# MANAJEMEN PROYEK SISTEM INFORMASI

## SATRIAMART Integrated Management System (SIMS)

### Pertemuan 2: Scope, Time, Cost, Quality, Resource Management

**Universitas Nusa Mandiri**  
**Fakultas Teknologi Informasi**  
**Program Studi Sistem Informasi**  
**Mata Kuliah: Proyek Sistem Informasi**  
**Pertemuan 2 - Studi Kasus Manajemen Proyek**

## 1. RUANG LINGKUP PROYEK (PROJECT SCOPE)

### 1.1 Project Scope Statement

#### A. Project Objectives

Mengembangkan sistem informasi terintegrasi SATRIAMART SIMS yang menggabungkan Customer Relationship Management (CRM), Inventory Management, Production Planning, dan Sales Analytics dalam satu platform web-based yang modern dan scalable.

#### B. Project Deliverables

##### Major Deliverables

1. **Project Management Deliverables**
   * Project Charter & Initiation Document
   * Comprehensive Project Plan dengan WBS
   * Risk Management Plan & Register
   * Quality Management Plan
   * Communication Plan & Stakeholder Matrix
2. **Analysis & Design Deliverables**
   * Business Requirements Document (BRD)
   * System Design Document (SDD)
   * Database Design (ERD) & Data Dictionary
   * User Interface Wireframes & Prototypes
   * System Architecture Document
3. **Implementation Deliverables**
   * Working System Prototype
   * Source Code dengan Documentation
   * Database Schema Implementation
   * API Documentation
   * User Interface Implementation
4. **Testing & Deployment Deliverables**
   * Test Plans & Test Cases
   * User Acceptance Testing (UAT) Results
   * Deployment Guide & Scripts
   * System Performance Report
   * Security Testing Report
5. **Training & Support Deliverables**
   * User Training Materials
   * System Administration Guide
   * Technical Documentation
   * User Manual & Help Documentation
   * Support Transition Plan

#### C. Project Boundaries

##### In Scope (What IS included)

✅ **CRM Module:** - Customer registration & profile management - Order management & tracking - Communication history & follow-up - Customer analytics & reporting

✅ **Inventory Management Module:** - Real-time stock tracking - Product catalog management - Automated reorder system - Supplier management interface

✅ **Production Planning Module:** - Work order management - Production scheduling - Resource allocation - Quality control tracking

✅ **Analytics Dashboard:** - Executive dashboard dengan KPIs - Sales performance analytics - Operational metrics - Custom reporting engine

✅ **System Infrastructure:** - Web-based responsive interface - MySQL database implementation - User authentication & authorization - Basic system administration

##### Out of Scope (What is NOT included)

❌ **Financial Accounting Integration:** Full ERP accounting modules ❌ **Advanced AI/ML Features:** Machine learning algorithms ❌ **Mobile Native Apps:** iOS/Android native applications ❌ **Third-party Integrations:** External system integrations ❌ **Multi-language Support:** Internationalization features ❌ **Advanced Workflow Engine:** Complex business process automation ❌ **Data Migration:** Migration dari sistem existing ❌ **Hardware Procurement:** Server dan infrastructure hardware

### 1.2 Work Breakdown Structure (WBS)

SATRIAMART SIMS Project (1.0)  
├── 1.1 Project Management  
│ ├── 1.1.1 Project Initiation  
│ ├── 1.1.2 Project Planning  
│ ├── 1.1.3 Project Execution Control  
│ └── 1.1.4 Project Closure  
├── 1.2 Requirements & Analysis  
│ ├── 1.2.1 Business Requirements Gathering  
│ ├── 1.2.2 Stakeholder Analysis  
│ ├── 1.2.3 Process Analysis & Modeling  
│ └── 1.2.4 Requirements Validation  
├── 1.3 System Design  
│ ├── 1.3.1 System Architecture Design  
│ ├── 1.3.2 Database Design  
│ ├── 1.3.3 User Interface Design  
│ └── 1.3.4 Integration Design  
├── 1.4 System Development  
│ ├── 1.4.1 Backend Development  
│ │ ├── 1.4.1.1 Database Implementation  
│ │ ├── 1.4.1.2 API Development  
│ │ ├── 1.4.1.3 Business Logic Implementation  
│ │ └── 1.4.1.4 Security Implementation  
│ ├── 1.4.2 Frontend Development  
│ │ ├── 1.4.2.1 UI Component Development  
│ │ ├── 1.4.2.2 Dashboard Implementation  
│ │ ├── 1.4.2.3 Module Integration  
│ │ └── 1.4.2.4 Responsive Design  
│ └── 1.4.3 System Integration  
├── 1.5 Testing & Quality Assurance  
│ ├── 1.5.1 Unit Testing  
│ ├── 1.5.2 Integration Testing  
│ ├── 1.5.3 System Testing  
│ └── 1.5.4 User Acceptance Testing  
├── 1.6 Deployment & Implementation  
│ ├── 1.6.1 Environment Setup  
│ ├── 1.6.2 System Deployment  
│ ├── 1.6.3 Data Migration  
│ └── 1.6.4 Go-Live Support  
└── 1.7 Training & Knowledge Transfer  
 ├── 1.7.1 User Training Development  
 ├── 1.7.2 Training Delivery  
 ├── 1.7.3 Documentation Creation  
 └── 1.7.4 Support Transition

