# Sprint-Wise Testing & Automation Strategy

## 1. Sprint-Wise Testing Approach

The project adopts an incremental sprint-based testing strategy to ensure early detection of defects and efficient automation coverage expansion:  
- Sprint 0 – No automation; manual testing is not performed.  
- Sprint 1 – Automation covers Sprint 0 scope; manual testing is done for Sprint 1.  
- Sprint 2 – Automation covers Sprint 0 + Sprint 1; manual testing is done for Sprint 2.  
This approach ensures continuous regression coverage growth without affecting the delivery timeline.

## 2. Regression Testing Overview

Regression testing validates that newly introduced changes or enhancements do not break existing functionality. Manual regression testing across multiple sprints is time-consuming and error-prone, hence automation is preferred.  
Automation Benefits:  
- Faster execution  
- Multiple dataset handling  
- Cross-browser and cross-platform testing

## 3. Automation Frameworks

Automation frameworks standardize test script development and improve maintainability.  
Types of frameworks:  
1. Keyword-Driven Framework – Uses high-level keywords representing actions.  
2. Data-Driven Framework – Focuses on testing with varied datasets.  
3. Hybrid Framework – Combines keyword-driven and data-driven advantages.

## 4. Tool Identification (Latest Recommended Tools)

Test Management Tools – Jira, TestRail, Zephyr

Test Automation Tools – Selenium, Cypress, Playwright

API Testing Tools – Postman, RestAssured, Newman

CI/CD Tools – Jenkins, GitHub Actions, GitLab CI/CD, Azure DevOps

Performance Testing Tools – Apache JMeter, Gatling, k6

Security Testing Tools – OWASP ZAP, Burp Suite, Nessus

Test Reporting Tools – Allure Reports, ExtentReports, ReportPortal.io

## 5. Project & Team Management Tools

1. Task and Project Management – Jira, Trello, Asana  
2. Communication & Collaboration – Slack, Microsoft Teams, Zoom  
3. Time Tracking & Reporting – Clockify, Harvest, Toggl  
4. Document & File Management – Confluence, Google Drive, SharePoint  
5. Team Performance & Analytics – Jira Insights, Power BI  
6. Agile & Scrum Management – Jira Agile Boards, Monday.com

## 6. Documentation Best Practices

Documentation ensures transparency and knowledge sharing. Key areas include:  
- Test cases and execution results  
- Bug reports and defect logs  
- Test data and configurations  
- Retrospectives and lessons learned  
  
Tools:  
Markdown Editors – Typora, Obsidian  
Documentation Platforms – Confluence, Notion, GitBook  
Static Site Generators – MkDocs, Docusaurus  
Visual Documentation Tools – Miro, Lucidchart

## 7. Performance Monitoring

Ensures application, server, and network stability under various loads.  
- Application Performance Monitoring (APM) – New Relic, AppDynamics, Dynatrace  
- Network Performance Monitoring – SolarWinds, Nagios  
- Infrastructure Monitoring – Prometheus, Zabbix  
- End-User Monitoring (EUM) – Catchpoint, Pingdom

## 8. Risk Assessment

Proactively identifying and mitigating risks ensures smooth testing and delivery.  
Tool Categories:  
- IT & Cybersecurity Risk Assessment – Qualys, Nessus  
- Management & Assessment – RiskWatch, Resolver  
- Project & Operational Risk – Primavera Risk Analysis, Active Risk Manager  
- Compliance & Regulatory – MetricStream, LogicGate