

# AI agent-based PDP automation proof-of-concept

Client Internal AI proof-of-concept  
Role Enterprise Architect  
Period 2025-04 — 2025-09

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## CONTEXT

Enterprise Product Development Processes — multi-stage, multi-stakeholder, iterative — are slow and unpredictable. Regulated industries want AI-driven compression of cycle time without sacrificing the quality gates that compliance requires. The POC had to credibly demonstrate both speed-up and safety, and had to be reusable across different industry prospects rather than over-fit to one.

## APPROACH

Modelled a representative target-state PDP using fictional demo data, structurally realistic enough to land the value with enterprise audiences. Identified process segments safe to automate via AI agents. Wrote the agent technical specifications (functions, interactions, behavioural requirements). Built the POC using multi-agent frameworks (Crew AI, MS Autogen) plus a custom RAG system (FastAPI, LangChain, OpenAI embeddings, PostgreSQL vector search) for organisational-knowledge retrieval. Designed for repeatable demonstration across multiple regulated-industry prospects.

## OUTCOME

Built an AI agent-based proof-of-concept that demonstrated up to 5× compression of enterprise product-development cycles — multi-agent architecture (Crew AI, MS Autogen) plus a custom RAG-based organisational-knowledge layer. Demoed to a vertically integrated oil & gas company, leading to negotiations for full-scale implementation.

- 5× projected reduction in product-development cycle (demonstrated on representative data).
- AI-powered quality gates structurally reduce non-compliance and standards-violation risk.
- Foundation for analytics tracking each product through every stage of the cycle.
- Demoed to a vertically integrated oil & gas company (5 stakeholders); positive feedback led to negotiations for full-scale implementation.

## KEY RESULT

Built an AI agent-based POC demonstrating 5× compression of enterprise PDP cycles — multi-agent architecture plus RAG knowledge layer — demoed to a vertically integrated oil & gas company with progression to implementation-negotiation stage.