SafeShipping API Data Models

## 📜 SafeShipping API - Rough Draft

This API will handle **shipping, transport, and delivery data** across **cargo ships, airplanes, semi-trucks, couriers, and mail carriers**—**fully IoT-integrated**.

**🚢 Cargo Ship Shipment Process**

**1️⃣ Shipment Created**

🔹 POST /api/shipping/cargo

json

{

"shipment\_id": "ABC123",

"origin\_port": "Shanghai",

"destination\_port": "Los Angeles",

"carrier": "Maersk Line",

"estimated\_departure": "2025-06-05T12:00:00Z",

"estimated\_arrival": "2025-06-20T15:00:00Z",

"contract\_hash": "0xabcde123",

"customs\_clearance": "Pending"

}

**2️⃣ In-Transit Updates**

🔹 PATCH /api/shipping/cargo/{shipment\_id}/status

json

{

"status": "In Transit",

"current\_gps": "32.7157,-117.1611",

"temperature": "12°C",

"humidity": "60%",

"seal\_integrity": "Secure",

"last\_port": "Singapore",

"ETA\_update": "2025-06-19T18:00:00Z"

}

**3️⃣ Delivery Confirmation**

🔹 POST /api/shipping/cargo/{shipment\_id}/delivery

json

{

"status": "Delivered",

"arrival\_time": "2025-06-20T14:55:00Z",

"final\_gps": "33.7490,-118.1910",

"receiver\_signature": "0xsignature123",

"delivery\_confirmation\_hash": "0xdeliveryhash456"

}

**✈️ Air Cargo Shipment Process**

**1️⃣ Flight Scheduled**

🔹 POST /api/shipping/air

json

{

"shipment\_id": "FL789",

"origin\_airport": "JFK",

"destination\_airport": "LHR",

"carrier": "FedEx Air Cargo",

"departure\_time": "2025-06-08T08:00:00Z",

"arrival\_time": "2025-06-08T14:30:00Z",

"weight": "1,250kg",

"fragility": "High",

"tracking\_enabled": true

}

**2️⃣ In-Transit Tracking**

🔹 PATCH /api/shipping/air/{shipment\_id}/status

json

{

"status": "In Transit",

"aircraft\_id": "FX1234",

"current\_altitude": "35,000 ft",

"temperature": "-10°C",

"humidity": "50%",

"shipment\_condition": "Stable",

"ETA\_update": "2025-06-08T14:20:00Z"

}

**3️⃣ Final Delivery & Customs Clearance**

🔹 POST /api/shipping/air/{shipment\_id}/delivery

json

{

"status": "Delivered",

"arrival\_time": "2025-06-08T14:15:00Z",

"customs\_clearance\_status": "Approved",

"receiver\_signature": "0xsignaturexyz",

"payment\_hash": "0xpayment789"

}

**🚛 Semi-Truck Freight Process**

**1️⃣ Load Pickup & Dispatch**

🔹 POST /api/shipping/truck

json

{

"shipment\_id": "TRK567",

"pickup\_location": "New York Warehouse",

"dropoff\_location": "Chicago Distribution Center",

"carrier": "UPS Freight",

"weight": "30,000 lbs",

"departure\_time": "2025-06-10T08:00:00Z",

"estimated\_arrival": "2025-06-12T18:00:00Z"

}

**2️⃣ Real-Time IoT Tracking (GPS, Sensors)**

🔹 PATCH /api/shipping/truck/{shipment\_id}/status

json

{

"status": "En Route",

"current\_gps": "40.7128,-74.0060",

"temperature": "15°C",

"vibration\_level": "Normal",

"seal\_integrity": "Secure",

"ETA\_update": "2025-06-12T17:30:00Z"

}

**3️⃣ Delivery Confirmation**

🔹 POST /api/shipping/truck/{shipment\_id}/delivery

json

{

"status": "Delivered",

"arrival\_time": "2025-06-12T17:45:00Z",

"receiver\_signature": "0xsignaturetruck",

"damage\_report": "None",

"final\_weight\_check": "30,000 lbs"

}

**📦 Courier & Mail Delivery Process**

**1️⃣ Package Registered**

🔹 POST /api/shipping/courier

json

{

"shipment\_id": "CR981",

"sender": "John Doe",

"receiver": "Sarah Smith",

"origin\_postal\_code": "90210",

"destination\_postal\_code": "10001",

"carrier": "DHL Express",

"package\_type": "Small Box",

"weight": "5 lbs",

"priority": "Overnight"

}

**2️⃣ Last-Mile GPS Tracking**

🔹 PATCH /api/shipping/courier/{shipment\_id}/status

json

{

"status": "Out for Delivery",

"courier\_name": "David Jones",

"current\_gps": "40.7128,-74.0060",

"ETA": "2025-06-09T10:00:00Z"

}

**3️⃣ Final Handover & Receipt Confirmation**

🔹 POST /api/shipping/courier/{shipment\_id}/delivery

json

{

"status": "Delivered",

"arrival\_time": "2025-06-09T09:45:00Z",

"receiver\_signature": "0xsignaturecourier",

"proof\_of\_delivery\_photo": "url\_to\_image.jpg"

}

**🚀 Key API Features**

✔ **Process-Oriented API Structure:** Each transport mode follows a **logical sequence**. ✔ **Blockchain-Immutable Shipment Records:** **Smart contract hashes** ensure data integrity. ✔ **IoT-Enabled Real-Time Monitoring:** Sensors provide **live tracking** for **temperature, vibration, seal status, and geolocation**. ✔ **Cross-Platform Compatibility:** Works for **cargo, air, truck, and last-mile courier logistics**