

eBuildify Mid-Semester Presentation

DCIT 208 - Software Engineering

BuildTech Solutions Team

Slide 1: Introduction

eBuildify - Construction Materials E-commerce Platform

Team: BuildTech Solutions

Team Members & Roles:

- **Enoch Amarteifio** (10716297) - Scrum Master & Frontend Developer
- **Ocran Bransford Charles** (10716297) - Product Owner & UI/UX Designer
- **Abdul Rashid** (11356950) - Backend Developer
- **Jimba Muzamil** (22250012) - QA Engineer & Testing Lead
- **Timeon Able** (22117793) - Documentation & Demo Lead
- **Dompkeh Jerry Jabari** (22039899) - Additional Developer
- **DevOps/CI-CD Lead** - [To be assigned]

Client: Sol Little By Little Enterprises

Project Duration: 16 weeks (June 2025 - December 2025)

Slide 2: Problem Statement & Goals

The Challenge

Sol Little By Little Enterprises processes orders manually through calls and WhatsApp, causing:

- Order errors and delays
- Inventory discrepancies
- Limited payment options
- Poor delivery tracking

Project Goals

- **Automate order processing** with real-time inventory management

- **Enable multiple payment methods** including credit facilities
- **Optimize delivery logistics** with distance-based pricing
- **Target growth:** 30% sales increase, 40% faster fulfillment

Key Features

- Ghana Card verification system
 - Multi-tier user management (customers, contractors, admins)
 - Credit management with automated payments
 - Service consultation booking
 - Mobile-first PWA design
-

Slide 3: Technical Deliverables Overview

System Requirements Specification (SRS)

- **55 User Stories** across 9 epics
- **24 Use Cases** with complete traceability
- **16 Non-functional requirements** covering performance, security, scalability

Product Backlog Highlights

- **369 story points** total backlog
- **INVEST-compliant** user stories
- **MoSCoW prioritization** framework
- **Planning Poker estimation** with Fibonacci scale

Technical Stack

- **Frontend:** React 18, PWA, Tailwind CSS
 - **Backend:** Node.js, Express, PostgreSQL
 - **Payment:** Flutterwave (MTN MoMo, Vodafone, Telecel)
 - **Infrastructure:** Docker, AWS/Heroku, CI/CD pipeline
-

Slide 4: Software Engineering Models

Data Flow Diagram (Level 0)



UML Class Diagram Key Classes

- **User** (Customer, Contractor, Admin inheritance)
- **Order** → **OrderItem** composition
- **Payment** (MTN MoMo, Credit, Card inheritance)
- **CreditAccount** with automatic payment scheduling

System Architecture

Microservices Design:

- API Gateway → Load Balancer
- User Management, Product Catalog, Payment Services
- PostgreSQL + Redis caching
- External integrations (Flutterwave, Maps, SMS)

Slide 5: Live Demonstration

Working Prototype Features

1. User Registration & Authentication

- Ghana Card verification system
- Role-based access control

2. Product Catalog

- Advanced search and filtering
- Mobile-responsive design
- Real-time inventory display

3. Shopping Experience

- Offline cart functionality
- Bulk pricing automation (1.5% discount ≥ 100 units)
- Product comparison tool

GitHub Repository

- **Organization:** BuildTech-Solutions
 - **Active branches:** main, develop, feature branches
 - **CI/CD Pipeline:** Automated testing, deployment
 - **Code coverage:** 92% (exceeds 80% target)
-

Slide 6: Agile Metrics Analysis

Sprint Velocity Trend

- **Sprint 1:** 16 points (5 days) - Infrastructure & Setup
- **Sprint 2:** 18 points (4 days) - Product Catalog
- **Sprint 3:** 26 points (7 days) - Shopping Cart & Ordering

Team Velocity Growth: +62% improvement from Sprint 1 to 3

Sprint Success Rates

- **Sprint 1:** 80% completion (8/10 stories)
- **Sprint 2:** 87.5% completion (7/8 stories)
- **Sprint 3:** 100% completion (8/8 stories)

Key Metrics

- **Code Coverage:** Consistently above 85%
 - **Story Point Accuracy:** 96% estimation accuracy in Sprint 3
 - **Quality:** Zero critical bugs in production features
-

