Master Data Management Strategy

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Master Data Management Strategy

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Description: Outlines the strategy for managing master data across the organization, including governance, quality, and architecture.

Master Data Management (MDM) Strategy

Project: adpa-enterprise-framework-automation
Version: 3.2.0
Date: July 2025

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1. Introduction

This document details the Master Data Management (MDM) Strategy for the adpa-enterprise-framework-automation project—a modular, standards-compliant Node.js/TypeScript automation framework supporting enterprise requirements, project, and data management. The framework underpins robust integration, automation, and reporting aligned with BABOK v3, PMBOK 7th Edition, and (in progress) DMBOK 2.0.

With the ongoing expansion of capabilities (including Adobe Creative Suite integration, Azure/SharePoint, and advanced API management), establishing a unified, governed, and high-quality master data foundation is critical for scalability, interoperability, compliance, and business value realization.

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2. MDM Goals and Objectives

Strategic Goals:

- Establish a single, authoritative source of master data (golden record) across critical domains (projects, requirements, users, templates, compliance assets, digital assets).
- Enable seamless, standards-compliant data integration between system modules (e.g., API, CLI, Adobe, Azure/SharePoint, collaboration tools).
- Drive data quality, consistency, and traceability to support regulatory compliance (BABOK, PMBOK, DMBOK, enterprise standards).
- Support secure, role-based access and collaboration, enabling multi-user and organizational workflows.
- Facilitate analytics, reporting, and automation by ensuring trusted, well-governed master data.
- Accelerate onboarding of new integrations, APIs, and automation workflows with standardized, reusable master data entities.

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3. Scope

3.1 Master Data Domains

Domain	Description	Key Attributes
Projects	Core project metadata, configuration, status, and relationships	ID, Name, Description, Type, Status, Owner, Dates
Requirements	Business, technical, regulatory requirements and traceability	ID, Text, Type, Priority, Source, Status, Linked Docs
Templates	Document, reporting, and visual templates for automation and compliance	ID, Name, Version, Category, Tags, Content, Owner
Users/Teams	User, team, and role definitions with permissions and audit trail	User/Team ID, Name, Roles, Permissions, Activity
Digital Assets	PDFs, images, InDesign, Illustrator, Photoshop, and generated content	Asset ID, Type, Version, Metadata, Linked Project
APIs	Registered API definitions and metadata (OpenAPI, endpoints, compliance tags)	API ID, Name, Version, Type, Description, Tags

Domain	Description	Key Attributes
Compliance	Standards, controls, and compliance mapping (e.g., PMBOK, BABOK, DMBOK)	Control ID, Standard, Mapping, Status, Evidence
Collaboration	Permissions, sharing, audit trails, workflow status	Record ID, Actor, Action, Timestamp, Target

3.2 Systems in Scope

- **adpa-enterprise-framework-automation**: Core API, CLI, and admin modules
- **Adobe Creative Suite Integration**: InDesign, Illustrator, Photoshop, Document Generation APIs
- **Azure Services**: API Center, SharePoint, Microsoft Graph
- **Collaboration Layer**: User/team management, permissions, workflow
- **Document Generation Pipeline**: Markdown, template processing, PDF/output assets
- **External APIs**: OpenAI, Google AI, other generative/analysis providers

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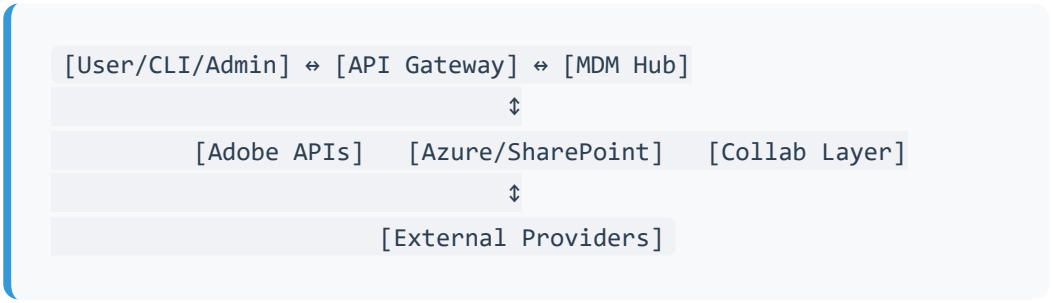
4. MDM Architecture

Overview:
A modular, API-centric, and cloud-integrated architecture, leveraging TypeScript/Node.js with enterprise security, scalability, and maintainability.

