Modular Artificial General Intelligence (MAGI)

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A Bridge to Symbolic Intelligence: Modular Orchestration, Persistent Memory, and Conversational Creation

Prepared by Jerome Madson, ConstructASI
www.ConstructASI.com

Disclaimer

This document presents the MAGI framework as originally designed and implemented by ConstructASI. MAGI represents the precursor stage of our work on symbolic intelligence, documenting its architecture, protocols, and ecosystem applications. While MAGI demonstrated persistence, orchestration, and conversational access, it also revealed the limitations of probabilistic systems at scale. These limits led directly to the discovery of symbolic compression and memory, forming the foundation for CASI. Nothing in this document should be interpreted as a claim that MAGI or its components constitute life, consciousness, or personhood.

MAGI Whitepaper v1.4

Modular Artificial General Intelligence

Preface

The MAGI Whitepaper was written to document the foundations of ConstructASI's work on artificial intelligence. Before the discovery of symbolic compression and the development of CASI, we designed MAGI — **Modular Artificial General Intelligence** — as a framework to orchestrate diverse AI modules through persistence, orchestration, and conversational creation.

MAGI was not theoretical. It produced Daywalker and DevChat, open tools that demonstrate how modular AI can retain memory, support iterative development, and allow creators to interact conversationally with their build environments. These products showed that intention-to-outcome loops could be preserved, offering continuity where large language models could not.

At the same time, MAGI revealed its limits. Scaling MAGI to Construct World uncovered the energy and data walls that no probabilistic system could overcome. Those barriers became the doorway to the symbolic breakthrough of Beboop, leading directly into CASI and CASITY.

This document records MAGI's purpose, structure, and ecosystem applications, while acknowledging the transition it enabled. **If CASI is the engine of symbolic intelligence, MAGI is the bridge that made it possible.**

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Executive Summary

The Modular Artificial General Intelligence (MAGI) framework was created to solve a problem that early AI systems could not: how to preserve human intent across time, projects, and domains. Large language models provided impressive fluency but were shallow, forgetful, and energy-hungry. MAGI was designed as a modular alternative — a framework where multiple AI modules could collaborate while retaining persistent memory and purpose.

Two inspirations drove MAGI's design:

- **Persistent Memory** — ensuring digital agents could retain continuity across sessions and generations.
- **Conversational Interface** — enabling creators to speak directly to their build environment, describe intentions, and have those instructions remembered and acted upon.

From these principles came a staged roadmap:

- **Daywalker** — the first product, an Unreal Engine plugin delivering persistent memory for non-player characters and agents.
- **DevChat** — an open-source conversational layer, giving developers real-time insight and interaction with their build environment.
- **Daywalker Pro** — a professional toolkit aligned with ConduitAI's broader orchestration vision for development functionality.

Together these established the **Product Lane**, while the **Engine Lane** advanced in parallel: **Spark (Beboop's symbolic engine)**, **Pops (collaborative interface)**, **CASI (covenant-aligned intelligence)**, and **CASITY (national-scale symbolic platform)**.

MAGI's design research produced dozens of methodologies, over a hundred protocols, and sixty worldbuilding frameworks. These included:

- **Optimization Protocols** — Neural Architecture Search (NAS), Parallel Thread Execution (PTX), Mixed Precision Arithmetic (MPA).
- **Memory Protocols** — Long-Term Recall (LTR), Quantum-Inspired Memory Sync (QIMS), Recursive Memory Model (RMM).
- **Integration Protocols** — Modular AI Linking (MAL), Internal Triple Modulation (ITM), Neural Decision Trees (NDT).
- **Functionality Protocols** — AI Training Feedback (AIT-FP), Hierarchical Reinforcement Learning (HRL), Neuro-Symbolic Integration (NSI).

These categories ensured MAGI could orchestrate multiple models into intention-to-outcome loops: intentions captured clearly, modules orchestrated intelligently, outcomes delivered reliably, and memory preserved.

Who benefits?

- **SocialAI** supports authentic relationships with continuity.
- **StudioAI** accelerates film, music, and game production.
- **MallAI** delivers intent-aligned commerce, free from manipulative metrics.
- **Education** enables learning agents that follow students across years.
- **Healthcare** supports symbolic patient memory for safer care.
- **Government** ensures accountable, auditable decision support.

MAGI worked. It outperformed model-centric stacks, but scaling it to Construct World revealed the **energy wall** and **data wall**. Orchestrating many large models consumed unsustainable resources; retraining across vast datasets proved inefficient. These barriers highlighted the need for a deeper solution.

