ERP Frontend Application Documentation (V1.0)

Date: 2025

Application: ERP System Frontend

Framework: Angular 17

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1. System Overview

1.1 Application Information

- Application Name: ERP System Frontend
- Version: 17.0.0
- Framework: Angular 17.0.5
- UI Library: PrimeNG 17.2.0
- Build Tool: Angular CLI 17.0.5
- Language: TypeScript 5.2.2
- Package Manager: npm

1.2 Technology Stack

1.2.1 Core Framework

- Angular: 17.0.5 (Modular architecture with lazy loading)
- TypeScript: 5.2.2 (Type-safe development)
- RxJS: 7.8.1 (Reactive programming)

1.2.2 UI Libraries

- PrimeNG: 17.2.0 (Component library)
- PrimeFlex: 3.3.1 (CSS utility library)
- PrimeIcons: 6.0.1 (Icon library)
- FontAwesome: 6.4.0 (Additional icons)

1.2.3 State Management & Storage

- RxJS: Observable-based state management
- LocalStorage: Browser-based persistence
- Session Storage: Temporary session data

1.2.4 HTTP & API Communication

- Angular HttpClient: Native HTTP client
- Custom API Service: Centralized API communication layer
- Interceptors: Request/response interceptors for authentication and error handling

1.2.5 Internationalization

- ngx-translate: 15.0.0 (Translation framework)
- Supported Languages: English (en), Arabic (ar)

1.2.6 Data Visualization

- Chart.js: 3.9.1 (Charting library)
- ng2-charts: 3.1.2 (Angular wrapper for Chart.js)
- chartjs-plugin-datalabels: 2.2.0 (Chart labels)
- chartjs-gauge: 0.3.0 (Gauge charts)
- gauge-chart: 1.0.0 (Additional gauge support)

1.2.7 Document & File Handling

- jsPDF: 2.5.2 (PDF generation)
- jspdf-autotable: 3.8.4 (PDF tables)
- html2pdf.js: 0.9.0 (HTML to PDF conversion)
- html2canvas: 1.4.1 (Canvas rendering)
- pdfjs-dist: 4.3.136 (PDF.js library)
- ExcelJS: 4.4.0 (Excel file handling)
- file-saver: 2.0.5 (File download)

1.2.8 Rich Text Editing

- Quill: 2.0.2 (Rich text editor core)

1.2.9 Utilities

- crypto-js: 4.2.0 (Encryption utilities)
- guid-ts: 1.1.2 (GUID generation)
- intl-tel-input: 19.2.3 (International phone input)
- canvas-confetti: 1.9.3 (Confetti animations)
- intro.js: 8.0.0-beta.1 (User onboarding)
- turn.js: 1.0.2 (Page flip effects)

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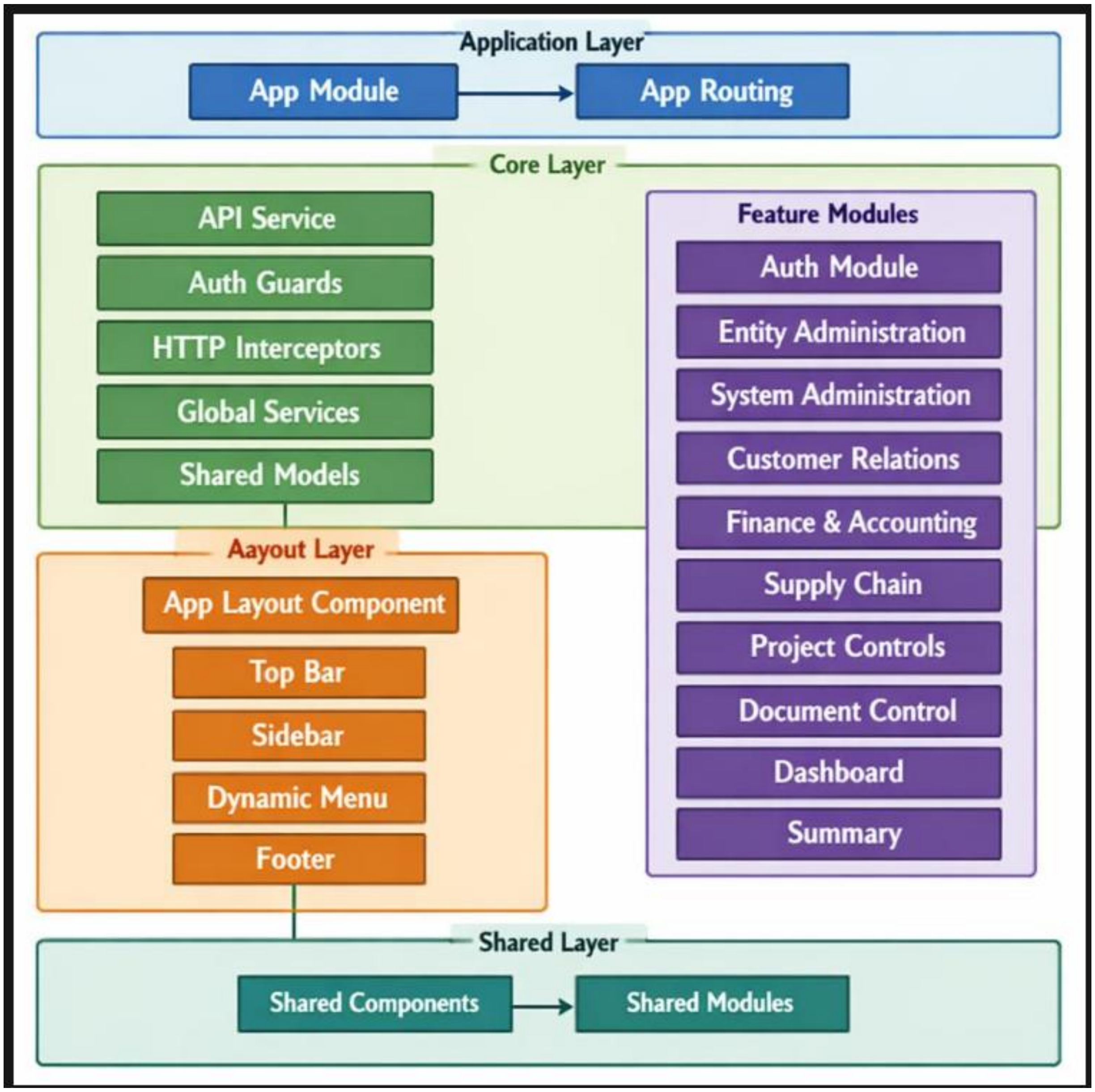
2. Project Architecture

