Prowiz-An Enterprise IntelliAgent ERP

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Outline

Section 1

System Architecture Layers

System Architecture - Part 1

Layer	Key Functionalities
UI Layer	Provides the user interface for document upload, agent triggering, task management, version review, change history, and analytics dashboards. Interfaces with API layer for all interactions.
API Layer	Acts as the central access point via ingress and API gateway. Handles routing, authentication, rate limiting, versioned API groups (auth, agent, document, ETL, ERP, summary, compliance).

Table: Functional Overview of Core System Layers (Part 1)

System Architecture - Part 2

Layer	Key Functionalities
ERP Task Engine Layer	Manages projects, tasks, workflows, approvals, assignments. Acts as the orchestrator connecting ETL, AI, and document systems with user workflows and audit logs.
AI Agent Layer	Executes intelligent agents for document generation, compliance review, email understanding, P&ID parsing, semantic diffing, enquiry processing, and task summaries.

Table: Functional Overview of Core System Layers (Part 2)

System Architecture - Part 3

Layer	Key Functionalities
ETL & Digitisation Layer	Ingests and watches file systems and document uploads. Computes checksums, extracts metadata, invokes AI-based content extraction, and stores structured outputs.
Document System Layer	Manages file uploads, versioning, semantic diffing, review flows, and links documents to tasks. Interfaces with storage and audit layers.

Table: Functional Overview of Core System Layers (Part 3)

System Architecture - Part 4

Layer	Key Functionalities
Storage Layer	Handles object storage (MinIO/S3), metadata (MongoDB/Postgres), embeddings (vector DB), audit trails (TimescaleDB), and raw file lifecycle APIs.
Observability Layer	Collects metrics (Prometheus), logs (Loki/ELK), distributed traces (Jaeger), alerting (Alertmanager), and agent audit logs. Visualized via Grafana.
Infrastructure Layer	Provides the platform base using Kubernetes, Vault, Prometheus, MinIO, SQL/NoSQL DBs, service mesh, ingress, and network/security policies.

Table: Functional Overview of Core System Layers (Part 4)

Section 2

ERP Task Engine Layer

ERP Task Engine Layer - Part 1

Component	**Functional Responsibility**
Task Manager	Create, update, and assign tasks linked to documents and agents
Workflow Controller	Control state transitions, enforce review rules
Review Interface	Collect reviewer decisions and confirmations

Table: ERP Task Engine - Functional Responsibilities (Part 1)

ERP Task Engine Layer - Part 2

Component	**Functional Responsibility**
Project Planner	Organize project timeline, deliverables, dependencies
Task Tracker	Track progress, task time, SLA milestones
Notification System	Send alerts, reminders, escalation messages

Table: ERP Task Engine - Functional Responsibilities (Part 2)

ERP Task Engine Layer - Part 3

Component	**Functional Responsibility**
Revision Alert Engine	Trigger dependent task revision when spec changes are detected
Project Query Agent	Provide real-time status and updates by interacting with multiple project agents
Analytics Engine	Report task durations, agent success rate, delays

Table: ERP Task Engine - Functional Responsibilities (Part 3)

ERP Task Engine Layer - Part 4

Component	**Functional Responsibility**
File Browser	View, search, and link documents to tasks
ERP API Interface	Accept and respond to API calls from UI and other layers
Task Database	Store all task metadata, decisions, timestamps, and links

Table: ERP Task Engine - Functional Responsibilities (Part 4)

Technical Responsibilities - Part 1

Component	**Technical Responsibility**
Task Manager	Exposes REST services to create, update, fetch, and assign tasks
Workflow Controller	Implements task FSM logic with configurable state transitions
Review Interface	Frontend and backend views integrated with task models

Table: ERP Task Engine - Technical Responsibilities (Part 1)

Technical Responsibilities - Part 2

Component	**Technical Responsibility**
Project Planner	Gantt and dependency logic using temporal fields and project graph
Task Tracker	Tracks task durations and stages via DB triggers or polling
Notification System	Hooks into Prometheus Alertmanager or custom notifier for emails, Slack, SMS

Table: ERP Task Engine - Technical Responsibilities (Part 2)

Technical Responsibilities - Part 3

Component	**Technical Responsibility**
Revision Alert Engine	Listens to changes in spec docs, triggers downstream task regeneration
Project Query Agent	Uses vector or indexed metadata to answer queries via LLM or keyword logic
Analytics Engine	Uses TimescaleDB or dashboard backend to show task KPIs

Table: ERP Task Engine - Technical Responsibilities (Part 3)

Technical Responsibilities - Part 4

Component	**Technical Responsibility**
File Browser	Embedded S3/MinIO explorer with task linkage metadata
ERP API Interface	REST/GraphQL endpoints with role-based access control
Task Database	Postgres with schema for task, versions, relations, timestamps

Table: ERP Task Engine - Technical Responsibilities (Part 4)