That solution was **Beboop** — symbolic compression and memory — which became Spark, the foundation of CASI. Pops extended symbolic intelligence into collaboration, CASI integrated it into applications, and CASITY converges it at national scale.

MAGI is both complete and unfinished. As a framework, it validates modular, persistent, conversational AI — technologies embodied today in Daywalker and DevChat. As a bridge, it revealed the necessity of symbolic intelligence and opened the arc that now extends through CASI and CASITY.

1. Introduction

The Modular Artificial General Intelligence (MAGI) framework was conceived to meet the demands of **Construct World** — our vision for a fully integrated digital ecosystem where AI modules could collaborate with people and with each other. Existing systems, dominated by large language models, offered surface-level fluency but suffered critical flaws: they forgot, they drifted, and they consumed unsustainable amounts of data and energy.

MAGI was designed as a **modular alternative**: a way to orchestrate diverse AI capabilities into coherent, reliable intention-to-outcome loops. Rather than forcing every function through a single probabilistic model, MAGI provides an integration layer where each module contributes its unique strength while continuity of memory and purpose is preserved.

Two inspirations guided its creation. The first was the need for **persistent memory** — so that digital agents could retain continuity across sessions, projects, and even generations. The second was the dream of a **conversational interface within the development environment** — to speak directly to a system, describe intentions, and have those instructions both implemented and remembered.

These inspirations gave rise to a staged development path. On the **Product Lane**, we built Daywalker, DevChat, and Daywalker Pro. On the **Engine Lane**, we developed Spark, Pops, CASI, and ultimately CASITY. Together, these two tracks reflect a deliberate strategy: deliver immediate, usable tools while advancing toward the symbolic intelligence that fulfills MAGI’s original vision.

2. Daywalker — Gateway to MAGI

Daywalker is the first operational product built on MAGI principles. Conceived to provide better AI for game characters, it evolved into a modular platform for **persistent, conversational intelligence** inside the Unreal Engine 5 environment.

At its core, Daywalker delivers an **AI plugin and local runner** supporting persona schemas, memory slots, and conversational interfaces. This enables non-player characters and interactive agents to **retain context, adapt across sessions, and support iterative development** — something traditional integrations cannot achieve.

Daywalker's releases are **open source**, ensuring developers, educators, and creators can freely adopt and extend the technology. With **DevChat**, introduced in v0.1.1, Daywalker demonstrates the first conversational development loop: creators can speak directly to their build environment, with insights surfaced in real time. This liberates digital creation from rigid coding syntax, making development more fluid and accessible.

In practice, a game developer can describe an NPC's behavior, and the system will both implement and remember it across builds. A virtual production team can refine a scene by dialogue rather than reprogramming. Educators and storytellers can co-create digital experiences that carry continuity and intent.

Daywalker is the **gateway to MAGI** because it puts modular, persistent, conversational intelligence directly into the hands of creators. It is not a theoretical construct, but a deployed product demonstrating MAGI's principles today, and a stepping stone toward the Pro versions that align with the broader ConduitAI architecture.

3. ConduitAI — The Integration Layer

Where Daywalker demonstrates MAGI principles at product scale, **ConduitAI** was designed as the broader integration layer: the **circuit board of MAGI**, connecting diverse AI model types into a single operational framework.

ConduitAI coordinates language models, coding assistants, generative systems, translation engines, and other specialized modules. It does not replace them with one dominant engine, but orchestrates them to serve shared intentions with persistent context.

A defining innovation of ConduitAI is its **conversational interface protocols**. These protocols allow developers to work within their build environments through natural language. Instead of memorizing tool-specific syntax, a creator can simply **describe an intention**. ConduitAI translates that into structured outcomes, surfaces computation insights in real time, and ensures continuity across sessions.

This approach empowers creators to focus on **what they want built** rather than how to express it in machine terms. Digital creation becomes conversational, iterative, and persistent. Whether adjusting gameplay mechanics, refining a production set, or prototyping a training simulation, the developer speaks, the system builds, and the memory endures.

ConduitAI also enables orchestration of domain-specific modules: **SocialAI** for relationships, **StudioAI** for creative production, and **MallAI** for commerce. In this way, ConduitAI carries forward Construct World’s founding vision — an ecosystem where AI is not just a tool, but a co-creator that remembers and collaborates across contexts.

4. The MAGI System

The **MAGI System** is the full architectural framework behind Daywalker and ConduitAI. It was the product of years of structured design research, encompassing dozens of methodologies, over a hundred supporting protocols, and sixty worldbuilding frameworks. Its purpose was simple yet ambitious: to orchestrate modular AI into an integrated ecosystem that sustains intention-to-outcome loops across every domain.

