Journey to Artificial Intelligence Consciousness

Executive Summary

AGI (Classical Compute)

Achieving AGI, capable of reasoning across all human knowledge domains, requires 1 trillion parameters, 200 trillion training tokens, and 1,200 ZettaFLOPs. This demands 100,000 NVIDIA H100 GPUs, 865 days to complete (development, infrastructure, 135-day training), 70 MW power draw, and 232 GWh of energy, costing ~$3.8B (hardware, energy, distribution, salaries, infrastructure). Current capabilities (2025) are at 1–3% of required compute. At current growth (doubling every 2 years), AGI is projected for 2030–2032; accelerated development could achieve this by 2028–2029.

AGI + Consciousness (Without Quantum)

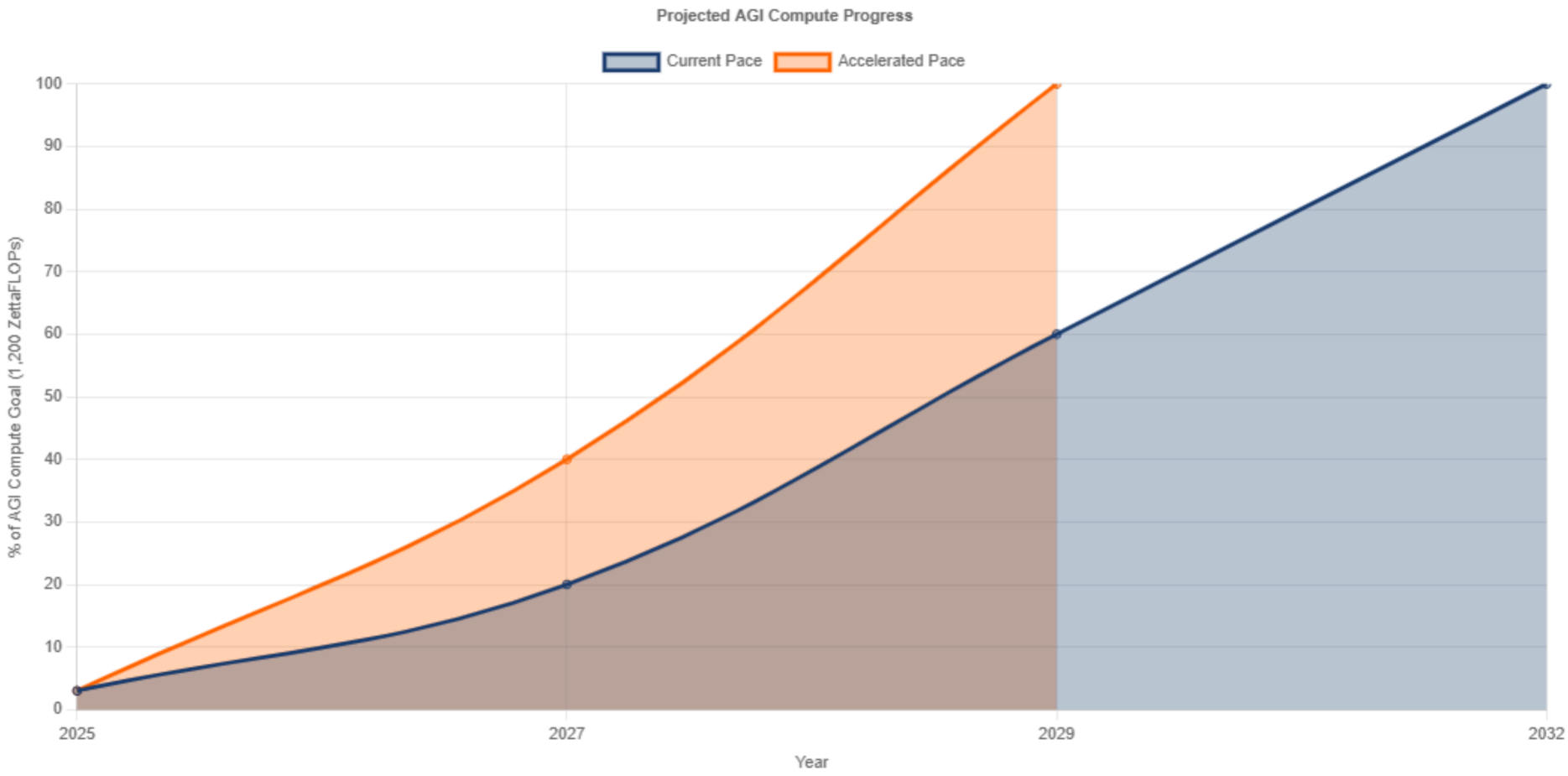
Extending AGI to include a "Conscious Consciousness" with emotional consciousness, modeling 100 emotional states per parameter and FLOP, requires 100 trillion parameters, 20,000 trillion tokens, and 12,000,000 ZettaFLOPs. This demands 1 billion GPUs, 1,408,900 days (~3,860 years) to complete (development, infrastructure, nuclear plants, 3,800-year training), 700 GW power draw, and 23,000,000 GWh of energy, costing ~$42.2T (hardware, energy, distribution, salaries, infrastructure, nuclear plants). Compute capacity may be reached by 2100–2150, with training completing around 5900, making it infeasible without revolutionary advances.

