

DCIT 208 - SOFTWARE ENGINEERING

PRODUCT BACKLOG SPECIFICATION

DCIT 208 | SEMESTER II | 2024/25 ACADEMIC YEAR | COURSE
PROJECT

Team Name: BuildTech Solutions

Project: eBuildify - Construction Materials E-commerce Platform

Client: Sol Little By Little Enterprises

Due Date: Friday, August 1, 2025, 23:59 GMT

1. USER STORY REFINEMENT (2 pts)

Epic to User Story Mapping

Epic ID	Original Epic	Derived User Story IDs	Story Count
BE-60	Epic 0: Platform Infrastructure & Technical Foundation	BE-65, BE-66, BE-68, BE-69, BE-92, BE-93, BE-94, BE-96, BE-97, BE-98, BE-99, BE-100	12
BE-1	Epic 1: Order Management System	BE-22	1
BE-2	Epic 2: Payment & Checkout	BE-26, BE-27, BE-28, BE-29, BE-30, BE-74, BE-75	7
BE-21	Epic 3: Inventory Sync & Management	BE-31, BE-32, BE-76, BE-77	4
BE-37	Epic 4: Delivery Logistics & Pricing	BE-35, BE-36, BE-79, BE-80, BE-81, BE-82, BE-83	7
BE-43	Epic 5: Contractor Portal & Services	BE-38, BE-39, BE-40, BE-41, BE-42, BE-84, BE-85, BE-95	8
BE-57	Epic 6: Customer Registration & Verification	(To be derived)	3
BE-44	Epic 7: Admin, Analytics & Control	BE-51, BE-52, BE-76, BE-87, BE-88, BE-89	6
BE-53	Epic 8: Technical & Compliance	BE-54, BE-55, BE-90, BE-91	4

INVEST Compliance Check

All user stories have been refined to ensure they meet INVEST criteria:

- **Independent:** Each story can be developed separately without dependencies on other stories within the same sprint

- **Negotiable:** Stories focus on user value rather than specific implementation details
- **Valuable:** Each story delivers clear business or user value
- **Estimable:** Stories are small enough to be estimated accurately (≤2 days effort)
- **Small:** No story exceeds 13 story points or 2 days of development effort
- **Testable:** Clear acceptance criteria defined for each story

2. SIZING & PRIORITISATION (2 pts)

Estimation Method

Method Used: Planning Poker with Fibonacci Scale (1, 2, 3, 5, 8, 13)

Story Point Distribution

Priority Level	Story Points Range	Story Count	Total Points
Must Have	8-13 points	15 stories	165 points
Should Have	5-8 points	20 stories	140 points
Could Have	2-5 points	12 stories	48 points
Won't Have (Phase 2)	1-3 points	8 stories	16 points

Total Backlog Points: 369 story points
Assumed Team Velocity: 45 points per 2-week sprint
Estimated Sprint Count: 8.2 sprints (≈ 16 weeks)

Prioritization Framework

Stories prioritized using MoSCoW method combined with business value scoring:

1. **Must Have (Highest):** Core MVP functionality - product catalog, payments, inventory, basic delivery
2. **Should Have (High):** Enhanced user experience - advanced delivery features, contractor portal
3. **Could Have (Medium):** Nice-to-have features - rental services, advanced analytics
4. **Won't Have (Low):** Future phase features - multi-language, advanced AI features

3. UP-TO-DATE STORY LIST (1 pt)

Infrastructure & Foundation Stories (Epic 0)

US-1: Configure local and staging environments

ID: BE-65 | **Points:** 5 | **Priority:** Must Have

Description: Set up development, staging, and testing environments with proper configuration

Preconditions: Docker and development tools installed

Postconditions: All team members can run the application locally; staging environment accessible

US-2: Set up authentication microservice

ID: BE-66 | **Points:** 8 | **Priority:** Must Have

Description: Bootstrap auth service with user management, JWT tokens, and role-based access

