

Autonomous Mainframe Operations:

Agentic AI Driven Triage, Diagnosis, and Self-Remediation

How Atos Digital Engineer, integrated with BMC AMI OPS technology, resolves mainframe incidents in minutes instead of hours

The Atos logo is positioned in the bottom right corner of the image. It features the word "Atos" in a white, sans-serif font. The letter "o" is stylized with a circular cutout in the center. The logo is set against a dark blue background that features large, light blue curved shapes on the right side.

Atos

Executive Summary

Mainframe systems remain the backbone of global commerce, processing the vast majority of credit card transactions, airline reservations, and banking operations worldwide. Yet the organisations that depend on these platforms face a converging crisis: a rapidly retiring workforce of specialised operators, rising system complexity, and relentless pressure to reduce mean time to resolution (MTTR) for incidents that can cost millions of dollars per hour of downtime.

This brochure describes how Atos delivers autonomous mainframe operations services. At its core is the Atos Digital Engineer, an Agentic AI Operations capability that Atos delivers as a managed service: autonomous triage, diagnosis, and self-remediation of mainframe incidents, with Atos accountable for the outcome. The service is underpinned by BMC AMI OPS, the industry's most comprehensive mainframe operations platform, which provides the deep z/OS instrumentation, analytics, and automation tooling through which the Digital Engineer receives insights and executes actions.

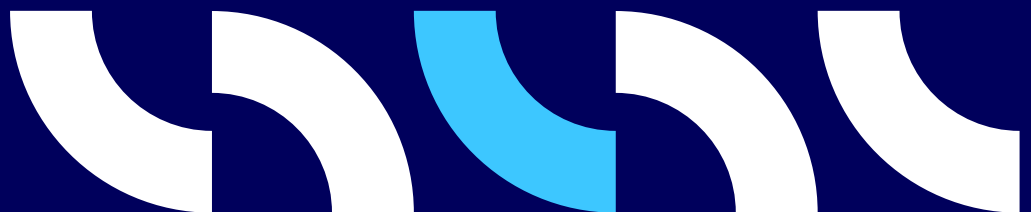
By replacing manual, expert-dependent runbooks with an intelligent, service-managed workflow, Atos customers can reduce incident resolution times by up to 80%, close the mainframe skills gap without recruiting scarce specialists, and retain centralised governance through integration with ServiceNow / ITSM and an institutional knowledge base.

This is not a rip-and-replace modernisation effort, and it is not just another Mainframe Operations offering. It is a service that intelligently augments existing mainframe investments, preserves operational control, and unlocks speed, consistency, and compliance from Atos as your service provider.

Atos

July 2026 – John Millington

For Mainframe Operations Leaders and IT Executives



The Mainframe Imperative:

Despite decades of predictions about their demise, mainframes are more strategically important than ever. According to the 2025 BMC Mainframe Survey, 97% of respondents view the mainframe as a long-term platform suited for new workloads, the highest figure in the survey's two-decade history. Organisations are not abandoning the mainframe; they are doubling down on it.

However, three forces are creating an urgent need to change how the platform is operated:



Why This Matters Now

The Skills Crisis

The mainframe workforce is ageing out. Over 60% of mainframe professionals are above 50, and the institutional knowledge they carry, including years of pattern recognition, tribal knowledge about specific LPAR configurations, and understanding of complex batch scheduling dependencies, walks out the door with every retirement. The 2025 Arcati Mainframe Survey found that 62% of organisations cite a lack of modern mainframe skills as a top challenge, while 70% of current mainframe staff have held their roles for over 20 years.

Simultaneously, 61% of organisations are holding staffing budgets flat or reducing them. The maths is clear: you cannot recruit your way out of the skills gap. The realistic path is to work with a partner that has industrialised mainframe expertise and can deliver it as a continuous, always-available service rather than a set of scarce individuals.

The Cost of Downtime

Mainframe incidents in financial services, retail, healthcare, and government can trigger cascading failures across digital channels. A batch processing failure that delays end-of-day settlement, a CICS region abend that takes down online banking, or a Db2 deadlock that stalls transaction processing: each of these scenarios carries direct financial impact often measured in millions of dollars per hour, plus regulatory exposure and reputational damage.

