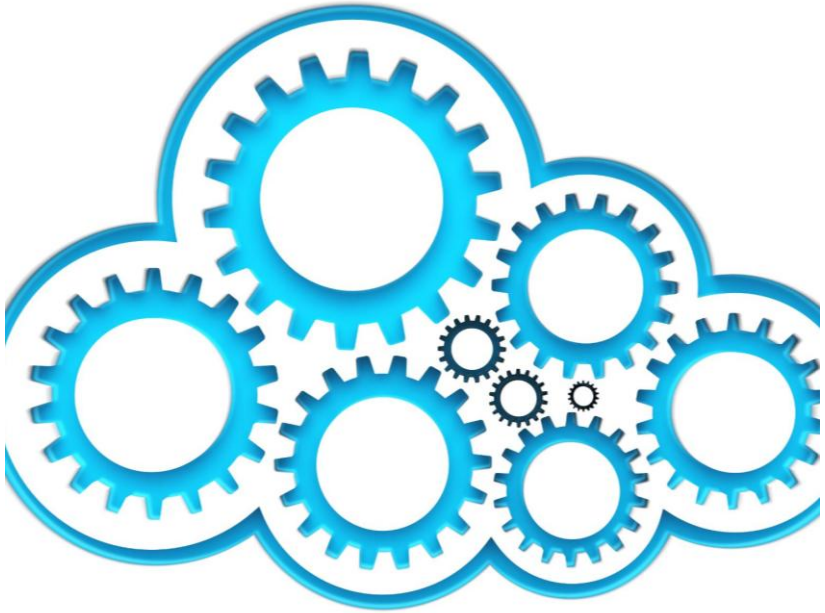
GOOGLE ADK OVERVIEW AND ARCHITECTURE

Understanding components and design of the development kit

OVERVIEW OF GOOGLE ADK

INTRODUCTION AND KEY FEATURES



Software Engineering Methodology

ADK uses a modular, testable approach prioritizing structured development for scalable AI agents.

Rich Tool Ecosystem

Includes tools for API interaction, databases, external services, and orchestration of complex workflows.

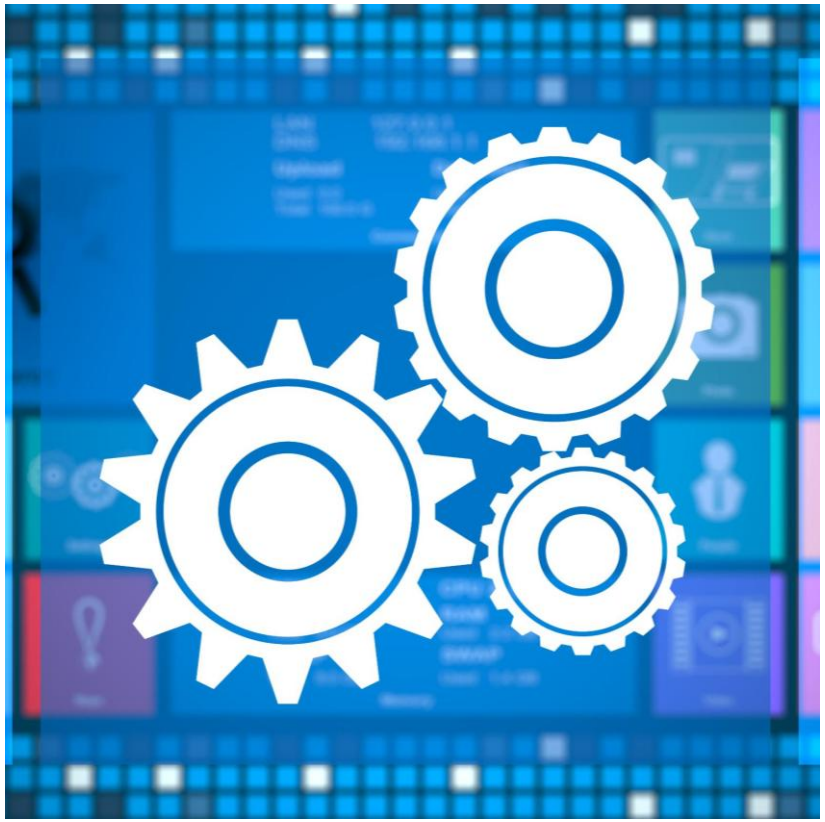
Cloud Service Integration

Seamlessly integrates with cloud platforms to support real-world AI applications and multi-model flexibility.

Evaluation and Safety

Built-in monitoring ensures agent reliability and safety, crucial for enterprise deployments.

WHY GOOGLE ADK MATTERS



Bridging Prototype to Production

ADK enables seamless transition from experimental AI prototypes to scalable, production-ready systems with robust testing.

Structured Development Environment

ADK offers a software engineering-like framework that promotes collaboration and maintainability in building complex agentic systems.

Integration with Cloud Infrastructure

Seamless integration with cloud services supports deployment, monitoring, and scaling of AI agents on enterprise-grade infrastructure.

Multi-Agent Orchestration and Safety

Supports coordinated multi-agent systems alongside evaluation frameworks and safety patterns for reliable, compliant applications.

GOOGLE ADK ARCHITECTURE

ARCHITECTURAL LAYERS AND COMPONENTS

Developer Experience Layer

Provides CLI and browser-based UI for local development, debugging, and testing of agents.