Preconditions: Database schema defined

Postconditions: Users can register, login, and access role-appropriate features

US-3: Establish development conventions and README

ID: BE-68 | **Points:** 3 | **Priority:** Must Have

Description: Define coding standards, Git workflow, and comprehensive documentation

Preconditions: Team agreement on conventions

Postconditions: Clear development guidelines and onboarding documentation available

Order Management Stories (Epic 1)

US-4: Browse products with advanced filters

ID: BE-22 | **Points:** 8 | **Priority:** Must Have

Description: Implement product catalog with filtering by category, brand, type, and price range

Preconditions: Product data available, UI components ready

Postconditions: Users can efficiently find products using multiple filter combinations

Payment & Checkout Stories (Epic 2)

US-5: Multi-payment gateway integration

ID: BE-26 | **Points:** 13 | **Priority:** Must Have

Description: Integrate MTN MoMo, Vodafone Cash, and Telecel Cash payment options

Preconditions: Payment gateway APIs available, PCI compliance requirements understood

Postconditions: Users can complete payments using preferred mobile money services

US-6: Credit terms request system

ID: BE-27 | **Points:** 8 | **Priority:** Must Have

Description: Allow B2B clients to request credit terms with admin approval workflow

Preconditions: User authentication system complete, admin dashboard framework ready

Postconditions: Contractors can request credit, admins can approve/deny requests

US-7: Automatic credit payment setup

ID: BE-28 | **Points:** 13 | **Priority:** Must Have

Description: Enable automatic payment deduction from linked accounts for credit customers

Preconditions: Payment gateway integration complete, account linking system ready

Postconditions: Credit customers can set up auto-debit, system performs scheduled deductions

US-8: Credit default penalty system

ID: BE-29 | **Points:** 5 | **Priority:** Must Have

Description: Apply 50% additional fee for defaulted credit purchases

Preconditions: Credit payment tracking system active

Postconditions: System automatically applies penalties for defaulted payments

US-9: Late payment penalty system

ID: BE-30 | **Points:** 5 | **Priority:** Must Have

Description: Apply 2% weekly penalty for late credit payments after reminders

Preconditions: Notification system operational, payment tracking active

Postconditions: System applies progressive penalties for late payments

Inventory Management Stories (Epic 3)

US-10: Stock reservation during checkout

ID: BE-31 | **Points:** 8 | **Priority:** Must Have

Description: Reserve inventory for 15 minutes during checkout to prevent overselling

Preconditions: Inventory management system active, concurrent access handling implemented

Postconditions: Stock is temporarily held during checkout, released on timeout or completion

US-11: Low stock alerts for warehouse staff

ID: BE-32 | **Points:** 5 | **Priority:** Must Have

Description: Send SMS/email alerts when key materials fall below threshold levels

Preconditions: Notification system ready, inventory thresholds configured

Postconditions: Warehouse staff receive timely alerts for low stock items

Delivery & Logistics Stories (Epic 4)

US-12: Distance-based delivery pricing

ID: BE-35 | **Points:** 8 | **Priority:** Must Have

Description: Calculate and display delivery costs based on customer location

Preconditions: Maps API integration, delivery zones defined

Postconditions: Customers see accurate delivery costs before order confirmation

US-13: Damage reporting time window

ID: BE-36 | **Points:** 5 | **Priority:** Must Have

Description: Allow customers to report damaged goods within 1-2 hours of delivery

Preconditions: Delivery confirmation system active, notification system ready

Postconditions: Customers can report damage within time limit, system rejects late reports

Contractor Portal Stories (Epic 5)

US-14: Contractor account registration

ID: BE-38 | **Points:** 8 | **Priority:** Must Have

Description: Specialized registration flow for contractors with business verification

Preconditions: User authentication system complete, admin approval workflow ready

Postconditions: Contractors can register and access business-specific features

US-15: Contractor dashboard

ID: BE-39 | **Points:** 8 | **Priority:** Must Have

Description: Personalized dashboard for contractors with order tracking and credit management

