.

Integrating Continuous Integration and Continuous Delivery

1. Setting Up Build Pipelines

TFS 2015's build system supports both TFVC and Git repositories.

- Create a new build definition in the Build & Release hub.
- Choose a template (e.g., "ASP.NET Web Application").
- Configure the build steps: checkout, compile, test, package.
- Add post build tasks like code analysis or unit test coverage.

2. Automated Testing

Automated tests are crucial for maintaining quality.

- Integrate unit tests using MSTest or NUnit.
- Add UI tests with Selenium or Appium.
- Configure test runs to trigger on every build.
- Use TFS dashboards to track test coverage over time.

3. Release Pipelines

Release management in TFS 2015 allows you to deploy builds to multiple environments.

1. Create a new release definition.
2. Define stages: Development, QA, Staging, Production.
3. Add deployment tasks: copy files, run scripts, update configuration.
4. Configure approvals and gates to ensure compliance.
5. Schedule or trigger releases automatically after successful builds.

Tracking Progress with Dashboards and Reports

1. Velocity and Burn Down Charts

Velocity charts show how many story points the team completed per sprint, while burn down charts track remaining work.

- Navigate to Analytics > Velocity to view trends.
- Open the Backlog view and select Burndown for a sprint.

2. Cumulative Flow Diagram

Use the Cumulative Flow Diagram (CFD) to monitor workflow bottlenecks.

- Access the Analytics hub and choose Cumulative Flow.
- Analyze the width of each column to detect delays.

3. Custom Dashboards

Tailor dashboards to your team's metrics:

1. Open Dashboards in TFS.
2. Click New Dashboard and add widgets.
3. Include widgets like Work Items, Builds, Test Results, and Code Coverage.
4. Save the dashboard and share it with stakeholders.

Best Practices for Agile Success with TFS 2015

- Keep Backlogs Groomed: Regularly refine items to ensure clarity.
- Limit Work in Progress (WIP): Prevent over commitment by setting WIP limits.
- Automate Repetitive Tasks: Use build and release pipelines to reduce manual effort.
- Encourage Pair Programming: Improves code quality and knowledge sharing.
- Maintain Clear Definition of Done (DoD) for each work item.
- Use Retrospectives to continuously improve processes.
- Leverage Integration with Azure DevOps Services for cloud scalability.

Common Challenges and How to Overcome Them

1. Resistance to Change

Adopting Agile and TFS 2015 may face cultural resistance. Mitigate this by:

- Providing training sessions on Agile principles and TFS features.
- Highlighting quick wins to demonstrate value.
- Encouraging open communication and feedback.

2. Managing Technical Debt

Technical debt can accumulate if refactoring is overlooked.

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