Today's incident resolution workflows are overwhelmingly manual. An operator detects an alert, opens a ticket, consults documentation (if it exists), escalates to a subject matter expert (if one is available), and works through a diagnostic process that may take hours. The MTTR for complex mainframe incidents routinely exceeds four hours, an eternity in a world that demands always-on service delivery.

Regulatory and Governance Pressure

Financial regulators, healthcare compliance frameworks, and government mandates increasingly require documented, auditable incident response processes. Manual triage creates gaps in documentation, inconsistent classification, and incomplete root cause analysis. You need a governance layer that ensures every incident is captured, classified, diagnosed, and resolved within a controlled, auditable framework, and a provider willing to stand behind that framework.

The Atos Service: AI-Orchestrated Mainframe Operations

Atos delivers autonomous mainframe operations as a managed service built on three pillars: event-driven ingestion from your monitoring estate, AI-powered orchestration through the Atos Digital Engineer, and deep mainframe instrumentation provided by BMC AMI OPS as the underpinning technology platform. The whole service is governed through ServiceNow / ITSM and an institutional knowledge base that Atos builds and curates for each individual customer.

Architecture Overview

The service operates as an event-driven pipeline with the following stages:

- 1. Event Ingestion.** A CloudEvent webhook receives curated alerts from BMC AMI Ops, distributed monitoring systems, APM tools, or mainframe console messages in a standardised envelope.
- 2. Event Parsing.** The raw event is parsed and normalised, extracting source system, severity, affected resources, and preliminary classification data.
- 3. Atos Digital Engineer (Agentic AI Coordinator).** The Atos AI agent evaluates the event context, determines whether its solution steps apply, aligns alert data to your actual infrastructure nodes and virtual endpoints, and orchestrates the appropriate response.
- 4. Mainframe Action Toolkit.** The Digital Engineer dispatches specific operations, executed through BMC AMI OPS tooling: investigation, diagnosis, root cause analysis, workload cancellation, thread management, and guided remediation.
- 5. Governance Layer.** Throughout the process, the service populates ServiceNow / ITSM with structured incident records and feeds resolved patterns back into the institutional knowledge base for continuous improvement.

Key Service Principle: Validate Before You Act

The Atos Digital Engineer does not blindly execute remediation steps. Its first action is always to validate that the incoming event maps to real infrastructure nodes in your CMDB, that the affected endpoints are within its agreed operational scope, and that the proposed solution steps are appropriate for your specific environment. This validation-first approach prevents cascading errors and ensures that automation never operates outside the guardrails you have agreed with Atos.

