The World as a Browser

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NOVA SST

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The forthcoming revolution

[16 augmented reality glasses of 2022](#)

The forthcoming revolution

"AR glasses only need 4 apps to become massively successful:

+ AR map directions

+ Real-time translation with subtitles

+ Digital replacement for monitors/TVs

+ A CV app that can tell you what you are looking at & teach you about it.

A human with these 4 apps is a superhuman"
@_LucasRizzotto

The forthcoming revolution

"Augmented Reality only needs to perfect one use case to go mainstream: infinite screens. Why would anyone spend thousands of dollars on monitors & TVs when they can just purchase a $1k-3k headset that lets them have as many as they want in their house? If Apple is doing anything, it's this @_LucasRizzotto

The forthcoming revolution

Apple forthcoming glasses will not enable us just to "super human capabilities", have infinite (2D) screens and virtual post-its overlaying everything (and the capability of buying it). They will become premier media consumption devices, introducing new 3D interactive experiences

The forthcoming revolution

VR portals
One can enter Virtual Worlds through a virtual Portal in the Real World

The forthcoming revolution

NERFs
3D environments created by stitching videos and 2D images using Neural Radiance Fields (NeRFs)

The forthcoming revolution
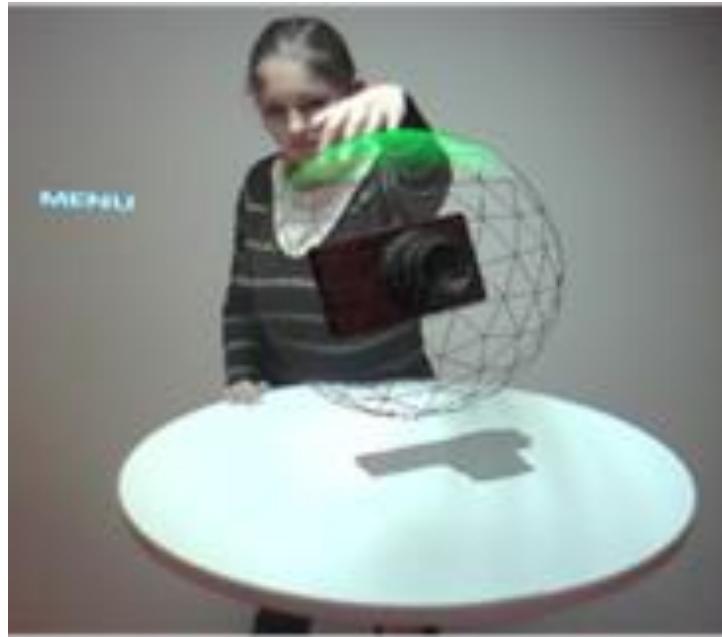
3D canvas

Transforming your field of view in a 3D canvas, where you can interact by gestures using depth perception sensors. You will also be able to introduce and interact with virtual characters in real scenes

Download

TUGA promotional app

https://drive.google.com/file/d/1T9heLxazENF1mLVusF0ViU6ny0RoPnEK/view?usp=sharing

Merlin ID app

https://play.google.com/store/apps/details?id=com.labs.merlinbirdid.app&hl=en&gl=US&pli=1

Key actors

Individuals

Ken Pimentel. VR Pioneer, Epic Games Head for AEC

Ori Inbar. AR Pioneer, AWE organizer

Kris Kolo. Executive Director, VRAR Association

Companies

Apple, Google, Facebook, Microsoft, Amazon, Niantic, Adobe

EPIC, Roblox

The ETH, DeFi and NFT ecosystem

Initial Augmented Reality (AR) efforts

Traditional AR

Marker based AR

Markerless AR

Additive AR

The World as a Browser

AR Cloud

Natural Interfaces

Multi-sensorial World

A new atomic unit

Initial AR efforts

Teresa Romão et al., ANTS- Augmented Environments, Computers & Graphics, 28, 5, 623, 2004

