TYPEONEBIS

ZETASWARM PROJECT

DEMOCRATIZING EXA-SCALE COMPUTING:
DEPLOYING 4,000,000 SWARM-CPUS

White Paper

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INTRODUCTION

Democratizing exascale computing will improve efficiency in the fields of finance, medicine, design, simulation, analysis, artificial intelligence (AI), etc. As of 2023, there was no public general purpose exascale computer system on the planet. The Frontier exascale computer installation, which in 2023 was the planet's only public special purpose exascale computer, has a theoretical speed of 1.6 exaflops. Frontier uses 9,472 AMD Epyc 7A53s CPUs, for a price upwards of US$37 million. Frontier however, uses 37,888 AMD Radeon instinct MI250X GPUs, which are not general purpose CPUs, for a price upwards of US$370 million. Frontier's total CPU+GPU price is more than US$400 million, while its total price is greater than US$600 million and, reportedly, has an operational cost above US$50 million per year. In 2024, a wafer of high end server CPUs cost approximately US$0.7 million, where the wafer can be divided into around 72 individual server CPUs.

The egregious cost of exascale computer systems, prevent ground breaking innovations in science and technology research, product design and development, and industrial modernization. To obviate this state of affairs, TypeOneBIS is promoting the ZETASWARM project.

The motivation for ZETASWARM is the building of a biogenic replicator vaccine that will reverse and regulate routine, day-to-day muscle atrophy. This swarm technology vaccine requires trillions of CPU+GPU compute cores to achieve the realistic simulations needed to perfect the vaccine's design. Acquiring such a computer based on current CPU designs, would make the vaccine prohibitively expensive, and thus accessible to only a select few. However, the primary goal is to make the vaccine affordable to everyone.

The project's mission is to rollout at least 4,000,000 swarm-CPUs (SPU) over 5 years, and offers swarm-CPUs containing from 1 wafer to 32k wafers. See the underlined white paper on swarm-CPUs, for further details. See also Table-1 for CPU comparisons.

SWARM CPU (SPU) OPTIONS

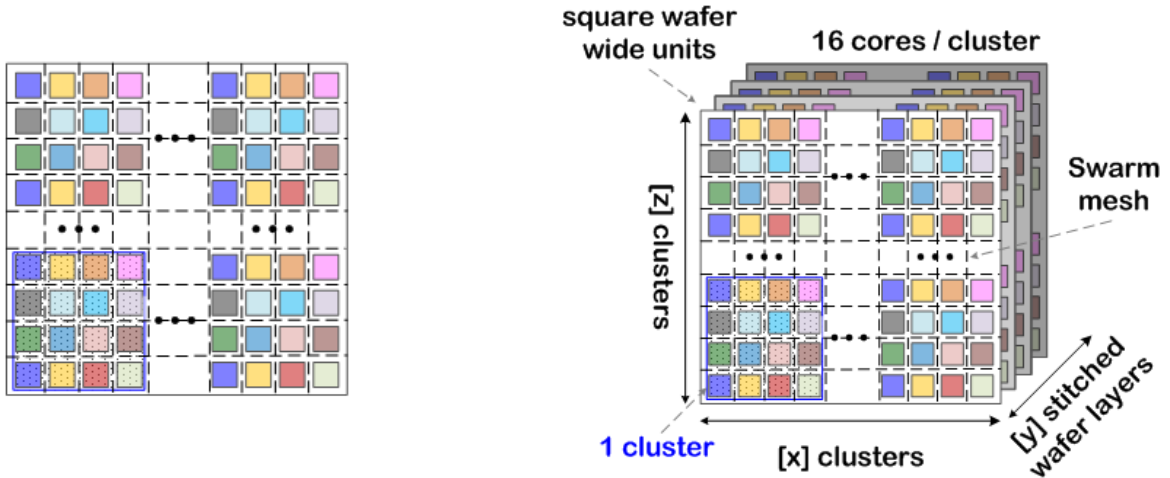SINGLE WAFER SWARM-CPU   MULTI-WAFER SWARM-CPU