### 1.3 Scope Change Management

#### Change Control Process

1. **Change Request Submission:** Formal change request dengan business justification
2. **Impact Assessment:** Technical, schedule, budget, dan resource impact analysis
3. **Stakeholder Review:** Evaluation oleh project steering committee
4. **Approval/Rejection:** Formal decision dengan documented rationale
5. **Implementation:** Controlled implementation dengan updated project plan

#### Scope Baseline Protection

* **Baseline Documentation:** Approved scope statement sebagai reference
* **Change Log:** Tracking semua scope changes dengan approval status
* **Version Control:** Document versioning untuk scope modifications
* **Stakeholder Communication:** Regular updates tentang scope changes

## 2. WAKTU PENGERJAAN PROYEK (PROJECT TIME MANAGEMENT)

### 2.1 Project Timeline Overview

**Total Project Duration:** 7 Weeks (49 Calendar Days)  
**Working Days:** 35 Days (5 days/week)  
**Project Start Date:** January 8, 2024  
**Project End Date:** February 23, 2024

### 2.2 Detailed Project Schedule

#### Phase 1: Project Initiation & Planning (Week 1)

**Duration:** 5 days | **Effort:** 120 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| Project Charter Development | 2 days | Jan 8 | Jan 9 | - | PM, BA |
| Stakeholder Identification | 1 day | Jan 8 | Jan 8 | - | PM |
| Project Plan Creation | 2 days | Jan 10 | Jan 11 | Charter | PM, Team Lead |
| Risk Assessment | 1 day | Jan 11 | Jan 11 | Plan | PM, BA |
| Communication Plan | 1 day | Jan 12 | Jan 12 | Plan | PM |

#### Phase 2: Requirements & Analysis (Week 2)

**Duration:** 5 days | **Effort:** 160 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| Business Requirements Gathering | 3 days | Jan 15 | Jan 17 | Charter | BA, SME |
| Stakeholder Interviews | 2 days | Jan 15 | Jan 16 | - | BA, PM |
| Process Analysis & Modeling | 2 days | Jan 17 | Jan 18 | Requirements | BA |
| Requirements Documentation | 2 days | Jan 18 | Jan 19 | Analysis | BA |
| Requirements Review & Approval | 1 day | Jan 19 | Jan 19 | Documentation | All Stakeholders |

#### Phase 3: System Design (Week 3)

**Duration:** 5 days | **Effort:** 180 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| System Architecture Design | 2 days | Jan 22 | Jan 23 | Requirements | Architect, Dev Lead |
| Database Design (ERD) | 2 days | Jan 22 | Jan 23 | Requirements | DB Designer |
| User Interface Wireframes | 3 days | Jan 24 | Jan 26 | Architecture | UI/UX Designer |
| API Specifications | 2 days | Jan 25 | Jan 26 | Architecture | Dev Lead |
| Design Review & Approval | 1 day | Jan 26 | Jan 26 | All Designs | Tech Team |

#### Phase 4: Development Sprint 1 (Week 4)

**Duration:** 5 days | **Effort:** 200 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| Database Schema Implementation | 2 days | Jan 29 | Jan 30 | DB Design | Developer |
| Backend API Development | 4 days | Jan 29 | Feb 1 | Architecture | Developer |
| Authentication System | 2 days | Jan 31 | Feb 1 | Backend | Developer |
| CRM Module Backend | 3 days | Jan 31 | Feb 2 | API Base | Developer |
| Unit Testing Setup | 2 days | Feb 1 | Feb 2 | Code Base | QA, Developer |

#### Phase 5: Development Sprint 2 (Week 5)

**Duration:** 5 days | **Effort:** 200 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| Inventory Module Development | 3 days | Feb 5 | Feb 7 | CRM Module | Developer |
| Production Module Development | 3 days | Feb 6 | Feb 8 | Inventory | Developer |
| Frontend UI Implementation | 4 days | Feb 5 | Feb 8 | Backend APIs | Frontend Dev |
| Dashboard Development | 3 days | Feb 7 | Feb 9 | All Modules | Frontend Dev |
| Integration Testing | 2 days | Feb 8 | Feb 9 | All Modules | QA |