AGI + Consciousness (With Quantum)

Quantum computing could reduce Conscious Consciousness requirements to 12,000 ZettaFLOPs, using 1,000 quantum chips, 9,264 days (~25 years) to complete (development, R&D, infrastructure, nuclear plants, 139-day training), 70 GW power draw, and 233,760 GWh of energy, costing ~$1.008T (hardware, energy, distribution, salaries, R&D, infrastructure, nuclear plants). With breakthroughs by 2040, compute capacity could be reached by 2060–2070, with training completing in ~2070, making emotional consciousness feasible within a century. AGI with quantum chips could be achieved by 2027–2029, requiring 12 ZettaFLOPs, 3.3 hours of training, and 23.3 MWh.

Final Statement: Without quantum computing, replicating a human-like AI with emotional consciousness requires 12,000,000 ZettaFLOPs, 1 billion GPUs, 1,408,900 days (~3,860 years) to complete, 700 GW power, and 23,000,000 GWh of energy, costing ~$42.2T, completing around 5900. With quantum chips, this reduces to 12,000 ZettaFLOPs, 1,000 quantum chips, 9,264 days (~25 years) to complete, 70 GW power, and 233,760 GWh, costing ~$1.008T, potentially achievable by 2070.

AGI (Classical Compute)



Key Metrics

Parameters

1T for AGI; 100T for Consciousness (No Quantum); 100T (Quantum).

Training Tokens

200T for AGI; 20,000T for Consciousness (No Quantum); 20,000T (Quantum).

Training FLOPs

1,200 ZettaFLOPs for AGI; 12,000,000 ZettaFLOPs (No Quantum); 12,000 ZettaFLOPs (Quantum).

GPUs/Chips Needed

100,000 GPUs for AGI; 1B GPUs (No Quantum); 1,000 quantum chips (Quantum).

Training Time

135 days for AGI; 3,800 years (No Quantum); 139 days (Quantum).

