**eBuildify: Project Management Blueprint (v2.0)**

Client: VillageTech

Project: eBuildify

Team: BuildTech Solutions

**1. Introduction**

This document serves as the master blueprint for the eBuildify project. It has been updated based on the detailed requirements, prioritized user stories, and system diagrams provided. It consolidates all critical project information into a single source of truth for planning, development, and stakeholder alignment.

**2. System Architecture**

The following diagram outlines the proposed technical architecture for eBuildify, illustrating the relationship between the frontend, backend microservices, databases, and third-party integrations.

graph TD

subgraph "User Interface"

A[Mobile-First PWA - React]

end

subgraph "API Gateway"

B(Main API Gateway)

end

subgraph "Backend Services (Microservices)"

C[Auth Service]

D[Product Catalog Service]

E[Order Management Service]

F[Payment Service]

G[Delivery & Logistics Service]

H[Notification Service]

I[Admin & Analytics Service]

end

subgraph "Databases"

J[PostgreSQL - Main DB]

K[Redis - Caching & Sessions]

end

subgraph "Third-Party Integrations"

L[Flutterwave - Payment Gateway]

M[Google Maps API - Geolocation]

N[Twilio/SMS Provider - Notifications]

O[Google Sheets API - Inventory Sync]

end

A --> B

B --> C

B --> D

B --> E

B --> F

B --> G

B --> H

B --> I

C --> J

D --> J

E --> J & K

F --> J & L

G --> J & M

H --> N

I --> J

D --> O

**3. Database Schema (ERD)**

This Entity-Relationship Diagram details the structure of our primary database, including tables and their relationships.

erDiagram

USERS ||--o{ ORDERS : places

USERS ||--o{ PAYMENTS : "makes"

USERS {

int user\_id PK

string name

string email

string password\_hash

string phone\_number

string ghana\_card\_details

string address

datetime created\_at

}

ORDERS {

int order\_id PK

int user\_id FK

datetime order\_date

string status

decimal total\_amount

string delivery\_address

int driver\_id FK

}

ORDER\_ITEMS {

int order\_item\_id PK

int order\_id FK

int product\_id FK

int quantity

decimal price\_per\_unit

}

PRODUCTS {

int product\_id PK

string name

string description

decimal price

int stock\_quantity

int category\_id FK

}

CATEGORIES {

int category\_id PK

string category\_name

}

PAYMENTS {

int payment\_id PK

int order\_id FK

int user\_id FK

decimal amount

string method

string status

datetime payment\_date

}

DRIVERS {

int driver\_id PK

string name

string phone\_number

string vehicle\_details

}

SERVICES {

int service\_id PK

string name

string description

decimal price

}

BOOKINGS {

int booking\_id PK

int user\_id FK

int service\_id FK

datetime booking\_date

string status

}

ORDERS ||--|{ ORDER\_ITEMS : "contains"

PRODUCTS ||--|{ ORDER\_ITEMS : "is part of"

CATEGORIES ||--o{ PRODUCTS : "groups"

ORDERS ||--o{ PAYMENTS : "is paid by"

DRIVERS ||--o{ ORDERS : "handles"

USERS ||--o{ BOOKINGS : "makes"

SERVICES ||--o{ BOOKINGS : "is for"

**4. Epics & Prioritized User Stories (MoSCoW)**

This section contains the detailed, prioritized user stories that will form our product backlog.

**EPIC 1: Order Management System (Must Have)**

* **Must:** As a customer, I want to browse products by category with filters so I can find materials fast.
* **Must:** As a contractor, I want tiered bulk pricing applied automatically (1.5% discount for ≥100 units of cement/iron rods) so I get volume discounts.
* **Must:** As any user, I want my cart saved offline so I can continue ordering in low-connectivity areas.
* **Must:** As a user, I want one-click reordering from order history so I save time.
* **Should:** As a customer, I want to search materials by brand or type so I don't scroll endlessly.
* **Should:** As a user, I want product comparison so I can choose wisely.
* **Should:** As a customer, I want to assign someone else to pick up my order so I don't have to be physically present.

**EPIC 2: Payment & Checkout (Must Have)**

* **Must:** As a user, I want to pay via MTN MoMo/Vodafone/Telecel Cash so I can use my preferred method.
* **Must:** As a B2B client, I want to request credit terms at checkout so I can delay payment.
* **Must:** As a credit customer, I want to set up automatic payment from my account so I don't miss due dates.
* **Must:** As the system, I must apply a 50% additional fee to defaulted credit purchases to recover costs.
* **Must:** As the system, I must apply a 2% penalty for late credit payments after multiple notifications.
* **Should:** As a COD customer, I want to input the cash amount before delivery so I prepare exact change.
* **Could:** As a returning user, I want saved payment options so I check out faster.

