Marketplace Technical Foundation [E-Commerce]
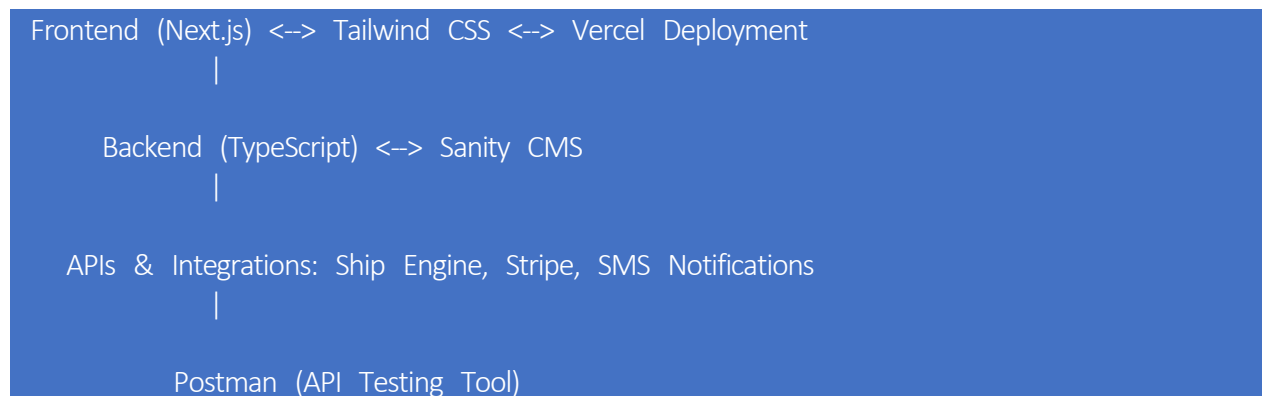

System Architecture Overview:

- **Website**:
  - ○ **Frontend**:
    - ▪ **Next.js**: For building modern, dynamic, and server-rendered UIs.
    - ▪ **Tailwind CSS**: For creating a responsive and visually appealing design.
    - ▪ **Vercel Deployment**: Ensures fast and reliable deployment for Next.js applications.
  - ○ **Backend**:
    - ▪ **TypeScript (TS)**: Provides strong typing and enhances code clarity and maintainability.
    - ▪ **Sanity CMS**: A flexible platform to manage and structure content effectively.
    - ▪ **Development Tools**: Various tools for development and debugging purposes.
  - ○ **APIs & Integrations**:
    - ▪ **Ship Engine**: For shipment tracking and delivery management.
    - ▪ **Stripe**: For secure and reliable payment processing.
    - ▪ **Postman**: A tool used for API testing.
    - ▪ **SMS Notifications**: Integrated via **Twilio** or **Nexmo** for sending SMS updates to users.
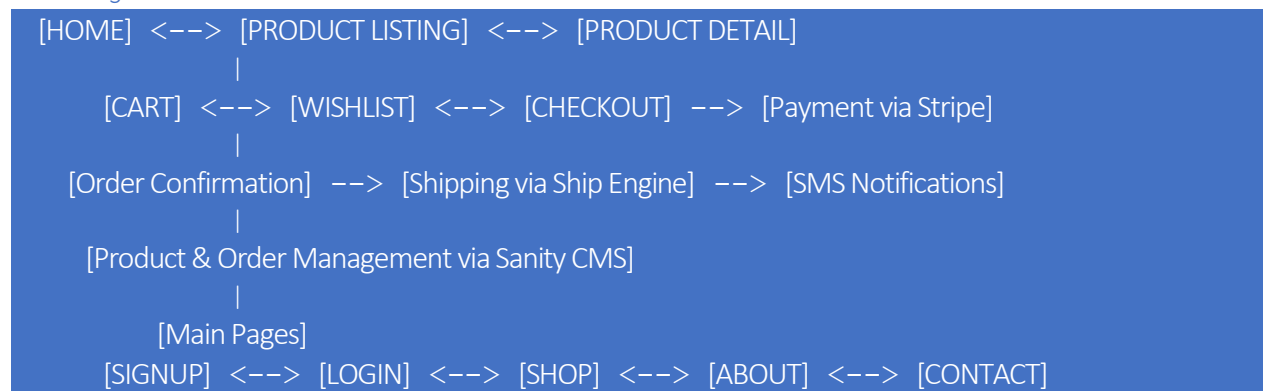

System Architecture Flowchart:

```
Frontend (Next.js) <--> Tailwind CSS <--> Vercel Deployment
            |

     Backend (TypeScript) <--> Sanity CMS
            |

   APIs & Integrations: Ship Engine, Stripe, SMS Notifications
            |

          Postman (API Testing Tool)
```

Key Features & Workflows:

- **Features**:
  - ○ **Product Listing Page**: Display a list of products available for purchase.
  - ○ **Product Detail Page**: Show detailed product descriptions, images, sizes, and colors.
  - ○ **Cart Page**: Users can add products to their cart, view totals, and proceed to checkout.
  - ○ **Wishlist Page**: Users can save products for future purchases.
  - ○ **Checkout Page**: Securely complete purchases via **Stripe**.