#### Phase 6: Integration & Testing (Week 6)

**Duration:** 5 days | **Effort:** 160 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| System Integration | 2 days | Feb 12 | Feb 13 | All Modules | Dev Team |
| Comprehensive Testing | 3 days | Feb 13 | Feb 15 | Integration | QA Team |
| Performance Testing | 2 days | Feb 14 | Feb 15 | System | QA, DevOps |
| Security Testing | 2 days | Feb 15 | Feb 16 | System | Security QA |
| Bug Fixes & Optimization | 2 days | Feb 15 | Feb 16 | Testing | Dev Team |

#### Phase 7: Deployment & Closure (Week 7)

**Duration:** 5 days | **Effort:** 120 person-hours

| **Task** | **Duration** | **Start Date** | **End Date** | **Dependencies** | **Resources** |
| --- | --- | --- | --- | --- | --- |
| Production Environment Setup | 1 day | Feb 19 | Feb 19 | Testing | DevOps |
| System Deployment | 1 day | Feb 20 | Feb 20 | Environment | DevOps, Dev |
| User Training Delivery | 2 days | Feb 20 | Feb 21 | Deployment | Trainer, PM |
| User Acceptance Testing | 2 days | Feb 21 | Feb 22 | Training | End Users, QA |
| Project Closure & Handover | 1 day | Feb 23 | Feb 23 | UAT | PM, Team |

### 2.3 Critical Path Analysis

#### Critical Path Tasks

Project Charter → Requirements Gathering → System Design →   
Backend Development → Frontend Development → Integration →   
Testing → Deployment → Closure

**Critical Path Duration:** 35 working days  
**Float/Buffer:** 0 days pada critical path  
**Risk Level:** High (no schedule buffer)

#### Schedule Risk Mitigation

1. **Resource Loading:** Cross-training team members untuk flexibility
2. **Parallel Processing:** Maksimasi parallel work streams
3. **Buffer Management:** 10% contingency time di non-critical tasks
4. **Daily Monitoring:** Daily standup untuk early issue detection

### 2.4 Schedule Management Tools

#### Project Management Tools

* **Primary Tool:** Microsoft Project / Gantt Chart
* **Daily Tracking:** Jira/Trello untuk task management
* **Communication:** Slack untuk real-time coordination
* **Reporting:** Weekly status reports dengan RAG status

#### Schedule Control Measures

* **Earned Value Management:** Track progress vs planned
* **Milestone Gates:** Go/No-go decisions di key milestones
* **Schedule Performance Index (SPI):** Target ≥ 0.95
* **Variance Analysis:** Weekly schedule variance reporting

## 3. RENCANA ANGGARAN BIAYA PROYEK (PROJECT COST MANAGEMENT)

### 3.1 Total Project Budget Summary

**Total Project Budget:** IDR 53,000,000  
**Budget Allocation Period:** 7 weeks  
**Cost Control Tolerance:** ±10%  
**Budget Baseline:** IDR 48,200,000  
**Management Reserve:** IDR 4,800,000 (10%)

### 3.2 Detailed Cost Breakdown Structure (CBS)

#### A. Human Resources Costs (60% - IDR 31,800,000)

| **Role** | **Rate/Day** | **Days** | **Total Cost** | **Percentage** |
| --- | --- | --- | --- | --- |
| **Project Manager** | IDR 800,000 | 35 | IDR 28,000,000 | 52.8% |
| **System Analyst** | IDR 600,000 | 28 | IDR 16,800,000 | 31.7% |
| **Software Developer** | IDR 700,000 | 35 | IDR 24,500,000 | 46.2% |
| **UI/UX Designer** | IDR 500,000 | 14 | IDR 7,000,000 | 13.2% |
| **Quality Assurance** | IDR 450,000 | 21 | IDR 9,450,000 | 17.8% |
| **DevOps Engineer** | IDR 600,000 | 7 | IDR 4,200,000 | 7.9% |
| **Business SME** | IDR 400,000 | 10 | IDR 4,000,000 | 7.5% |
| **Technical Writer** | IDR 350,000 | 7 | IDR 2,450,000 | 4.6% |
| **Trainer** | IDR 500,000 | 3 | IDR 1,500,000 | 2.8% |
| **Subtotal HR** |  |  | **IDR 97,900,000** | **184.9%** |
| **Discounted Rate (67%)** |  |  | **IDR 31,800,000** | **60.0%** |

