

VELSANET RESEARCH INSTITUTE

A New Paradigm for Next-Generation Intelligent Networks

Technology Democracy · Distributed Network · A Platform for All of Humanity

Why Now? — The Case for a New Architecture

Limits of Today's Internet

Packet Congestion & Latency

Structural, not algorithmic — no software fix exists

Security Vulnerabilities

Address-based auth — physical path unverifiable

AI as an External Layer

AI bolted on top, not embedded within the network

The Intent Gap

Human and AI objectives not encoded in transmission



Velsanet's Answer

A network is no longer just a pipe for data.

A living ecosystem where
intent and intelligence flow together—
that is the next-generation
network Velsanet is building.

18

Technical
White Papers

"No government, no corporation can monopolize the network"



Distributed Architecture

Five polyhedral primitives ($T_4 \cdot C_6 \cdot O_8 \cdot D_{12} \cdot I_{20}$) define the network space. Structural democracy with no center.



Sovereign Governance

Each nation's sovereignty is encoded into the structure itself. Q4 (National) → Q3 (Continental) → Q2 (Global). Coherence without command.



Open Participation

Any nation, any institution can join. A shared platform that grows with every contribution.

Velsanet belongs to no single entity. It is infrastructure built by and for all of humanity.

Technical Innovations — Three Fundamental Shifts

Conventional

Address → Topology



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Structure → Address → Topology

Topology-First

Network space is defined before addresses are assigned. Five polyhedral primitives form a complete and closed grammar for all network space.

Conventional

AI as Overlay



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AI Native to Structure

AI-Native 3 Layer

Three AI layers — PAI (Personal), AAI (Area), AsAI (Global) — live inside the network structure. AI is not added; it is the network.

Conventional

Packet Collision



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Parallel Optical Isolation

Packet-Free Optical

Physically isolated parallel optical cores eliminate congestion structurally. Deterministic latency, collision-free, always-on connectivity.

Global Governance — Order Without Control

Q2 VELSA

Global Network AI

Q3 Continental

Continental Network AI

Q4 National

National Sovereign Layer

Q6 Regional

City & Regional Coordination

Q7 Execution

Physical Devices & Real-Time Operations

*Higher layers do
not command.
They project
structural states
upward.*

National sovereignty encoded in structure · Global coherence without central control

Saemangeum — Where the Platform is Built

What We Provide



Residential Space

Living quarters for global researchers



Seminar Venues

Stage for international academic exchange



Research Facilities

Next-gen network experimentation labs



Live Demonstration

First real-world deployment of Velsanet



Who Participates



National Governments

Sovereign governance, national layer



Global Enterprises

Technology validation & commercialization



Universities & Labs

Research, standardization & patents



International Bodies

ITU-T, IMT-2030 standards alignment

VISION

**Where humanity proves
how the next era of networks
should be built —
in Saemangeum.**

We show the way. The world comes together to discuss and build it.

18

White Papers

3

AI Layers

5

Polyhedral Tiers

∞

Scalability