**Test Strategy Document**

**OrangeHRM Web Application**

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**1. Introduction**

**1.1 Purpose**

This document outlines the overall test strategy for the OrangeHRM web application, defining the testing approach, testing types, and quality objectives.

**1.2 Scope**

* Web application testing
* Database testing
* Integration testing
* Security testing
* Performance testing
* Mobile responsiveness testing

**2. Testing Approach**

**2.1 Testing Levels**

1. **Unit Testing**
   * Individual component testing
   * Developer-driven testing
   * Automated test suite execution
2. **Integration Testing**
   * Module interaction testing
   * API integration testing
   * Database integration testing
3. **System Testing**
   * End-to-end functionality testing
   * Business flow validation
   * Cross-browser testing
4. **Acceptance Testing**
   * User acceptance testing
   * Business acceptance testing
   * Performance acceptance testing

**2.2 Testing Types**

**2.2.1 Functional Testing**

* Manual testing
* Automated testing
* Exploratory testing
* Regression testing
* Smoke testing
* Sanity testing

**2.2.2 Non-Functional Testing**

**Performance Testing**

* Load testing
* Stress testing
* Endurance testing
* Scalability testing
* Response time testing

**Security Testing**

* Penetration testing
* Vulnerability assessment
* Security audit
* Access control testing
* Data encryption testing

**Compatibility Testing**

* Browser compatibility
* OS compatibility
* Mobile responsiveness
* Screen resolution testing

**3. Testing Tools and Technologies**

**3.1 Test Management**

* JIRA for bug tracking
* TestRail for test case management
* Jenkins for CI/CD
* Git for version control

**3.2 Testing Tools**

* Selenium WebDriver for automation
* JMeter for performance testing
* Postman for API testing
* OWASP ZAP for security testing
* Chrome DevTools for debugging

**4. Test Environment Strategy**

**4.1 Environment Requirements**

* Development environment
* Testing environment
* Staging environment
* Production environment

**4.2 Hardware Requirements**

* Server specifications
* Client machine specifications
* Network requirements
* Storage requirements

**4.3 Software Requirements**

* Operating systems
* Browsers
* Database
* Third-party tools

**5. Risk Analysis and Mitigation**

**5.1 Technical Risks**

* System complexity
* Integration points
* Performance bottlenecks
* Security vulnerabilities

**5.2 Business Risks**

* Time constraints
* Resource availability
* Budget limitations
* Requirement changes

**5.3 Mitigation Strategies**

* Regular risk assessment
* Contingency planning
* Resource allocation
* Change management

**6. Test Data Strategy**

**6.1 Test Data Requirements**

* Master data
* Transaction data
* Historical data
* Configuration data

**6.2 Test Data Management**

* Data generation
* Data maintenance
* Data backup
* Data cleanup

**7. Defect Management Strategy**

**7.1 Defect Life Cycle**

* New
* Assigned
* In Progress
* Fixed
* Verified
* Closed
* Reopened

**7.2 Defect Triage**

* Severity classification
* Priority assignment
* Impact analysis
* Resolution tracking

**8. Testing Metrics**

**8.1 Quality Metrics**

* Defect density
* Test coverage
* Pass/Fail ratio
* Test execution progress

**8.2 Performance Metrics**

* Response time
* Throughput
* Resource utilization
* Error rate

**9. Team Structure and Responsibilities**

**9.1 Testing Team**

* Test Manager
* Test Lead
* Test Engineers
* Automation Engineers
* Performance Testers

**9.2 Supporting Teams**

* Development Team
* DevOps Team
* Business Analysts
* Security Team

**10. Exit Criteria**

* Test coverage achieved
* Critical defects resolved
* Performance benchmarks met
* Security requirements fulfilled
* Stakeholder approval obtained