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

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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

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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

Task	Duration	Start Date	End Date	Dependencies	Resources
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

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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

Category	Item	Quantity	Unit Cost	Total Cost
	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				

Category	Description	Quantity	Unit Cost	Total Cost
	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

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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

Metric	Target	Measurement Method
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

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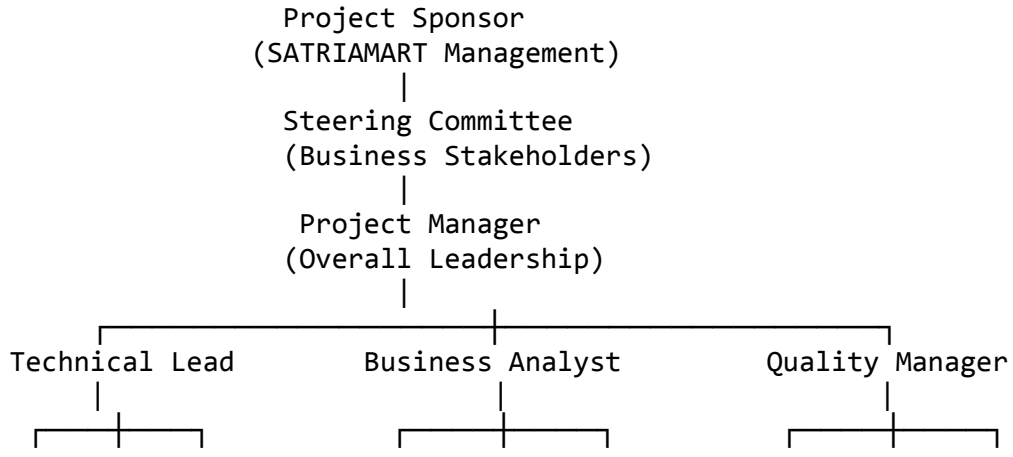
5. SUMBER DAYA PROYEK (PROJECT RESOURCE MANAGEMENT)

5.1 Human Resource Structure

A. Project Organization Chart



```
  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

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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

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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

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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

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

Prepared by: Kelompok 2 [Roki Anjas 11250066, Fahruroji 11250085, Susanto 11250068]
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