Slide 7: Sprint Reflections & Achievements

What Went Exceptionally Well

- **Technical Foundation:** Robust CI/CD pipeline and security implementation
- **Team Maturation:** 100% Sprint 3 completion shows growing expertise
- **Quality Focus:** 92% code coverage with comprehensive testing
- **Innovation:** Offline cart functionality exceeds industry standards
- **Client Alignment:** All demos received positive stakeholder feedback

Key Technical Achievements

- **Ghana Card Verification:** Secure encryption and validation system
 - **Payment Integration:** Flutterwave gateway ready for multiple providers
 - **Offline Functionality:** Cart persists in poor connectivity areas
 - **Bulk Pricing Engine:** Automated 1.5% discount system
 - **Mobile Performance:** 2.1 second average load time
-

Slide 8: Challenges & Risk Management

Major Challenges Encountered

1. Payment Gateway Complexity

- **Impact:** Integration more complex than estimated
- **Mitigation:** Dedicated payment sprint with API testing phase

2. Ghana Card API Integration

- **Challenge:** Government partnership requirements unclear
- **Solution:** Implemented basic verification with enhancement options

3. Team Coordination

- **Issue:** 7-member team communication overhead
- **Resolution:** Enhanced daily standups and clear role definitions

Risk Mitigation Strategies

- **Technical Spikes:** 2-day research phases for complex integrations
 - **Buffer Time:** Built into critical path activities
 - **Fallback Options:** Multiple payment providers, offline functionality
-

Slide 9: Process Improvements Implemented

Agile Methodology Evolution

Sprint 1 → Sprint 3 Improvements:

- Enhanced estimation accuracy (60% → 96%)
- Better story decomposition following INVEST principles
- Improved cross-team collaboration

Development Practices

- **Code Review:** Minimum 2 approvals before merge
- **CI/CD Pipeline:** Automated testing, security scans, deployment
- **Documentation:** Parallel development with features

Communication Enhancements

- **Client Demos:** Bi-weekly stakeholder presentations
 - **Risk Assessment:** Weekly evaluation during sprint planning
 - **Knowledge Sharing:** Cross-training across technical domains
-

Slide 10: Current Project Status

Epic Completion Overview

- **Epic 0:** Infrastructure - **100% Complete** ✅
- **Epic 1:** Order Management - **95% Complete** 🎯
- **Epic 6:** Customer Verification - **100% Complete** ✅
- **Epic 2:** Payment & Checkout - **15% Complete** 📋
- **Epic 3:** Inventory Management - **25% Complete** 📋

Overall Progress

- **MVP Progress:** 65% complete (ahead of schedule)
 - **Technical Debt:** Minimal due to quality focus
 - **Team Velocity:** Accelerating trend
 - **Client Satisfaction:** High with positive demo feedback
-

Slide 11: Sprint 3 Objectives & Next Steps

Immediate Priorities (Next Sprint)

1. Payment Integration Sprint

- Complete MTN MoMo, Vodafone Cash, Telecel Cash integration
- Implement B2B credit system with admin approval workflow
- Develop automatic payment scheduling and penalty system

2. Technical Goals

- Maintain 90%+ code coverage

- Implement PCI-DSS compliance measures
- Complete payment security audit

Capacity Planning

- **Recommended Capacity:** 28-30 story points
 - **Duration:** 7 days focused on payment complexity
 - **Team Availability:** All 7 members ready for integration work
-

Slide 12: Final Release Timeline

Remaining Development Phases

- **Phase 4 (Sprint 4-5):** Delivery Management & Logistics
- **Phase 5 (Sprint 6-7):** Service Booking & Contractor Portal
- **Phase 6 (Sprint 8):** Final Integration & Performance Optimization

Launch Readiness Assessment

- **Expected MVP Launch:** October 1, 2025
- **Final Launch:** December 15, 2025
- **Budget Status:** On track with ₦174,944 total project cost

Success Metrics Target

- **Performance:** <3 seconds load time on 3G networks
 - **Capacity:** Support 500+ concurrent users
 - **Business Impact:** 30% sales increase, 40% faster fulfillment
-

Thank You - Questions?

Contact Information

Primary Contact: Enoch Amarteifio (Scrum Master)

Email: amarteifioenoch4@gmail.com

Phone: 0542972982

Repository: <https://github.com/enoch-amart/BuildTech-Solutions>

Team YouTube: @buildtechsolutions

Ready for live demo and technical questions!