2.1 High-Level Architecture

The application follows a (modular monolith architecture) with lazy-loaded feature modules. The architecture is organized into three main layers:

1. Core Layer (`src/app/core/`): Singleton services, guards, interceptors (global scope)
2. Feature Modules Layer (`src/app/modules/`): Business logic modules (lazy-loaded)
3. Shared Layer (`src/app/Shared/`): Reusable components, pipes, directives

2.2 Architecture Diagram



2.3 Module Organization Strategy

2.3.1 Lazy Loading

All feature modules are lazy-loaded for optimal performance. Modules are loaded on-demand when their routes are accessed, reducing initial bundle size.

2.3.2 Route Protection

- AuthGuard: Protects all authenticated routes by verifying token presence
- Module Guards: Additional guards can be implemented per module for fine-grained access control

2.3.3 Service Pattern

- Singleton Services: Core services are provided in root, ensuring single instance
- Feature Services: Module-specific services handle business logic
- API Service: Centralized HTTP communication through `ApiService`

2.3.4 Component Pattern

- Presentation Components: Handle UI rendering and user interaction
- Container Components: Manage state and business logic
- Shared Components: Reusable across multiple modules

2.3.5 State Management

- RxJS Observables: Used for reactive state management
- LocalStorage: Persistent storage for user data, tokens, and settings
- BehaviorSubject: Used in services for state sharing

3. Complete Folder Structure

3.1 Root Directory Structure

```
ERP-front/
├── .angular/                 # Angular build cache
├── dist/                     # Build output directory
|   └── avalon-ng/            # Production build files
├── node_modules/             # npm dependencies
├── src/                      # Source code directory
├── angular.json              # Angular CLI configuration
├── package.json              # npm package configuration
├── package-lock.json         # Dependency lock file
├── tsconfig.json             # TypeScript configuration
├── tsconfig.app.json         # TypeScript app configuration
├── tsconfig.spec.json        # TypeScript test configuration
```

3.2 Source Directory (`src/`)

```
src/
├── app/                      # Application source code
├── assets/                   # Static assets
├── environments/             # Environment configurations
|   ├── environment.ts        # Development environment
|   ├── environment.prod.ts   # Production environment
|   └── environmentTest.ts    # Test environment
├── favicon.ico               # Application favicon
├── index.html                # Main HTML entry point
├── main.ts                   # Application bootstrap
├── styles.scss               # Global styles
├── table-loading-spinner.html  # Loading spinner template
```

```
└── upload.php              # File upload handler
```

3.3 Application Directory (`src/app/`)

```
src/app/
├── app.component.ts          # Root component
├── app.component.html        # Root template
├── app.component.scss        # Root styles
├── app.component.spec.ts     # Root component tests
├── app.module.ts             # Root module
├── app-routing.module.ts     # Root routing configuration
├── core/                     # Core layer (singleton services)
├── layout/                   # Layout components
├── modules/                  # Feature modules (lazy-loaded)
└── Shared/                   # Shared resources
```

