AFS Freight Billing & Logistics Management System
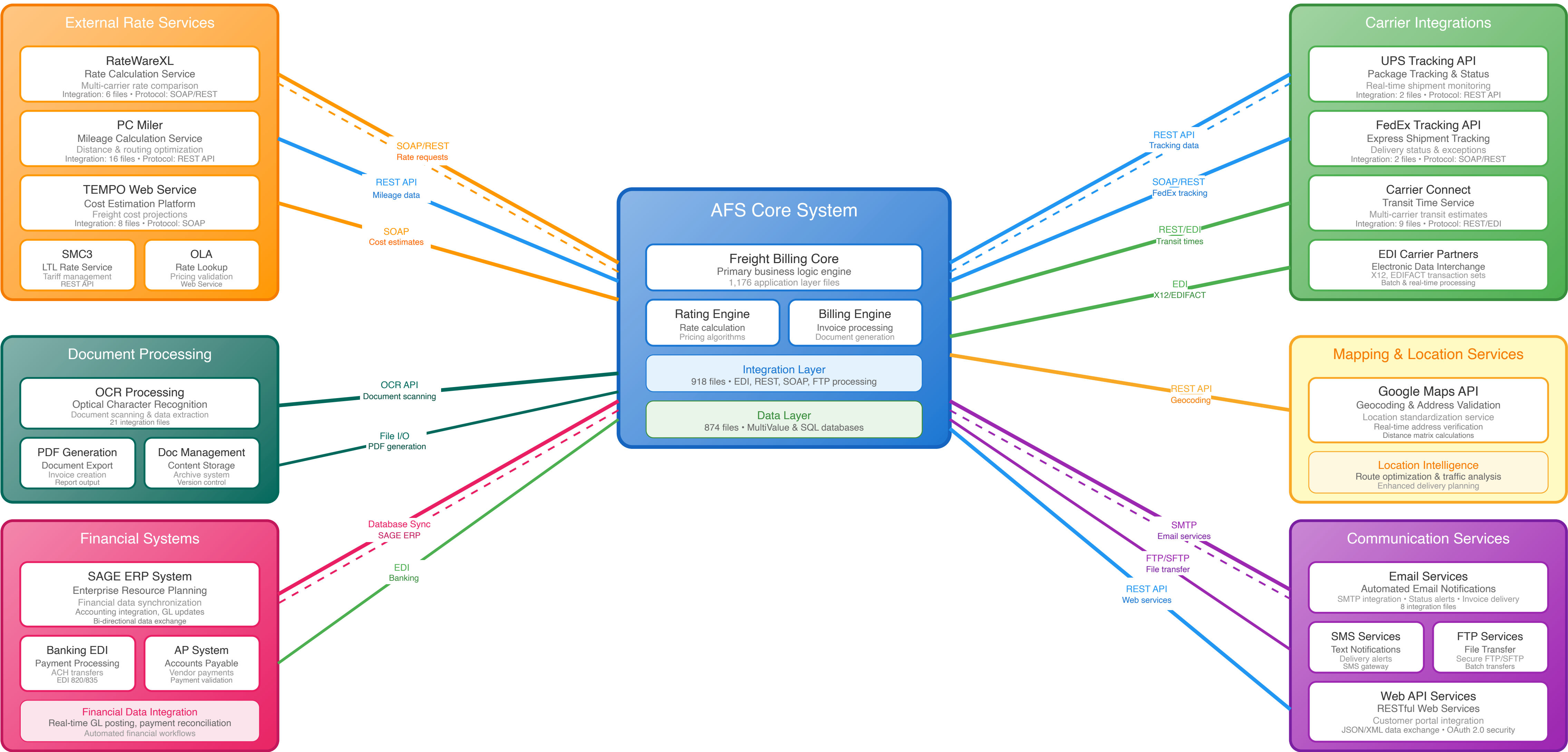
Integration Architecture
External System Connectivity & Data Exchange Patterns

External Rate Services

RateWareXL
Rate Calculation Service
Multi-carrier rate comparison
Integration: 6 files • Protocol: SOAP/REST

PC Miler
Mileage Calculation Service
Distance & routing optimization
Integration: 16 files • Protocol: REST API

TEMPO Web Service
Cost Estimation Platform
Freight cost projections
Integration: 8 files • Protocol: SOAP

SMC3
LTL Rate Service
Tariff management
REST API

OLA
Rate Lookup
Pricing validation
Web Service

Document Processing

OCR Processing
Optical Character Recognition
Document scanning & data extraction
21 integration files