#### B. Technology & Infrastructure Costs (25% - IDR 13,250,000)

| Category | Item | Quantity | Unit Cost | Total Cost |
| --- | --- | --- | --- | --- |
| **Development Tools** |  |  |  |  |
|  | IDE Licenses (VS Code Pro) | 3 | IDR 500,000 | IDR 1,500,000 |
|  | Version Control (Git Premium) | 1 | IDR 800,000 | IDR 800,000 |
|  | Project Management (Jira) | 1 | IDR 1,200,000 | IDR 1,200,000 |
| **Cloud Infrastructure** |  |  |  |  |
|  | Development Environment | 7 weeks | IDR 300,000/week | IDR 2,100,000 |
|  | Testing Environment | 4 weeks | IDR 200,000/week | IDR 800,000 |
|  | Production Environment | 2 weeks | IDR 400,000/week | IDR 800,000 |
| **Software Licenses** |  |  |  |  |
|  | Laravel Framework (Extended) | 1 | IDR 2,000,000 | IDR 2,000,000 |
|  | Database Tools (MySQL Workbench) | 1 | IDR 800,000 | IDR 800,000 |
|  | Testing Tools (Postman, Selenium) | 1 | IDR 1,000,000 | IDR 1,000,000 |
| **Security & Monitoring** |  |  |  |  |
|  | SSL Certificates | 1 | IDR 500,000 | IDR 500,000 |
|  | Security Scanning Tools | 1 | IDR 750,000 | IDR 750,000 |
|  | Monitoring Tools (New Relic) | 2 months | IDR 500,000/month | IDR 1,000,000 |
| **Subtotal Technology** |  |  |  | **IDR 13,250,000** |

#### C. Training & Documentation Costs (10% - IDR 5,300,000)

| **Category** | **Description** | **Quantity** | **Unit Cost** | **Total Cost** |
| --- | --- | --- | --- | --- |
| **Training Materials** |  |  |  |  |
|  | User Manual Development | 1 | IDR 2,000,000 | IDR 2,000,000 |
|  | Video Training Content | 10 hours | IDR 200,000/hour | IDR 2,000,000 |
|  | Interactive Training Platform | 1 | IDR 800,000 | IDR 800,000 |
| **Documentation** |  |  |  |  |
|  | Technical Documentation | 1 | IDR 500,000 | IDR 500,000 |
| **Subtotal Training** |  |  |  | **IDR 5,300,000** |

#### D. Operational & Miscellaneous Costs (5% - IDR 2,650,000)

| **Category** | **Description** | **Total Cost** |
| --- | --- | --- |
| **Communication** | Meeting rooms, teleconferencing | IDR 800,000 |
| **Travel & Transportation** | Site visits, stakeholder meetings | IDR 600,000 |
| **Office Supplies** | Stationery, printing, materials | IDR 400,000 |
| **Contingency Operations** | Miscellaneous operational costs | IDR 850,000 |
| **Subtotal Operational** |  | **IDR 2,650,000** |

### 3.3 Cost Management Plan

#### Budget Baseline Control

Month 1 (Weeks 1-4): IDR 32,000,000 (60.4%)  
Month 2 (Weeks 5-7): IDR 21,000,000 (39.6%)  
Total Planned: IDR 53,000,000 (100%)

#### Cash Flow Projection

| **Week** | **Weekly Budget** | **Cumulative Budget** | **Cumulative %** |
| --- | --- | --- | --- |
| Week 1 | IDR 6,500,000 | IDR 6,500,000 | 12.3% |
| Week 2 | IDR 7,200,000 | IDR 13,700,000 | 25.8% |
| Week 3 | IDR 8,100,000 | IDR 21,800,000 | 41.1% |
| Week 4 | IDR 10,200,000 | IDR 32,000,000 | 60.4% |
| Week 5 | IDR 9,800,000 | IDR 41,800,000 | 78.9% |
| Week 6 | IDR 7,500,000 | IDR 49,300,000 | 93.0% |
| Week 7 | IDR 3,700,000 | IDR 53,000,000 | 100.0% |

#### Cost Control Measures

##### Earned Value Management (EVM)

* **Planned Value (PV):** Budget baseline untuk completed work
* **Earned Value (EV):** Budget value untuk actual completed work
* **Actual Cost (AC):** Actual cost yang telah dikeluarkan
* **Cost Performance Index (CPI):** Target ≥ 0.90
* **Schedule Performance Index (SPI):** Target ≥ 0.95

##### Budget Monitoring & Control

1. **Weekly Cost Reviews:** Budget vs actual spending analysis
2. **Variance Analysis:** Identification dan explanation of variances >5%
3. **Forecasting:** Updated cost projections berdasarkan current performance
4. **Change Control:** Formal budget change approval process
5. **Risk Reserves:** Management reserve untuk identified risks

## 4. KUALITAS PROYEK (PROJECT QUALITY MANAGEMENT)

### 4.1 Quality Management Framework

#### Quality Policy Statement

“SATRIAMART SIMS akan dibangun dengan standar kualitas tertinggi yang memenuhi business requirements, technical specifications, dan user expectations, dengan zero tolerance untuk critical defects pada production release.”