Table 1 – Comparison of CPU Specifications

	swarm-CPU.v1	swarm-CPU.v1	Typical CPU [a]
Process node	**5nm**	**28nm**	**5nm**
Die size	wafer-wide	wafer-wide	850mm^2
Frequency	2.0 - 4.0 GHz	1.5 - 3.0 GHz	2.2 GHz
Core count	35.4 million	7.1 million	96
Hardware threads	141.7 million	28.3 million	192
Cache size	16.7 GB	3.4 GB	384 MB
Max Memory	17.9 PB	3.6 PB	4 TB
Instructions / sec	**12,504 trillion**	**1,876 trillion**	**400 billion**
Max FLOPS	537.8 trillion	80.7 trillion	3.4 trillion
Year Available	2026	2026	2023
MSRP	US$72,400	US$14,300	US$9,000

a.) typical state-of-the-art high end server CPU

PROJECT FUNDING

Phase 1: *contributions and projections*

Statement of Financial Position (US$ million)		2026	-	2030 [3]
Asset	Current asset	-	-	2,600
	Tangible capital asset	[1] 5,200	-	7,300
	Other tangible and intangible assets	[5] 200	-	19,300
	Total assets	**5,400**	**-**	**29,200**
	Liabilities	-	-	-
	Total liabilities	**-**	**-**	**-**
Equity	Contributions	[1] 3,356	-	6,500
	Additional contributions	[5] 2,044	-	2,300
	Other shareholders equity	-	-	20,400
	Total equity	**5,400**	**-**	**29,200**
	Total equity and liabilities	**5,400**	**-**	**29,200**

Statement of profit and Loss (US$ million)	2026 [2]	2027 [2]	2030 [3]
SPU sales [4]	[6] 286	10,368	47,595
Cost of goods sold	(130)	(5,910)	(28,557)
Operating expenses	(20)	(650)	(2,100)
Other income	4	64	415
Net profit	**140**	**3,872**	**17,353**

1. *contributions in 2025*
2. *expression of interest*
3. *project phase-1 goals*
4. *unit sales for 2026, 2027 & 2030*
5. *capital for 20,000 – 28nm SPUs*
6. *sale of 20,000 – 28nm SPUs*

Phase 2

The current version–1 SPU will be upgraded to a version–2 architecture, which will improve instructions per second (IPS) by a factor of ten times (10x).

SWOT ANALYSIS

Strengths

- Strong capital base
- Very Low leverage
- No need to recover chip design cost
- Swarm technology moat
- Indigenous core technologies
- Promotes strong partnership
- Strong oversight

Weakness

- Low market presence
- External software required for some processes
- Narrow domain focus
- SPUs will require ecosystem adoption

Opportunity

- Low price/performance ratio opens emerging markets access.
- Countries can gain technological sovereignty via this project.
- Emerging markets can produce ultra-advanced SPUs with local 28nm-fabs.
- Highly profitable as no need to recover SPU design costs.
- Boost chip production supply chain in emerging markets
- General purpose SPUs have applications from gadgets to spacecraft
- Enormous growth potential due to SPU processing power and ruggedness

Threats (see existential risks)

- Bureaucratic
- Technological
- Misappropriation or Expropriation

EXISTENTIAL RISKS

BUREAUCRATIC – OBSTRUCTION

Since 2023 the computer ecosystem has been facing significantly enhanced bureaucratic headwinds, determined to restrict the global democratization of technological progress. However, throughout the development of human civilization, restriction on technological democratization has always been a feature of societal development, to a greater or lesser extent, but has never been successful. The motivation for restriction results from a struggle between control and progress. However, technology always finds a way to democratize because society benefits from progress.

ZETASWARM will result in major technological progress and thus have a great social impact. The project is expected to generate significant transformation in developed and emerging markets. The ensuing engagements are expected to be a strong mitigating factor against bureaucratic risk.

TECHNOLOGICAL – IMPAIRMENT

Impairment is generally accessed via two main avenues. First is the "rule-of-thumb" that, when one social group develops an innovation, it is because that innovation is in the collective unconsciousness of society, as contemplated in the arts. As a result, generally, no innovation remains enshrouded for long, encouraging the use of patent systems. The second adapted fallacious "line-of-reasoning" is that, airplanes, birds and rockets use different designs, yet accomplish the same goal, flight. The fallacy occurs because the word, "design", encompasses many facets, including structural and functional. The three have different *structural* designs, but use the same *functional* design concept of "thrust" to achieve flight.

