# System Diagram C4 Model

# Introduction

In the Specification & Design phase, I used the C4 model to gain a broader overview of the system that I am building for this project with N8N, Notion and OpenAI API. The C4 model, which stands for Context, Containers, Components, and Code, provides a structured way to visualize software architecture. This document contains the first three levels of the C4 model to demonstrate the practical applications and benefits of generative AI for enhancing workflow processes.

The first level of the C4 model outlines the broader concept of this project: a system that uses generative AI to create agents capable of enhancing organizational workflow processes and handling repetitive tasks.

The second level zooms into a specific component of this system: a task breakdown system powered by generative AI. This system enables project managers or supervisors to break down projects into actionable tasks efficiently.

The third level details how this task breakdown component utilizes generative AI, database management, and API integrations. These tasks are then processed by either human employees or specialized agents. While the development of these specialized agents is part of the first-level vision, it is beyond the scope of the current project and will be addressed in future work.

# System Overview

The AI-Enhanced Workflow Automation System integrates Notion, N8N, and OpenAI to automate and enhance project management tasks. The system dissects projects into actionable tasks using AI-driven automation, providing users with structured outputs that streamline workflows and improve productivity.

1. **System Context Diagram:** Provides a high-level overview of the system, showing how it interacts with external entities.

2. **Container Diagram:** Zooms into the system to show the high-level technical building blocks and their interactions.

3. **Component Diagram:** Further breaks down each container to show the major structural elements and their relationships.

4. **Detailed Workflow Diagram:** Provides a granular view of the workflow, detailing each step and interaction within the system.

By using the C4 model, I aim to offer a clear and detailed explanation of the system, making it accessible and understandable for both technical and non-technical stakeholders. This structured approach ensures that each part of the system is well-documented and its purpose and functionality are clearly explained.

# System Context Diagram

**Description**

The System Context Diagram provides a high-level overview of how the system breaks down tasks and sends these to AI agents or human employees. In the image you can see how data flows from the Project Backlog all the way to assigned agent or employee. The idea is that every department will have this system and will be able to breakdown their tasks for their departments.



Key Points:

- **Project Backlog**: Contains the list of new projects.

- **Project Manager**: Manages projects and sends data to the Breakdown Agent.

- **Breakdown Agent**: Breaks down the project into individual tasks.

- **Tasks**: Get sent to either AI agents or human employees for execution.

Interactions:

- **Project Managers**: Can manage their projects for their departments.

- **AI Agents:** Can perform tasks on behalf of the Project Managers.

- **Tasks**: Get assigned to either employees or AI agents for completion.
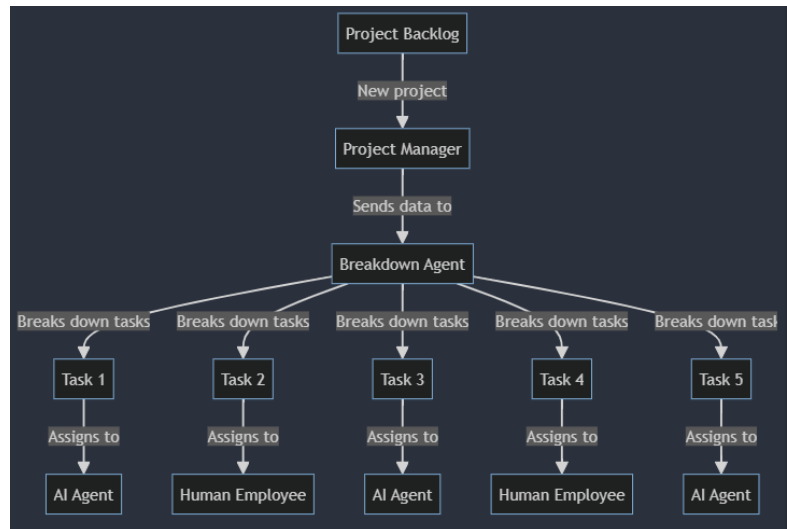
# Container Diagram

The Container Diagram zooms into the system's architecture, detailing the major containers such as the Notion Database, n8n Workflow (Breakdown Agent), and AI/Employee task execution. This diagram shows how these containers interact to enable project managers to break down projects into actionable tasks using generative AI.
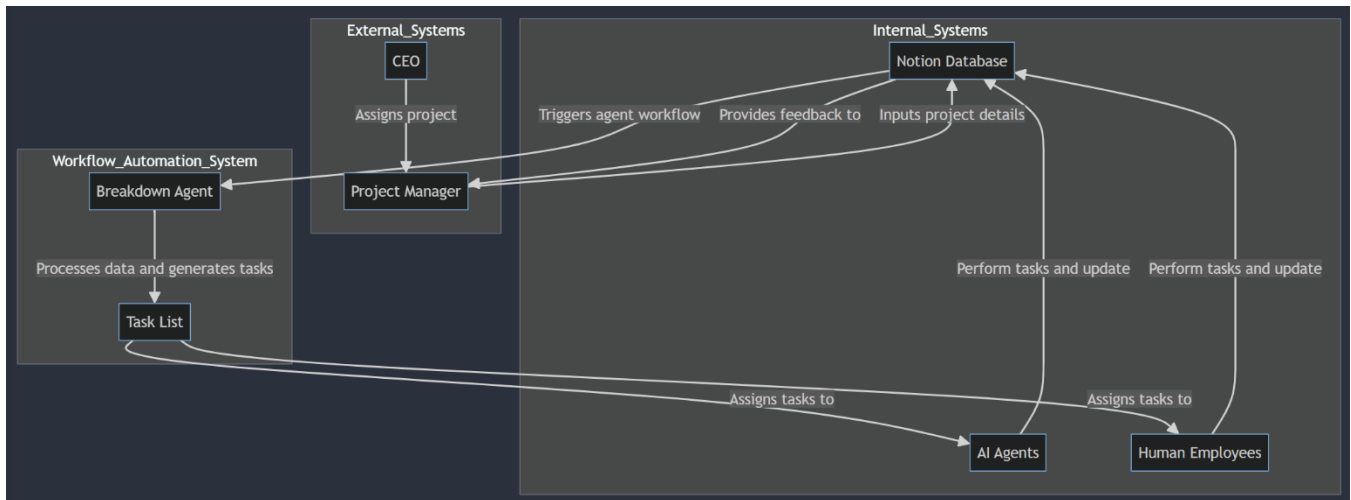