---

4. Core Layer Architecture

4.1 Core Directory Structure

```
src/app/core/
├── api/                      # API communication
│   ├── api.service.ts        # Centralized HTTP service
│   └── api-result.model.ts   # API response model
├── components/               # Core UI components
│   ├── coming-soon/          # Coming soon page
│   ├── landing/              # Landing page
│   ├── notfound/             # 404 page
│   └── session-expired-dialog/ # Session expiration dialog
├── directives/               # Shared directives
│   └── has-role.directive.ts  # Role-based directive
```

```
├── enums/                  # Shared enumerations
├── Guards/                 # Route guards
|   └── auth.guard.ts        # Authentication guard
├── Interceptors/            # HTTP interceptors
|   ├── error-handling.interceptor.ts  # Error handling
|   └── loading.interceptor.ts        # Loading indicator
├── models/                  # Shared data models
|   ├── account-status.model.ts # Account status interfaces
|   └── system-roles.ts        # System roles definitions
├── pipes/                   # Shared pipes
|   └── safe.pipe.ts          # Safe HTML pipe
├── services/                # Global services
|   ├── entity-logo.service.ts  # Entity logo management
|   ├── image.service.ts       # Image handling
|   ├── language-dir.service.ts # Language direction (RTL/LTR)
|   ├── Loading.service.ts      # Loading state management
|   ├── local-storage.service.ts # LocalStorage wrapper
|   ├── module-navigation.service.ts # Module navigation logic
|   ├── network-status.service.ts # Network connectivity
|   ├── passwordMatchValidator.ts # Password validation
|   ├── permission.service.ts   # Permission checking
|   ├── profile-picture.service.ts # Profile picture handling
|   ├── translation.service.ts  # Translation utilities
|   └── user-name.service.ts    # User name formatting
└── validators/              # Shared form validators
    ├── password-match.validator.ts # Password matching
    └── text-field.validator.ts    # Text field validation
```

4.2 Core Components

4.2.1 API Service (`api/api.service.ts`)

Purpose: Centralized HTTP communication gateway for all backend API calls.

Key Features:

- Request packing: Converts request data to byte array format
- Response unpacking: Parses byte array responses
- Error handling: Centralized error management
- Token management: Automatic access token handling

Usage Pattern:

```
// All API calls go through ApiService
this.apiService.call(requestCode, accessToken, parameters);
```

4.2.2 Auth Guard (`Guards/auth.guard.ts`)

Purpose: Protects routes by verifying user authentication.

Logic:

1. Checks for valid token in localStorage
2. Allows access if token exists
3. Redirects to `/auth` if no token found

Applied To: All protected routes in `app-routing.module.ts`

4.2.3 HTTP Interceptors

Error Handling Interceptor (`Interceptors/error-handling.interceptor.ts`)

- Intercepts HTTP errors
- Provides centralized error handling
- Can show error messages or redirect

4.2.4 Loading Interceptor (`Interceptors/loading.interceptor.ts`)

- Manages loading state for HTTP requests
- Shows/hides loading indicators
- Tracks request progress

4.3 Core Services Catalog

Service	Purpose	Location
ApiService	Centralized HTTP communication	api/api.service.ts
LocalStorageService	Type-safe localStorage wrapper	services/local-storage.service.ts
ModuleNavigationService	Dynamic module navigation logic	services/module-navigation.service.ts
TranslationService	Translation utilities	services/translation.service.ts
PermissionService	Permission checking	services/permission.service.ts
LoadingService	Loading state management	services/Loading.service.ts
NetworkStatusService	Network connectivity monitoring	services/network-status.service.ts
ImageService	Image handling utilities	services/image.service.ts
EntityLogoService	Entity logo management	services/entity-logo.service.ts
ProfilePictureService	Profile picture handling	services/profile-picture.service.ts
UserNameService	User name formatting	services/user-name.service.ts
LanguageDirService	Language direction (RTL / LTR)	services/language-dir.service.ts

4.4 Core Models

4.4.1 Account Status Model (`models/account-status.model.ts`)

Contains interfaces for:

- `IFunctionsDetails`: Function definitions
- `IModulesDetails`: Module definitions
- `IModuleDetail`: Individual module details
- `IFunctionDetail`: Individual function details
- `IAccountSettings`: Account configuration
- `IMenuFunction`: Menu function structure
- `IMenuModule`: Menu module structure

4.4.2 System Roles (`models/system-roles.ts`)

Defines system role constants and enumerations.

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5. Layout Architecture

5.1 Layout Directory Structure

```
src/app/layout/
├── app-breadcrumb/          # Breadcrumb navigation
│   ├── app.breadcrumb.component.html
│   └── app.breadcrumb.component.ts
├── app-footer/              # Application footer
│   ├── app.footer.component.html
│   └── app.footer.component.ts
├── app-layout/              # Main layout container
│   ├── app.layout.component.html
│   ├── app.layout.component.ts
│   └── app.layout.module.ts
```

```
├── app-menu/              # Main navigation menu
│   ├── app.menu.component.html
│   ├── app.menu.component.ts
│   ├── app.menu.service.ts
│   ├── app.menuitem.component.ts
│   └── menuchangeevent.ts
├── app-menuProfile/       # User profile menu
│   ├── app.menuprofile.component.html
│   └── app.menuprofile.component.ts
├── app-rightMenu/         # Right-side menu
│   ├── app.rightmenu.component.html
│   └── app.rightmenu.component.ts
├── app-services/          # Layout services
│   └── app.layout.service.ts
├── app-sidebar/           # Sidebar component
│   ├── app.sidebar.component.html
│   └── app.sidebar.component.ts
├── config/                # Configuration panel
│   ├── app.config.component.html
│   ├── app.config.component.ts
│   └── app.config.module.ts
├── no-internet-overlay/   # Network status overlay
│   ├── no-internet-overlay.component.html
│   ├── no-internet-overlay.component.scss
│   └── no-internet-overlay.component.ts
└── top-bar/               # Top navigation bar
    ├── app.topbar.component.html
    ├── app.topbar.component.scss
    └── app.topbar.component.ts
```

5.2 Layout Components

5.2.1 App Layout (`app-layout/`)

Purpose: Main application shell that wraps all authenticated pages.