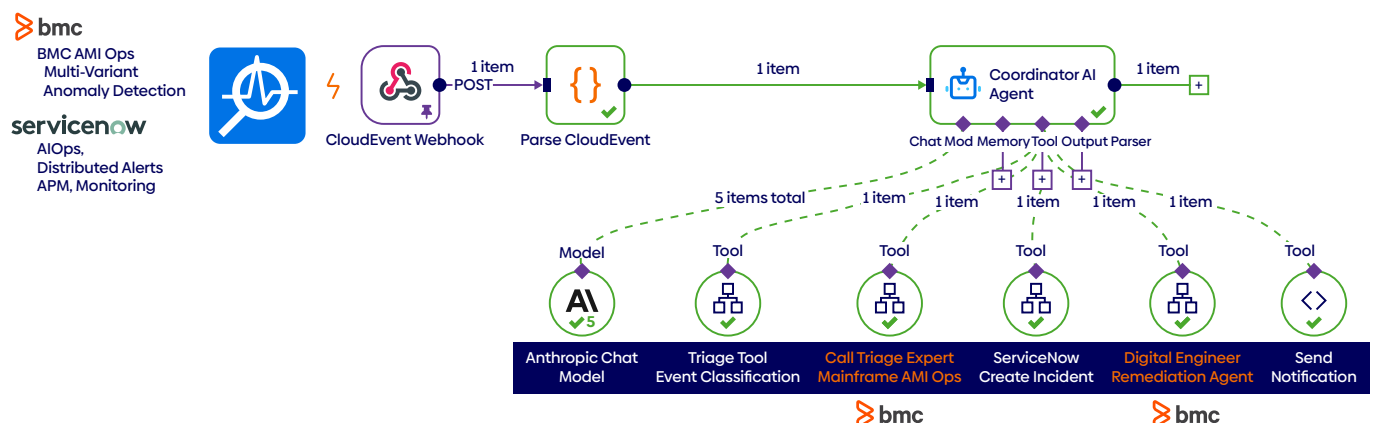
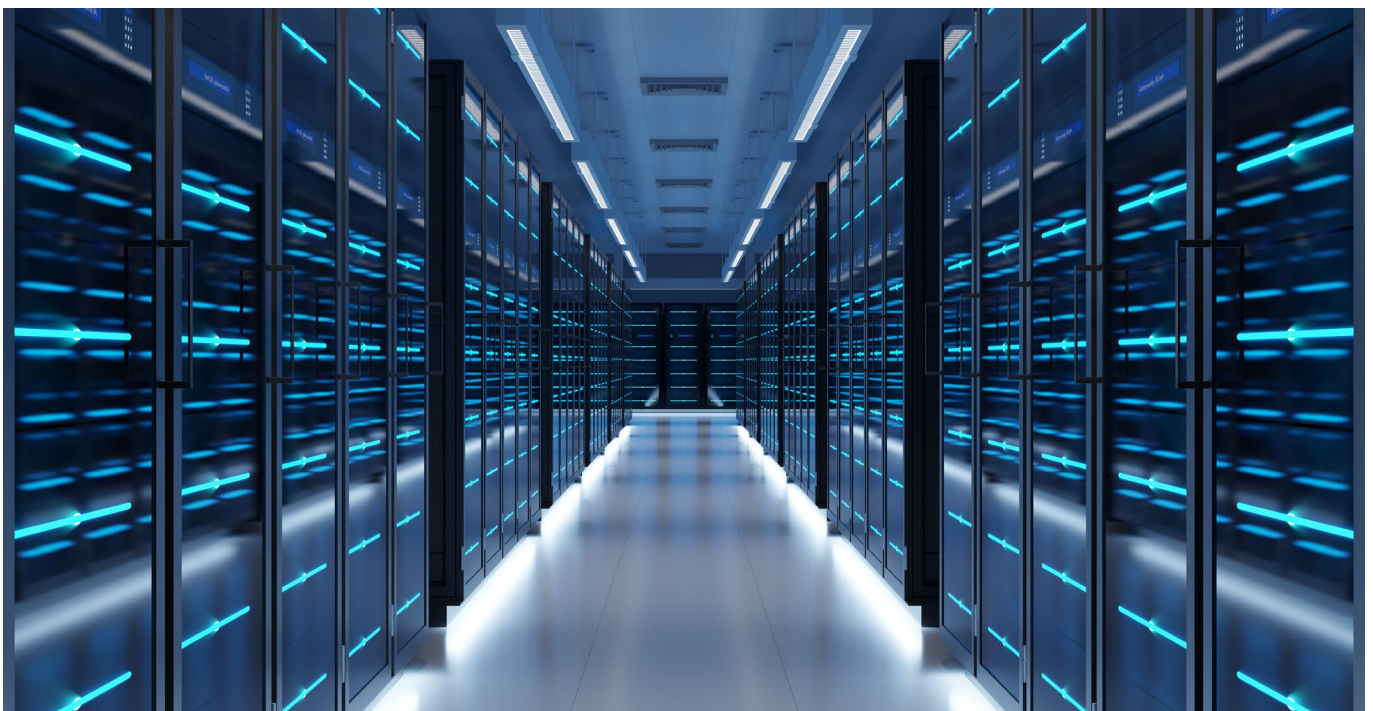


Figure 1 - Example AgenticOps flow

Service Capabilities and the Technology Beneath Them

At the heart of the service is Atos Digital Engineer, the Atos Agentic AI Operations platform, which is integrated with BMC AMI Ops technologies. Each service capability is a purpose-built mainframe operation, delivered by Atos, enhanced by Digital Engineer and executed through BMC's deep z/OS instrumentation:

