Glossary - ADK Terms and Concepts

> **Description:** Comprehensive glossary of Google Agent Development Kit (ADK) terms, concepts, and terminology used throughout the tutorials.

🎯 **Purpose**: Comprehensive reference for Google Agent Development Kit (ADK) terminology and concepts used throughout the tutorials.

📚 **Source of Truth**: google/adk-python (https://github.com/google/adk-python) (ADK 1.15) + Official Google Documentation

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A

Agent

A complete AI system powered by a Large Language Model (LLM) that can perform tasks through tools, maintain state, and interact with users. Agents are more than just LLMs - they include reasoning, tools, memory, and instructions.

See Also: Tutorial 01: Hello World Agent (01_hello_world_agent.md)

Agent-to-Agent (A2A) Communication

Protocol for agents to communicate and collaborate with each other, enabling distributed multi-agent systems.

See Also: Tutorial 17: Agent-to-Agent Communication (17_agent_to_agent.md)

Agent Engine

Google Cloud's managed service for deploying and scaling agents on Vertex AI, providing built-in scaling, monitoring, and version management.

See Also: Tutorial 23: Production Deployment (23_production_deployment.md)

B

Built-in Tools

Pre-built tools provided by Google ADK for common operations like web search, location services, and code execution.

See Also: Tutorial 11: Built-in Tools & Grounding (11_built_in_tools_grounding.md)

C

Callbacks

Functions that execute at specific points in an agent's lifecycle (before/after agent runs, tool calls, etc.) for monitoring, guardrails, and control flow.

See Also: Tutorial 09: Callbacks & Guardrails (09_callbacks_guardrails.md)

Context Window

The maximum amount of text (measured in tokens) that an LLM can process at once. Exceeding this limit causes errors.

CopilotKit

React component library for building AI chat interfaces that integrate with ADK agents.

E

Evaluation

Systematic testing and quality assessment of agent behavior using automated metrics and human review.

See Also: Tutorial 10: Evaluation & Testing (10_evaluation_testing.md)

Events

Structured logging system that tracks agent execution, state changes, tool calls, and errors for debugging and monitoring.

See Also: Tutorial 18: Events & Observability (18_events_observability.md)

F

Function Tools

Regular Python functions that agents can call to perform specific tasks. ADK automatically generates schemas from function signatures and docstrings.

See Also: Tutorial 02: Function Tools (02_function_tools.md)

G

Gemini

Google's family of multimodal large language models, including Gemini 1.5, Gemini 2.0, etc.

See Also: Tutorial 22: Model Selection (22_model_selection.md)

Grounding

Connecting LLM responses to real-world data and facts through tools like web search, databases, and APIs to ensure accuracy.

See Also: Tutorial 11: Built-in Tools & Grounding (11_built_in_tools_grounding.md)

Guardrails

Safety mechanisms and validation rules that prevent agents from performing harmful actions or generating inappropriate content.

See Also: Tutorial 09: Callbacks & Guardrails (09_callbacks_guardrails.md)

L

Large Language Model (LLM)

AI models trained on vast amounts of text data that can understand and generate human-like text. Examples: Gemini, GPT-4, Claude.

Loop Agent

Workflow agent that iteratively refines output through critic/refiner patterns until quality criteria are met.

See Also: Tutorial 07: Loop Agents (07_loop_agents.md)

M

Memory Service

Persistent storage system for long-term agent memory, enabling agents to recall information across sessions.

See Also: Tutorial 08: State & Memory (08_state_memory.md)

Model Context Protocol (MCP)

Standardized protocol for tool communication between agents and external services, enabling interoperability.

See Also: Tutorial 16: MCP Integration (16_mcp_integration.md)

Multi-Agent Systems

Architectures where multiple specialized agents work together to accomplish complex tasks.

See Also: Tutorial 06: Multi-Agent Systems (06_multi_agent_systems.md)

O

Observability

The ability to monitor, debug, and understand agent behavior through logging, metrics, and tracing.

