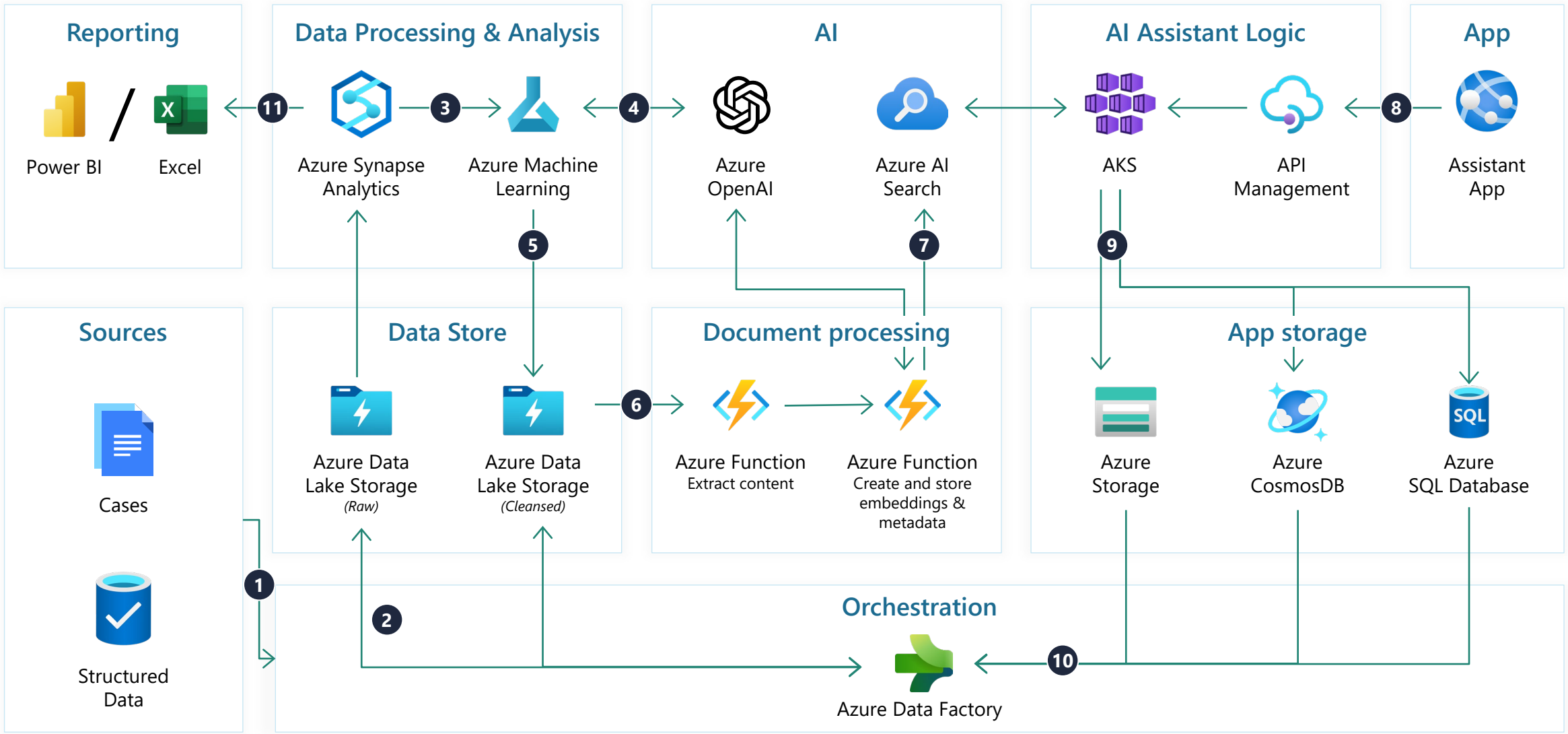
Assist fraud investigations

Assist fraud investigations Reference Architecture



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1. **Data Ingestion and Storage:** Business, HR documents, transaction records, and other relevant data are ingested into Azure Data Lake for storage. This process is facilitated using Azure Data Factory, which supports the efficient transfer and storage of large volumes of data.

2. **Raw Data Loading:** Raw data is loaded into Azure Data Lake Storage. This platform is designed to handle large volumes of data and supports integration with various analytics and machine learning tools.

3. **Formation of a Taskforce and Initial Analysis:** A dedicated taskforce reviews grant recipients and investigates suspicious cases. They use a combination of data on the businesses, including transaction records and other relevant information. Azure Synapse Analytics is utilized to integrate and process the data. Generative AI, possibly leveraging Azure Cognitive Services, is employed for triaging and organizing information, setting the stage for more detailed analysis. This approach facilitates the initial assessment of cases, pinpointing anomalies and gathering crucial evidence.

4. **Generative AI for Anomaly Detection:** Generative AI performs an initial review of the numerous cases, detecting anomalies and collecting pertinent evidence. This aids investigators in prioritizing their focus on the most suspicious cases.

5. **Data Lake Storage for Relevant Cases:** Cases deemed relevant are moved to a dedicated area within Data Lake Storage. Here, they undergo further processing, utilizing the RAG (Retrieval-Augmented Generation) pattern or similar methodologies for deep analysis.

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6. **Document Processing with Azure Functions:** Documents are processed using Azure's Form Recognizer or an equivalent process implemented in an Azure Function. This step involves extracting content from the documents for further analysis.

7. **Embedding Generation with Azure OpenAI:** Azure OpenAI is used to generate embeddings, which are then stored in Azure AI Search. This facilitates the accessibility of these embeddings for query and analysis by the AI Assistant application.

8. **AI Assistant for Information Retrieval:** When information is requested via the AI Assistant, it conducts searches on the vector content in Azure AI Search. It retrieves summaries and documentation from the stored data, enabling efficient access to relevant information.

9. **Complex Query Processing Across Databases:** The AI assistant processes complex queries to cross-reference employee records with transaction data. This data might be stored in Azure SQL Database, CosmosDB, and Azure Storage. These databases also serve to store user information, conversation history, feedback, and comments related to the cases.

10. **Feedback Loop and Adaptive Learning:** Analysts provide feedback on the AI-generated results, which is extracted using Azure DataFactory from the application's storage layer and moved to Azure Data Storage. Azure Machine Learning models then use this feedback to learn and adapt over time, improving their accuracy and effectiveness in fraud investigations.

11. **AI-Generated Documentation and Reporting:** As investigations conclude, AI generates drafts for documentation. Suggested fraud indicators and rules are integrated into the models to enhance future analyses. Reports can be generated using tools like Power BI and Excel, providing a comprehensive view of the findings and insights gained from the fraud investigations.