Structure:

- Contains sidebar, top bar, menu, and content area
- Manages layout state (sidebar collapsed/expanded)
- Handles responsive behavior

5.2.2 Top Bar (`top-bar/`)

Purpose: Header navigation bar.

Features:

- User profile menu
- Notifications
- Search functionality
- Theme toggle
- Language selector

5.2.3 Sidebar (`app-sidebar/`)

Purpose: Left navigation sidebar.

Features:

- Collapsible/expandable
- Module navigation
- Responsive behavior

5.2.4 Menu (`app-menu/`)

Purpose: Dynamic navigation menu system.

Features:

- Dynamic menu generation from Functions and Modules
- Hierarchical menu structure
- Active route highlighting
- Menu state management via `AppMenuService`

5.2.5 Breadcrumb (`app-breadcrumb/`)

Purpose: Navigation breadcrumb trail.

Features:

- Automatic generation from route data
- Clickable navigation
- Localized labels

5.2.6 Footer (`app-footer/`)

Purpose: Application footer.

Features:

- Copyright information
- Version display
- Additional links

5.2.6 Config (`config/`)

Purpose: Theme and configuration panel.

Features:

- Theme selection
- Layout options
- Color scheme customization

5.2.7 Menu Profile (`app-menuProfile/`)

Purpose: User profile dropdown menu.

Features:

- User information display
- Profile settings link
- Logout option

5.2.7 Right Menu (`app-rightMenu/`)

Purpose: Right-side navigation menu.

Features:

- Additional navigation options
- Quick actions

5.2.8 No Internet Overlay (`no-internet-overlay/`)

Purpose: Network connectivity indicator.

Features:

- Shows when network is offline
- Blocks interaction when offline
- Auto-hides when connection restored

6. Feature Modules Architecture

6.1 Modules Directory Structure

```
src/app/modules/
├── auth/                    # Authentication module
├── dashboard/               # Dashboard module
├── summary/                 # Summary module (profile, settings, etc.)
├── entity-administration/     # Entity administration module
├── system-administration/     # System administration module
├── customer-relation-management/  # CRM module
├── finance-accounting/        # Finance & accounting module
├── supply-chain-management/    # Supply chain module
├── project-controls/          # Project controls module
└── document-control/          # Document management module
```

6.2 Module Breakdown

6.2.1 Authentication Module (`auth/`)

Purpose: User authentication and session management.

Structure:

```
auth/
├── auth.module.ts
├── auth-routing.module.ts
├── components/
|   ├── login/               # Login page
|   ├── logout/              # Logout handler
|   ├── forget-password/       # Password recovery
|   ├── reset-password/        # Password reset
|   ├── verify-2fa/            # Two-factor authentication
|   ├── verification-email/     # Email verification
|   ├── email-verified/         # Email verified confirmation
|   └── account-status/         # Account status display
├── models/                     # Auth-related models
└── services/
    └── auth.service.ts         # Authentication service
```

Routes:

- `/auth` - Login page
- `/auth/forget-password` - Password recovery
- `/auth/reset-password` - Password reset
- `/auth/verify-2fa/:email` - 2FA verification
- `/auth/verify-email` - Email verification
- `/auth/email-verified` - Email verified confirmation
- `/auth/account-status` - Account status

Key Features:

- User login with credentials
- Two-factor authentication (2FA)
- Password recovery flow
- Email verification
- Account status checking
- Session management

6.2.2 Entity Administration Module (`entity-administration/`)

Purpose: Managing organizational structure, users, roles, and permissions.

Structure:

```
entity-administration/
├── entity-administration.module.ts
├── entity-administration-routing.module.ts
├── entities/                  # Company/Branch management
|   ├── entities.module.ts
|   ├── entities-routing.module.ts
|   ├── components/
|   |   └── Entity/            # Entity CRUD components
|   ├── models/
|   |   └── entities.model.ts
|   └── services/
|       └── entities.service.ts
├── entity-accounts/           # Entity account management
|   ├── entity-accounts.module.ts
|   ├── entity-accounts-routing.module.ts
|   └── components/            # Entity account components
├── user-accounts/             # User management
|   ├── user-accounts.module.ts
|   ├── user-accounts-routing.module.ts
|   ├── components/            # User CRUD components
|   ├── models/                # User models
|   ├── services/              # User services
|   └── users-details/         # User details
├── roles/                     # Role and permission management
|   ├── roles.module.ts
|   ├── roles-routing.module.ts
|   ├── components/
|   |   ├── Role/           # Role CRUD
|   |   ├── Permissions/     # Permission management
|   |   └── Assignment/      # Role assignment
|   ├── models/             # Role models
|   └── services/           # Role services
└── workflows/              # Workflow management
    ├── workflows.component.html
    ├── workflows.component.scss
    └── workflows.component.ts
```