The early warning impairment indicator used to monitor the swarm technology moat, is the discovery of biovisity, the mechanics by which discrete units, interacting via "local rules only", self-organize to build a composite or collective entity at any scale, as per blueprint specifications *(misnomered as emergence)*. The moat's safety margin can be assessed by realizing that, Bee or Ant swarms do not apply global rules such as "back propagation" or "reinforcement learning". As of 2024, there is no indication from society's arts *(i.e. film, literature, etc.)*, that the biovisity mechanics required for swarm technology is being contemplated, thus mitigating impairment risk during phase–1 of the project.

MISAPPROPRIATION OR EXPROPRIATION – CAPITAL

While best effort measures are applied to protect technology capital, there is no guarantee that misappropriation will never occur. Expropriation may conceivably require technology capital conversion. This risk is therefore material.

TypeOneBIS contributions to ZETASWARM

GDSII

TypeOneBIS has contributed, the verified GDSII files for the 5nm and 28nm wafer-wide SPUs. See table 1.

Analytics

TypeOneBIS has contributed for use with SPUs, via a GNU Public License, its big data analytics server platform. Financial, telecoms, insurance, medical, logistics and other organizations, will be able to process and analyze data, in real-time if necessary, at more than 1 trillion records per second on multi-billion core SPUs right out of the box. Various sales projection what-if scenarios can be generated using predictive AI models, and the resulting vast data sets animated and analyzed to choose the best strategy. See figure 1.
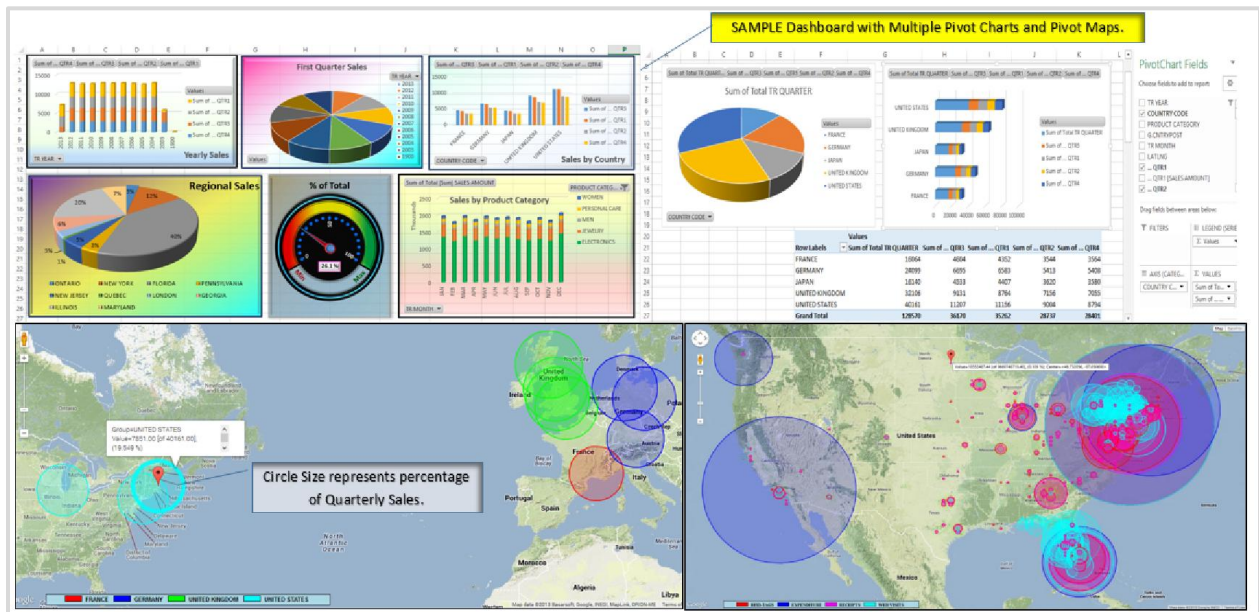

Figure 1 – Analytics dashboard snapshot of animated data views of actual, predicted, and projected sales.

