**System Requirements**

**P13: ContinuumAI**

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# Introduction

**Project Code:** P13

**Project Title:** ContinuumAI

**Project Overview:** ContinuumAI is an Agentic AI system designed to function as a personal data scientist for non-technical users in business roles. Its primary objective is to enable decision-makers - such as managers in HR, Sales, Marketing, and Product teams - to access and act upon data insights through natural language prompts, without requiring coding or technical expertise.

The system bridges the gap between data science capabilities and business needs by automating the full analytics workflow: from data ingestion to descriptive, diagnostic, predictive, and prescriptive analysis. It provides outputs such as trends, visualizations (e.g., bar charts, line graphs), forecasts, performance metrics, and actionable recommendations entirely based on user queries in plain English.

For example, a regional sales manager might want to understand what factors influenced last quarter’s revenue dip or forecast next month's performance. Instead of relying on a data team, they can simply ask the system in natural language. ContinuumAI automatically identifies the relevant data, applies the right analytical methods, and delivers clear, actionable insights empowering the user to make informed decisions instantly.

While the long-term goal is to support **all major business domains**, the current version of ContinuumAI is focused specifically on the **Sales domain**, allowing us to build deep and meaningful capabilities before expanding further.

As for the data required to support our sales-oriented features, we are currently in discussions with firms to obtain sales related datasets. If such data is not accessible, we will explore open-source alternatives (e.g., Kaggle, Hugging Face) or generate synthetic data based on well-defined schemas.

# System Actors

| **Actor Name** | **Description** |
| --- | --- |
| Sales Manager | Responsible for overseeing sales teams and performance across regions or product lines. Uses ContinuumAI to track sales trends, identify underperforming areas, and generate forecasts or performance reports. |
| Product Manager | Drives product development and strategy. Uses the system to uncover sales trends, customer insights, and market opportunities, enabling faster, data-informed decisions without technical support. |
| Sales Business Analyst | Supports sales strategy through data analysis and reporting. Uses the platform to quickly explore datasets, validate hypotheses, and generate insights (e.g., customer churn, revenue patterns) without manual SQL or spreadsheet work. |
| Customer Relationship Manager | Works post-sale to ensure client satisfaction and retention. Uses the system to identify at-risk customers based on declining purchases or engagement trends and to suggest proactive follow-up actions. |
| Regional Sales Lead | Focuses on sales activities within a specific geographic region. Uses ContinuumAI to assess territory-specific trends, seasonal patterns, and demand shifts, helping plan outreach and future steps to take. |
| ERP/Resource Planning Manager | Responsible for aligning inventory, procurement, and logistics based on product demand. Uses ContinuumAI to monitor sales trends across regions and time periods, helping to allocate resources (e.g., stock, labor, logistics support) more efficiently toward high-performing or fast-moving products. |
| Marketing Strategist | Focuses on planning high-level marketing campaigns and aligning them with business goals. Uses ContinuumAI to analyze sales trends, customer demographics, and regional performance data to identify underperforming products or markets. Based on these insights, they tailor marketing efforts to boost visibility and engagement where it's most needed. |

# Functional Requirements

| **Requirements of Sales Manager** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to ask what factors influenced last quarter’s revenue so I can understand root causes without waiting for analysts. |
| 2 | I want the system to generate a plain-English summary of weekly performance so I can quickly brief executives without building reports. |
| 3 | I want to receive proactive recommendations on how to close my pipeline gap so I can improve quota attainment. |
| 4 | I want to track quota attainment in real time so I can identify risks early. |
| 5 | I want to view sales rep performance comparisons so I can coach underperformers. |
| 6 | I want to run “what-if” scenarios on pricing or discount strategies so I can predict impact on revenue. |
| 7 | I want to identify churn risk segments so I can direct my team to retention efforts. |
| 8 | I want to drill down into regional or product sales trends so I can focus attention where it matters most. |
| 9 | I want alerts when major KPIs move unexpectedly so I can react immediately. |

| **Requirements of Product Manager** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to forecast product-specific demand so I can plan for upcoming launches and growth. |
| 2 | I want to connect product adoption data with sales outcomes so I can prioritize roadmap decisions. |
| 3 | I want to view product-level dashboards (eg. churn) so I can measure product success in the market.. |
| 4 | I want to analyze feature usage by customer segment so I can align development with needs. |
| 5 | I want to identify which features correlate with customer retention so I can focus investment. |
| 6 | I want to simulate how roadmap decisions could impact revenue so I can justify prioritization. |
| 7 | I want to benchmark my product performance against industry standards so I can spot opportunities. |
| 8 | I want to measure campaign impact on adoption so I can guide go-to-market strategy. |
| 9 | I want to receive early signals of declining usage so I can intervene before churn grows |

| **Requirements of Sales Business Analyst** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to explore KPIs like conversion, velocity, and churn without using SQL so I can quickly analyze performance. |
| 2 | I want to view detailed breakdowns of results (e.g churn, ROI) so I can understand what is driving outcomes. |
| 3 | I want to publish insights and visualizations so managers can use them in decision-making. |
| 4 | I want to upload datasets and have KPIs automatically detected so I save setup time. |
| 5 | I want to run a cohort analysis so I can track performance of different customer groups. |
| 6 | I want to validate the accuracy of dashboards so leaders trust the outputs. |
| 7 | I want to forecast trends in KPIs so I can flag upcoming risks. |
| 8 | I want to compare multiple time periods so I can assess growth patterns. |
| 9 | I want to integrate outputs into presentations easily so I can support executive discussions. |

