



Alliance for IoT
and Edge Computing
Innovation

Edge IoT Industrial Immersive Technologies

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Edge IoT Industrial Immersive
Technologies and Spatial
Computing Continuum



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Edge IoT Industrial Immersive Technologies

The Position paper provides the vision of the convergence of edge IoT, artificial intelligence (AI), digital twins (DT), immersive triplets (IMT), intelligent mesh connectivity, IoT of senses (IoTS), software-defined automation (SDA) and spatial computing technologies to create an industrial real-digital-virtual continuum.

The continuum is made of immersive environments, which are computer-generated virtual worlds where users can sense as if they were physically embodied in that generated perception context.

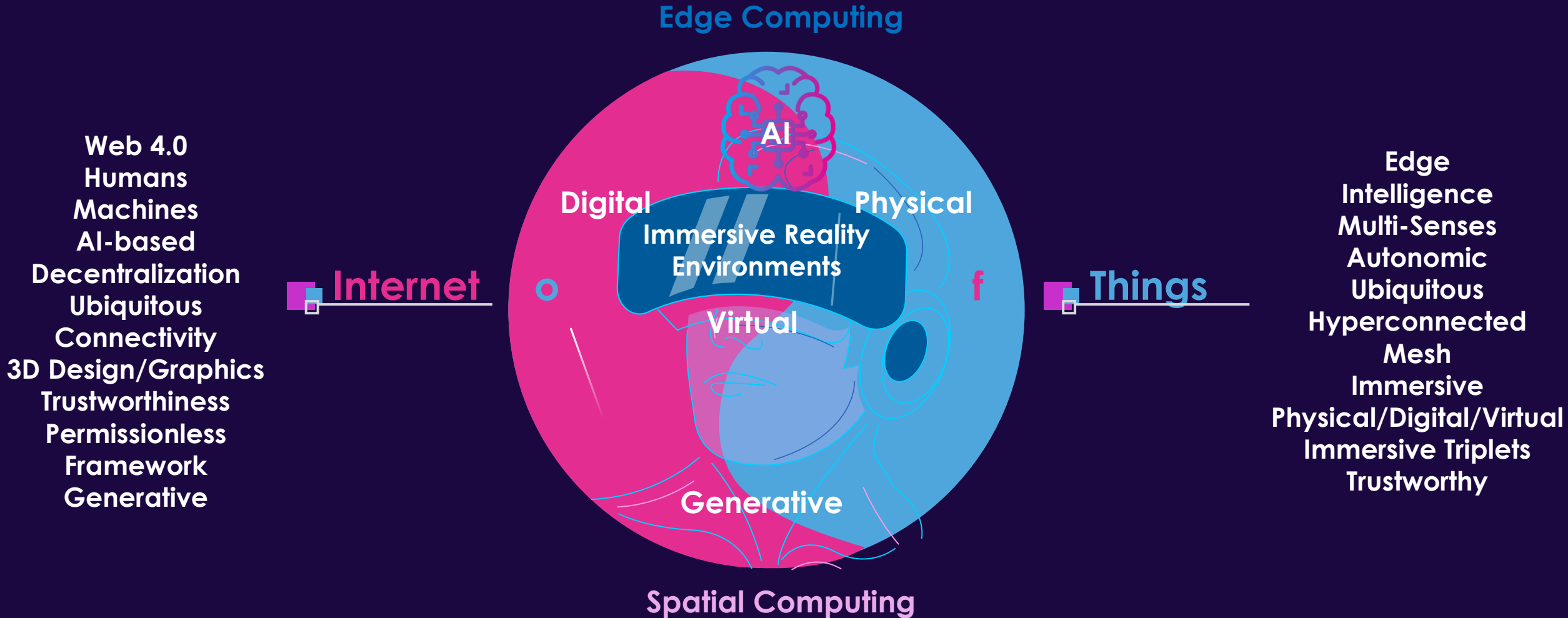
The convergence of these technologies into industrial immersive solutions advances the integration and application of edge intelligent immersive technologies combining augmented reality (AR), virtual reality (VR), mixed reality (MR), and extended reality (XR) with concepts like metaverses, omniverse, multiverses, next generation spatial web, Web 4.0 as part of future virtual worlds.

Edge IoT Industrial Immersive Technologies

The vision for industrial immersive technologies fusing and converging several technology enablers is to create a highly advanced and interconnected industrial landscape. This landscape leverages the convergence of edge IoT, AI, generative heuristics, Web 4.0, DT, IMT, IoT5, AR, VR, MR, XR, SDA and verse technologies (metaverse, omniverse, multiverse). These concepts represent layers of interconnected virtual spaces.

The metaverse refers to a single, universal virtual world. The omniverse is a network of multiple metaverses, potentially operated by different entities but interconnected seamlessly, allowing users to navigate from one to another without leaving the virtual environment. The multiverse extends this idea further into a virtually infinite number of diverse universes within broader narratives.

