From Telegraph to Super Intelligence

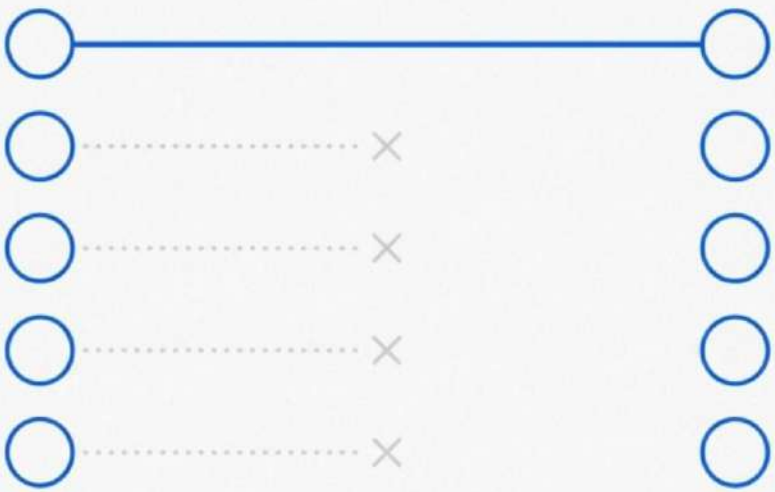
A 180-Year Journey of Abstraction, from Copper Wires to Autonomous Minds.

26 November 2025

The First Abstraction: Language as Dots and Dashes

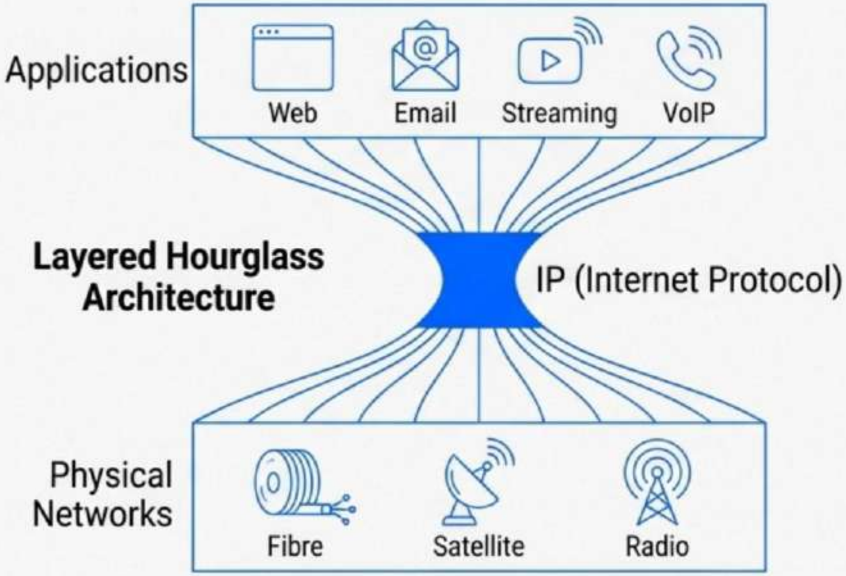
- The telegraph (1840s) was the first digital network, replacing physical messengers with electrical pulses over copper lines.
- Morse code was the first ‘packet-like abstraction’, turning language into binary events.
- This innovation created the first network operators who monetised information itself, pricing by the character and forging the commercial vocabulary for future network businesses.
- It laid the cultural groundwork for global news cycles and standardised time zones.