**EPIC 3: Inventory Sync & Management (Must Have)**

* **Must:** As the system, I must reserve stock during checkout for 15 minutes to prevent overselling.
* **Must:** As warehouse staff, I want stock alerts when cement is low so we can replenish.
* **Should:** As an admin, I want to override stock manually if sync fails so we keep selling in emergencies.
* **Should:** As an admin, I want to manage service availability (consultancy, rentals) so customers can book appropriately.
* **Could:** As the system, I want stock synced with Google Sheets hourly so inventory stays up-to-date.

**EPIC 4: Delivery Logistics & Pricing (Should Have)**

* **Must:** As a customer, I want to know delivery costs upfront based on my location so I can budget accurately.
* **Must:** As a customer, I must report damaged goods within 1-2 hours of delivery to be eligible for replacement.
* **Should:** As a dispatch manager, I want to assign orders to drivers by zone to reduce travel times.
* **Should:** As a customer, I want real-time delivery status with SMS updates so I can plan accordingly.
* **Should:** As a customer, I want to tip delivery drivers for exceptional service so I can show appreciation.
* **Could:** As a driver, I want to report damage offline so I can sync when back online.
* **Could:** As a user, I want to choose a delivery window (AM/PM) so I'm available to receive materials.

**EPIC 5: B2B Contractor Portal & Services (Must Have)**

* **Must:** As a contractor, I want to tag orders by project so I can track budgets.
* **Must:** As an admin, I need to process VAT-exemption approvals so compliant contractors get tax relief.
* **Must:** As a customer, I want to book consultancy services (architectural drawings, etc.) so I get professional support.
* **Should:** As a contractor, I want multi-site delivery options so I can split orders efficiently.
* **Should:** As a contractor, I want full building contract services so I can outsource entire projects.

**EPIC 6: Customer Registration & Verification (Must Have)**

* **Must:** As a new customer, I must provide Ghana Card details during registration so the company can verify my identity.
* **Must:** As one of the first 20 customers, I want special incentive packages so I'm rewarded for early adoption.
* **Should:** As a verified customer, I want to receive birthday and holiday greetings with special offers so I feel valued.

**EPIC 7: Admin, Analytics & Control (Must Have)**

* **Must:** As finance, I want only my role to refund payments so I control financial risks.
* **Must:** As finance, I want automated credit payment tracking so I can monitor outstanding debts.
* **Should:** As the CEO, I want a dashboard showing orders by product & category so I can monitor sales.
* **Should:** As an admin, I want to manage service consultant schedules so I can optimize service delivery.
* **Could:** As an admin, I want to track order activity logs by user so I can audit system use.

**EPIC 8: Technical & Compliance (Must Have)**

* **Must:** As the system, I must comply with PCI-DSS for card payments to prevent data breaches.
* **Must:** As the system, I must securely store Ghana Card data in compliance with data protection laws.
* **Must:** As a user, I want cement batch numbers on invoices so I meet safety compliance.
* **Should:** As a developer, I want test coverage ≥80% so we reduce bugs.
* **Should:** As the system, I must integrate with multiple payment providers for automatic credit deductions.

**5. Requirement Clarifications (Q&A)**

This section documents the answers to key questions, providing clarity for development.

**1. Credit Default Fee:** The "50% additional fee" on defaulted credit purchases—is this a one-time flat fee calculated on the outstanding balance, or does it have a different structure?

* **Answer:** The 50% fee is a **one-time, flat fee** calculated on the total outstanding balance at the time of default. It is applied after the payment window lapses and three reminders have been sent. For example, a ₵1,000 defaulted purchase incurs a ₵500 fee, making the total due ₵1,500.

**2. Pickup Assignment:** For the third-party pickup feature, what specific information about the designated person needs to be captured? What is the verification process at the warehouse?

* **Answer:** The following **mandatory fields** must be captured: Full Name, a valid Phone Number, and a Ghana Card ID Number (or other official ID).
* **Verification Process:** The designated person must present the physical ID at the warehouse. Staff will verify the ID Number and Full Name. An SMS confirmation is sent to both the buyer and the pickup person upon release of materials.

**3. Damage Reporting Window:** What is the communication workflow once a report is successfully submitted within the 1-2 hour window?

* **Answer:**
  + **Workflow:** Customer submits the report with photo evidence. The system logs the request and sends **automatic notifications** to the Warehouse Supervisor and a Customer Service Agent.
  + **Customer Communication:** The customer receives an **instant SMS/email confirmation** with a tracking ID.
  + **Response Time:** The target for the first response to the customer is **within 1 business hour**, with a resolution (e.g., refund/replacement approval) expected within 24 hours.

**4. Manual Stock Override:** What information should be included in the mandatory audit log?

* **Answer:** The audit log must capture: User ID/Admin Username, Role, Timestamp, Product ID & Name, Previous Stock Quantity, New Stock Quantity, and a mandatory text field for the **Reason for Override**.

**5. Data Migration:** Can you provide a sample of the historical data for migration planning?

* **Answer:** Yes, a sample spreadsheet will be provided. The structure generally includes: Customer Name, Phone Number, Product, Quantity, Total Price, Payment Type, Order Date, Delivery Address, and Status. The full file contains over 2000 records to be cleaned and standardized before import.