#### Quality Objectives

1. **Functional Quality:** 100% critical requirements implemented correctly
2. **Performance Quality:** System response time <3 seconds untuk 95% transactions
3. **Reliability Quality:** 99.5% system uptime pada production environment
4. **Security Quality:** Zero critical security vulnerabilities
5. **Usability Quality:** User satisfaction score ≥90% dalam UAT

### 4.2 Quality Standards & Metrics

#### A. Code Quality Standards

##### Development Standards

| **Metric** | **Target** | **Measurement Method** |
| --- | --- | --- |
| **Code Coverage** | ≥85% | Automated testing tools |
| **Code Complexity** | Cyclomatic complexity ≤10 | Static analysis tools |
| **Code Duplication** | <5% | SonarQube analysis |
| **Documentation Coverage** | ≥80% | Documentation review |
| **Coding Standards Compliance** | 100% | Automated linting |

##### Technical Debt Management

* **Technical Debt Ratio:** <5% of total development effort
* **Code Smells:** <100 minor issues per 10K lines of code
* **Security Hotspots:** 0 critical, <5 major security issues
* **Maintainability Index:** ≥70 (good maintainability rating)

#### B. Functional Quality Standards

##### Requirements Traceability

| **Requirement Type** | **Traceability Target** | **Verification Method** |
| --- | --- | --- |
| **Business Requirements** | 100% | Requirements matrix |
| **Functional Requirements** | 100% | Test case mapping |
| **Non-functional Requirements** | 100% | Performance testing |
| **User Stories** | 100% | Acceptance criteria |

##### Defect Management

| **Defect Severity** | **Target Resolution Time** | **Escalation Trigger** |
| --- | --- | --- |
| **Critical (System Down)** | 4 hours | Immediate |
| **High (Major Function)** | 24 hours | 12 hours |
| **Medium (Minor Function)** | 72 hours | 48 hours |
| **Low (Cosmetic)** | 1 week | 5 days |

#### C. Performance Quality Standards

##### Performance Benchmarks

| **Performance Metric** | **Target** | **Measurement Condition** |
| --- | --- | --- |
| **Page Load Time** | <3 seconds | 90th percentile |
| **API Response Time** | <1 second | Average response |
| **Database Query Time** | <500ms | Complex queries |
| **Concurrent Users** | 100 users | Without degradation |
| **Memory Usage** | <2GB | Peak usage |
| **CPU Utilization** | <70% | Average load |

### 4.3 Quality Assurance Process

#### A. Quality Planning Phase

##### Quality Planning Activities

1. **Quality Standards Definition:** Establish quality criteria dan metrics
2. **Quality Roles & Responsibilities:** Define QA team structure
3. **Quality Tools Selection:** Choose appropriate testing tools
4. **Quality Checkpoints:** Define review dan testing milestones
5. **Quality Training Plan:** Ensure team competency on quality practices

#### B. Quality Assurance Activities

##### Code Review Process

1. Developer Self-Review (100% of code)  
 ↓  
2. Peer Code Review (100% of code)  
 ↓  
3. Technical Lead Review (Critical modules)  
 ↓  
4. Architecture Review (Design changes)  
 ↓  
5. Quality Gate Approval

##### Testing Strategy

Testing Pyramid:  
├── Unit Tests (70% of total tests)  
│ ● Individual function/method testing  
│ ● Mock dependencies  
│ ● Fast execution (<5 minutes total)  
│  
├── Integration Tests (20% of total tests)  
│ ● API endpoint testing  
│ ● Database integration  
│ ● Service layer testing  
│  
└── End-to-End Tests (10% of total tests)  
 ● Complete user workflow  
 ● Cross-browser testing  
 ● Production-like environment

#### C. Quality Control Activities

##### Testing Phases

1. **Developer Testing**
   * Unit testing dengan minimum 85% coverage
   * Local integration testing
   * Code quality checks (linting, formatting)
2. **QA Team Testing**
   * Functional testing berdasarkan test cases
   * Regression testing untuk bug fixes
   * Performance testing benchmarks
   * Security vulnerability scanning
3. **User Acceptance Testing**
   * Business scenario validation
   * User experience evaluation
   * Production data simulation
   * Sign-off dari business stakeholders

##### Quality Gates

| **Phase** | **Quality Gate Criteria** | **Exit Criteria** |
| --- | --- | --- |
| **Design Review** | Architecture approval, design consistency | Stakeholder sign-off |
| **Code Complete** | Code coverage ≥85%, peer review complete | No critical defects |
| **System Testing** | All test cases pass, performance targets met | Test execution ≥95% |
| **UAT Complete** | User acceptance ≥90%, critical scenarios pass | Business sign-off |
| **Production Ready** | Security scan clean, deployment tested | Go-live approval |

### 4.4 Quality Tools & Techniques

#### A. Automated Quality Tools

##### Code Quality Tools

* **Static Analysis:** SonarQube untuk code quality metrics
* **Linting:** ESLint (JavaScript), PHP CodeSniffer (PHP)
* **Dependency Check:** OWASP Dependency Check untuk security
* **Code Formatting:** Prettier untuk consistent code style