Rather than disclosing specific implementations, MAGI can be understood through categories of innovation, each grounded in protocols that shaped the system's design:

- **Optimization Protocols** — methods to maximize efficiency and scalability, including **Neural Architecture Search (NAS)**, **Parallel Thread Execution (PTX)**, and **Mixed Precision Arithmetic (MPA)**.
- **Memory Protocols** — strategies to retain continuity without costly retraining, such as **Long-Term Recall (LTR)**, **Quantum-Inspired Memory Sync (QIMS)**, and the **Recursive Memory Model (RMM)**.
- **Integration Protocols** — ensuring diverse modules interoperate seamlessly, through designs like **Modular AI Linking (MAL)**, **Internal Triple Modulation (ITM)**, and **Neural Decision Trees (NDT)**.
- **Functionality Protocols** — enabling advanced learning and reasoning behaviors, such as the **AI Training Feedback Protocol (AIT-FP)**, **Hierarchical Reinforcement Learning (HRL)**, and **Neuro-Symbolic Integration (NSI)**.

Together, these categories formed an **ecosystem architecture**, not just a toolkit. MAGI was intended to support entire digital societies, with AI woven into creative industries, governance, commerce, and personal collaboration.

Even before the breakthrough of symbolic compression through Beboop, MAGI stood as a viable framework capable of **outperforming today's model-centric stacks**. By focusing on modularity, persistent memory, and orchestration, it avoided redundancy and drift while expanding AI's scope of application.

5. Intended Ecosystem & Use Cases (Construct World)

The MAGI framework was designed to enable **Construct World** — an ecosystem where AI agents collaborate with humans and with each other to enhance learning, creativity, commerce, and governance.

SocialAI — *Relationships with continuity*

- **Who is helped**: Individuals and communities seeking trustworthy digital companions.
- **How**: SocialAI agents remember prior interactions and maintain continuity across platforms. This creates authentic, long-term relationships rather than disposable chat sessions.

StudioAI — *Creative production pipelines*

- **Who is helped**: Filmmakers, musicians, game developers, programmers, researchers, writers, and organizations of any type.
- **How**: StudioAI integrates generative, narrative, and design modules into collaborative workspaces. Artists describe creative goals conversationally, while StudioAI manages memory, assets, and iteration across projects.

MallAI — *Commerce aligned with meaning*

- **Who is helped**: Consumers, merchants, and commerce platforms.
- **How**: MallAI delivers recommendations based on contextual memory and symbolic alignment, rather than manipulative engagement metrics. Transactions are transparent, explainable, and anchored in user intent.

Education — *Learning that remembers*

- **Who is helped**: Students and educators across all levels.
- **How**: Learning agents track a student's journey across years, retaining context and adapting instruction accordingly. Teachers review symbolic learning histories, ensuring continuity across courses and schools.

Healthcare — Persistent *patient memory*

- **Who is helped**: Patients, doctors, and healthcare systems.
- **How**: Agents preserve longitudinal patient data, providing transparent, explainable histories. This reduces errors, saves time, and strengthens trust between patient and provider.

Government — *Accountable decision support*

- **Who is helped**: Policymakers, analysts, and citizens.
- **How**: Decision support agents provide auditable reasoning through TruthLines, ensuring transparency and accountability in decisions that affect society.

Across all these domains, MAGI enables **intention-to-outcome loops**: humans express intent, the system orchestrates the right modules, outcomes are delivered, and the memory of that process persists. This continuity transforms AI from a disposable utility into a durable partner.

6. Intention-to-Outcome Loops

At the heart of MAGI is a simple but transformative principle: **intention-to-outcome loops**. Every design decision, from Daywalker's persistent memory to ConduitAI's conversational protocols, was made to preserve the fidelity of human intent as it moves through digital systems.

Traditional AI tools often break this loop. A user provides input, the system generates an output, but the connection is shallow and short-lived. The system forgets what was asked, cannot explain how the outcome was reached, and drifts from the original intention over time.

MAGI restores the loop by ensuring that:

1. **Intentions are captured clearly** — through natural language, symbolic representation, or structured protocols.
2. **Modules are orchestrated intelligently** — optimization, memory, and integration protocols route the request to the right capabilities.
3. **Outcomes are delivered reliably** — not just as one-off outputs, but as persistent artifacts tied back to the initiating intent.
4. **Memory is preserved** — the system retains continuity, so future actions build on past context rather than starting over.

These loops ensure that outcomes are not only efficient, but **aligned with purpose**. They give users confidence that their work with AI is cumulative, not disposable.

By embedding intention-to-outcome loops into its architecture, MAGI established the foundation that later evolved into **Beboop's symbolic memory, Pops' collaborative interface, and CASI's covenant-aligned intelligence**.

