

# Industrial Metaverse Interoperability

## Domain Exploratory Group

### FINAL

#### 1. Proposers

Siemens  
Nokia  
Bosch  
PEREY Research & Consulting  
exxar.cloud

#### 2. Exploratory Group Scope

Build consensus and draft a proposed charter for an “Industrial Metaverse Interoperability” Domain Working Group.

#### 3. Proposed Working Group Goals (and Non-Goals) and Deliverables

"The industrial metaverse enables collaboration between geographically dispersed teams through virtual environments, expert avatars, digital twins, data visualization, AR/VR and the emerging concept of Shared Reality (SR)"<sup>1</sup>. The Industrial metaverse is expected to be deployed at scale first [1], before the consumer market. The consumer market is mostly gaming-centric with willingness-to-pay, QoE and form-factors still requiring improvement for mass scale deployment and device proliferation. The industrial metaverse benefits from use-cases having immediate return on investments. While the consumer market is still awaiting a technological breakthrough, the industry and enterprise domains are closer to deployments at scale.

The metaverse is often confused with XR, but it is actually much wider in scope when it comes to industrial and enterprise applications. Beyond topics already addressed by other working groups (connectivity, 3D assets, privacy & security), topics such as interoperability and communications between digital twins (including network and geospatial) and marketplaces are critical for a successful industrial metaverse. Coordination between industry associations, forums and SDOs is essential.

To address this need of coordination and ensure an excellent ecosystem development, the goal and scope of this proposed group will be the following:

- Identify synergies and needs for interoperability in the industrial ecosystem.
- Identify ecosystem gaps regarding marketplaces (including data, software, 3D assets, simulations, physical models, ...) and digital twins.
- Collect use cases and functional requirements for the industrial metaverse, beyond the technical requirements already addressed by other Forum Domain Groups.
- Coordinate with relevant organizations (e.g. Catena-X, Gaia-X, Manufacturing-X, digital twin consortium, IDTA, Open Industry 4.0 alliance, OPC foundation, ...) and SDOs (e.g., ISO/IEC, ITU...) in the industrial field in order to leverage synergies and harmonize the ecosystem.
- Coordinate with other Forum Domain Groups on technical aspects to ensure expectations from the industrial ecosystem are met (e.g. network KPIs).

In order to avoid overlap with other working groups and Forum activities, this proposed group will not work on deliverables that are already covered by existing working groups, but contribute Industrial Metaverse specific aspects to these groups:

- Network requirements and capabilities
- 3D assets interoperability
- Cybersecurity and Identity
- Real/Virtual world integration

The expected deliverables for this group would be:

- Relevant use cases for an industrial metaverse

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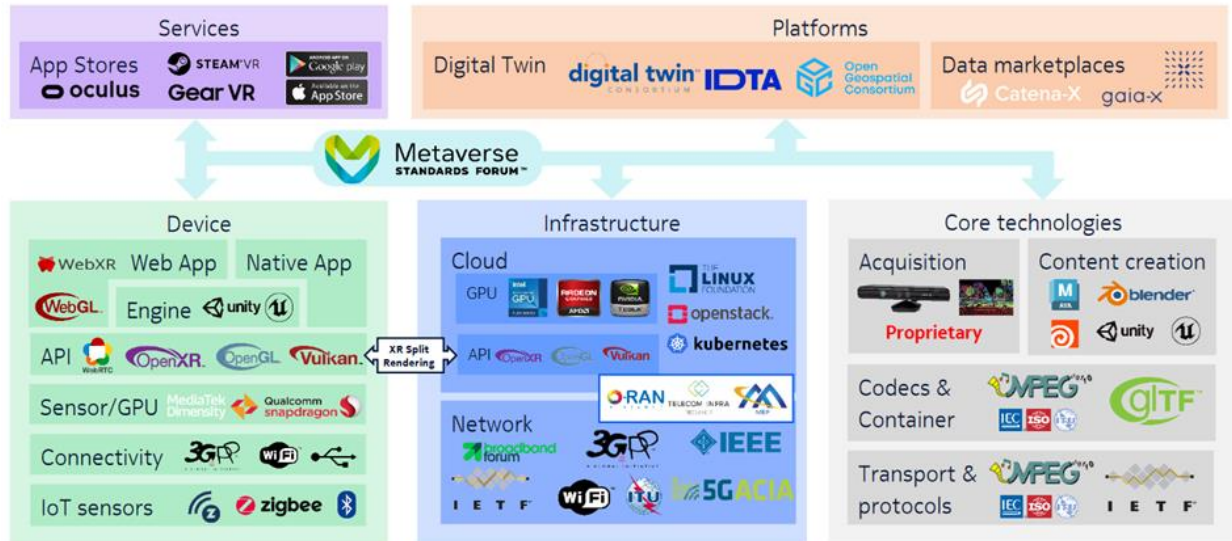
<sup>1</sup> definition from VTT publication: <https://www.vttresearch.com/en/ourservices/human-driven-industrial-metaverse-solutions>. A final definition will be provided during the charter development phase.

- Gaps in ongoing standardization efforts
- Prioritized roadmap on industrial requirements and needs
- Liaisons, workshops and production of white papers with relevant organizations

#### 4. Coordination

The Group shall coordinate with the Standards Register Working group for identifying and reaching out relevant organizations.

The Group shall seek to encourage appropriate companies and SDOs as outlined below to join the Forum, or alternatively enter into external liaisons in accordance with Forum-defined liaison procedures.



The Metaverse Standards Forum Coordination Role for the Industrial Metaverse

#### 5. Risk Factors

Principal risk for this proposed group is that the ecosystem (SDOs, organizations, forums, ...) refuses to collaborate with Forum on a common ground.

#### 6. Target timeline to create proposed Working Group Charter

Q4 2023