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## **Fermyon Built the WebAssembly Cloud. The Cloud Hosts Functions, Not Self-Executing Objects.**

by [Nick Clark](#) | Published March 28, 2026 | [PDF](#)

Fermyon built Fermyon Cloud as a managed platform for WebAssembly serverless applications, providing instant scaling, global deployment, and developer-friendly tooling. The cloud platform is well-engineered. But Fermyon Cloud hosts trigger-based functions that execute in response to events and terminate upon completion. It does not host objects that carry their own execution cycle, maintain governed memory, or self-evaluate between invocations. The gap is between managed serverless hosting and a platform for memory-resident self-executing objects.

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Fermyon Cloud's WebAssembly-native platform and instant scaling provide genuine infrastructure innovation. The gap described here is about the execution model it hosts.

## Serverless scaling without execution continuity

Fermyon Cloud scales WebAssembly functions based on incoming requests. Each function invocation is independent. The platform manages the scaling. But the objects being scaled have no execution continuity between invocations. Each invocation starts fresh, evaluates a trigger, and terminates. There is no persistent execution state that the platform maintains between invocations.

## Global deployment without governed state migration

Fermyon Cloud deploys functions globally. But there is no mechanism for governed state to migrate with execution, for trust slope to persist across deployment regions, or for memory lineage to remain intact as functions execute across different locations.

## What memory-resident execution provides

Memory-resident execution objects maintain governed state that persists across execution cycles and can migrate between substrates with full lineage. The execution cycle is intrinsic to the object, not triggered by external events. Fermyon Cloud's efficient WebAssembly hosting could serve as one substrate for memory-resident objects. The governed memory and self-execution cycle would be provided by the memory-resident execution layer above the hosting platform.

[Memory-Resident Execution All 21 steps →](#)

Persistent objects that execute without orchestration.

Patent

[US 19/538,221](#) · filed

Primary Technical Disclosure

◦ [Memory-Resident Execution: Persistent Semantic Objects Without Orchestration](#)

Secondary Technical

◦ [Six-Action Execution Evaluation Cycle: Parse, Evaluate, Select at Every Node](#) ◦ [Cognition-Authority-Execution Separation: Reasoning Cannot Authorize Action](#) ◦ [Dormancy as First-Class Execution State: Valid Suspension Without Failure](#) ◦ [Semantic Backoff: Retry Pacing From Execution Outcomes Rather Than Fixed Timers](#) ◦ [Wake Triggers for Dormancy Exit: Explicit Reentry Conditions in Memory](#) ◦ [Persistent Polling Behavior: Autonomous Condition Evaluation Without Schedulers](#) ◦ [Intent Refinement During Execution: Adaptive Objectives Without Re-Instantiation](#) ◦ [Compositional Execution Through Recursive Delegation: Parent-Child Lineage Tracking](#) ◦ [Negative Capability Signals: Recording What Cannot Be Done as Structured Constraint](#) ◦ [Swarm-Based Execution Emergence: Coordinated Behavior Without Centralized Control](#) ◦ [Latency and Failure as Semantic Signals: Structured Inputs From Adverse Conditions](#) ◦ [LLM as Advisory Execution Node: Inference Without Authority Over Agent State](#) ◦ [Append-Only Memory Field: Complete Execution Lineage Through Immutable Records](#)

Applications (General)

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Applications (Specific)

◦ [Cloudflare Durable Objects Made State Local. The Objects Still Need Orchestration.](#) ◦ [Azure Service Fabric Actors Are Addressable. They Are Not Autonomous.](#) ◦ [Akka Perfected the Actor Model. Actors Still React Instead of Self-Execute.](#) ◦ [Orleans Made Virtual Actors Practical. The Actors Still Execute on Request.](#) ◦ [Dapr Provides a Sidecar Runtime for Microservices. The Services Still Need External Orchestration.](#) ◦ [wasmCloud Runs WebAssembly Actors. The Actors Wait for Messages.](#) ◦ [Spin Made WebAssembly Serverless. The Functions Are Still Trigger-Based.](#) ● [Fermyon Built the WebAssembly Cloud. The Cloud Hosts Functions, Not Self-Executing Objects.](#) ◦ [Fly Machines Made Micro-VMs Fast. The VMs Still Need External Orchestration.](#) ◦ [Railway Simplified Application Deployment. The Applications Still Depend on External Execution Triggers.](#)

[Memory-Resident Execution overview →](#)

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deterministic

autonomy

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