Routes:

- `/company-administration` - Main route
- `/company-administration/entities` - Entity management
- `/company-administration/user-accounts` - User management
- `/company-administration/roles` - Role management
- `/company-administration/workflows` - Workflow management

Key Features:

- Entity (company/branch) CRUD operations
- User account management
- Role-based access control (RBAC)
- Permission assignment
- Workflow configuration

6.2.3 System Administration Module (`system-administration/`)

Purpose: Global system configuration and ERP feature management.

Structure:

```
system-administration/
├── system-administration.module.ts
├── system-administration-routing.module.ts
├── settings-configurations.model.ts
├── settings-configurations.service.ts
├── erp-functions/           # ERP Functions management
│   ├── erp-functions.module.ts
│   ├── erp-functions-routing.module.ts
│   ├── components/          # Function CRUD components
│   ├── models/              # Function models
│   └── services/            # Function services
├── erp-modules/             # ERP Modules management
│   ├── erp-modules.module.ts
│   ├── erp-modules-routing.module.ts
│   ├── components/          # Module CRUD components
│   ├── models/              # Module models
│   └── services/            # Module services
└── system-control-panel/    # System control panel
```

Routes:

- `/system-administration` - Main route
- `/system-administration/erp-functions` - Functions management
- `/system-administration/erp-modules` - Modules management

Key Features:

- ERP Functions configuration
- ERP Modules licensing and activation
- System-wide settings
- Control panel for system configuration

Important Distinction:

- ERP Functions: High-level capabilities/features of the system
- ERP Modules: Licensed modules that can be enabled/disabled per entity
- Angular Modules: Code organization units (folders in `src/app/modules/`)

6.2.4 Customer Relation Management Module (`customer-relation-management/`)

Purpose: Managing customer relationships, tenders, estimates, and contracts.

Structure:

```
customer-relation-management/
├── clients-details/          # Client database
├── tendering/                # Tender management
├── estimation/               # Project estimation
├── main-contracts/           # Main contract management
└── customers-invoicing/      # Customer invoicing
```

Routes:

- Routes are dynamically generated based on module configuration

Key Features:

- Client database management
- Tender creation and tracking
- Project estimation tools
- Contract management
- Customer invoicing

6.2.5 Finance & Accounting Module (`finance-accounting/`)

Purpose: Financial transactions, accounting, and reporting.

Structure:

```
finance-accounting/
├── financials.module.ts
├── financials-routing.module.ts
├── general-ledger/          # General ledger
├── chart-of-accounts/       # Chart of accounts
├── account-payables/        # Vendor payables
├── account-receivables/     # Customer receivables
└── components/
    └── invoices/            # Invoice components
        ├── invoices.component.html
        ├── invoices.component.scss
        └── invoices.component.ts
```

Routes:

- `/financials` - Main route
- `/financials/invoices` - Invoice management

Key Features:

- General ledger entries
- Chart of accounts hierarchy
- Accounts payable (vendor invoices)
- Accounts receivable (customer invoices)
- Financial reporting

6.2.6 Supply Chain Management Module (`supply-chain-management/`)

Purpose: Procurement, vendor management, and supply chain operations.

Structure:

```
supply-chain-management/
├── purchase-orders/       # Purchase order management
├── subcontracts/          # Subcontract management
├── vendors-details/       # Vendor database
└── vendors-invoicing/     # Vendor invoicing
```

Routes:

- Routes are dynamically generated based on module configuration

Key Features:

- Purchase order creation and tracking
- Subcontract management
- Vendor database
- Vendor invoicing and payments

6.2.7 Project Controls Module (`project-controls/`)

Purpose: Project planning, budgeting, cost control, and progress tracking.

Structure:

```
project-controls/
├── budgeting/              # Project budgeting
├── work-breakdown-structure/  # WBS management
├── cost-breakdown-structure/  # CBS management
├── quantity-surveying/       # Quantity surveying
├── cost-reports/            # Cost reporting
└── progress-reports/         # Progress reporting
```

Routes:

- Routes are dynamically generated based on module configuration

Key Features:

- Project budgeting
- Work Breakdown Structure (WBS)
- Cost Breakdown Structure (CBS)
- Quantity surveying
- Cost tracking and reporting
- Progress monitoring

6.2.8 Document Control Module (`document-control/`)

Purpose: Document management and file organization.

Structure:

```
document-control/
├── shared-documents/        # Shared document management
│   ├── shared-documents.module.ts
│   ├── shared-documents-routing.module.ts
│   └── components/          # Document components
└── components/              # Additional document components
```

Routes:

- `/document-control` - Main route

Key Features:

- Document upload and storage
- File organization
- Document sharing
- Version control
- Document search

6.2.9 Dashboard Module (`dashboard/`)

Purpose: Main application dashboard with overview and analytics.