Section 3

ETL and Digitisation Layer

ETL and Digitisation Layer - Functional Responsibilities (Part 1)

Component	**Functional Responsibility**
File Watcher	Detect new files or folder changes from UI or simulation output
Checksum Engine	Compute hash and compare against existing versions to avoid duplication
Metadata Extractor	Extract filename, type, timestamp, author, tags
Content Extractor	Run format-based parsers or OCR tools to extract document content
Simulation Connector	Pull data from engineering software (e.g., AVEVA, HYSYS) via COM or CLI

Table: ETL and Digitisation Layer - Functional Responsibilities (Part 1)

ETL and Digitisation Layer - Functional Responsibilities (Part 2)

Component	**Functional Responsibility**
Agent Trigger Manager	Decide which agents to trigger and when (e.g., document parser, compliance)
Error and Retry Handler	Reattempt failed extractions or flag for manual review
ERP Task Notifier	Create new ERP tasks or update existing tasks based on file content
Storage Uploader	Push raw and structured outputs to File Management Layer

Table: ETL and Digitisation Layer - Functional Responsibilities (Part 2)

ETL and Digitisation Layer - Technical Responsibilities (Part 1)

Component	**Technical Responsibility**
File Watcher	Uses S3 notifications, Linux inotify, or Windows filesystem events
Checksum Engine	Uses SHA-256 or similar to verify content changes
Metadata Extractor	YAML/JSON/regex parsers and custom rules per file type
Content Extractor	Integrates Tesseract, Donut, PDF parsers, or custom XML/CSV loaders
Simulation Connector	Python COM interface via 'pywin32', AutoCAD script runner, HYSYS export tool

Table: ETL and Digitisation Layer - Technical Responsibilities (Part 1)

ETL and Digitisation Layer - Technical Responsibilities (Part 2)

Component	**Technical Responsibility**
Agent Trigger Manager	Sends API calls or events to AI agent dispatcher per document class
Error and Retry Handler	Uses retry queue (e.g., RabbitMQ, Redis) with backoff and alerting
ERP Task Notifier	RESTful API call to ERP Task Engine with task context payload
Storage Uploader	Calls File Management API to store versioned files and metadata

Table: ETL and Digitisation Layer - Technical Responsibilities (Part 2)

Section 4

AI Agent Layer

AI Agent Layer - Functional Responsibilities (Part 1)

Agent Name	**Functional Responsibility**
Email Agent	Parse instructions, project context, and intent from incoming emails
Doc Extraction Agent	Extract data from tables, forms, and scanned docs using OCR or layout models
Document Generation Agent	Generate structured documents like BoQ or datasheets from extracted data
Compliance Agent	Validate content against standards, checklists, and tender specs
Diagram GPT	Parse and understand flow diagrams like P and ID or layout maps
ERP Action Agent	Convert natural language into ERP commands or task state changes

Table: AI Agent Layer - Functional Responsibilities (Part 1)

AI Agent Layer - Functional Responsibilities (Part 2)

Agent Name	**Functional Responsibility**
Project Query Agent	Answer task-related queries across agents and document context
Enquiry Agent	Parse RFQs to extract delivery dates, quantities, vendor details
AI Review Summary Agent	Generate summaries for human reviewers with context awareness
Semantic Diff Agent	Highlight structural and content changes between document versions
Iteration Summary Agent	Track changes over task lifecycle and report rejections, updates
Change Justification Agent	Prompt reviewer to explain rejection or suggest revision reason

Table: AI Agent Layer - Functional Responsibilities (Part 2)

AI Agent Layer - Technical Responsibilities (Part 1)

Agent Name	**Technical Responsibility**
Email Agent	NLP pipeline with rule-based intent parser, optionally tied to email gateway or ERP API
Doc Extraction Agent	Uses OCR or layout parser for tables and text zones, outputs structured fields
Document Generation Agent	Template-to-prompt pipeline with slot filling, LLM-based output generation
Compliance Agent	Rule engine and prompt chain for checklist validation and clause comparison
Diagram GPT	VLM (e.g. Layout Parser + LLM) to parse nodes, connections, and symbols
ERP Action Agent	Prompt-tuned agent that maps instructions to ERP APIs or state updates

Table: AI Agent Layer - Technical Responsibilities (Part 1)

AI Agent Layer - Technical Responsibilities (Part 2)

Agent Name	**Technical Responsibility**
Project Query Agent	Uses vector or structured context store to resolve task or project questions
Enquiry Agent	Uses prompt chaining to extract quantities, specs, RFQ tables, and requirements
AI Review Summary Agent	Extracts section highlights and generates human-reviewable summaries
Semantic Diff Agent	Compares two files via structure, token diff, and summary generation
Iteration Summary Agent	Aggregates change history and task metadata to summarize evolution
Change Justification Agent	Prompts reviewers for structured or free-form explanation, logs it to task

Table: AI Agent Layer - Technical Responsibilities (Part 2)