Metaverse, Spatial Web, Web 3.0 for industry and the new society

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Croke Park Conference Center - Hogan Mezzanine 2
About us.

- Software (SaaS) company based in LA and Eindhoven, founded in 2018
- VERSES is a next-generation AI company providing foundational technology for the contextual computing era.
- We provide the market with three solutions.
  1. AI-based Autonomous applications
  2. Context-Aware, AI-Operating System (COSM OS)
  3. Spatial Web Protocols (HSTP, HSML)
- **Fortune 500** companies clients (logistics, mobility, smart cities)
TO METAVERSE...

....or Not?
THE METAVERSE DREAM

Open
Interoperable
Contiguous
Persistent
Immersive
Portable
Economy
ENTERPRISE OR SOCIAL?
REAL WORLD OR OMNIVERSE
Parisi’s Seven Rules of the Metaverse

1. There is Only One Metaverse.
2. The Metaverse is for Everyone.
3. Nobody Controls the Metaverse.
4. The Metaverse is Open.
5. The Metaverse is Hardware-Independent.
6. The Metaverse is a Network.
7. The Metaverse is the Internet.

WHAT’S NEW?
THE SPATIAL WEB

The next generation internet that enables a hyper-integrated, contextually-aware, ethically-aligned network of humans, machines, and AI.
“The Spatial Web eliminates the boundary between digital content and physical objects...”
The metaverse is a human experience / an in-person experience of the spatial web

SMART EXPERIENCES
- Education, Entertainment
- Spatial Ads, Commerce
- Domains, Avatars, Assets

SMART GOVERNANCE
- Mobility & IoT Mgmt
- Cybersecurity & Certs
- Government Services
- Climate Accounting

WEB 3.0
Metaverse

HUMAN 2.0
Transhumanism

AI IoT
XR DLT 5G
Robotics
Genomics

SOCIETY 5.0
Smart Society

INDUSTRY 4.0
Autonomous Systems

SMART (HEALTH) SERVICES
- Digital Health & Credentials
- User Data Pods
- AI Agents, Digital Health

SMART OPERATIONS
- AI Powered Routing
- Automated Workflows
- Low CapEx and rapid ROI
SMarter CYBER-PHYSICAL INFRASTRUCTURE

IoT / XR / AI / DLT
DRONES, AR & VR CLOUDS, AI, CRYPTO

LOCATIONS
(REALITIES, SPACES, TIME, CHANNELS)

ACTIVITIES
(RIGHTS, CREDENTIALS, CLAIMS, ACTIVITIES)

IDENTITIES
(AUTHORITIES, DOMAINS, USERS, ASSETS)

ENTERPRISE STACK
(ERP/WMS/CRM/GIS)

NETWORKS
(4G, 5G, 6G)
STANDARDS are key

- SPATIAL WEB STANDARDS AND PROTOCOLS -

ADDRESS

PROGRAM

PROTOCOL

STATE

WEB DOMAINS

HTML

HTTP

STATELESS

SPATIAL DOMAINS

HSML

HSTP

STATEFULNESS

Geometry

Geography

Context and data internetworking

Smart contrat-like capabilities

Adaptivity

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Hyperspatial Transaction Protocol (HSTP) & Hyperspatial Modeling Language (HSML)

First Draft Specification Unanimously Approved by IEEE Spatial Web Working Group December 2021

“Public Imperative”
WG P2874

90+ International participants and growing
SWF one of the founding members

A Constellation of Standards

Building a pervasive, open and inclusive metaverse at a global scale will require cooperation and coordination between a constellation of international standards organizations, including the Khronos Group, World Wide Web Consortium (W3C), Open Geospatial Consortium, OpenAR Cloud, Spatial Web Foundation, and many others.

The Forum will not create standards itself but will coordinate requirements and resources to foster the creation and evolution of standards within standards organizations working in relevant domains.

Launch Today
3pm CET!
VERSEs leverages the SPATIAL WEB PROTOCOLS to **optimize and automate the flow of people and things within and through places / spaces.**

In order to do that, machines need to understand the world the same way humans do. We need to rethink how to **describe the world to machines, internetwork data**, and be able to execute and **govern systems and activities** of people and things **at scale.**
THE DIMENSIONAL CHALLENGE

Multidimensionality and shared understanding of reality
PROGRAMMABLE SPACE

Today’s Enterprise Systems are “Dimensionally-Challenged”
Spatial Domains are **digital titles linked to 3D volumetric locations** such as buildings, parks, streets, or larger regions such as cities, states, continents and trading blocs. Spatial **Subdomains** represent sub-spaces that have **holonic structure** confer additional **rights**.