Distributed - Scalable - Reduced Latency - Better Real-Time Response - Bandwidth Efficiency

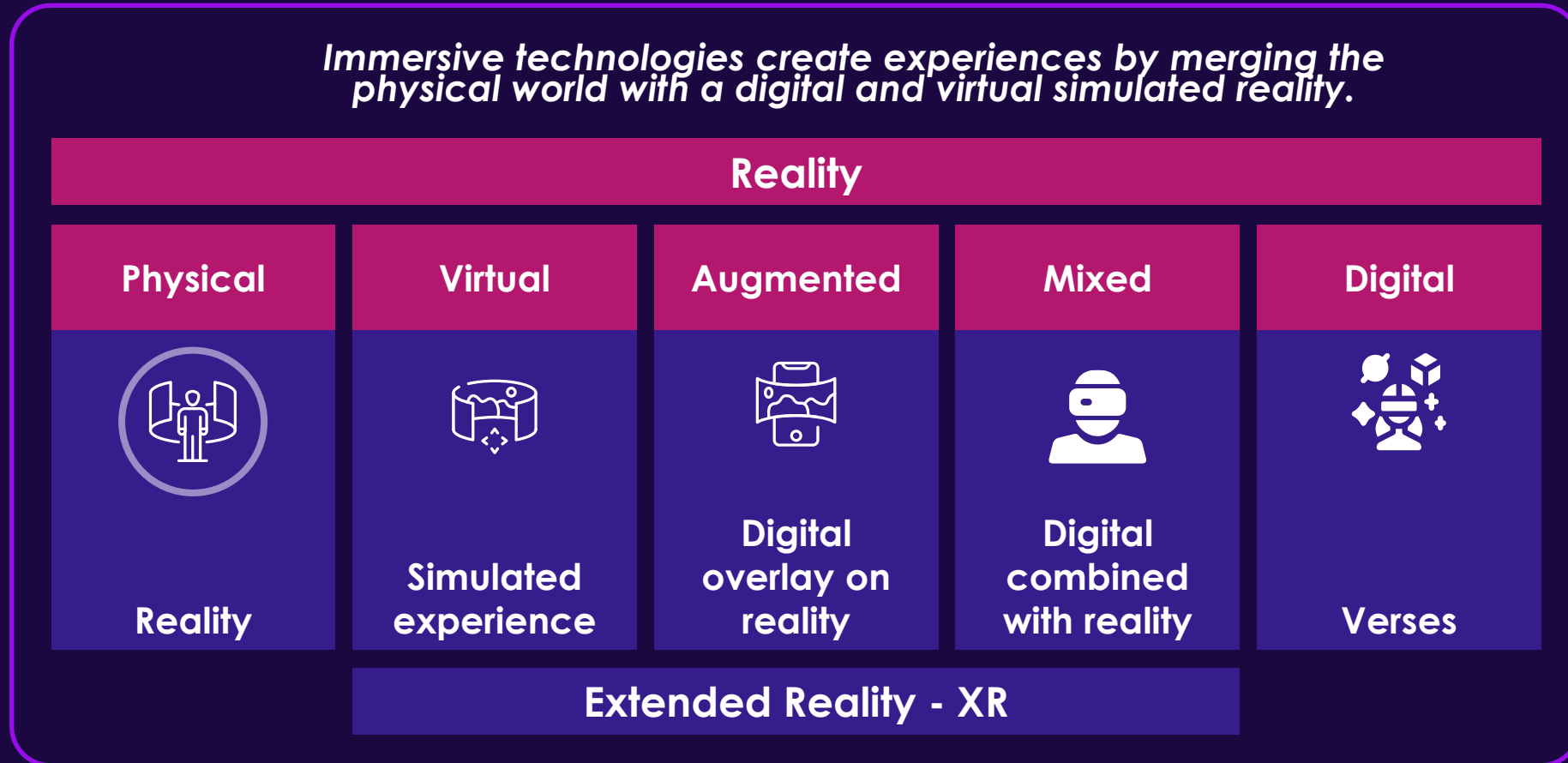


Use of Physical Space Medium to Interact with Digital, Virtual Space

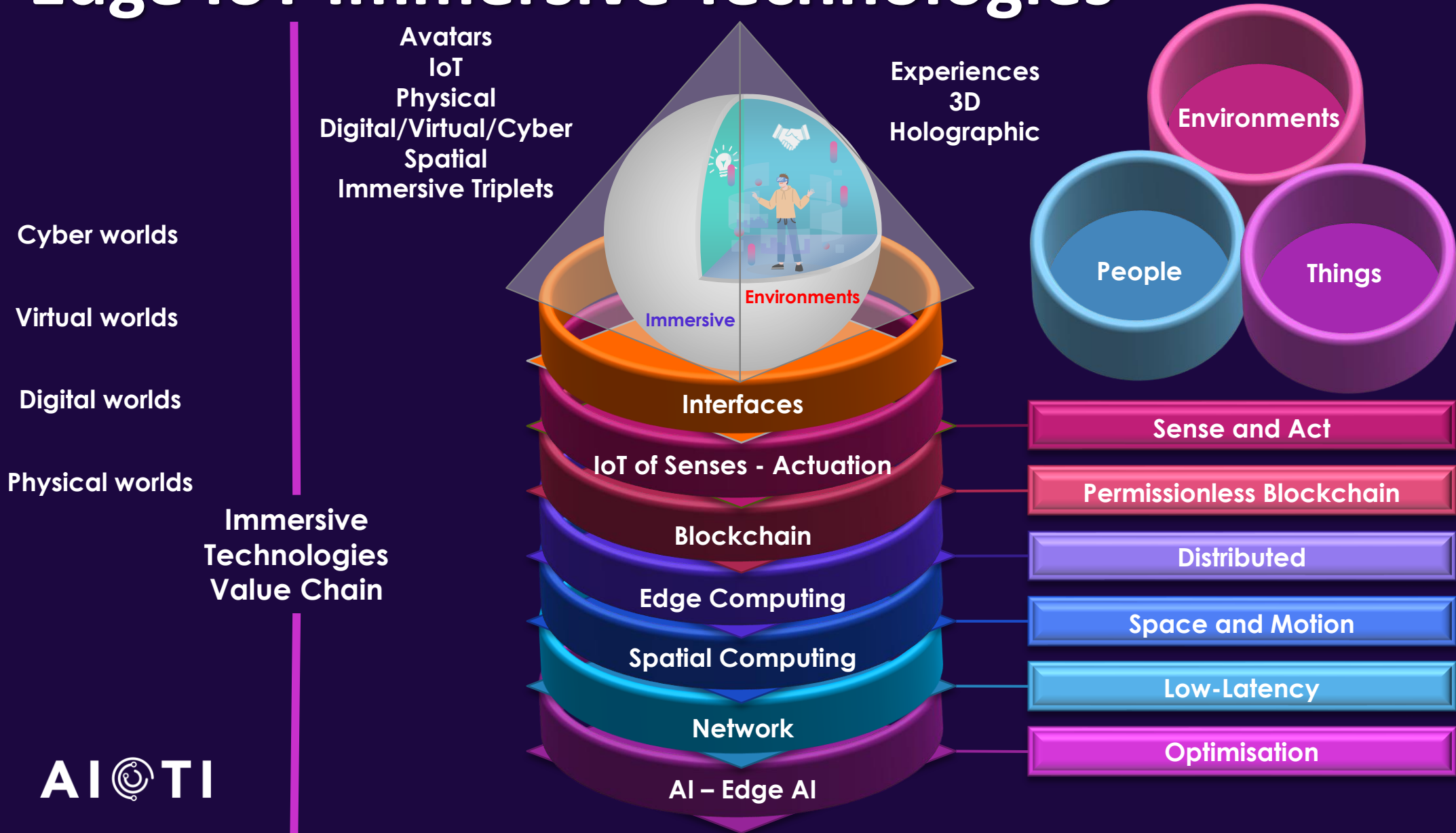
Enables to interact with and manipulate the physical world, understand space and motion, and provide real-time feedback based on this understanding.

Immersive Technologies

Immersive technologies create experiences by merging the physical world with a digital and virtual simulated reality.



Edge IoT Immersive Technologies



Industrial Immersive Technologies



- *Internet of Things*
- *Internet of Things Senses*
- *Physical-Digital-Virtual Triplets*
- *Edge Computing*
- *Spatial Computing*
- *Artificial Intelligence*
- *Distributed Ledger*
- *Spatial Generative AI*
- *Immersive Physical-Digital-Virtual Spatial Computing*
- *Continuum*
- *Industrial Immersive Systems of Systems Integration*
- *Industrial Immersive Trustworthiness*
- *Standardisation*
- *Future Technology Trends and Challenges*

Edge IoT Industrial Immersive Applications

New Position Paper - Structure



- **Introduction**
 - *Background and Motivation*
 - *Objectives of the Paper*
 - *Scope and Limitations*
- **Overview of Edge IoT and Immersive Technologies**
 - *Overview of Industrial Immersive Applications*
 - *Convergence of Edge IoT and Immersive Technologies*

Application Sectors: Example Manufacturing

- ***Applications of Edge IoT in Manufacturing***
 - *Manufacturing and Production*
 - *Predictive Maintenance and Monitoring*
 - *Quality Control and Assurance*
 - *Workforce Training and Safety*
 - *Supply Chain and Logistics*

Edge IoT Industrial Immersive Applications



- **Benefits and Challenges**
 - **Benefits**
 - **Technical Challenges and Solutions**
 - **Economic and Organizational Challenges**
 - **Regulatory and Security Considerations**
- **Future Trends and Opportunities**
 - **Emerging Technologies and Innovations**
 - **Potential Future Use Cases**
 - **Strategic Roadmap for Adoption**
- **Conclusion**
 - **Summary of Findings**
 - **Recommendations**
 - **Final Thoughts**



Thank you!

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