## **📄 Requirement Analysis Document**

**Project Title:** n8n AI Agent for Gold Price Retrieval  
 **Date:** May 8, 2025  
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### **1. Introduction**

#### **1.1 Purpose**

This document outlines the functional and non-functional requirements for an n8n workflow that uses an AI agent to retrieve and return the current gold price from the internet using Google Gemini API, Simple Memory, and SerpAPI.

#### **1.2 Scope**

The agent interacts with users via n8n, understands user requests using the Gemini LLM, fetches real-time gold price data using SerpAPI, stores temporary context via Simple Memory, and returns the result to the user.

#### **1.3 Intended Audience**

* Developers
* Project Managers
* AI/ML Engineers
* QA/Testers

### **2. Overall Description**

#### **2.1 Product Perspective**

This is a standalone n8n workflow integrating multiple services. It functions as a simple, task-specific AI agent and does not depend on a larger platform.

#### **2.2 Product Functions**

* Accepts user input related to gold price queries
* Uses Gemini API to interpret intent
* Uses SerpAPI to fetch current gold price
* Returns the answer in natural language
* Maintains short-term context via Simple Memory

#### **2.3 User Characteristics**

Users are expected to be non-technical individuals requesting the current gold price. Interaction should be natural and conversational.

#### **2.4 Assumptions and Dependencies**

* Internet connection is stable
* Valid SerpAPI and Gemini API keys are configured
* n8n instance is properly deployed and secure

### **3. System Features / Functional Requirements**

| **ID** | **Description** |
| --- | --- |
| FR1 | The system shall accept user input asking for the current gold price |
| FR2 | The system shall use Google Gemini API to interpret the request |
| FR3 | The system shall call SerpAPI to fetch the latest gold price |
| FR4 | The system shall return a natural language response with the gold price |
| FR5 | The system shall store recent queries in Simple Memory for context retention |

### **4. Non-Functional Requirements**

| **ID** | **Description** |
| --- | --- |
| NFR1 | Response time shall be under 3 seconds |
| NFR2 | System shall be available 99% of the time |
| NFR3 | User data and API keys must be securely stored and not logged |
| NFR4 | Must support English language queries |

### **5. External Interface Requirements**

#### **5.1 User Interface**

* A simple chat-style input/output interface via n8n UI or webhook (e.g., Telegram, Webchat)

#### **5.2 Software Interfaces**

* **Gemini API** for intent parsing
* **SerpAPI** for fetching real-time gold price data
* **Simple Memory** module for storing recent user interactions

### **6. Data Requirements**

| **Data** | **Source** | **Use** |
| --- | --- | --- |
| Gold Price | SerpAPI | Display current gold price |
| User Query | n8n webhook or chat input | Intent parsing |
| Memory Context | Simple Memory | Track previous interactions |

### **7. Appendices**

#### **7.1 Glossary**

* **n8n**: Node-based workflow automation tool
* **LLM**: Large Language Model
* **Gemini API**: Google’s generative AI API
* **SerpAPI**: Real-time search engine API
* **Simple Memory**: Lightweight context tracking module

#### **7.2 References**

* [n8n Docs](https://docs.n8n.io/)
* [SerpAPI](https://serpapi.com/)
* [Google Gemini API](https://ai.google.dev/)