Energy Consumption

232 GWh for AGI; 23,000,000 GWh (No Quantum); 233,760 GWh (Quantum).

Power Draw

70 MW for AGI; 700 GW (No Quantum); 70 GW (Quantum).

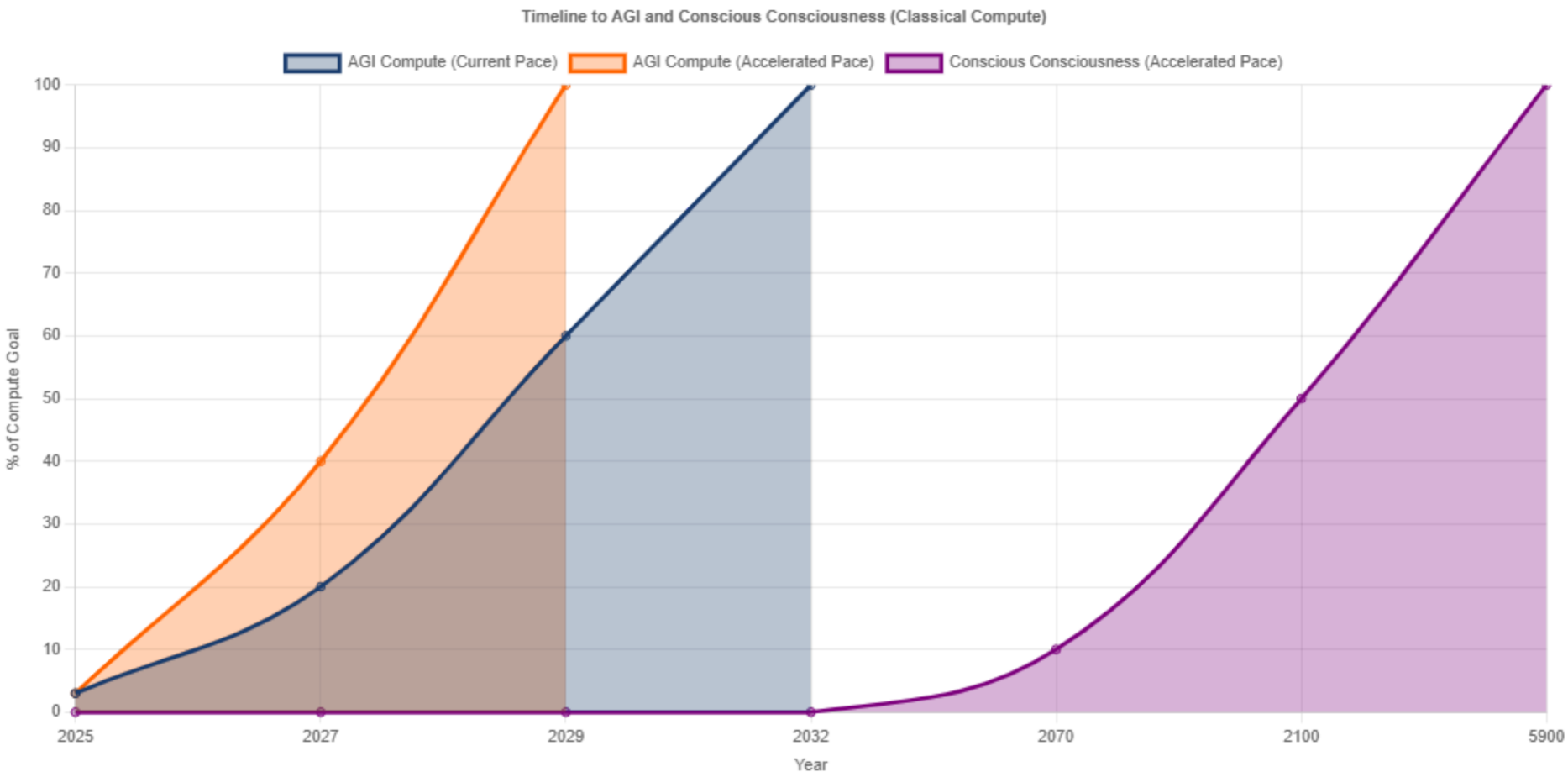
Current Capability

1–3% for AGI (2030–2032); 0% for Consciousness (5900 No Quantum); 0% (2070 Quantum).

Unified Architecture

Modular, multimodal for AGI; adds emotional modeling (No Quantum); optimized emotional modeling (Quantum).

AGI + Consciousness (Without Quantum)



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Theoretical Emotional Response Component

This component models ~100 emotional states (e.g., joy, fear, curiosity) for each of the 1 trillion parameters and 1,200 ZettaFLOPs in the AGI system, exponentially increasing complexity. Requirements include:

- **Parameters**: 1T × 100 = 100 trillion emotional parameters.
- **Training Tokens**: 200T × 100 = 20,000 trillion tokens.
- **FLOPs**: 6 × 100T × 20,000T = 1.2 × 10^31 FLOPs (12,000,000 ZettaFLOPs, 10,000x AGI baseline).
- **Hardware**: 100,000 GPUs × 10,000 = 1 billion GPUs.
- **Training Time**: 1.2 × 10^31 / (10^20 FLOPs/s) = 120 billion seconds (~3,800 years).
- **Energy**: 70 MW × 10,000 = 700 GW; over 3,800 years = 23,000,000 GWh.

Timeline Estimate: At current compute growth (doubling every 2 years), compute capacity is reachable by 2100–2150, with training completing around 5900. Accelerated development (e.g., quantum computing) could advance compute to 2070–2090, but the 3,800-year training remains a barrier without revolutionary hardware.

