

Future Scenarios and their Impacts on Standards for use in Augmented Reality

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Executive Summary

Companies develop their strategies based on likely scenarios. In Mobile AR, companies can safely assume that past macro trends in mobile such as lower cost and smaller hardware components for mobile devices; increasing display resolution, size; faster processors for tackling computationally-complex tasks; lower or similar power consumption; and improved communications via mobile networks, will continue.

In parallel, companies planning their role in the world when mobile AR is ubiquitous must anticipate significant disruption caused by entry of new and powerful players, introduction of AR features in platforms not developed first for communications and the development of entirely new business models around information delivery and use. Standards can play an important role in the adaptation strategies adopted by forward-looking companies.

Goals

Based on continual landscape monitoring and consulting activities in the mobile AR and related enabling technology segments, this paper describes a few scenarios for the next 12 to 24 months and examines how they might impact the development and adoption of standards for mobile AR. We encourage discussion of our opinions by AR Standards Community members on the mailing list and during future meetings.

More Gorillas Awaken

This is inevitable. To portray Apple, Google, Sony, Nokia or Microsoft as being “asleep” or unconscious with respect to mobile AR would be irresponsible. From the sidelines, these companies are carefully watching Qualcomm, which currently spends more than any other company on mobile AR, and Intel that has occasionally invested in mobile AR ventures. All have and are increasing their investments in components/core enabling technologies as well as full solutions that will support better mobile AR.

The “awakening” of these major Internet and Mobile companies, signaled by their introduction of hardware, software and content for AR experiences, will be extremely disruptive to the entire existing mobile AR business. Overall, the impacts will be beneficial to end users and those who want to begin experimenting or expanding their investments to integrate the technologies with their existing systems.

Although at first these companies will likely promote their proprietary data formats and authoring tools to their own developer ecosystems, we believe there will be resistance from developers and publishers of content who will have to support many proprietary platforms and silos.

The “proprietary-first” position will gradually weaken in favor of open standards. The need to have their enormous digital information repositories accessible through the physical world from any AR-enabled device will first drive the Gorillas to define interfaces for content conversion. Then, when the conversion processes are proven too slow or expensive by comparison to “native” AR data services provided by companies using open standards, attention to standard data formats and schema will follow.

AR and the Car

As a group, automotive industry companies constitute the oldest industrial AR segment (some, in partnership with the German government, invested in AR as early as the military). This fact, combined with the numerous use cases and the rapid trend toward the “connected car” for managing renewable energy consumption, make the AR-rich automobile another of the inevitable scenarios. Companies providing microprojectors and a variety of enabling hardware are ready. Some high-end models already have the components built-in, awaiting the clarification of key issues with regulation and the content provider ecosystem (who gets to publish, how, who gets paid?).

First, there will be AR-assisted systems for passengers, repair and maintenance, sales, etc. Due to concerns around distraction, AR systems for driver assistance will be introduced gradually.

Automotive industry AR implementations will increase consumer acceptance of using devices other than a smartphone for AR. Service providers and automotive companies will also explore subscription business models. Finally, as a result of their manufacturing in large volumes, implementation of AR in cars will drive research to reduce size and cost of components (e.g., cameras) for use in other industries. With a few exceptions, this scenario is not highly disruptive to the existing ecosystem of companies.

The automotive industry already has a long history of standards adoption and will be preferentially choose to work with vendors that provide AR-assisted services and products using open interfaces and standard formats, especially if they can leverage existing automotive industry standards for digital information, navigation and communications.

Now and Then

Mobile AR use cases focus heavily on the present. Developers frequently design experiences to help people understand their current surroundings, focus their attention on retail opportunities or deepen relationships with brands. Think of these experiences as “time=now.”

Most people, places and things have a temporal axis that extends into the past and the future. Time, as an axis for exploring reality, will become much more important.

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Customers of information that want to examine any dimension other than the present will have to ask themselves how much they are willing to pay for the privilege. Historical information will be available from a wide range of sources and the providers will be able to charge according to the quality of their assets. Curated assets will be more valuable than those without qualified attribution.

The same applies to information about the future. Predicting the trajectory or highlighting places or things of interest prior to and in anticipation of a decision-making event is going to provide value. The further into the future one wants to explore, the less reliable the information and, again, quality of the source would be reflected in the fee.

Time is understood as a valuable resource and its value, as well as the storage, delivery and curation of appropriate assets, will be reflected in new business models for mobile AR. Since there isn't the equivalent in any current services, the addition of time as a factor for mobile AR will take a long time to evolve and could lead to confusion among customers.

In order to compete on the depth and quality of their AR-enabled data sets and other features, we predict that publishers of AR-ready content associating a physical world with past and future states will all use existing conventions defining time periods in minutes, hours, days, months, years and decades. There expect there will also need to be agreements, if not international standards, on the use of gestures or other interfaces to "navigate" experiences in the temporal domain.

Conclusion

This paper explores a few likely scenarios for mobile AR futures. We suggest that in order to compete and to grow a market for their products and services all the actors in the ecosystem will implement open interfaces but adoption will be at different rates and for different reasons.