See Also: Tutorial 18: Events & Observability (18_events_observability.md), Tutorial 24: Advanced Observability (24_advanced_observability.md)

OpenAPI Tools

Tools automatically generated from OpenAPI/Swagger specifications, allowing agents to call REST APIs without manual coding.

See Also: Tutorial 03: OpenAPI Tools (03_openapi_tools.md)

Output Key

Configuration that automatically saves an agent's response to session state for later retrieval.

See Also: Tutorial 08: State & Memory (08_state_memory.md)

P

Parallel Agent

Workflow agent that executes multiple sub-agents simultaneously for improved performance on independent tasks.

See Also: Tutorial 05: Parallel Processing (05_parallel_processing.md)

Planners

Advanced reasoning components that help agents break down complex tasks and create execution plans.

See Also: Tutorial 12: Planners & Thinking (12_planners_thinking.md)

Production Deployment

Strategies for deploying agents to production environments with scalability, reliability, and monitoring.

See Also: Tutorial 23: Production Deployment (23_production_deployment.md)

R

Runner

ADK component that executes agents, manages state, and coordinates tool calls.

S

Sequential Agent

Workflow agent that executes sub-agents in order, where each step depends on the previous step's output.

See Also: Tutorial 04: Sequential Workflows (04_sequential_workflows.md)

Session State

Key-value storage that persists data within a conversation session but is discarded when the session ends.

See Also: Tutorial 08: State & Memory (08_state_memory.md)

State Management

System for storing and retrieving data across agent interactions, with different scopes (session, user, app, temp).

See Also: Tutorial 08: State & Memory (08_state_memory.md)

Streaming

Real-time response generation where the agent sends partial responses as they are generated, rather than waiting for completion.

See Also: Tutorial 14: Streaming & SSE (14_streaming_sse.md)

Server-Sent Events (SSE)

HTTP standard for real-time communication from server to client, used for streaming agent responses.

See Also: Tutorial 14: Streaming & SSE (14_streaming_sse.md)

T

Tool Context

Object passed to tool functions containing state, session information, and execution context.

Tools

Capabilities that extend agent functionality beyond LLM reasoning. Types include function tools, OpenAPI tools, MCP tools, and built-in tools.

See Also: Tools & Capabilities (tools-capabilities.md)

V

Vertex AI

Google Cloud's machine learning platform that provides managed AI services including Gemini models and Agent Engine.

W

Workflow Agents

Agents that orchestrate other agents in structured patterns: sequential, parallel, and loop workflows.

See Also: [Workflows & Orchestration](workflows-orchestration.md) (workflows-orchestration.md)

Quick Reference Tables

Agent Types

Type	Purpose	Example Use Case
LLM Agent	Flexible reasoning and conversation	Customer support, content creation
Sequential Agent	Ordered, dependent steps	Blog writing pipeline
Parallel Agent	Independent concurrent tasks	Research gathering
Loop Agent	Iterative refinement	Code review and improvement

State Scopes

Prefix	Scope	Persistence	Example
(none)	Current session	SessionService dependent	`state['topic']`
`user:`	All user sessions	Persistent	`state['user:language']`
`app:`	All users/sessions	Persistent	`state['app:settings']`
`temp:`	Current invocation	Never persisted	`state['temp:calc']`

Tool Types

Type	Source	Example
Function Tools	Python functions	Custom business logic
OpenAPI Tools	REST API specs	Weather, news APIs
MCP Tools	MCP servers	Filesystem, databases
Built-in Tools	Google ADK	Search, maps, code execution

Workflow Patterns

Pattern	Execution	Use Case
Sequential	One after another	Assembly line processes
Parallel	All at once	Independent research tasks
Loop	Repeat until criteria met	Quality improvement cycles

Contributing to the Glossary

This glossary is maintained alongside the ADK tutorials. When new concepts are introduced:

1. Add the term with a clear definition
2. Include "See Also" links to relevant tutorials
3. Update related terms if needed
4. Keep definitions concise but comprehensive

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