SIMULATION

TypeOneBIS has contributed for use with SPUs, via a GNU Public License, its visual, multi-user, browser based, partial differential equation (PDE) simulation server platform, allowing organizations to visually build and simulate large scale PDE hierarchical models on multi-trillion core SPUs right out of the box. This PDE simulator is also being used in building the biogenic replicator vaccine for regulating muscle atrophy. Figure 2 shows an example blood glucose regulator model.
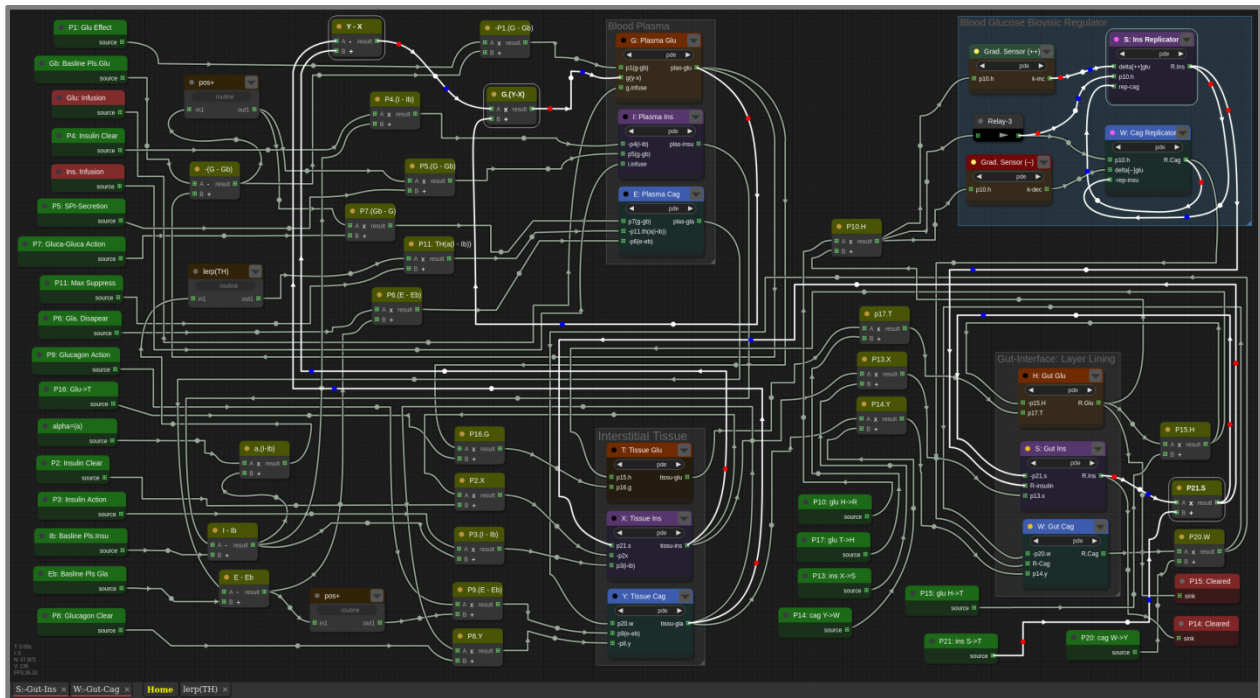

Figure 2 –visual PDE hierarchical tree circuit model of blood glucose, Glucagon vs. Insulin regulation

SQL RELATIONAL DATABASE

The project intends to port MYSQL Relational Database Management System to SPUs.

LINUX

Linux is being ported to SPUs.

EXPECTED PROJECT OUTCOME

Over 5 years, ZETASWARM is expected to generate revenues upwards of US$100 billion, part of which will be used to lower the cost of SPUs by 50% using more efficient designs, and to expand the SPU software and support open ecosystem. The size and scope of the project makes it possible to establish new wafer fabrication facilities if current facilities are incapable of meeting these unanticipated extra production capacities.

The upgraded version–2 swarm-CPU is expected to make current non-swarm CPU architecture (NSPU) designs obsolete. Custom ASIC chips used for graphics processing *(GPUs)*, crypto mining, video, telecoms, satellites, security, AI and most other fields can all be easily upgraded to use swarm technology. NSPUs will thus get phased out, being replaced with swarm-CPU architectures from various competing chip design companies. As a result, it is anticipated that in the medium term *(10+ years)*, many millions of swarm-CPUs will have been deployed in gadgets, mobile phones, desktops, servers and zeta-scale computers, building a US$2-trillion swarm-CPU ecosystem.

This project is thus anticipated to drive a computer revolution, resulting in the price per instruction of CPUs falling by a factor 1,000 or more. Over time, the MSRP of CPUs with specifications equivalent to the "typical CPU" detailed in the last column of table 1, should fall close to Nine dollars (US$9.00).

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