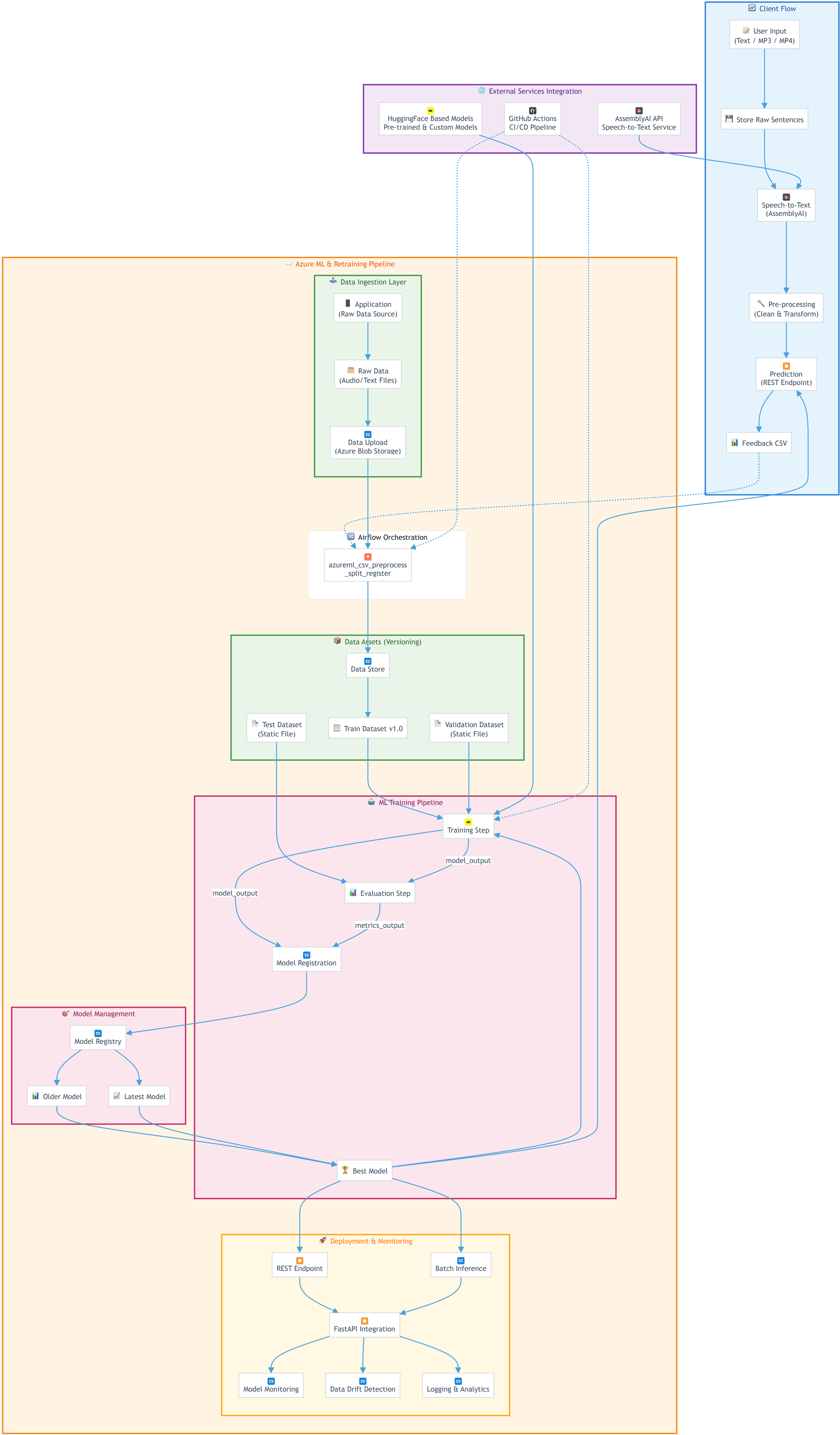


# Data Pipeline Architecture

MLOps Pipeline with Azure ML, Airflow Orchestration & External Service Integration



## How to Read This Diagram

<b>Solid Arrows:</b>	Direct data flow or process execution
<b>Dotted Arrows:</b>	External service dependencies or triggers
<b>Colored Sections:</b>	Different layers of the architecture (Client, Azure ML, External Services)
<b>Service Logos:</b>	Actual tools/platforms used (Azure, HuggingFace, AssemblyAI, etc.)
<b>Static Files:</b>	Validation and Test datasets are pre-existing files, not generated
<b>Feedback Loop:</b>	Best Model feeds back into the prediction endpoint for production use

## Tools & Technologies

<b>Microsoft Azure</b>	Cloud platform for ML services, storage, and deployment
<b>HuggingFace</b>	ML model hub for transformers and custom emotion models
<b>AssemblyAI</b>	Speech-to-text API for audio transcription
<b>FastAPI</b>	High-performance Python web framework for REST endpoints
<b>Apache Airflow</b>	Workflow orchestration platform for data pipeline automation
<b>GitHub Actions</b>	CI/CD automation platform for continuous integration