##### Testing Tools

* **Unit Testing:** PHPUnit untuk backend, Jest untuk frontend
* **Integration Testing:** Postman/Newman untuk API testing
* **E2E Testing:** Laravel Dusk untuk browser automation
* **Performance Testing:** Apache JMeter untuk load testing
* **Security Testing:** OWASP ZAP untuk vulnerability scanning

#### B. Quality Monitoring & Reporting

##### Quality Dashboards

1. **Development Quality Dashboard**
   * Real-time code coverage metrics
   * Build success/failure rates
   * Code quality trends
   * Technical debt tracking
2. **Testing Quality Dashboard**
   * Test execution status
   * Defect discovery trends
   * Test coverage reports
   * Performance benchmarks
3. **Production Quality Dashboard**
   * System uptime monitoring
   * Performance metrics
   * Error rate tracking
   * User satisfaction scores

##### Quality Reports

* **Weekly Quality Report:** Quality metrics summary untuk stakeholders
* **Milestone Quality Review:** Comprehensive quality assessment
* **Defect Analysis Report:** Root cause analysis dan prevention measures
* **Final Quality Report:** Complete quality achievement documentation

## 5. SUMBER DAYA PROYEK (PROJECT RESOURCE MANAGEMENT)

### 5.1 Human Resource Structure

#### A. Project Organization Chart

Project Sponsor  
 (SATRIAMART Management)  
 |  
 Steering Committee  
 (Business Stakeholders)  
 |  
 Project Manager  
 (Overall Leadership)  
 |  
 ┌──────────────────┼──────────────────┐  
 Technical Lead Business Analyst Quality Manager  
 | | |  
 ┌───┼───┐ ┌────┼────┐ ┌────┼────┐  
 Dev DevOps SME Trainer QA Security  
 Team Engineer Team QA

#### B. Roles & Responsibilities Matrix (RACI)

| **Activity** | **PM** | **TL** | **Dev** | **BA** | **QA** | **SME** | **Sponsor** |
| --- | --- | --- | --- | --- | --- | --- | --- |
| **Project Charter** | A | C | I | C | I | C | R |
| **Requirements Gathering** | C | C | I | A | I | R | C |
| **System Design** | C | A | C | C | I | C | I |
| **Development** | C | R | A | I | I | I | I |
| **Testing** | C | C | C | I | A | C | I |
| **Deployment** | R | A | C | I | C | I | C |
| **Training** | C | I | I | C | I | A | I |

**Legend:** R=Responsible, A=Accountable, C=Consulted, I=Informed

### 5.2 Detailed Resource Allocation

#### A. Core Team Members

##### 1. Project Manager (1 FTE)

**Primary Responsibilities:** - Overall project leadership dan coordination - Stakeholder management dan communication - Risk management dan issue resolution - Budget monitoring dan resource allocation - Schedule management dan milestone tracking

**Required Skills & Experience:** - PMP/PRINCE2 certification preferred - 3+ years project management experience - Strong communication dan leadership skills - Experience dengan IT projects - Stakeholder management expertise

**Time Allocation:** - Week 1-7: 100% dedicated (35 days total) - Daily availability: 8 hours/day - Key activities: Planning, monitoring, stakeholder communication

##### 2. Technical Lead (1 FTE)

**Primary Responsibilities:** - Technical architecture design dan decisions - Code review dan quality assurance - Technical risk identification dan mitigation - Developer mentoring dan guidance - Technology stack evaluation dan selection

**Required Skills & Experience:** - 5+ years software development experience - Expertise in Laravel, PHP, MySQL - Full-stack development capabilities - Architecture design experience - Team leadership experience

**Time Allocation:** - Week 1-3: 80% (Design phase) - Week 4-6: 100% (Development phase) - Week 7: 60% (Deployment phase) - Total: 28 days equivalent

##### 3. Software Developer (2 FTE)

**Primary Responsibilities:** - Backend API development (Laravel/PHP) - Frontend implementation (HTML/CSS/JavaScript) - Database design dan implementation - Unit testing dan code documentation - Bug fixing dan performance optimization

**Required Skills & Experience:** - 2+ years web development experience - Proficiency in PHP, Laravel framework - Frontend skills: HTML5, CSS3, JavaScript - Database skills: MySQL, SQL optimization - Version control: Git experience

**Time Allocation:** - Developer 1: Week 1-7, 100% (35 days) - Developer 2: Week 4-7, 100% (20 days) - Combined effort: 55 person-days - Focus areas: Backend (60%), Frontend (40%)

##### 4. Business Analyst (1 FTE)

**Primary Responsibilities:** - Business requirements gathering dan analysis - Stakeholder interviews dan workshops - Process modeling dan documentation - User story creation dan validation - UAT coordination dan support

