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Building agents is easy. Running them is not. How Flock and Dapr make AI agents production-ready

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Who we are

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Agenda

- From Chatbots to Agents
- Agent Loops, Tools & State
- Flock: Blackboard-Based Orchestration
- Dapr: Cloud-Native Runtime Building Blocks
- Using Dapr State Stores in Flock
- Demo: From Local Development to Production-Ready Agents
- Key Takeaways

20 Years of Software Evolution

- **Cloud** changed where software runs.
- **Containers** changed how we package it.
- **Kubernetes** changed how we scale it.
- **DevOps** changed how we deliver it.

HOW
we build software

AI changes **WHAT** software can do.

Beyond Chatbots

AI changes what software can do:

From answering questions

to **completing tasks**.

Chatbots respond.

Agents work toward a goal.

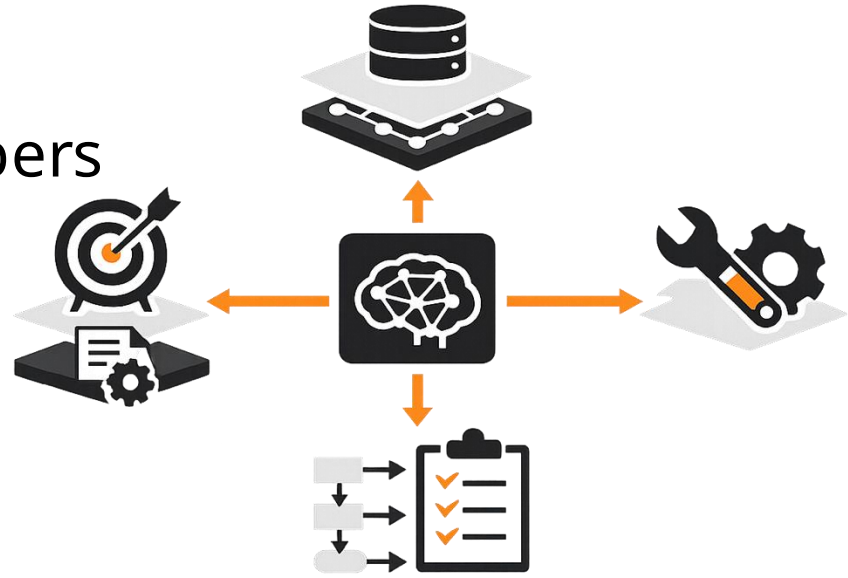
The shift is not from chatbots to smarter chatbots.
The shift is from conversation to execution.

What Makes AI Agentic?

A model can answer.

Agentic AI can act - because it has:

- **Goal** — what should be achieved
- **Context** & **State** — what it knows and remembers
- **Tools** — what it can use
- **Instructions** — how it should behave



The model is only one part.
The system around it makes it agentic.

The Agent Loop

Agentic AI is not a single model call.

An agent repeatedly:

- **Observes** the current context
- **Reasons** about the next step
- Uses a **tool**
- Updates its **state**
- Continues or stops

A loop is not reliable by default.
Every step must be persisted, managed, and made recoverable.

Why State Becomes Critical

For a demo, state can live in memory.

For production, state must be:

- **Durable** — survive restarts
- **Traceable** — show what happened
- **Recoverable** — continue after failures
- **Secure** — protect data and secrets
- **Portable** — switch environments

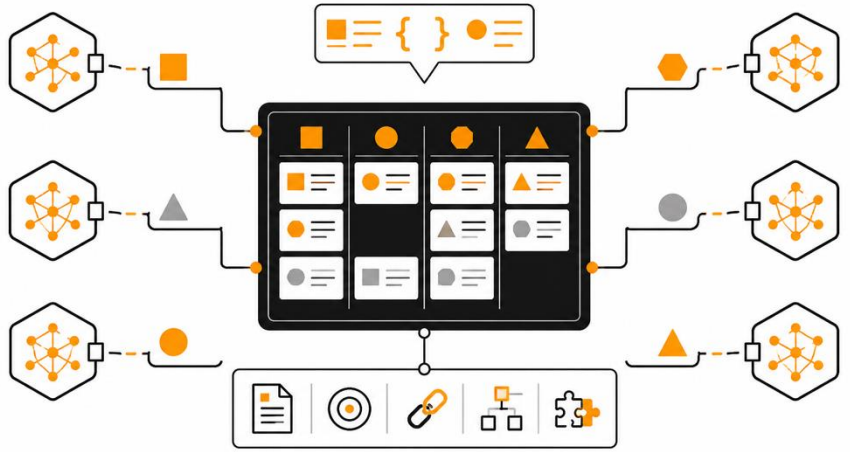
Agents do not just need memory.
They need **operational state**.

Flock: Blackboard-Based Orchestration

Agents do not call each other directly.