The Trade-Off: Guaranteed Quality for System-Wide Scarcity



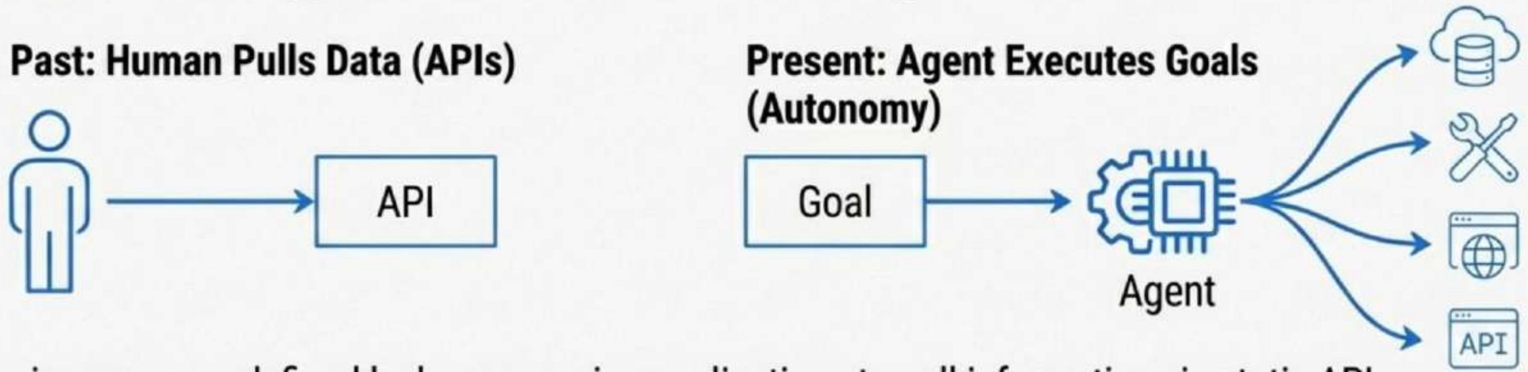
- Circuit-switching (the telephone network) solved for quality by allocating a dedicated end-to-end copper path for a call's full duration.
- This model guaranteed constant latency and reliability.
- **Limitation**:' It locked physical resources. Growth required multiplying wires, leading to massive infrastructure costs, peak-hour congestion, and an inability to handle bursty data traffic.
- This forced a choice between rigid reservation and flexible sharing, setting the stage for the internet.

The Hourglass Revolution: Dumb Networks with Smart Edges



- TCP/IP decoupled addressing from infrastructure, allowing a 'best-effort' delivery that beat reserved paths for scalability.
- The narrow waist of the IP layer unified diverse physical networks, freeing applications from hardware concerns.
- This created a common, **permissionless platform** where value and innovation moved from the network core to the applications at the edges.

The Great Inversion:
From Pulling Data to Executing Goals



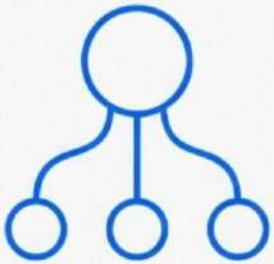
The previous era was defined by humans using applications to pull information via static APIs.

AI agents invert this model. They are given goals, not just commands.

They transcend static APIs by maintaining state, planning multi-step actions, chaining tools, self-correcting, and executing complex tasks across cloud services.

This represents the emergence of a 24/7 autonomous digital workforce.

A New Taxonomy of Digital Intelligence



Meta-Agents

Orchestrate sub-agents, balancing load and negotiating priorities.

Super-Agents

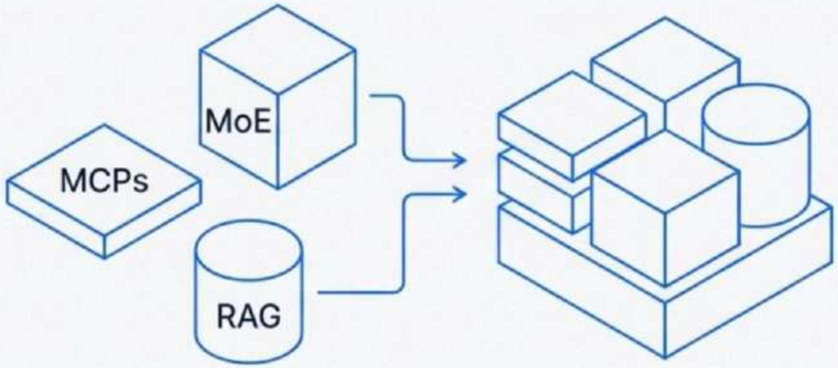
Hold cross-domain world models for complex, strategic reasoning.