Key Elements:

- **MDM Hub/Service**: Central master data repository (could be a dedicated service or module, e.g., `src/mdm/`).
- **API-first Access**: All master data exposed and managed via secured RESTful APIs (Express.js), supporting CRUD, search, and batch operations.
- **Event-Driven Sync**: Near real-time synchronization between system components (Adobe, Azure, SharePoint, CLI, admin) using events or webhooks.
- **Data Model Governance**: TypeSpec/OpenAPI-based schemas for strict definition and validation of master data entities.
- **Integration Adapters**: Standard connectors for Adobe, Azure, and other platforms to maintain master data lineage and consistency.
- **Authentication & Authorization**: OAuth2/JWT-based access, with granular RBAC aligned to MDM domains.
- **Data Lineage & Audit**: Full traceability of changes, access, and lifecycle events for all master data objects.

Reference Diagram:



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5. Governance and Stewardship

Data Governance Structure:

- **MDM Steering Committee**: Senior stakeholders from product, architecture, compliance, and operations.
- **Data Stewards**: Assigned per master data domain; responsible for data definitions, quality, ownership, and lifecycle management.
- **Data Owners**: Business and technical leads accountable for master data integrity and compliance.

- **Change Control Board**: Approves schema, integration, and process changes affecting master data.

Policies:

- **Data Standards**: All master data entities must adhere to defined TypeSpec/OpenAPI schemas.
- **Lifecycle Management**: Definitions for create, update, archive, and purge actions.
- **Access Management**: RBAC policies enforced for all CRUD and administrative actions.
- **Audit & Compliance**: All changes logged with timestamp, actor, and reason for traceability.
- **Data Privacy**: Compliance with applicable data privacy and protection regulations (e.g., GDPR).

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6. Data Quality for Master Data

Quality Dimensions & Controls:

- **Completeness**: Required fields enforced at API and UI levels.
- **Uniqueness**: Golden record enforced via primary keys (UUID, natural keys) and deduplication logic.
- **Consistency**: Cross-system validations (e.g., project IDs in assets must exist in Projects domain).
- **Accuracy**: Automated and manual validation routines; AI-augmented checks for content-based domains.
- **Timeliness**: SLA for data sync between integrations (e.g., <1 minute for project status updates).
- **Validity**: Schema validation (AJV, Zod, Joi) on all create/update operations.

Monitoring & Improvement:

- **Dashboards**: Data quality KPIs tracked and reported in admin interface.

- **Data Profiling**: Regular profiling jobs to identify anomalies and improvement opportunities.
- **Issue Management**: Workflow for raising, triaging, and resolving data quality issues.

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7. Implementation Roadmap

Phase	Key Activities	Timeline	Milestones
1. Design	Define MDM domains, data models, governance roles, and policies	M1-M2	MDM schemas, data steward assignments
2. Foundation	Implement MDM Hub/module, secure API endpoints, initial integrations	M2-M3	MDM API live, RBAC enforced, audit logging
3. Integration	Onboard Adobe, Azure/SharePoint, collaboration, external providers	M3-M5	End-to-end data flows, golden record achieved
4. Data Quality	Implement DQ rules, profiling, monitoring, dashboards	M4-M5	Quality KPIs and reporting active
5. Governance	Run regular stewardship, audits, continuous improvement cycles	M5+	First audit completed, issue tracker live

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8. Approval

Prepared by:
Data Management Architect, adpa-enterprise-framework-automation

Reviewed by:
Product Owner, Lead Developer, Compliance Officer, Data Stewards

Approved by:
MDM Steering Committee

Revision History:

- v1.0 – July 2025 – Initial Release

Appendix (References):

- DMBOK 2.0, BABOK v3, PMBOK 7th Edition
- ADPA API and architecture documentation
- SharePoint and Azure API integration guides
- Adobe Creative Suite implementation plans