Structure:

```
dashboard/
├── dashboard.module.ts
├── dashboard.component.html
├── dashboard.component.scss
└── dashboard.component.ts
```

Routes:

- `/` - Root route (default dashboard)

Key Features:

- Overview widgets
- Key performance indicators (KPIs)
- Quick access to modules
- Recent activities
- Dynamic module display based on user permissions

6.2.10 Summary Module (`summary/`)

Purpose: User profile, settings, notifications, and actions.

Structure:

```
summary/
├── summary.module.ts
├── summary-routing.module.ts
├── components/
|   ├── profile/          # User profile
|   ├── settings/         # User settings
|   ├── notifications/    # Notifications
|   └── actions/          # User actions
├── models/
|   ├── actions.model.ts
|   ├── notifications.model.ts
|   ├── profile.model.ts
|   └── settings.model.ts
└── services/
    ├── actions.service.ts
    ├── notifications.service.ts
    ├── profile-api.service.ts
    ├── settings-api.service.ts
    └── settings.service.ts
```

Routes:

- `/summary` - Main route
- `/summary/profile` - User profile
- `/summary/settings` - User settings
- `/summary/notifications` - Notifications
- `/summary/actions` - User actions

Key Features:

- User profile management
- Account settings
- Notification center
- Action history

---

7. Shared Resources

7.1 Shared Directory Structure

```
src/app/Shared/
├── components/             # Reusable UI components
│   ├── color-scema-settings/  # Color scheme settings
│   ├── erp-info/           # ERP information display
│   ├── erp-rich-text/       # Rich text editor wrapper
│   ├── erp-variables/       # ERP variables component
│   └── table-loading-spinner/ # Table loading indicator
└── shared/                 # Shared modules
    ├── app-translate.module.ts # Translation module
    └── shared.module.ts      # Shared Angular module
```

7.2 Shared Components

7.2.1 Color Schema Settings (`color-scema-settings/`)

- Purpose: Color scheme configuration component.

- Usage: Used in theme configuration panels.

7.2.2 ERP Info (`erp-info/`)

- Purpose: Displays ERP system information.

- Usage: About pages, system information displays.

7.2.3 ERP Rich Text (`erp-rich-text/`)

Purpose: Wrapper component for rich text editing.

Usage: Forms requiring rich text input.

7.2.4 ERP Variables (`erp-variables/`)

Purpose: Manages ERP system variables.

Usage: Configuration pages, system settings.

7.2.5 Table Loading Spinner (`table-loading-spinner/`)

Purpose: Loading indicator for data tables.

Usage: PrimeNG tables during data loading.

7.3 Shared Modules

7.3.1 SharedModule (`shared/shared.module.ts`)

Purpose: Common Angular modules and components shared across the application.

Exports:

- CommonModule
- FormsModule
- ReactiveFormsModule
- PrimeNG components
- Other shared modules

7.3.2 AppTranslateModule (`shared/app-translate.module.ts`)

Purpose: Translation module configuration.

Features:

- ngx-translate setup
- HTTP loader configuration
- Message format compiler
- Language switching

---

8. Assets and Resources

8.1 Assets Directory Structure

```
src/assets/
├── customIcons/          # Custom SVG icons
|   ├── linux.svg
|   ├── mac.svg
|   └── windows.svg
├── demo/                 # Demo data and assets
|   ├── data/             # JSON demo data files
|   ├── images/           # Demo images
|   └── styles/           # Demo styles
├── i18n/                 # Translation files
|   ├── ar.json           # Arabic translations
|   └── en.json           # English translations
├── images/               # Application images
|   ├── companyDefaultLogo.png
|   ├── email_verification.jpg
|   └── quantum_logo.png
```

```
├── layout/              # Layout assets
|   ├── fonts/           # Custom fonts
|   ├── images/            # Layout images
|   └── styles/          # Theme and layout styles
├── media/                # Media files
├── pdfjs/              # PDF.js library
|   └── pdf.worker.min.js
└── rich-text/           # Rich text editor assets
    ├── jquery-3.4.1.slim.min.js
    ├── summernote-lite.min.css
    ├── summernote-lite.min.js
    └── summernote fonts
```

8.2 Asset Categories

8.2.1 Custom Icons (`customIcons/`)

- Platform-specific icons (Linux, Mac, Windows)
- Custom SVG icons for application use

8.2.2 Demo Assets (`demo/`)

- Data: JSON files for demo/testing purposes
- `chat.json`, `countries.json`, `customers-*.json`
- `files.json`, `products.json`, `tasks.json`
- Images: Demo images for UI components
- Avatars, product images, blog images
- Styles: Demo-specific stylesheets

8.2.3 Internationalization (`i18n/`)

- ar.json: Arabic translation keys and values
- en.json: English translation keys and values
- Format: Key-value pairs for all translatable strings