They collaborate through a blackboard:

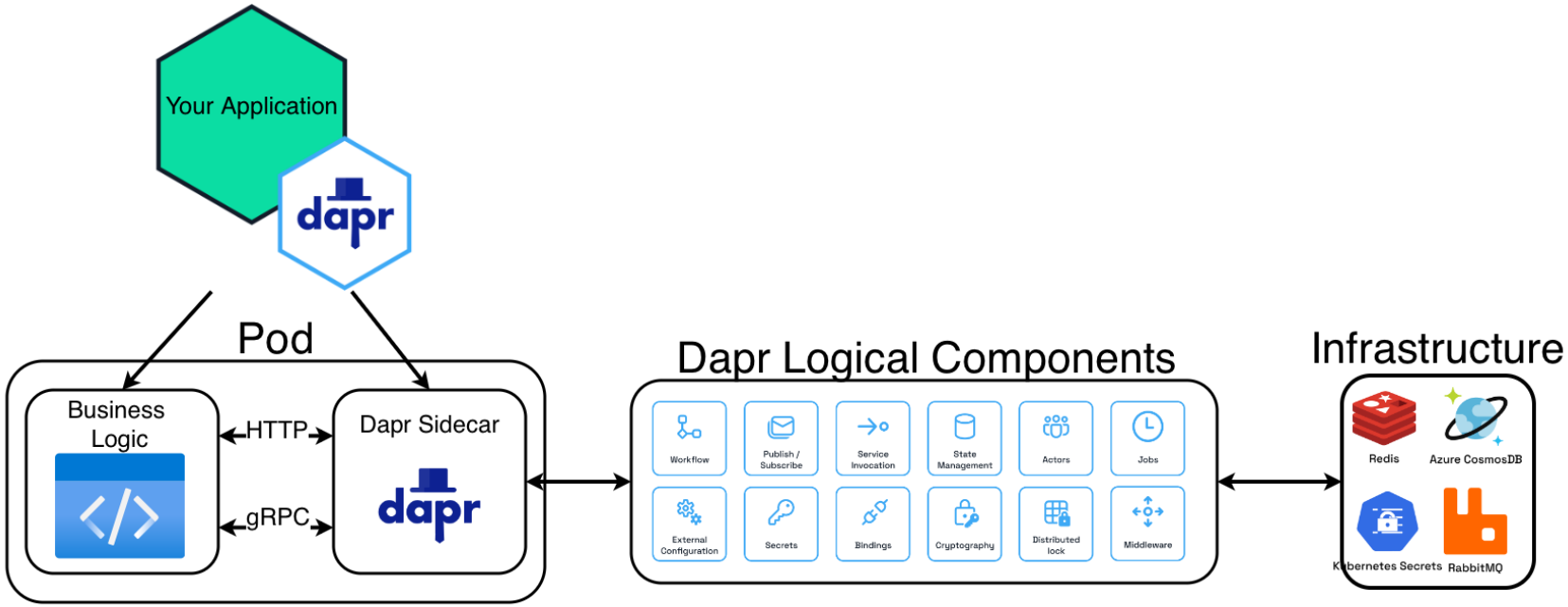
- **Typed contracts** — what agents produce
- **Semantic subscriptions** — who reacts
- **Loose coupling** — agents stay independent
- **Flexible workflows** — no rigid graph required



Blackboard = shared context for agent collaboration.