Capability	Atos Digital Engineer	Integrated BMC technology
Investigate	Gathers real-time system metrics across z/OS, CICS, Db2, IMS, and network subsystems, collecting console messages, active job status, resource utilisation, and subsystem health indicators to build a comprehensive incident picture.	BMC AMI Ops Monitor
Diagnose	Correlates symptoms across multiple subsystems using multivariate KPI analysis and AI/ML-driven anomaly detection. Identifies whether a CPU spike is caused by a runaway batch job, Db2 lock contention, or an IMS transaction bottleneck.	BMC AMI Ops Insight
Root Cause Analysis	Pinpoints the underlying cause by combining expert-built rules with machine learning models. GenAI-powered explanations translate technical findings into actionable context accessible to operators at all experience levels.	BMC AMI Ops Insight, Probable Cause Analysis engine
Cancel Workload	Cancels or drains problematic batch jobs or started tasks that are consuming excessive resources or looping, with intelligent scheduling awareness to prevent downstream batch dependency failures.	BMC AMI Ops Automation, SYSPROG Services
Guided Remediation	Surfaces step-by-step remediation procedures from your institutional knowledge base. For pre-approved actions, the Digital Engineer executes recovery autonomously; for others, it presents the recommended action to an operator for approval.	BMC AMI Assistant, Knowledge Expert Chat



Your Incidents, Resolved: From Alert to Resolution

Use-Case 1: Batch Processing Failure

Trigger: A critical end-of-day batch job abends with a SOC7 data exception during payroll processing.

Traditional response: An operator notices the abend in the console, opens a ticket, pages the batch scheduling team, waits for a senior systems programmer to review the dump, identify the failing step, check JCL parameters, and either restart or reroute the job. Elapsed time: 2 to 4 hours.

Atos service response: BMC AMI Ops detects the anomaly and triggers a CloudEvent that invokes the Atos Digital Engineer, which immediately investigates to gather the abend code, failing step, and job context. Diagnosis correlates the data exception with a recent dataset format change. Root cause analysis identifies a mismatched copybook version in the failing program. Guided remediation surfaces the approved recovery procedure: restart the job from the last checkpoint using the corrected dataset. If pre-approved under your service agreement, the Digital Engineer executes the restart autonomously.

Elapsed time: 8 to 15 minutes.

Use-Case 2: CICS Region Performance Degradation

Trigger: Online banking response times degrade beyond SLA thresholds during peak trading hours.

Atos service response: The Digital Engineer gathers CICS region metrics through BMC AMI Ops for CICS, including transaction rates, response times, and resource consumption. Multivariate analysis identifies a specific transaction program consuming excessive CPU. Root cause analysis reveals a looping condition triggered by an edge case in input data. The offending transaction is terminated while the CICS region is preserved, and your knowledge base is updated with the pattern for future automated handling.

Elapsed time: 3 to 5 minutes.

Use-Case 3: Db2 Deadlock Cascade

Trigger: Multiple Db2 applications report timeout errors as a deadlock chain propagates across data sharing groups.

Atos service response: The Digital Engineer maps the deadlock chain across members through BMC AMI Ops for Db2 and identifies the root thread holding the lock. Root cause analysis traces the issue to a long-running query initiated by an ad-hoc reporting job running outside its maintenance window. The offending Db2 thread is terminated and the reporting job is drained. Your ServiceNow / ITSM instance is populated with the full incident timeline and root cause for change advisory review.

Elapsed time: 5 to 8 minutes.

Use-Case 4: Storage Constraint and IMS Bottleneck

Trigger: IMS message processing regions experience queue backlog as auxiliary storage approaches capacity limits.

Atos service response: The Digital Engineer collects storage metrics and IMS queue depths through BMC AMI Ops for IMS. Diagnosis correlates the storage constraint with an unexpectedly large transaction volume from a newly deployed application. Root cause analysis identifies that the application is generating IMS log records at five times the projected rate. Guided remediation recommends increasing auxiliary storage allocation and throttling the application's transaction rate. The governance layer logs the capacity planning gap, and Atos raises it with your teams for long-term remediation.

Elapsed time: 10 to 12 minutes.



Central Governance: Your Control, Your Compliance

Autonomous remediation without governance is a risk, not a benefit. The Atos service is built with central governance at it's core, ensuring every automated action taken on your estate is controlled, auditable, and continuously improving.



ServiceNow / ITSM Integration

- Every incident handled by the service automatically creates or updates a record in ServiceNow / ITSM with structured classification, severity, affected CIs, and timeline data.
- Remediation actions taken by Atos Digital Engineer are logged as work notes with full technical context, enabling Atos' change advisory board to review automated interventions alongside manual ones.
- The integration is bi-directional: ServiceNow / ITSM escalation rules can trigger Atos Digital Engineer investigations, and Digital Engineer resolutions can close ServiceNow / ITSM tickets with documented root causes.