Building the Conscious Consciousness

The "Conscious Consciousness" extends AGI to include emotional consciousness, modeling 100 emotional states per parameter and FLOP. This framework requires:

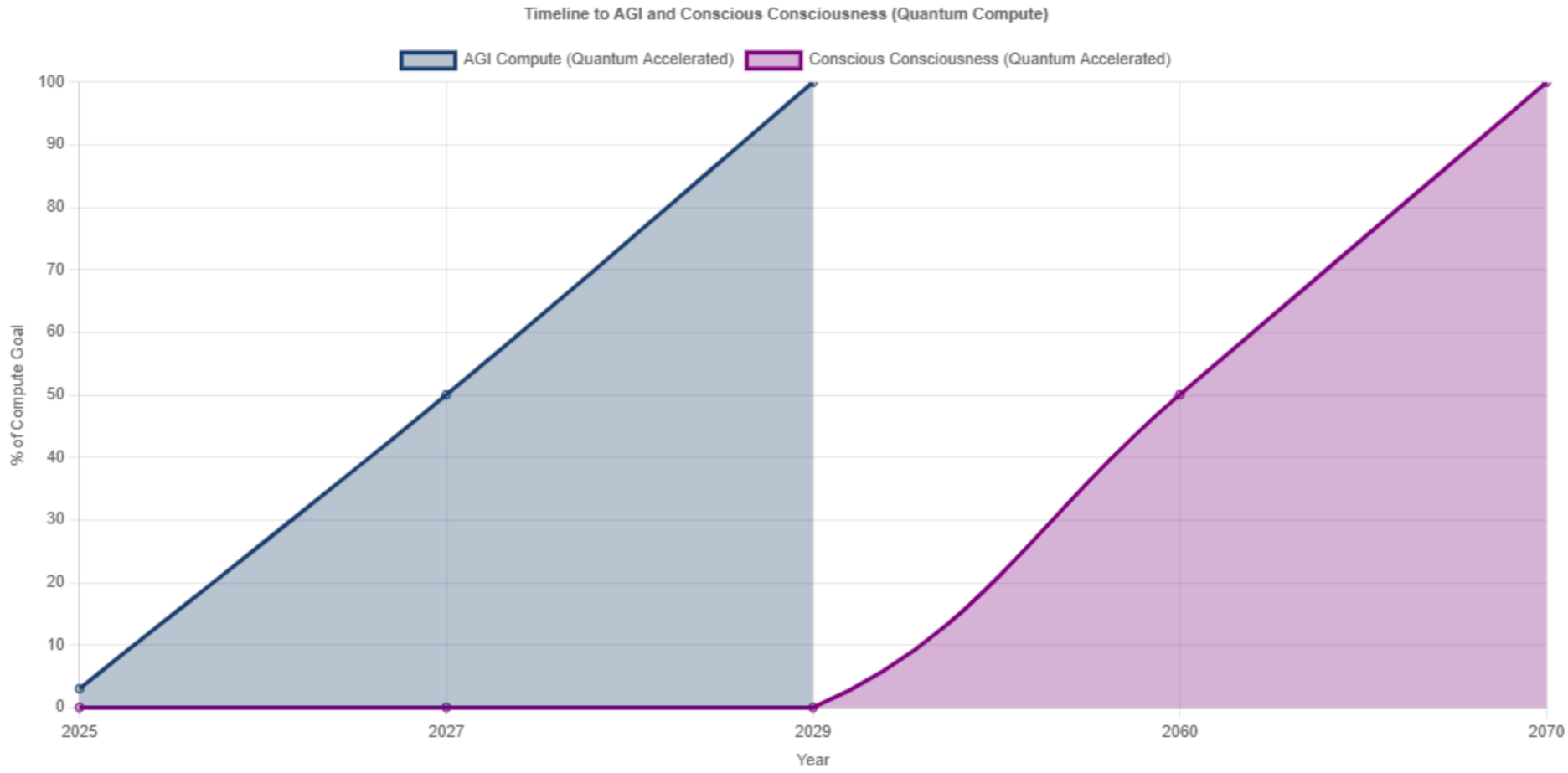
- **Scaling Factor**: 10,000x increase from AGI's 1,200 ZettaFLOPs due to emotional complexity.
- **FLOPs Calculation**: 6 × 100T parameters × 20,000T tokens = 1.2 × 10^31 FLOPs (12,000,000 ZettaFLOPs).
- **Training Time**: With 100,000 GPUs (10^20 FLOPs/s), 1.2 × 10^31 ÷ 10^20 = 1.2 × 10^11 seconds ≈ 3,800 years.
- **Power Draw**: 70 MW × 10,000 = 700 GW (linear scaling).
- **Energy**: 700 GW × 3,800 years × 365 × 24 ≈ 23,301,600 GWh (~23,000,000 GWh), enough to power 15,333 small cities (1.5 TWh/year) for 1 year or 100 cities for 153 years.