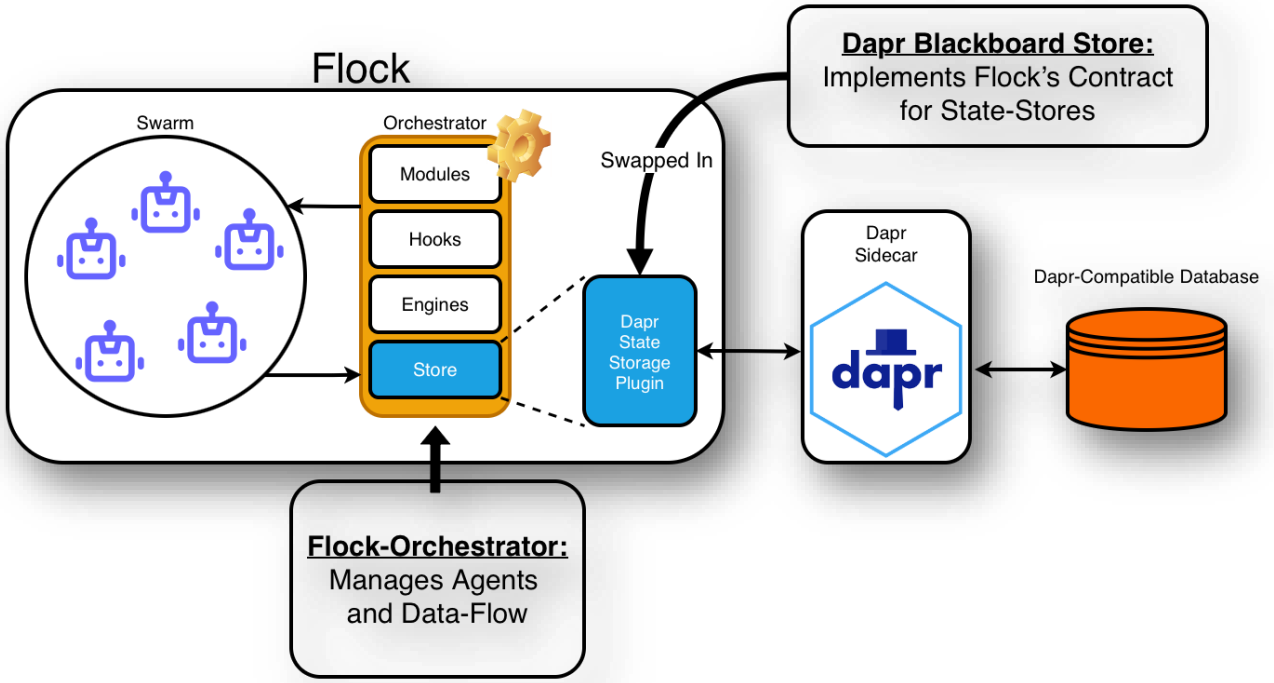
Dapr: Conceptual Overview

- **Dapr** = **D**istributed **A**pplication **R**untime
- Portable, event-driven, modular
- Building blocks handle common cloud-native tasks
- Provides a **unified interface** for underlying services



Find out more at: dapr.io

How Flock and Dapr go Hand-in-Hand



Flock's Blackboard models:

- Message-flow from agent to agent.
- The state s_t of an agent-team / agent swarm at a point in time t.
- Flock's blackboard represents the **state** of the entire application!

Dapr State-Stores are the perfect fit.

Using Dapr State Stores in Flock

- Dapr and Flock share the same modular design-philosophy.
- Thank‘s to Flock‘s modular architecture, integration is a breeze.
- A new component just needs to **adhere to Flock‘s contract-system**.

```python
from flock import (
    Flock,
    DaprStateBlackboardStore,
    DaprStateBlackboardConfig,
)
from dapr.clients import DaprClient

# Load Secrets from Dapr
dapr_secrets = load_dapr_secrets()

# Configure the store
store_config = DaprStateBlackboardConfig(dapr_secrets)

# Initialize the Blackboard Store
dapr_store = DaprStateBlackboardStore(config=store_config)

# Intialize the swarm
flock = Flock(
    model="azure/gpt-5.5",
    store=dapr_store,
)
```

What you get out of the Box

Component	CRUD	Transactional	ETag	TTL	Actors	Workflow	Status	Component version	Since runtime version
Aerospike	✅	☐	✅	☐	☐	☐	Alpha	v1	1.0
Apache Cassandra	✅	☐	☐	✅	☐	☐	Stable	v1	1.9
CockroachDB	✅	✅	✅	✅	✅	☐	Stable	v1	1.10
Couchbase	✅	☐	✅	☐	☐	☐	Alpha	v1	1.0
etcd	✅	✅	✅	✅	✅	✅	Beta	v2	1.12
Hashicorp Consul	✅	☐	☐	☐	☐	☐	Alpha	v1	1.0
Hazelcast	✅	☐	☐	☐	☐	☐	Alpha	v1	1.0
In-memory	✅	✅	✅	✅	✅	✅	Stable	v1	1.9
JetStream KV	✅	☐	☐	☐	☐	☐	Alpha	v1	1.7
Memcached	✅	☐	☐	✅	☐	☐	Stable	v1	1.9
MongoDB	✅	✅	✅	✅	✅	✅	Stable	v1	1.0
MySQL & MariaDB	✅	✅	✅	✅	✅	✅	Stable	v1	1.10
Oracle Database	✅	✅	✅	✅	✅	✅	Beta	v1	1.7

Dapr State-Store Support: https://docs.dapr.io/reference/components-reference/supported-state-stores/#state-stores

What you get out of the Box

1. Zero code-changes between development and prod. ✅
2. Integration with all Dapr-supported State Stores. ✅
3. Distributed state for multiple Flock-swarms. ✅
4. Choice of consistency for state (Strong vs. Eventual). ✅
5. Transactional updates for Blackboard-State. ✅
6. Encryption of Data-at-Rest via Dapr. ✅
7. Apply Dapr Resiliency-Policies for your underlying storage. ✅
8. Secrets stored in supported Secret-Stores. ✅
9. Vendor-Agnostic Business-Logic. ✅

Demo

What are these Agents working on?

Find out more at:

https://agent-challenge.whiteduck.de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