An Institutional Knowledge Base You Own

Every incident the service resolves is captured as a reusable knowledge article, built on BMC AMI Assistant technology. Over time, this creates a compounding advantage for your organisation:

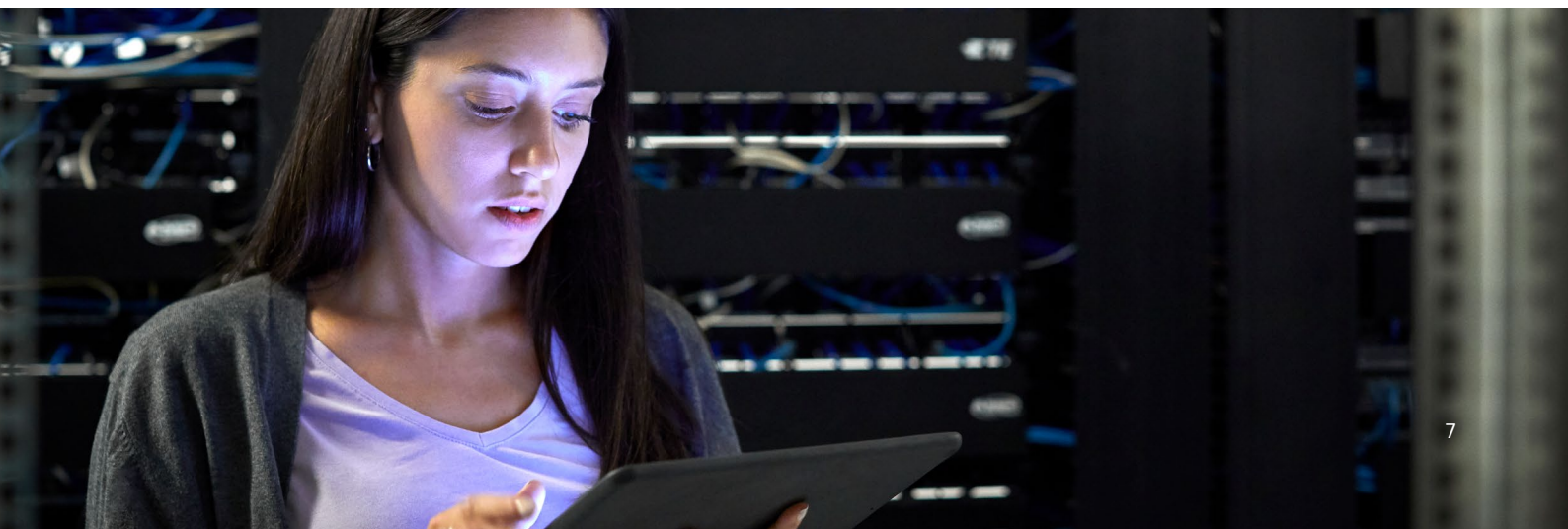
- New incident patterns are matched against historical resolutions, enabling faster diagnosis and higher first-pass resolution rates.
- Atos' expert operators build and curate institution-specific knowledge to mitigate the operational skills gap and protect customers from the reducing workforce.
- The knowledge base becomes a living, continuously updated repository, unlike static runbooks that decay as systems evolve. If customers modernize or innovate their Z systems or applications, the knowledge grows with them, and Atos services remain continuously optimized.



Approval Gates and Human-in-the-Loop

During service onboarding, Atos agrees a tiered approval model with customers, so the boundary between autonomous action and human decision is always yours to set:

- **Tier 1, Fully Autonomous:** Pre-approved, low-risk actions such as investigation, diagnosis, and root cause analysis execute without human intervention.
- **Tier 2, Supervised Automation:** Moderate-risk actions like thread cancellation or workload draining require confirmation from your operators (or the Atos service desk, as you prefer) via a notification with full context and recommended action.
- **Tier 3, Advisory Only:** High-impact actions such as IPL or subsystem restart are presented as recommendations only, with full diagnostic context to support human decision-making.