**Key Points:**

- **Notion Database**: Stores project data and task details.

- **n8n Workflow (Breakdown Agent)**: Processes project data and breaks it down into tasks using generative AI.

- **Task List**: Stores the generated tasks.

- **AI Agents and Human Employees**: Execute the tasks and update the database.

**Interactions:**

- **Project Managers**: Input project details into the Notion Database.

- **n8n Workflow (Breakdown Agent)**: Processes and breaks down the project into tasks.

- **Task List**: Manages the tasks generated by the Breakdown Agent.

- **AI Agents and Human Employees**: Perform the tasks and update the status in the Notion Database.

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# Component Diagram

The Component Diagram breaks down the Breakdown Agent (n8n Workflow) into its main parts, showing the internal structure and interactions. This includes the two different agents: one for large segmentation and another for breaking down the segments into actionable tasks.

**Key Points:**

- **Breakdown Agent (n8n Workflow)**: Consists of two agents:

    - **Breakdown Agent Level 1**: Breaks down the project into larger segments.

    - **Breakdown Agent Level 2**: Further breaks down the large segments into actionable tasks until they are small enough for execution.

- **OpenAI Processing**: Used by both agents to process and generate tasks.

- **Task Generator**: Component that creates the task list from the processed data.

**Interactions:**

- **Project Manager**: Inputs project details into the Notion Database.

- **Breakdown Agent Level 1**: Processes the project data into larger segments.

- **Breakdown Agent Level 2**: Further refines these segments into detailed, actionable tasks.

- **Task List**: Manages and stores the generated tasks.

- **AI Agents and Human Employees**: Execute the tasks and update the database.
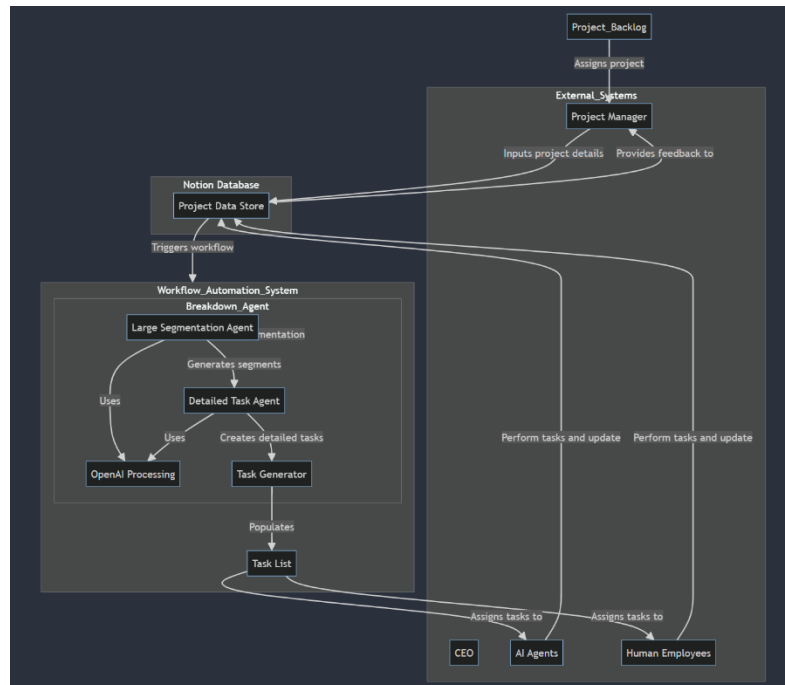
# Conclusion

The goal of this project was to show how generative AI can help improve workflow processes, using the C4 model to create clear diagrams of the system's architecture. At the first level, we provided a big-picture view, showing how the system interacts with external entities like the Project Manager, AI agents, and human employees.

The second level detailed the main parts of the system, including the Notion Database and Breakdown Agent, and how these parts interact to manage and break down projects into actionable tasks.

The third level broke down the Breakdown Agent into its main parts, explaining the roles of Breakdown Agent Level 1 and Breakdown Agent Level 2, and how they work together to process project data into manageable tasks.

One challenge was ensuring all parts of the system worked well together, which we addressed by creating detailed diagrams to map out these interactions. We also had to carefully manage data flow and processing, which the Breakdown Agent handled effectively. Future work could focus on refining these agents to handle more complex tasks, expanding the system to more departments, and integrating additional AI features to further enhance workflows.

Testing the system in real situations and getting user feedback will be crucial for validating its effectiveness and guiding improvements.

Overall, document demonstrates how generative AI can be used to enhance workflow processes, helping to increase productivity and streamline operations.