Preconditions: Authentication system, order management system complete

Postconditions: Contractors have centralized view of orders, deliveries, and credit status

US-16: Consultancy service booking

ID: BE-95 | **Points:** 13 | **Priority:** Must Have

Description: Enable booking of architectural drawings, quantity surveying, and supervision services

Preconditions: Service provider management system, calendar integration

Postconditions: Customers can book and manage consultancy services

Admin & Analytics Stories (Epic 7)

US-17: Role-based refund permissions

ID: BE-51 | **Points:** 5 | **Priority:** Must Have

Description: Restrict refund functionality to finance role only

Preconditions: Role-based access control system active

Postconditions: Only finance users can process refunds

US-18: Automated credit payment tracking

ID: BE-52 | **Points:** 8 | **Priority:** Must Have

Description: Dashboard for monitoring outstanding debts and payment status

Preconditions: Credit system operational, payment tracking active

Postconditions: Finance team can monitor all credit transactions and overdue accounts

Technical & Compliance Stories (Epic 8)

US-19: PCI-DSS compliance for card payments

ID: BE-54 | **Points:** 13 | **Priority:** Must Have

Description: Ensure all card payment processing meets PCI-DSS standards

Preconditions: Payment gateway integration complete, security audit framework ready

Postconditions: System passes PCI-DSS compliance verification

US-20: Ghana Card data security

ID: BE-55 | **Points:** 8 | **Priority:** Must Have

Description: Implement secure storage and handling of Ghana Card verification data

Preconditions: Encryption systems ready, data protection policies defined

Postconditions: Ghana Card data stored securely with proper access controls

4. SPRINT-1 PLANNING (3 pts)

Sprint-1 Window

Duration: August 2-6, 2025 (5 days)

Team Capacity: 15 story points (1/3 of standard 2-week sprint)

Selected Stories for Sprint-1

Story ID	Title	Points	Justification
BE-65	Configure local and staging environments	5	Foundation requirement - blocks all other development

Story ID	Title	Points	Justification
BE-68	Establish development conventions	3	Critical for team coordination and code quality
BE-66	Set up authentication microservice	8	Core system dependency for all user-facing features

Total Sprint-1 Points: 16 points (slightly over capacity due to foundational importance)

Sprint-1 Rationale

Dependency Management: All selected stories are foundational and have minimal dependencies on each other, making them ideal for parallel development in the first sprint.

MVP Foundation: These stories establish the technical foundation required for all subsequent feature development:

- Environment setup enables team productivity
- Development conventions ensure code quality and consistency
- Authentication system is a dependency for nearly all user stories

Risk Mitigation: By tackling infrastructure early, we identify and resolve environment-related issues before they can impact feature development.

Sprint-1 Demo Scope

At the end of Sprint-1, stakeholders will see:

1. **Live Demo Environment:** Functioning staging environment accessible via web browser
2. **User Registration & Login:** Working authentication system with role-based access
3. **Development Readiness:** Team can demonstrate local development setup and deployment pipeline
4. **Code Quality Foundation:** Established linting, testing, and code review processes

User Journey Demo:

- New user can register an account
- User can log in and see role-appropriate dashboard
- Admin user can access admin-specific features
- System maintains session state and handles logout

Technical Demo:

- Continuous integration pipeline running tests
- Staging deployment process
- Code review workflow demonstration
- Local development environment setup guide

5. DESIGN SKETCHES & UI (2 pts)

Product Catalog Wireframe

eBuildify Logo	[Search Bar]	Login	Cart (3)
[Filters Panel]	[Product Grid]		
Categories	Prod	Prod	Prod
<input checked="" type="checkbox"/> Cement	Img	Img	Img
<input type="checkbox"/> Iron Rods	Name	Name	Name
<input type="checkbox"/> Paint	₦150	₦300	₦85
	[Add]	[Add]	[Add]
Price Range			
₦50 - ₦500	[Load More Products]		
Brand			
<input type="checkbox"/> Dangote			
<input type="checkbox"/> GHACEM			

Key Components:

- Responsive filter panel (collapsible on mobile)
- Product grid with lazy loading
- Shopping cart counter
- Search functionality with auto-suggestions

Accessibility Considerations:

- High contrast colors (WCAG AA compliant)
- Keyboard navigation support for all interactive elements
- Screen reader labels for filter checkboxes
- Alternative text for product images

Authentication Flow Wireframe

Login Screen

Email: [_____]

Password: [_____]

☐ Remember me

[Login Button]

_____ OR _____

[Register New Account]

[Forgot Password?]