Spatial Domains enable secure management of digitally mediated rights and permissions for:

- Who/What is authorized to access the domain
- What content or data is available to view
- Who can publish and modify content
- Who can transact or interact within it
HSTP or Hyperspatial Transaction Protocol enables IoT sensors to **identify, localize and update the state of objects in space, over time**. By supporting credentialed search of objects within spatial ranges over multiple coordinate systems (lat/lon, xyz, t, etc.) across multiple dimensions (0D–4D etc.) and hyperspatial vectors (physical, purpose, policy)

**MULTI-SOURCE** (optical, temp, motion, pressure)

**SPATIAL RANGE QUERY**

**MULTI-COORDINATE** (lat, long, x, y, z, t,)

**MULTI-DIMENSIONAL** (0D, 1D, 2D, 3D, 4D)

**MULTI-VECTOR** (spatial/semantic/social state)
Combining **Digital Twin** (3D + ID’s) + **Digital Thread** (Data Integrity) + **Spatial Contracts** (Rules) results in a spatial network that **links** people, places, things and their activities.
CONTEXT & THE DATA
INTERNETWORKING CHALLENGE

From data lakes to actionable knowledge
Data is out of **Context**.

**PROBLEM**
Today, context-specific results are difficult because the answers to these questions lie in siloed systems and schemas that can’t easily be cross queried.
Put Data into Context.

**SOLUTION**
Define the relationships of entities, objects, locations and actions in an interoperable knowledge graph that maintains their context across databases, systems and schemas.
THE COMPLETE CONTEXT

Permission-based (Societal) digital information and instructions about the world (Semantic)
Presented in a physically coherent context (Spatial) in the world.
HSML CONTEXT GRAPH

HSML - Hyperspace Modeling Elements form a canonical data model that can be used to digitally describe any class of user, object, policy and activity in physical, digital and virtual space.

<table>
<thead>
<tr>
<th>WHERE/WHEN LOCATIONS</th>
<th>WHAT/HOW ACTIVITIES</th>
<th>WHO/WHAT IDENTITIES</th>
</tr>
</thead>
<tbody>
<tr>
<td>Reality Re^0</td>
<td>Right Ri^4</td>
<td>Authority Au^2</td>
</tr>
<tr>
<td>Space Sp^9</td>
<td>Credential Cr^5</td>
<td>Domain Do^3</td>
</tr>
<tr>
<td>Time Ti^1</td>
<td>Claim Cl^6</td>
<td>User Us^1</td>
</tr>
<tr>
<td>Channel Ch^1</td>
<td>Activity Ac^7</td>
<td>Asset As^8</td>
</tr>
</tbody>
</table>
GOVERNANCE & REAL-TIME ADAPTIVITY

Public and Private adaptive automation between networks of devices, applications, and users.
THE OPERATING CHALLENGE

AI, governance, interoperability and execution
COSM ADAPTIVE INTELLIGENCE LOOP

Goal-based logic driven by requirements and constraints

**A** SENSE (IoT)
IoT, Sensors, CCTV, ERPs collect data.

**B** MODEL (3D/DLT/Graph)
3D Spatial Twin integrates disparate data streams

**C** RECOMMEND (AI/ML)
AI analyzes, runs simulations and makes recommendations

**D** ACT (AR/VR)
“Actors” and actuators perform instructions in the real world.
COSM SOLUTIONS IN ACTION
Our flagship Industry-Specific Autonomous Apps built on COSM

SMART LOGISTICS
- Wayfinding to exact location
- Spatial Tasks and Instructions
- Capacity Optimization
- Rapid Asset Location
- Dynamic IOT Integration
- Spatial Analytics & Simulation

SMART FACILITIES
- Inventory & Equip Management
- Optimized Routing
- Activity Validation
- Facility Management
- Regulatory Compliance
- Emergency Response

SMART CITY & MOBILITY
- Land Title Management
- Mobility / Drone Compliance
- Climate Accounting
- Identity & Facial Recognition
- Public Services
- Digital Certificate Issuance

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Imagine a Smarter World.

Thank you.

Philippe Sayegh
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Philippe Sayegh
Chief Adoption Officer
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The cyber-physical (spatial) web

7 Billion people

“Metaverse” experiences:
- Entertainment
- Gaming
- Virtual worlds

Smart homes
Remote maintenance
Robots & people in homes, supply chains,...

Machine Automation
Automatisation (B2B)

Hybrid

In-Person Experience (B2C)

30 Billion connected devices

AI / IOT / XR / DLT ...

Industry 4.0 & smart cities:
- Smart factory
- Smart logistics
- Smart mobility
- Smart decarbonisation