8.2.4 Application Images (`images/`)

- Company logos
- Email verification images
- Application branding

8.2.5 Layout Assets (`layout/`)

- Fonts: Custom Roboto font files (woff, woff2)
- Images: Layout-specific images
  - Avatars, logos, dashboard images
  - Configurator images
  - Exception pages images
- Styles: Theme and layout stylesheets
  - Layout styles (40+ SCSS files)
  - Theme styles (100+ SCSS files)

8.2.6 Media Files (`media/`)

- Various media assets
- Icons and images for specific features
- Logo variations

8.2.7 PDF.js (`pdfjs/`)

- PDF.js worker file for PDF rendering
- Required for PDF viewing functionality

8.2.8 Rich Text Assets (`rich-text/`)

- jQuery library (for Summernote)
- Summernote editor files
- Summernote fonts (eot, ttf, woff, woff2)

---

9. Routing Architecture

9.1 Route Configuration

The application uses Angular's RouterModule with lazy loading for all feature modules.

Root Routes (`app-routing.module.ts`)

`typescript

```
Routes Structure:
├── / (AppLayoutComponent)
|   ├── '' → DashboardModule (lazy)
|   ├── summary → SummaryModule (lazy)
|   ├── system-administration → SystemAdministrationModule (lazy)
|   ├── company-administration → EntityAdministrationModule (lazy)
|   ├── document-control → SharedDocumentsModule (lazy)
|   └── financials → FinancialsModule (lazy)
├── /auth → AuthModule (lazy)
├── /notfound → NotfoundModule (lazy)
└── ** → redirect to /notfound
```

9.2 Route Hierarchy

9.2.1 Public Routes

- `/auth/*` - Authentication pages (no guard)
- `/notfound` - 404 page (no guard)

9.2.2 Protected Routes

All routes under `AppLayoutComponent` are protected by `AuthGuard`:

- `/` - Dashboard
- `/summary/*` - User summary pages
- `/system-administration/*` - System admin
- `/company-administration/*` - Entity admin
- `/document-control/*` - Document control
- `/financials/*` - Finance module

9.3 Module-Specific Routes

9.3.1 Authentication Routes (`auth-routing.module.ts`)

```
/auth
├── '' → LoginComponent
├── /forget-password → ForgetPasswordComponent
├── /reset-password → ResetPasswordComponent
├── /verify-2fa/:email → Verify2FAComponent
├── /verify-email → VerificationEmailComponent
├── /email-verified → EmailVerifiedComponent
└── /account-status → AccountStatusComponent
```

9.3.2 Entity Administration Routes (`entity-administration-routing.module.ts`)

```
/company-administration
├── '' → redirect to /entities/list
├── /entities → EntitiesModule (lazy)
├── /roles → RolesModule (lazy)
├── /user-accounts → UserAccountsModule (lazy)
└── /workflows → WorkflowsComponent
```

9.3.3 System Administration Routes (`system-administration-routing.module.ts`)

```
/system-administration
├── '' → redirect to /dashboard
├── /erp-functions → ErpFunctionsModule (lazy)
└── /erp-modules → ErpModulesModule (lazy)
```

9.3.4 Finance Routes (`financials-routing.module.ts`)

```
/financials
└── '' → InvoicesComponent
```

9.3.5 Summary Routes (`summary-routing.module.ts`)

```
/summary
├── /profile → ProfileComponent
├── /settings → SettingsComponent
├── /notifications → NotificationsComponent
└── /actions → ActionsComponent
```

9.4 Route Guards

AuthGuard

- Location: `core/Guards/auth.guard.ts`
- Purpose: Verifies user authentication
- Logic: Checks for token in localStorage
- Applied To: All routes under AppLayoutComponent

9.5 Dynamic Routing

The application supports dynamic module routing through `ModuleNavigationService`:

- Modules are loaded based on user permissions
- Routes are generated from Functions and Modules data
- Menu structure reflects available modules

---

10. Directory Purpose Reference

10.1 Quick Reference Table

Directory	Purpose	Location
Core API	Centralized HTTP communication	src/app/core/api/
Guards	Route protection	src/app/core/Guards/
Interceptors	HTTP request/response handling	src/app/core/Interceptors/
Core Services	Global singleton services	src/app/core/services/
Core Models	Shared data models	src/app/core/models/
Core Components	Global UI components	src/app/core/components/
Layout	Application shell components	src/app/layout/
Auth Module	Authentication & session	src/app/modules/auth/
Entity Admin	Organization & user management	src/app/modules/entity-administration/

Directory	Purpose	Location
System Admin	System configuration	src/app/modules/system-administration/
CRM	Customer relations	src/app/modules/customer-relation-management/
Finance	Accounting & financials	src/app/modules/finance-accounting/
SCM	Supply chain	src/app/modules/supply-chain-management/
Project Controls	Project management	src/app/modules/project-controls/
Document Control	Document management	src/app/modules/document-control/
Dashboard	Main dashboard	src/app/modules/dashboard/
Summary	User profile & settings	src/app/modules/summary/
Shared Components	Reusable UI components	src/app/Shared/components/
Shared Modules	Shared Angular modules	src/app/Shared/shared/
Assets	Static resources	src/assets/
i18n	Translation files	src/assets/i18n/
Layout Assets	Theme & layout files	src/assets/layout/