PDF Generation
Document Export
Invoice creation
Report output

Doc Management
Content Storage
Archive system
Version control

Financial Systems

SAGE ERP System
Enterprise Resource Planning
Financial data synchronization
Accounting integration, GL updates
Bi-directional data exchange

Banking EDI
Payment Processing
ACH transfers
EDI 820/835

AP System
Accounts Payable
Vendor payments
Payment validation

Financial Data Integration
Real-time GL posting, payment reconciliation
Automated financial workflows

AFS Core System

Freight Billing Core
Primary business logic engine
1,176 application layer files

Rating Engine
Rate calculation
Pricing algorithms

Billing Engine
Invoice processing
Document generation

Integration Layer
918 files • EDI, REST, SOAP, FTP processing

Data Layer
874 files • MultiValue & SQL databases

Carrier Integrations

UPS Tracking API
Package Tracking & Status
Real-time shipment monitoring
Integration: 2 files • Protocol: REST API

FedEx Tracking API
Express Shipment Tracking
Delivery status & exceptions
Integration: 2 files • Protocol: SOAP/REST

Carrier Connect
Transit Time Service
Multi-carrier transit estimates
Integration: 9 files • Protocol: REST/EDI

EDI Carrier Partners
Electronic Data Interchange
X12, EDIFACT transaction sets
Batch & real-time processing

Mapping & Location Services

Google Maps API
Geocoding & Address Validation
Location standardization service
Real-time address verification
Distance matrix calculations

Location Intelligence
Route optimization & traffic analysis
Enhanced delivery planning

Communication Services

Email Services
Automated Email Notifications
SMTP integration • Status alerts • Invoice delivery
8 integration files

SMS Services
Text Notifications
Delivery alerts
SMS gateway

FTP Services
File Transfer
Secure FTP/SFTP
Batch transfers

Web API Services
RESTful Web Services
Customer portal integration
JSON/XML data exchange • OAuth 2.0 security

Connection labels:
- SOAP/REST — Rate requests
- REST API — Mileage data
- SOAP — Cost estimates
- OCR API — Document scanning
- File I/O — PDF generation
- Database Sync — SAGE ERP
- EDI — Banking
- REST API — Tracking data
- SOAP/REST — FedEx tracking
- REST/EDI — Transit times
- EDI — X12/EDIFACT
- REST API — Geocoding
- SMTP — Email services
- FTP/SFTP — File transfer
- REST API — Web services

Integration Patterns & Protocols

REST APIs	SOAP Services	EDI Processing	Database Sync	File Transfer
• PC Miler integration	• RateWareXL integration	• X12 transaction sets	• SAGE ERP integration	• FTP/SFTP protocols
• UPS/FedEx tracking	• TEMPO web service	• EDIFACT standards	• SQL synchronization	• Secure file exchange
• Google Maps API	• Legacy system support	• Carrier partnerships	• Real-time replication	• Bulk data transfers
• Web services	• WS-Security standards	• Banking transactions	• Change data capture	• Scheduled automation
• SMC3, OLA services	• XML messaging	• Batch processing	• Transaction integrity	• Email attachments
JSON/XML data exchange	WSDL-based contracts	AS2 secure transport	ACID compliance	SSL/TLS encryption
OAuth 2.0 authentication	Enterprise-grade reliability	Real-time & scheduled	Conflict resolution	Retry mechanisms

Integration Architecture Statistics

Integration Layer Files:
- Total integration files: 918 (39% of codebase)
- External services: 122 files
- File processing: 243 files
- Data processing: 85 files

Transaction Volume:
- EDI transactions: 1000+ daily
- API calls: Real-time processing

External Systems:
- Rate services: 5 major providers
- Carrier integrations: 4 primary channels
- Financial systems: 3 core platforms
- Communication services: 4 channels

Data Formats:
- JSON, XML, EDI X12, EDIFACT
- CSV, PDF, proprietary formats

Integration Legend

Connection Types:
- REST API (Real-time)
- SOAP Service (Synchronous)
- EDI (Batch/Real-time)
- Database Sync (Bi-directional)
- File Transfer (FTP/Email)
- Document Processing

System Categories:
- Rate & Pricing Services
- Carrier & Logistics
- Financial Systems
- Communication Services
- Document Processing

Integration Patterns:
- Request/Response (Synchronous)
- Event-driven (Asynchronous)
- Batch Processing (Scheduled)
- Real-time Streaming
- Publish/Subscribe
- Bi-directional Sync
- Store and Forward