Agent Logic Layer

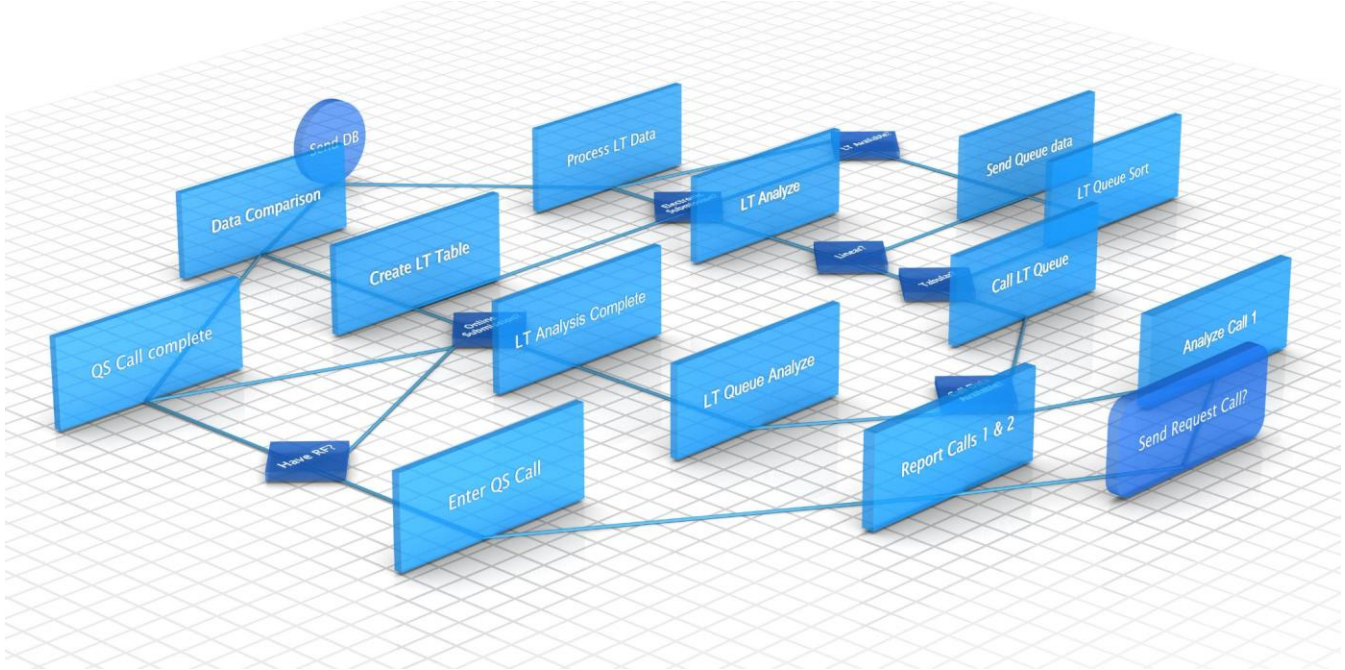
Defines agent behavior including LLM-powered reasoning and workflow agents with orchestration logic.

Runtime Services Layer

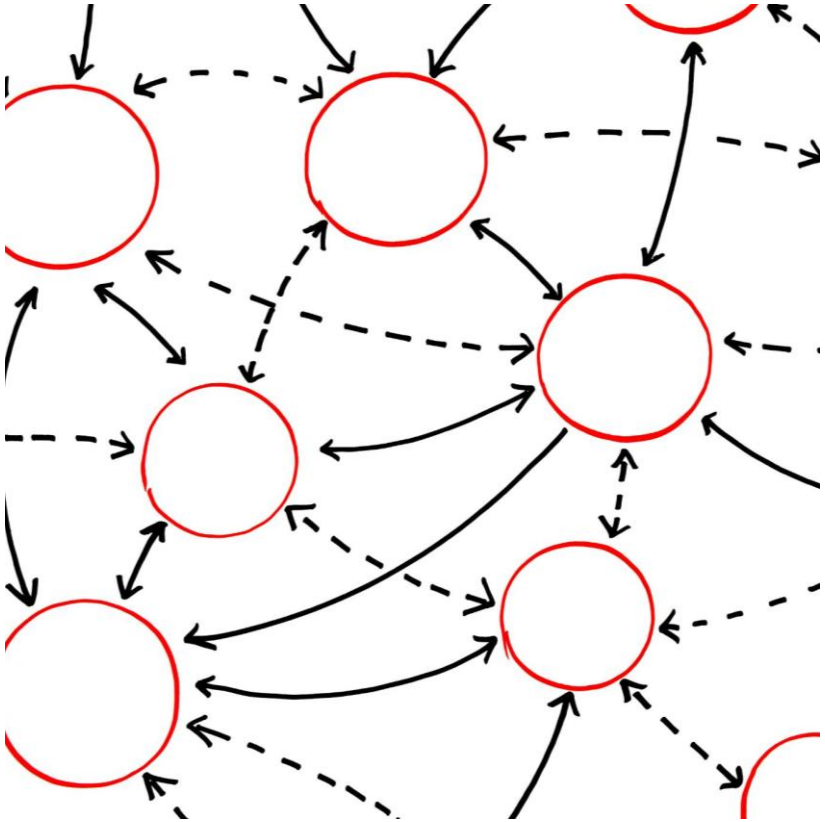
Manages execution flow, session state, memory recall, and artifact handling during runtime.

Model Integration and Deployment

Supports various language models and flexible deployment across local and cloud environments.



WORKFLOW SUPPORT AND ORCHESTRATION



Specialized Workflow Agents

SequentialAgent executes tasks in order, ParallelAgent handles concurrent tasks, and LoopAgent manages iterative workflows.

Dynamic Routing via LLM

ADK enables dynamic workflow routing through LLM-driven decisions adapting to context and user inputs.

Multi-agent Orchestration

Hierarchical orchestration allows an orchestrator agent to delegate tasks to sub-agents for complex system coordination.

Rich Tool Ecosystem

Agents can call APIs, execute code, query databases, and interact with other agents, enhancing workflow capabilities.