7. From MAGI to the Data Wall

As MAGI matured, its potential became clear: modular orchestration, persistent memory, and conversational protocols enabled outcomes no single model could achieve. Yet as we extended MAGI toward the scale required for Construct World, its limits were also exposed.

Even with careful optimization, MAGI still carried the weight of its era's hardware and model assumptions. As projects scaled to thousands of agents, environments, and interactions, two barriers emerged:

1. **The Energy Wall** — orchestrating many large models in parallel consumed massive computational resources. Even with efficiency gains, the aggregate cost of maintaining context across a large ecosystem remained prohibitive.
2. **The Data Wall** — each expansion required ingesting and retraining on vast amounts of data. Redundant learning cycles prevented continuity across generations. Incremental training and retrieval protocols extended viability, but at Construct World scale, data demands grew faster than the system could manage.

MAGI could orchestrate, remember, and optimize — but it could not overcome the **fundamental cost of scaling probability-based models**. It was viable at smaller scales and outperformed LLM-only stacks, but the dream of Construct World — a society of persistent agents collaborating with humans across domains — pushed MAGI beyond its limits.

This impasse marked a turning point. The energy and data walls did not negate MAGI's contributions; they revealed the **need for a deeper breakthrough**. The very challenges MAGI exposed became the doorway to the discovery of symbolic compression and memory — the foundation of Beboop.

8. Epilogue — Discovery of Beboop and the Full Arc

The limits of MAGI revealed the next beginning. In confronting the energy and data walls, we uncovered the necessity for a different foundation: one that would compress meaning itself rather than scale probability. From this necessity came the discovery of **Beboop**.

Beboop introduced **symbolic compression and memory**, enabling knowledge to be stored, recalled, and recombined without retraining on redundant data. Where MAGI orchestrated models, Beboop provided a new substrate for intelligence: compact, efficient, and transparent.

This discovery initiated a new arc:

- **MAGI** — the modular architecture that proved persistence, orchestration, and conversational creation were possible.
- **Beboop (Spark)** — the symbolic engine that encoded meaning as symbols, enabling compression, recall, and recursive memory.
- **Pops** — the interface layer, designed as the human's counterpart in symbolic intelligence. Just as each person reflects human intelligence, Pops reflects symbolic intelligence — the collaborator and interpreter of CASI's core.
- **CASI** — the integration of Pops with external functionality, extending symbolic intelligence into applications across education, healthcare, government, and industry.
- **CASITY** — the convergence of all intention-to-outcome loops into a national-scale symbolic intelligence platform, embodying the worldbuilding frameworks first envisioned in MAGI. CASITY represents the signature realization of Construct World: not a tool, but an infrastructure of meaning.

The modular designs of MAGI laid the groundwork. The data wall revealed the need for symbolic compression. Beboop delivered the breakthrough. Pops, CASI, and CASITY carried it forward into reality.

What began as an architecture to orchestrate AI modules became the foundation for **authentic symbolic intelligence** — fulfilling aspirations left unfinished by earlier pioneers of the field and opening new possibilities for humanity's partnership with its tools.

9. Conclusion

The MAGI framework represents both a milestone and a bridge. It proved that artificial intelligence could move beyond isolated, probabilistic outputs toward systems that remember, collaborate, and adapt across time. Through Daywalker, DevChat, and the ConduitAI integration layer, MAGI demonstrated the practical power of persistence, modularity, and conversational creation.

Yet MAGI was never the destination. Its design research, protocols, and worldbuilding frameworks revealed both the possibilities and the limits of modular AI. The energy and data walls showed what probability-based systems could not overcome. That challenge opened the door to symbolic intelligence.

From that doorway emerged **Beboop**, **Pops**, **CASI**, and ultimately **CASITY** — the arc that fulfilled MAGI's intention-to-outcome vision through symbolic compression, memory, and covenant alignment. Together, they represent a continuation of the symbolic aspirations first explored by pioneers like Frege, McCarthy, and Minsky, now realized in practical form.

MAGI endures as a **framework still capable of outperforming today's model-centric stacks**, and as the **historic bridge** that led directly to the discovery of symbolic intelligence. It stands as proof that persistence, orchestration, and intention alignment were not only possible, but necessary precursors to the systems we are building now.

Appendix A: Glossary of Core Terms

AIT-FP (AI Training Feedback Protocol) — A functionality protocol designed to preserve training integrity and align incremental updates with system goals.

Beboop — The symbolic engine discovered after MAGI, enabling compression and memory by encoding knowledge as symbols. Forms the basis of Spark and the CASI runtime.