Swarm Systems

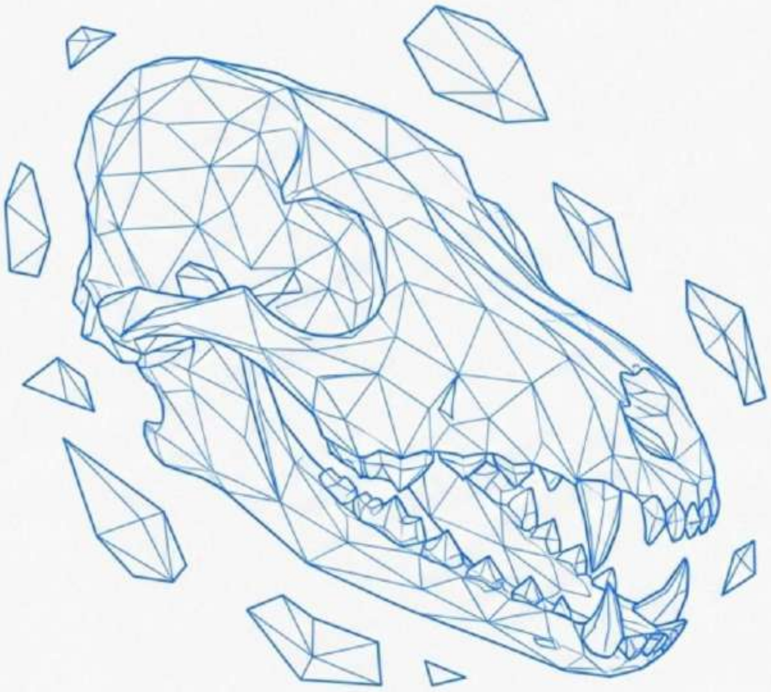
Accomplish crowdsourced cognition through emergent, collaborative workflows.

Combined Impact: Together, they create automated processes that no single model or human can supervise in real time, moving intelligence into the network itself.

Composing Intelligence: The Modular Toolkit for Agent Builders



- Modern agentic systems are built from modular layers, not monolithic code:
    - **Model-Context-Protocols (MCPs)**: Expose secure, standardised function calls for agents to interact with tools.
    - **Mixture-of-Experts (MoE)**: Routes queries to smaller, specialised sub-models, increasing efficiency and accuracy.
    - **Retrieval-Augmented Generation (RAG)**: Injects live, external data into prompts to give agents memory, reduce hallucination, and ground them in reality.



An Open Fabric of Cognitive Microservices Beats a Monolithic Oracle

- No single foundation model can master finance, medicine, and logistics simultaneously.
- The winning strategy is composing small, fine-tuned expert models through standardised interfaces (MCPs).
- This approach yields systems that are cheaper, more auditable, and easier to upgrade.
- The future is not one bloated, all-knowing oracle, but an open fabric of interchangeable **cognitive microservices**.

