**The Cyberphysical revolution of spatial computing and associated interoperability challenges**

Imagining a world where digital and physical realities intertwine seamlessly. This is the promise of spatial computing, crafting the blueprint for our interactive future, where every space becomes a potential playground of innovation.

Humans inherently perceive and comprehend the world in 3 dimensions. However, historically, the digital realm remained drearily flat. It was just a matter of time, resources, and efforts for the brightest minds to unlock the key for this digital third dimension, hence enabling new waves of immersive digital experiences that can blend with the real world. Eventually, decades of relentless infrastructural innovations in various domains such as computing power, optics and display hardware, and ever faster networks are opening the door to the early stages of this revolution.

As fascinating as the promise of this future may be, it's still in its infancy. This means that foundational groundwork remains to be done. Additionally, major digital revolutions always come with crucial challenges and risks, that need to be anticipated, addressed, and mitigated. To name a few, think of sustainability challenges associated with tremendous computing resources; digital equity tension due to mass adoption, proliferation of use cases and immersion addiction versus global accessibility; or cyberbullying and virtual harassment, woefully made more realistic than ever due to ever more social and immersive experiences. There are many more, and identifying all challenges associated to such disruptive change would be too lengthy for such an essay, albeit captivating and critical.

Some challenges are more technical, and solving those will open the door to new horizons for developers and users. This is the case of interoperability. The center piece of most cyberphysical experience is content. This content, inherently digital, but supposedly the faithful representation of a real-world element, is often called a digital twin. A digital twin could be the representation of anything: a living creature like a human, an electronic device, an entire factory of robots, or a whole city. Spatial Computing, like most vast technology domains, comes with its share of complexity. It encompasses many hardware or software related subdomains, programming languages and protocols. Consequently, aligning on how to generate, manage, secure, or exchange digital twins is no easy thing. What should it represent? In what format? What if we are using various and different endpoints: mobile, head-mounted, computers? Can we ensure its authenticity? How is it stored?

A digital twin should be persistent, and usable in various contexts and platforms developed by different organisms. Failing in ensuring compatibility between those will tremendously limit the use case potential of spatial computing.

This is why, in my opinion, industry standards can play a crucial role as a tool and framework to provide global definitions and guidelines, hence enabling creators to build easily and users to experience seamlessly. The vastness of spatial computing potential is comparable to the Web’s, and the “html” of digital twins is yet to be found. As I believe openness and collaboration are keys for success, ensuring interoperability between protocols and content will open new opportunities for all, and a brighter future.