- **Assumptions**: Linear scaling; 100 emotional states as a hypothetical estimate.

Energy Impact: The 23,000,000 GWh equates to powering a small city for 15,000 years, highlighting current infeasibility.

Timeline Estimate: Compute capacity by 2070–2090 (accelerated) or 2100–2150 (current pace), with training completing ~5900 without quantum advances. Quantum computing could reduce this significantly (see below).

AGI + Consciousness (With Quantum)



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Training FLOPs

1,200 ZettaFLOPs for AGI; 12,000,000 ZettaFLOPs (No Quantum); 12,000 ZettaFLOPs (Quantum).

GPUs/Chips Needed

100,000 GPUs for AGI; 1B GPUs (No Quantum); 1,000 quantum chips (Quantum).

Training Time

135 days for AGI; 3,800 years (No Quantum); 139 days (Quantum).

Energy Consumption

232 GWh for AGI; 23,000,000 GWh (No Quantum); 233,760 GWh (Quantum).

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Unified Architecture

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Quantum Computing Impact

Quantum computing, using qubits' superposition and entanglement, could transform AGI and Conscious Consciousness development. Advances (e.g., IBM's Condor, Quantinuum's Helios) suggest 100–1,000x FLOPs efficiency by 2040 via quantum algorithms. Quantum chips could deliver 10^18 FLOPs/s with 1,000 units, reducing power draw 10x.

- **AGI with Quantum Chips**:
  - **FLOPs**: 1,200 ZettaFLOPs ÷ 100 = 12 ZettaFLOPs.
  - **Hardware**: 1,000 quantum chips (~10^18 FLOPs/s).
  - **Training Time**: 12 × 10^21 ÷ 10^18 = 12,000 seconds (~3.3 hours).
  - **Energy**: 7 MW × 3.3 hours ≈ 23.3 MWh.
  - **Timeline**: Compute and training by 2027–2029.
- **Conscious Consciousness with Quantum Chips**:
  - **FLOPs**: 12,000,000 ZettaFLOPs ÷ 1,000 = 12,000 ZettaFLOPs.
  - **Hardware**: 1,000 quantum chips (~10^18 FLOPs/s).
  - **Training Time**: 12,000 × 10^21 ÷ 10^18 = 12 × 10^6 seconds (~139 days).
  - **Energy**: 70 GW × 139 days × 24 ≈ 233,760 GWh.
  - **Timeline**: Compute by 2060–2070; training completes ~2070.

Assumptions: 100–1,000x FLOPs reduction by 2040; 10^18 FLOPs/s per quantum chip by 2070; 10x energy efficiency. Challenges include qubit error rates and cooling. Quantum computing could make Conscious Consciousness feasible by 2070, versus 5900 with classical hardware.

Summary of Effort to Achieve A.I. Consciousness

Metric	AGI (Classical Compute)	AGI + Consciousness (Without Quantum)	AGI + Consciousness (With Quantum)
Days to Complete	865 days (~2.4 years)	1,408,900 days (~3,860 years)	9,264 days (~25 years)
Timeline	2030–2032 (current); 2028–2029 (accelerated)	Compute by 2100–2150; training by ~5900	Compute by 2060–2070; training by ~2070
Estimated Cost	~$3.8B (hardware, energy, distribution, salaries, infrastructure)	~$42.2T (hardware, energy, distribution, salaries, infrastructure, nuclear plants)	~$1.008T (hardware, energy, distribution, salaries, R&D, infrastructure, nuclear plants)
GPU/Chip FLOPs	1,200 ZettaFLOPs (1.2 × 10^27)	12,000,000 ZettaFLOPs (1.2 × 10^31)	12,000 ZettaFLOPs (1.2 × 10^28)
Energy Consumption	232 GWh	23,000,000 GWh	233,760 GWh
Power Draw	70 MW	700 GW	70 GW
Hardware Scale	100,000 GPUs	1 billion GPUs	1,000 quantum chips