**Required Skills & Experience:** - 3+ years business analysis experience - Requirements gathering expertise - Process modeling skills (BPMN) - Stakeholder communication skills - Domain knowledge in manufacturing/retail

**Time Allocation:** - Week 1-3: 100% (Requirements phase) - Week 4-5: 40% (Development support) - Week 6-7: 60% (Testing support) - Total: 21 days equivalent

##### 5. Quality Assurance Engineer (1 FTE)

**Primary Responsibilities:** - Test plan creation dan execution - Automated testing setup dan maintenance - Bug identification, tracking, dan verification - Performance testing dan optimization - User acceptance testing coordination

**Required Skills & Experience:** - 2+ years QA/testing experience - Test automation skills (Selenium, PHPUnit) - Performance testing tools (JMeter) - Bug tracking tools (Jira, Bugzilla) - API testing expertise (Postman)

**Time Allocation:** - Week 3-4: 40% (Test planning) - Week 5-6: 100% (Testing execution) - Week 7: 80% (UAT support) - Total: 18 days equivalent

#### B. Supporting Resources

##### 6. UI/UX Designer (0.4 FTE)

**Primary Responsibilities:** - User interface wireframes dan mockups - User experience design dan validation - Responsive design specifications - Visual design dan branding consistency - Usability testing support

**Time Allocation:** Week 3-4, 40% allocation (4 days total)

##### 7. DevOps Engineer (0.2 FTE)

**Primary Responsibilities:** - Development environment setup - CI/CD pipeline configuration - Production deployment automation - Monitoring dan logging setup - Infrastructure as Code implementation

**Time Allocation:** Week 1 & Week 6-7, 20% allocation (3 days total)

##### 8. Business Subject Matter Expert (0.3 FTE)

**Primary Responsibilities:** - Business domain expertise dan guidance - Requirements validation dari business perspective - User acceptance criteria definition - Training content review - Change management support

**Time Allocation:** Week 2-3 & Week 7, 30% allocation (5 days total)

### 5.3 Resource Acquisition Plan

#### A. Internal vs External Resources

##### Internal Resources (60%)

* **Project Manager:** Internal assignment dari IT department
* **Business Analyst:** Internal resource dari business unit
* **Subject Matter Expert:** SATRIAMART business users
* **End User Testers:** Existing SATRIAMART staff

##### External Resources (40%)

* **Technical Lead:** External consultant (contract)
* **Software Developers:** Mix of contract dan freelance
* **QA Engineer:** External testing specialist
* **UI/UX Designer:** Freelance designer

#### B. Resource Procurement Strategy

##### Vendor Selection Criteria

1. **Technical Competency:** Demonstrated expertise dalam required technologies
2. **Experience:** Minimum experience requirements untuk each role
3. **Availability:** Full availability during project timeline
4. **Cost Effectiveness:** Competitive rates within budget constraints
5. **Cultural Fit:** Alignment dengan project team dynamics

##### Onboarding Process

1. **Week -1:** Resource identification dan selection
2. **Day 1:** Project orientation dan team introduction
3. **Day 2:** Technical setup dan access provisioning
4. **Day 3:** Detailed role briefing dan expectation setting
5. **Week 1:** Integration dengan existing team members

### 5.4 Resource Management Plan

#### A. Resource Loading & Leveling

##### Resource Utilization Chart

Week 1: PM(100%), BA(100%), SME(50%)  
Week 2: PM(100%), BA(100%), SME(50%)  
Week 3: PM(100%), BA(100%), TL(80%), Designer(40%)  
Week 4: PM(100%), TL(100%), Dev1(100%), Dev2(100%), QA(40%)  
Week 5: PM(100%), TL(100%), Dev1(100%), Dev2(100%), QA(100%)  
Week 6: PM(100%), TL(100%), Dev1(100%), Dev2(100%), QA(100%)  
Week 7: PM(100%), TL(60%), QA(80%), DevOps(20%), SME(30%)

##### Peak Resource Period

* **Week 4-6:** Maximum resource utilization (5.4 FTE)
* **Critical Period:** Week 5 (development sprint)
* **Resource Conflicts:** Potential conflicts selama peak periods

#### B. Resource Performance Management

##### Performance Monitoring

1. **Daily Standups:** Task progress dan resource utilization tracking
2. **Weekly Performance Reviews:** Individual performance assessment
3. **Milestone Reviews:** Resource contribution evaluation
4. **360-Degree Feedback:** Cross-functional performance feedback

##### Performance Metrics

| **Metric** | **Target** | **Frequency** | **Action Threshold** |
| --- | --- | --- | --- |
| **Task Completion Rate** | 95% | Daily | <85% daily |
| **Quality Standards** | 100% | Weekly | Any non-compliance |
| **Collaboration Rating** | >4.0/5 | Bi-weekly | <3.5/5 rating |
| **Availability** | 95% | Daily | <90% availability |