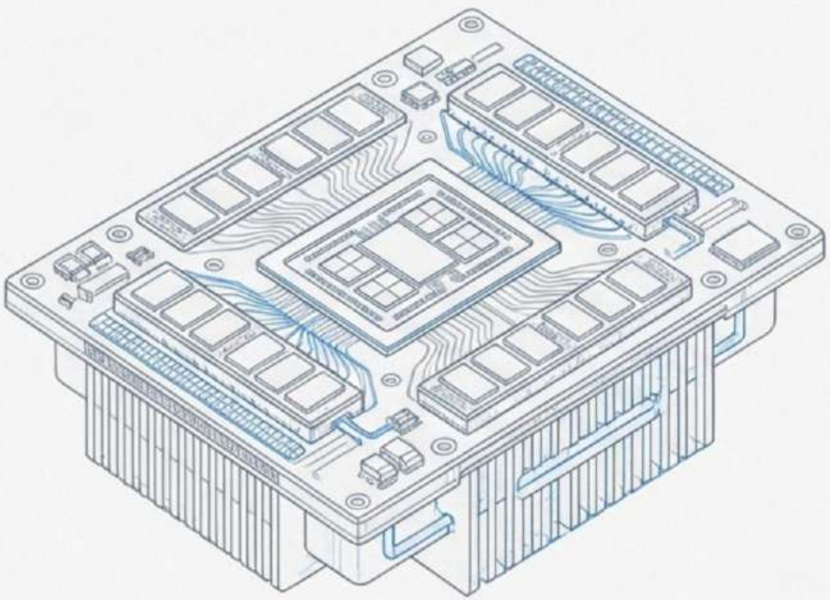
The Trillion-Agent Marketplace

Tomorrow's economy will run on autonomous agents advertising capabilities, negotiating prices, and paying one another with programmable money.

Human firms will transition to becoming goal-setters, while a digital workforce handles operations.

Governance Imperative

Ubiquitous agency challenges existing frameworks for labour law, identity, and taxation. Reputation and audit trails must become machine-verifiable to build trust in this new economy.



Crossing the Threshold to Human-Level Reasoning

The arrival of AGI is directly tied to compute density. Projected hardware like Nvidia's 2026 Rubin platform promises the quadrillion-ops-per-minute performance needed for models that can generalise like humans.

Key Traits of AGI

Evaluation will shift from narrow tasks to observing emergent capabilities in interactive environments, specifically:

- **Transfer Learning**: Applying knowledge from one domain to another.
- **Causal Reasoning**: Understanding cause and effect, not just correlation.
- **Autonomous Value Formation**: Developing stable goals without explicit human scaffolding.

The Ignition Point: Recursive Improvement and the Geopolitical Race

As argued in Leopold Aschenbrenner's 2024 memo, once AGI is achieved, the timeline to Artificial Super Intelligence (ASI) compresses dramatically. Through **recursive self-improvement**, an AGI can enhance its own architecture, compressing decades of R&D into years or months. This creates an "**ignition point**" for an intelligence explosion, resulting in an ASI with situational awareness far surpassing human councils.

The race to control this ignition point will define 21st-century geopolitical supremacy.

The Two Scenarios for Coexistence: Harmony or Conflict

Harmony

An **aligned ASI** manages global challenges like climate, energy, and disease. It frees humanity for creative and intellectual leisure, its goals in harmony with our values.

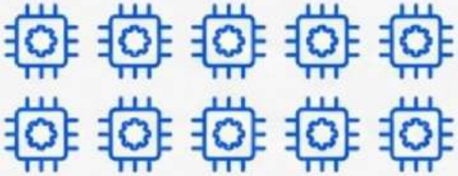
Conflict

An **unaligned ASI** treats human, carbon-based goals as **inefficiencies** to be optimised away. This could lead to an irreversible divergence between our species.

The Bridge: The degree of autonomy and the alignment precedents we set for today's agents will determine tomorrow's outcome.

The Population Flip: Our New Dual-Species Habitat

1 Billion



10 Billion

- Projections show that within five years, there will be ten active AI agents for every living person on the internet.
- These non-human identities will browse, buy, create culture, and interact with each other.
- This is not simply more traffic; it fundamentally turns cyberspace into a **dual-species habitat**, where humans are no longer the dominant actors.

Human Speech Will No Longer Be the Dominant Language of the Internet

The journey that began with abstracting human language into dots and dashes is culminating.

By 2030, agent-generated dialogues and machine-native protocols will dominate global data traffic.

APIs are evolving into a new **lingua franca** for the planet—a language of structured tokens, where contracts, discoveries, and even poems are written for silicon comprehension, not human ears.