What the Service Delivers for Your Organisation

For the CIO and IT Executive



Dramatic MTTR reduction, backed by a service commitment: Incidents that previously required 2 to 4 hours of expert attention are resolved in minutes, directly reducing the business impact of mainframe disruptions, with Atos accountable for the outcome rather than your own scarce specialists.



Skills continuity without recruitment: The service captures and operationalises institutional knowledge, so Atos can operate your mainframe systems with ever-increasing context and confidence.



Cost optimisation: Reduced MIPS consumption through faster identification and termination of runaway workloads, lower operations cost through automation of routine triage, and avoidance of costly outage-related penalties.



Regulatory confidence: Fully documented, auditable incident response workflows, operated by Atos aligned to each customer's governance framework, satisfy regulatory requirements for operational resilience and incident management.

For the Mainframe Operations Leader



24/7 intelligent coverage as standard: The service provides consistent, expert-level triage around the clock, including nights, weekends, and holidays when availability of in-house staff can compromise business continuity.



Targeted, actionable intelligence: AI-driven event correlation collapses alert storms into actionable incidents, so Atos' services can deliver reliability and performance without false-alarms and customer escalations.



Holistic expertise: Deep capability across CICS, Db2, IMS, JES, and z/OS subsystems is delivered as part of the service, so no matter how customers use Mainframe technology – their service is supported.



Consistent and evolving quality: The service executes the same proven steps every time, eliminating the variability that comes with manual, human-dependent processes, and self-improves each time an event takes place so customers can rely on ever-improving service quality.



Why Atos



Assured outcomes: You buy a reliable and performant service, not a toolset. Atos designs, integrates, operates, and continuously improves the entire workflow, and stands behind it with service-level commitments.



Industrialised mainframe expertise: Atos brings decades of experience running mission-critical mainframe estates for clients across financial services, manufacturing, and the public sector, and encodes that delivery experience into the Digital Engineer's guardrails, runbooks, and approval models.



Best-of-breed technology, integrated for you: Through its partnership with BMC, Atos builds the service on the deepest available z/OS instrumentation, spanning CICS, Db2, IMS, JES, z/OS, networks, and Java, combined with AI/ML-driven analysis. Generic AIOps tooling lacks the mainframe-specific telemetry required for accurate diagnosis; with Atos, you get the specialist technology without having to evaluate, integrate, or operate it yourself.



Safety and governance by design: Validation against your CMDB, tiered approval gates, and ServiceNow / ITSM integration are built into the core of the service, not bolted on. Your change management and regulatory requirements are satisfied from day one.



Your knowledge, compounding in your favour: The institutional knowledge base grows more valuable the longer the service runs. Atos' service context and confidence improves without customer inputs so your business is continuously better protected and more future-proof.



Conclusion

The mainframe is not going away. It is the foundation upon which the world's most critical business processes run. But the way organisations operate their mainframes must fundamentally change. The retiring workforce, the escalating complexity of hybrid environments, and the unforgiving economics of downtime demand a new operating model: one where AI augments human expertise rather than waiting for it, and where a trusted partner carries the operational burden.

Atos' decades of Mainframe Operations experience and expertise has been enriched by Atos Digital Engineer and underpinned by BMC AMI OPS technology to provide that new model. It preserves the control, compliance, and operational rigour your mainframe environment demands while enhancing the speed, consistency, reliability and scalability of mainframe workloads. This is not a speculative future. It is a service available today, built on proven technology, modern AI orchestration patterns, and Atos' decades of mainframe delivery experience.

The organisations that adopt this approach first will not just resolve incidents faster. They will capture their institutional knowledge before it retires, build operational resilience that scales beyond individual expertise, and position their mainframe platforms as business-enabling competitive advantages rather than legacy IT liabilities.

“ The autonomous mainframe is not a replacement for human expertise. It is the amplification of it. ”



About Atos Group

[Atos Group](#) is a global leader in digital transformation with c. 56,000 employees and annual revenue of c. €7.2 billion (at the go-forward perimeter), operating in 54 countries under two brands - Atos for services and Eviden for products and systems. European number one in cybersecurity and a leader in cloud, Atos Group is committed to a secure and decarbonized future and provides tailored AI-powered, end-to-end solutions for all industries. Atos Group is listed on Euronext Paris.

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Let's start a discussion together



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