NeuralMesh™ Accelerates AEC Simulation and Rendering, Unifies Project Data for AI

WEKA's NeuralMesh™ delivers Architecture, Engineering, and Construction (AEC) customers continuous throughput and unified file and object access to speed simulation and rendering, cut data copies between sites, and make decades of project history usable in growing AI workloads.

Key Benefits of NeuralMesh in AEC

Unify Every Workload in a Single Namespace

- Share one scan across jobs
- Use POSIX, NFS, SMB, S3
- Retire separate NAS silos
- Run on-prem, cloud, hybrid
- Span trillions of files

Keep Render and Simulation Nodes Fed

- Serve thousands of nodes
- Push 10.2 TB/s per rack
- Remove controller queues
- Handle small and large I/O
- Hold throughput under load

Move Data Between Sites and Cloud Faster

- Browse data before it lands
- Prioritize data hydration
- Replicate metadata first
- Burst to AWS, Azure, OCI, and GCP on demand

Finish Multi-Day Simulation Runs More Efficiently

- Self-heal without human help
- Cut runs from 80 hours to 4
- Avoid restarts after failures
- Rebuild faster even as clusters increase in size

Open Decades of Archives to Support New AI Workloads

- Serve S3 at full speed
- Feed RAG from project history
- Extend GPU memory for KV cache reuse

Protect and Isolate Confidential Projects

- Isolate tenants physically
- Encrypt data per tenant
- Share hardware, not data
- Recover with snap-to-object

Store Larger Datasets Using Less Hardware Space

- Minimize physical footprint
- Reduce data, guaranteed
- Scale for throughput without sacrificing performance

Simplify Regular Operations for Lean IT Teams

- Skip manual tuning
- Monitor clusters in one view
- Diagnose at client level
- Automate upgrades with K8s

Up to 6x	>1.1 EB	Up to 73%	210M	Up to 10x
Maximum data reduction at <5% write overhead	Effective capacity per WEKApod 3 rack	Space reduction for equal capacity with WEKApod 3	IOPS per rack with WEKApod 3	Faster rebuilds as clusters double in size

Architecture, Engineering, and Construction Use Cases

Simulation and Engineering Analysis

NeuralMesh absorbs large per-step writes from CFD, FEA, and flood models to keep long- run jobs on schedule

Reality Capture and Geospatial Processing

NeuralMesh makes field scans browsable at HQ or in the cloud almost immediately, without copying full datasets

Visualization and Rendering

NeuralMesh serves the same shared assets to thousands of render nodes at once and bursts to the cloud on the same platform to meet deadlines

Digital Twins and Operations

NeuralMesh unifies IoT sensor data and models in one namespace, so engineers can run hundreds of simulations against real operating data

> "NeuralMesh eliminated the trade-off between performance and cost. It delivered the high-speed data storage performance we required for VFX rendering without the hefty price tag."
>
> — Tom Taylor, Owner, Gunpowder LLC, Technology Consultant to Parliament VFX

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