10.2 Component Organization

Within Modules

Each feature module typically follows this structure:

```
module-name/
├── module-name.module.ts
├── module-name-routing.module.ts
├── components/        # UI components
├── services/          # Business logic services
├── models/            # Data models
└── [sub-modules]/     # Nested feature modules
```

Component Structure

```
component-name/
├── component-name.component.ts    # Component logic
├── component-name.component.html   # Template
└── component-name.component.scss   # Styles
```

10.3 Service Organization

10.3.1 Service Location Rules

- Global Services: `src/app/core/services/`
- Module Services: `src/app/modules/{module}/services/`
- Shared Services: Can be in `core/services/` if used across modules

10.3.2 Service Naming

- Use descriptive names: `user-accounts.service.ts`
- Include module prefix if module-specific: `entities.service.ts`
- Use `.service.ts` suffix

---

11. Appendices

11.1 Appendix A: Complete File Tree

```
ERP-front/
├── angular.json
├── package.json
├── package-lock.json
├── tsconfig.json
├── tsconfig.app.json
├── tsconfig.spec.json
├── README.md
├── CHANGELOG.md
├── deploy.md
├── MODULE_URLS_DATABASE.md
├── timesheet-instructions.md
├── Docs/
|   ├── Account_and_Session_Management.md
|   ├── Folder_Structure_Map.md
|   ├── Technical_Reference_Manual.md
|   └── ERP APIs– (1A-F) Account and Session Management (v6.1) images/
├── src/
|   ├── app/
|   |   ├── app.component.ts
|   |   ├── app.component.html
|   |   ├── app.component.scss
|   |   ├── app.component.spec.ts
|   |   ├── app.module.ts
|   |   ├── app-routing.module.ts
|   |   ├── core/
|   |   |   ├── api/
|   |   |   ├── components/
|   |   |   ├── directives/
|   |   |   ├── enums/
|   |   |   ├── Guards/
|   |   |   ├── Interceptors/
|   |   |   ├── models/
|   |   |   ├── pipes/
|   |   |   ├── services/
|   |   |   └── validators/
|   |   ├── layout/
|   |   |   ├── app-breadcrumb/
|   |   |   ├── app-footer/
|   |   |   ├── app-layout/
|   |   |   ├── app-menu/
|   |   |   ├── app-menuProfile/
|   |   |   ├── app-rightMenu/
|   |   |   ├── app-services/
|   |   |   ├── app-sidebar/
|   |   |   ├── config/
|   |   |   ├── no-internet-overlay/
|   |   |   └── top-bar/
|   |   ├── modules/
|   |   |   ├── auth/
|   |   |   ├── dashboard/
|   |   |   ├── summary/
|   |   |   ├── entity-administration/
|   |   |   ├── system-administration/
|   |   |   ├── customer-relation-management/
|   |   |   ├── finance-accounting/
|   |   |   ├── supply-chain-management/
|   |   |   ├── project-controls/
|   |   |   └── document-control/
|   |   └── Shared/
|   |       ├── components/
|   |       └── shared/
|   ├── assets/
|   |   ├── customIcons/
|   |   ├── demo/
|   |   ├── i18n/
|   |   ├── images/
|   |   ├── layout/
|   |   ├── media/
|   |   ├── pdfjs/
|   |   └── rich-text/
|   ├── environments/
|   |   ├── environment.ts
|   |   ├── environment.prod.ts
|   |   └── environmentTest.ts
|   ├── favicon.ico
|   ├── index.html
|   ├── main.ts
|   ├── styles.scss
|   ├── table-loading-spinner.html
|   └── upload.php
└── dist/
    └── avalon-ng/
```

11.2 Appendix B: Module Route Mapping

Module	Route Path	Guard	Lazy Load
Dashboard	/	Yes	Yes
Summary	/summary	Yes	Yes
System Administration	/system-administration	Yes	Yes
Entity Administration	/company-administration	Yes	Yes
Document Control	/document-control	Yes	Yes
Finance & Accounting	/financials	Yes	Yes
Authentication	/auth	No	Yes
Landing	/landing	No	Yes
Not Found	/notfound	No	Yes

11.3 Appendix D: Key Abbreviations

Abbreviation	Full Form
API	Application Programming Interface
CRUD	Create, Read, Update, Delete
RBAC	Role-Based Access Control
WBS	Work Breakdown Structure
CBS	Cost Breakdown Structure
CRM	Customer Relationship Management
SCM	Supply Chain Management
DMS	Document Management System
ERP	Enterprise Resource Planning
2FA	Two-Factor Authentication
KPI	Key Performance Indicator
RTL	Right-to-Left
LTR	Left-to-Right
i18n	Internationalization
HTTP	Hypertext Transfer Protocol
HTTPS	Hypertext Transfer Protocol Secure
JSON	JavaScript Object Notation
SCSS	Sass Cascading Style Sheets
TS	TypeScript

Document Version History

Version	Date	Changes
1.0	2025	Initial comprehensive documentation