- o **Payment Integration**: Handle payment securely through **Stripe**.
- o **Shipping Label Generation & Order Tracking**: Managed via **Ship Engine**.
- o **Product & Order Management**: Manage products and orders effectively via **Sanity CMS**.
- o **SMS Notifications**: Notify users about order status, promotions, or cart reminders.
- **Main Pages**:
  - o **HOME**
  - o **PRODUCT LISTING**
  - o **PRODUCT DETAIL**
  - o **CART**
  - o **WISHLIST**
  - o **CHECKOUT**
  - o **SIGNUP**
  - o **LOGIN**
  - o **ABOUT**
  - o **SHOP**
  - o **CONTACT**

Main Pages Flowchart:

```
[HOME]  <-->  [PRODUCT LISTING]  <-->  [PRODUCT DETAIL]
                 |
    [CART]  <-->  [WISHLIST]  <-->  [CHECKOUT]  -->  [Payment via Stripe]
                 |
  [Order Confirmation]  -->  [Shipping via Ship Engine]  -->  [SMS Notifications]
                 |
    [Product & Order Management via Sanity CMS]
                 |
          [Main Pages]
     [SIGNUP]  <-->  [LOGIN]  <-->  [SHOP]  <-->  [ABOUT]  <-->  [CONTACT]
```

API Endpoints:

- **Authentication**:
  - o `POST /api/signup`: Register a new user.
  - o `POST /api/login`: Authenticate the user and provide access token.
- **Products**:
  - o `GET /api/products`: Fetch all products.
  - o `GET /api/products/:id`: Get details of a specific product.
  - o `POST /api/products`: Add a new product.
  - o `PUT /api/products/:id`: Update product details.
  - o `DELETE /api/products/:id`: Delete a specific product.
- **Cart**:
  - o `GET /api/cart`: Fetch the user's cart.
  - o `POST /api/cart`: Add an item to the cart.
  - o `DELETE /api/cart/:id`: Remove an item from the cart.
- **Wishlist**:

- o `GET /api/wishlist`: Fetch the user's wishlist.
- o `POST /api/wishlist`: Add an item to the wishlist.
- o `DELETE /api/wishlist/:id`: Remove an item from the wishlist.
- **Checkout & Payment**:
  - o `POST /api/checkout`: Process checkout.
  - o `POST /api/payment`: Handle Stripe payment processing.
- **Order Management**:
  - o `GET /api/orders`: Fetch order history.
  - o `GET /api/orders/:id`: Get specific order details.
  - o `POST /api/orders`: Create a new order.
  - o `PUT /api/orders/:id`: Update order status.
  - o `DELETE /api/orders/:id`: Cancel an order.
- **Shipping**:
  - o `POST /api/shipping`: Generate a shipping label.
  - o `GET /api/shipping/:id`: Track the order shipment.
- **Notifications**:
  - o `POST /api/notifications/sms`: Send an SMS notification to the user.

API Endpoints Flowchart:

```
Authentication
    |
  [POST /api/signup] --> [POST /api/login]

Products
    |
  [GET /api/products] --> [GET /api/products/:id]
    |
  [POST /api/products] --> [PUT /api/products/:id] --> [DELETE
/api/products/:id]

Cart
    |
  [GET /api/cart] --> [POST /api/cart] --> [DELETE /api/cart/:id]

Wishlist
    |
  [GET /api/wishlist] --> [POST /api/wishlist] --> [DELETE
/api/wishlist/:id]

Checkout & Payment
    |
    [POST /api/checkout] --> [POST /api/payment]

Order Management
    |
```

```
 [GET /api/orders] --> [GET /api/orders/:id] --> [POST /api/orders] -
-> [PUT /api/orders/:id] --> [DELETE /api/orders/:id]

Shipping
      |
 [POST /api/shipping] --> [GET /api/shipping/:id]

Notifications
      |
      v
[POST /api/notifications/sms]
```