| **Requirements of Customer Relationship Manager** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to identify at-risk accounts based on signals like declining usage so I can act before churn occurs. |
| 2 | I want to receive recommendations for upsell and cross-sell opportunities so I can grow existing accounts. |
| 3 | I want the system to generate proactive follow-up suggestions so I can maintain customer satisfaction. |
| 4 | I want to track customer health scores in real time so I can focus on high-priority accounts. |
| 5 | I want alerts when a key customer’s engagement drops suddenly so I can intervene. |
| 6 | I want to view relationship history (tickets, purchases, usage) in one place so I have context before meetings. |
| 7 | I want to analyze customer satisfaction survey trends so I can address systemic issues. |
| 8 | I want to predict likelihood of renewal for major accounts so I can plan retention campaigns. |
| 9 | I want to measure the ROI of my interventions so I know what’s working. |

| **Requirements of Regional Sales Lead** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to understand seasonal or geographic sales patterns so I can plan campaigns. |
| 2 | I want to forecast future territory performance so I can set realistic targets. |
| 3 | I want to compare region-by-region performance so I can spot underperforming areas. |
| 4 | I want to identify which reps or territories are exceeding targets so I can share best practices. |
| 5 | I want to simulate the effect of resource reallocation between regions so I can maximize growth. |
| 6 | I want to analyze competitor activity impact on my region so I can adjust strategy. |
| 7 | I want to detect anomalies (sudden dips or spikes) so I can investigate quickly. |
| 8 | I want to track pipeline health at a territory level so I know if goals are at risk. |

| **Requirements of ERP/Resource Planning Manager** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to align sales forecasts with inventory and logistics data so resources are allocated efficiently. |
| 2 | I want the system to forecast resource needs so I can plan procurement in advance. |
| 3 | I want to detect potential stockouts so I can adjust supply chain plans. |
| 4 | I want to simulate the impact of demand surges so I can stress-test capacity. |
| 5 | I want to balance staffing requirements with forecasted sales so I avoid shortages. |
| 6 | I want to receive alerts when resource utilization exceeds safe thresholds so I can act early. |
| 7 | I want to connect financial planning data with resource forecasts so budgets align. |
| 8 | I want to optimize warehouse capacity based on projected demand so I reduce waste. |
| 9 | I want to view integrated dashboards across sales, supply, and logistics so I see the big picture. |

| **Requirements of Marketing Strategist** | |
| --- | --- |
| **Sr#** | **Requirement** |
| 1 | I want to identify which channels generate the most qualified leads so I can focus budgets effectively. |
| 2 | I want to receive recommendations on reallocating spend so I can improve marketing-driven sales impact. |
| 3 | I want to compare ROI across campaigns so I can prove value to leadership. |
| 4 | I want to forecast campaign performance so I can plan ahead. |
| 5 | I want alerts when campaign metrics fall below benchmarks so I can act quickly. |
| 6 | I want to measure impact of brand campaigns on long-term sales so I can argue for investment. |
| 7 | I want to simulate different budget allocations so I can choose the best strategy. |
| 8 | I want to integrate campaign insights with sales data so I can prove end-to-end effectiveness. |

# Non-functional Requirements / Quality Attributes

| **Sr#** | **Requirements** |
| --- | --- |
| 1 | The system will process and display visualizations for 90% of natural language queries on datasets under 500 MB within 10 seconds. |
| 2 | A 100 MB CSV file will be ingested, processed, and made ready for analysis in under 60 seconds. |
| 3 | After a 15-minute tutorial, new users must achieve an 80% first-attempt success rate when generating a sales trend visualization without assistance. |
| 4 | The system must support 20 concurrent users with no more than a 20% degradation in average query response time compared to a single user. |
| 5 | Exporting any chart to a PNG file or data table to a CSV file must complete within 5 seconds. |

# Security Requirements

| **Sr#** | **Security Risks** | **Potential Losses** | **Controls** |
| --- | --- | --- | --- |
| 1 | Broken Access Control | Confidential data exposure, Data integrity compromise,  Legal and compliance issues | Session Isolation,  Access Control Validation,  Token Management |
| 2 | Cryptographic Failures | Confidential Data Exposure,  Data Integrity Compromise,  Regulatory Penalties | Encrypt Data at Rest and Transit,  Password Hashing,  Key Management |
| 3 | Injection | Confidential data exposure, Data integrity compromise,  System Compromise | Input Validation and Sanitisation,  Parameterized Queries for SQL |
| 4 | Unrestricted Resource Consumption | Denial of Service (DoS), Increased Operational Costs | Rate Limiting,  Resource Quotas (for network bandwidth etc.) |
| 5 | Server Side Request Forgery (SSRF) | Data Exposure,  Denial of Service (DoS) | Input Validation and Sanitization,  Allowlists for URL Origins |

# Security Engineer

| **Name of the Security Engineer** | Muhammad Nafees |
| --- | --- |

# Use of Generative AI

* Used to understand the typical LLM benchmark for processing CSV file, relevant for agentic models such like ours
* Learning about what kind of security requirements should we cater for
* Basic grammar fixing, sentence structuring

# Who Did What?

| **Name of the Team Member** | **Tasks done** |
| --- | --- |
| Umer | Section 1, Review Sections 2, 3, 7 |
| Mustufa | Section 4,7 |
| Ali Faizan | Section 1, 2, 7 plus review |
| Bazaf | Section 2,3 + review |
| Nafees | Section 5, 6 |

# Review checklist

| **Section** **Title** | **Reviewer Name(s)** |
| --- | --- |
| Introduction | Bazaf |
| Actors | Umer |
| Functional Requirements | Nafees |
| Non-functional requirements | Ali Faizan |
| Security Requirements | Mustafa |
| Use of Generative AI | Umer |