

Multi-Agent System for Automated Presentation Generation

Architecture, Patterns, Use Cases, and Limitations

Agenda

1. System Overview
2. Architecture and Agent Roles
3. Anthropic Patterns: Orchestrator, Evaluator, Prompt Chaining
4. Use Cases
5. Why n8n?
6. System Limitations
7. Conclusion

System Overview

Automated generation of presentations from documents

Uses LLMs, embeddings, and vector databases

Workflow triggered by file upload to Google Drive

Cloud-based orchestration with n8n

Architecture and Agent Roles

Trigger: Starts workflow on file upload

Importer: Loads and extracts files from Google Drive

Text Processor: Splits text, creates embeddings

Planner Agent: Creates logical slide structure

Slide Author Agent: Generates slide content

Evaluator Agent: Reviews and scores slides

Feedback Agent: Structures evaluation results

Storage: Persists slides and feedback

Anthropic Patterns in Use

Prompt Chaining: Sequential task decomposition

Orchestrator: Central agent delegates tasks to workers

Evaluator: Feedback loop for iterative improvement

Each agent follows structured prompts and roles

Use Cases

Academic and business presentation generation

Automated summarization and visualization of papers

Slide planning, authoring, and evaluation

Export to PDF/PPTX and cloud storage

Why We Use n8n

Visual low-code interface for rapid prototyping

Native integration with APIs (Google Drive, OpenAI)

Built-in support for parallel and sequential workflows

Persistence and resume support for long tasks

Event-based triggers and modular orchestration

System Limitations

Limited context window for LLMs

No real agent autonomy or shared memory

No built-in fact-checking or citation linking

Image extraction and relevance challenges

n8n lacks long-term memory and advanced scheduling

Conclusion

Modular multi-agent architecture enables automation

Anthropic patterns enhance reliability and structure

n8n provides flexible orchestration

System is extensible but has technical constraints

Future work: multilingual support, co-authoring, better memory