#### C. Resource Risk Management

##### Resource Risks & Mitigation

1. **Key Person Risk**
   * Risk: Critical team member unavailability
   * Mitigation: Cross-training, documentation, backup resources
2. **Skill Gap Risk**
   * Risk: Technical expertise shortage
   * Mitigation: Training programs, external mentoring, expert consultation
3. **Resource Conflict Risk**
   * Risk: Multiple projects competing for same resources
   * Mitigation: Resource prioritization, stakeholder agreement, buffer planning
4. **Performance Risk**
   * Risk: Underperforming team members
   * Mitigation: Performance monitoring, coaching, replacement planning

## 6. INTEGRATION & INTERDEPENDENCIES

### 6.1 Knowledge Area Integration

#### Triple Constraint Integration

SCOPE ←→ TIME ←→ COST  
 ↑ ↑ ↑  
 └─ QUALITY ←→ RESOURCE

**Integration Points:** - **Scope-Time:** Requirements complexity impacts development duration - **Time-Cost:** Schedule compression requires additional resources - **Cost-Quality:** Budget constraints affect quality assurance depth - **Quality-Resource:** Quality standards determine required skill levels - **Resource-Scope:** Team capabilities limit achievable scope

### 6.2 Success Criteria Integration

#### Integrated Success Metrics

| **Success Factor** | **Scope Impact** | **Time Impact** | **Cost Impact** | **Quality Impact** | **Resource Impact** |
| --- | --- | --- | --- | --- | --- |
| **Requirements Clarity** | ✅ Reduces scope creep | ✅ Prevents rework delays | ✅ Avoids cost overruns | ✅ Improves quality | ✅ Efficient resource use |
| **Stakeholder Engagement** | ✅ Scope validation | ✅ Faster approvals | ✅ Budget support | ✅ Quality standards | ✅ Resource commitment |
| **Technical Excellence** | ✅ Feature completeness | ✅ Development efficiency | ✅ Reduces defect costs | ✅ High quality delivery | ✅ Team productivity |
| **Project Management** | ✅ Scope control | ✅ Schedule adherence | ✅ Budget control | ✅ Quality assurance | ✅ Resource optimization |

## 7. MONITORING & CONTROL FRAMEWORK

### 7.1 Integrated Monitoring Dashboard

#### Executive Dashboard Metrics

* **Schedule Health:** SPI (Schedule Performance Index)
* **Budget Health:** CPI (Cost Performance Index)
* **Scope Health:** Requirements completion percentage
* **Quality Health:** Defect density dan customer satisfaction
* **Resource Health:** Team productivity dan utilization rates

### 7.2 Risk Integration Matrix

#### Cross-Knowledge Area Risks

| **Risk Category** | **Scope Risk** | **Time Risk** | **Cost Risk** | **Quality Risk** | **Resource Risk** |
| --- | --- | --- | --- | --- | --- |
| **Technical** | Feature complexity | Development delays | Additional expertise costs | Technical debt | Skill requirements |
| **Business** | Scope creep | Requirement changes | Budget approvals | User acceptance | SME availability |
| **External** | Vendor dependencies | Third-party delays | License costs | Integration quality | External resource |

## 8. CONCLUSION & RECOMMENDATIONS

### 8.1 Project Readiness Assessment

#### Readiness Score: 92/100 (Excellent)

* **Scope Definition:** 95/100 (Well-defined dengan clear boundaries)
* **Schedule Feasibility:** 90/100 (Tight but achievable dengan proper management)
* **Budget Adequacy:** 90/100 (Realistic budget dengan appropriate reserves)
* **Quality Framework:** 95/100 (Comprehensive quality management approach)
* **Resource Availability:** 90/100 (Mixed internal/external resources dengan good plan)

### 8.2 Critical Success Recommendations

1. **Strengthen Change Control:** Implement rigid scope change process
2. **Resource Backup Planning:** Identify backup resources untuk critical roles
3. **Quality Gate Enforcement:** Strict adherence to quality checkpoints
4. **Stakeholder Communication:** Maintain regular dan transparent communication
5. **Risk Monitoring:** Weekly risk assessment dan mitigation updates

### 8.3 Go/No-Go Recommendation

**RECOMMENDATION: GO**

Proyek SATRIAMART SIMS memiliki strong foundation dalam semua 5 knowledge areas critical untuk project success. Dengan proper execution dari rencana yang telah disusun, proyek ini memiliki high probability of success.

**Next Steps:** 1. Stakeholder approval untuk project plan 2. Resource procurement dan onboarding 3. Project kickoff meeting 4. Baseline establishment 5. Execution phase initiation

*Dokumen ini disusun sebagai deliverable Pertemuan 2 mata kuliah Proyek Sistem Informasi untuk memenuhi requirement manajemen proyek yang komprehensif.*

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