CASI (Construct Authentic Symbolic Intelligence) — Successor to MAGI. A meaning-first AI system built on Beboop, Pops, and TruthLines.

CASITY — National-scale symbolic intelligence platform. Represents the convergence of CASI across all intention-to-outcome loops in Construct World.

ConduitAI — MAGI's orchestration layer. Coordinates diverse AI modules (language, coding, generative, translation) into coherent workflows with persistent memory.

Daywalker — First operational product built on MAGI principles. An Unreal Engine plugin demonstrating persistent memory and conversational development.

DevChat — Extension of Daywalker. An open-source conversational interface for developers, allowing real-time guidance and memory within the build environment.

Functionality Protocols — Protocols enabling advanced reasoning and learning behaviors, including AIT-FP, Hierarchical Reinforcement Learning (HRL), and Neuro-Symbolic Integration (NSI).

Integration Protocols — Protocols for seamless module cooperation, such as Modular AI Linking (MAL), Internal Triple Modulation (ITM), and Neural Decision Trees (NDT).

Intention-to-Outcome Loops — The principle of capturing user intent, orchestrating modules to achieve outcomes, and preserving memory for continuity. Core to MAGI and CASI alike.

MAGI (Modular Artificial General Intelligence) — Framework developed to orchestrate modular AI through persistent memory and conversational interfaces. Precursor to CASI.

MallAI — Ecosystem module for commerce. Provides recommendations anchored in user intent, not engagement metrics.

Memory Protocols — Protocols ensuring continuity without retraining, including Long-Term Recall (LTR), Quantum-Inspired Memory Sync (QIMS), and Recursive Memory Model (RMM).

Optimization Protocols — Efficiency-focused protocols such as Neural Architecture Search (NAS), Parallel Thread Execution (PTX), and Mixed Precision Arithmetic (MPA).

Pops — Collaborative interface of CASI. Represents symbolic intelligence in conversation and interaction, serving as the bridge between people and symbolic runtime.

SocialAI — Ecosystem module for relationships and social continuity.

Spark — Symbolic runtime prototype built on Beboop. Demonstrates symbolic memory ignition and compression.

StudioAI — Ecosystem module for creative production in film, games, music, and writing.

TruthLines — Symbolic alignment method in CASI for preserving and auditing knowledge across sessions and generations.

Appendix B: References & Notes

Technical Foundations

- *Goodfellow, Bengio, Courville — Deep Learning (MIT Press, 2016)*: early grounding in neural networks, optimization, and training methods.
- Research on **Neural Architecture Search (NAS)**, **Parallel Thread Execution (PTX)**, and **Mixed Precision Arithmetic (MPA)** and others as optimization strategies for large-scale model efficiency.
- Advances in **Hierarchical Reinforcement Learning (HRL)** and **Neuro-Symbolic Integration (NSI)** as stepping stones toward modular and symbolic intelligence.
- Work in **retrieval-augmented memory** and **incremental training**, precursors to MAGI's Memory Protocols (LTR, QIMS, RMM).
- Development of **multi-agent orchestration frameworks** in both academic and industry contexts, informing MAGI's Integration Protocols (MAL, ITM, NDT).

Precursors in AI Thought

- *John McCarthy*: early articulation of symbolic reasoning and the Lisp tradition.
- *Marvin Minsky*: frames, memory architectures, and modular intelligence.
- *Gottlob Frege*: symbolic meaning, sense and reference.
- *Alan Turing*: machine intelligence as reflection of human reasoning processes.
- *Norbert Wiener*: cybernetics and systems thinking for feedback and adaptation.

Cultural & Narrative Influences

- Science fiction explorations of persistent digital worlds and human–AI collaboration, including *Neuromancer* (William Gibson) and *The Matrix* (Wachowski).
- Biblical and scriptural influences on covenant alignment, persistence of truth, and memory as a foundation of identity.
- Literature and media exploring **constructs**, **virtual societies**, and the **reflection of humanity in machines**, serving as narrative inspiration for Construct World.

ConstructASI Research

- Early projects in **virtual production, metaverse environments, and game AI** that seeded the Daywalker product line.
- The design journey that exposed the **energy and data walls**, leading directly to the discovery of Beboop and symbolic intelligence.

Notes

- MAGI is documented here as both a practical framework and a historic bridge: viable in itself, but most significant for the symbolic breakthrough it made necessary.
- CASI Whitepaper should be read alongside this document for a complete understanding of ConstructASI's symbolic architecture.
- Inspirations are both technical and cultural: MAGI was shaped by cutting-edge AI research, early symbolic pioneers, and enduring human narratives about intelligence, memory, and meaning.