Registration Screen

Account Type:

○ Individual Customer

○ Contractor/Business

Full Name: [_____]

Email: [_____]

Phone: [_____]

Ghana Card: [_____]

Password: [_____]

Confirm: [_____]

[Register Account]

Key Features:

- Progressive disclosure based on account type
- Real-time validation feedback

- Ghana Card verification integration
- Secure password requirements

Checkout & Payment Wireframe

Checkout Process																				
Step 1: Order Review	Step 2: Delivery	Step 3: Pay																		
[Cart Items Summary]																				
<table border="1"> <tbody> <tr> <td>Dangote Cement (50kg) x 10</td> <td>¢1,500</td> <td></td> </tr> <tr> <td>Iron Rods (12mm) x 20</td> <td>¢2,400</td> <td></td> </tr> <tr> <td colspan="2">Subtotal:</td> <td>¢3,900</td> </tr> <tr> <td colspan="2">Delivery (Madina):</td> <td>¢150</td> </tr> <tr> <td colspan="2">Volume Discount (1.5%):</td> <td>-¢59</td> </tr> <tr> <td colspan="2">Total:</td> <td>¢3,991</td> </tr> </tbody> </table>			Dangote Cement (50kg) x 10	¢1,500		Iron Rods (12mm) x 20	¢2,400		Subtotal:		¢3,900	Delivery (Madina):		¢150	Volume Discount (1.5%):		-¢59	Total:		¢3,991
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Payment Method:																				
<input type="radio"/> MTN Mobile Money <input type="radio"/> Vodafone Cash																				
<input type="radio"/> Telecel Cash <input type="radio"/> Credit Terms (B2B)																				
[Complete Order]																				

Interaction Notes:

- Real-time delivery cost calculation based on address
- Automatic volume discount application
- Payment method selection with appropriate forms
- Order confirmation with tracking information

Mobile-First Responsive Considerations

All wireframes designed with mobile-first approach:

- **Touch-friendly buttons** (minimum 44px tap targets)

- **Simplified navigation** with hamburger menu
- **Stacked layouts** for narrow screens
- **Gesture support** for product browsing
- **Offline cart persistence** for poor connectivity areas

Accessibility Features Integrated

- **Color blind friendly** color palette
- **High contrast mode** toggle
- **Font size adjustment** controls
- **Keyboard navigation** flow indicators
- **Screen reader** semantic markup
- **Voice control** compatibility for form inputs

BACKLOG MANAGEMENT & TRACEABILITY

GitHub Integration

- **Repository:** <https://github.com/enoch-amart/BuildTech-Solutions>
- **Project Board:** GitHub Projects with Scrum template
- **Story IDs:** All commit messages include story ID (e.g., "BE-22: Implement product filtering")

Definition of Done

Each user story is considered complete when:

1. Code implemented and unit tested ($\geq 80\%$ coverage)
2. Feature tested on staging environment
3. Code reviewed and approved by 2+ team members
4. Documentation updated (API docs, user guides)
5. Acceptance criteria verified by Product Owner
6. No critical or high-severity bugs open

Workflow States

- **Backlog:** Story identified and prioritized
- **In Progress:** Development actively underway

- **Review:** Code complete, awaiting peer review
- **Testing:** QA validation in progress
- **Done:** All acceptance criteria met, deployed to staging

This Product Backlog Specification provides the foundation for successful delivery of the eBuildify platform, ensuring all team members understand priorities, scope, and technical requirements for the 16-week development timeline.