Traditional AR

"Reality only better", Economist and Wired, 2007

Marker based AR

https://www.youtube.com/watch?v=jmrLAaF2DgA

Markerless AR

https://www.youtube.com/watch?v=qXcIZ1R68SQ

Auggies 2010, non-official Oscar for AR

Additive AR
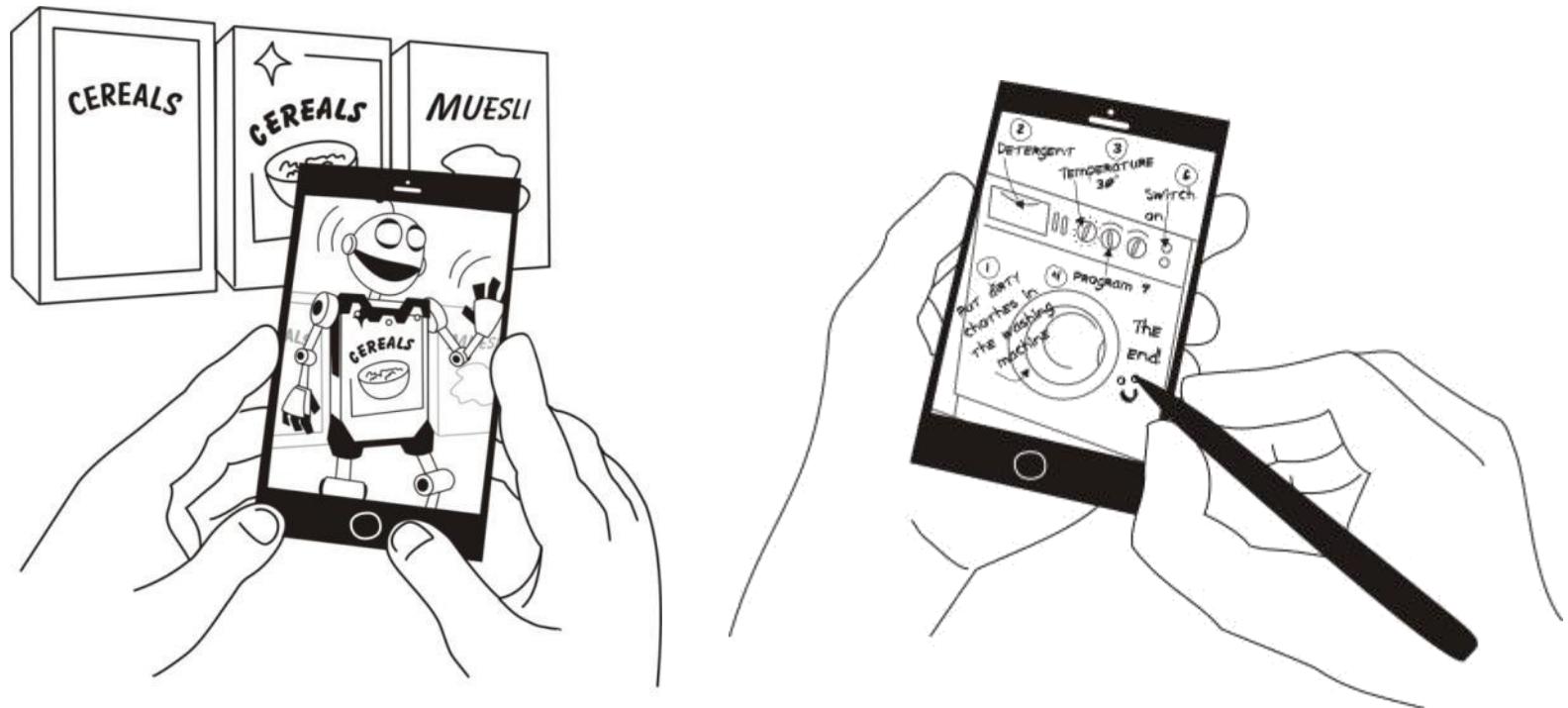
The World as a Browser

Antonio Camara, Environmental Systems, Oxford University Press, 2002

AR Cloud

A 3D canvas to enrich the Real World

clockwise: 3D virtual drawing and sculpting; large scale projections; inserting and controlling virtual elements in real scenes; Cloud Atlas' special effects

Natural interfaces

https://vimeo.com/6734803

https://www.youtube.com/watch?v=AmIKYMDO8x8
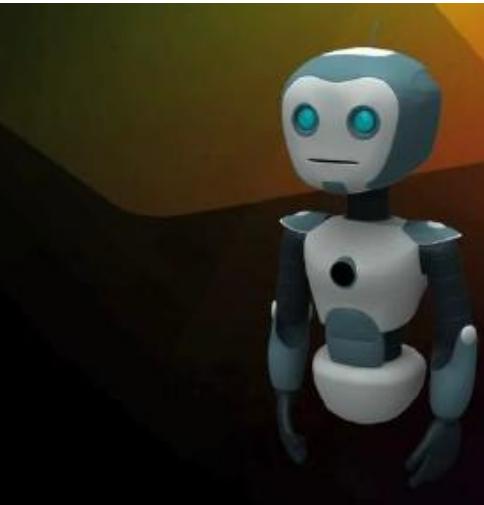
Antonio Camara, Natural User Interfaces, Human Computer Interaction, Springer, 2011

The World as a Browser

"Touch " the World

Ynvisible vision for "like buttons"

The World as a Browser

"Listen" to the World

https://www.youtube.com/watch?v=0qhyjnD0R4Y

The World as a Browser

"Smell (and taste) the World"

The World as a Browser

Telepresence via audio

The World as a Browser

Telepresence using holographic
projections and 5 G

https://youtu.be/GWB0MIUGfhE

A new atomic unit for a Real World browser

…

Smart tags

"The World as a browser: the challenges"

Hyperlocal and global/broadcasted versus distributed

https://youtu.be/9Soso9273r0

AR Cloud, Multiverse, Omniverse, MirrorWorld (AR+VR)
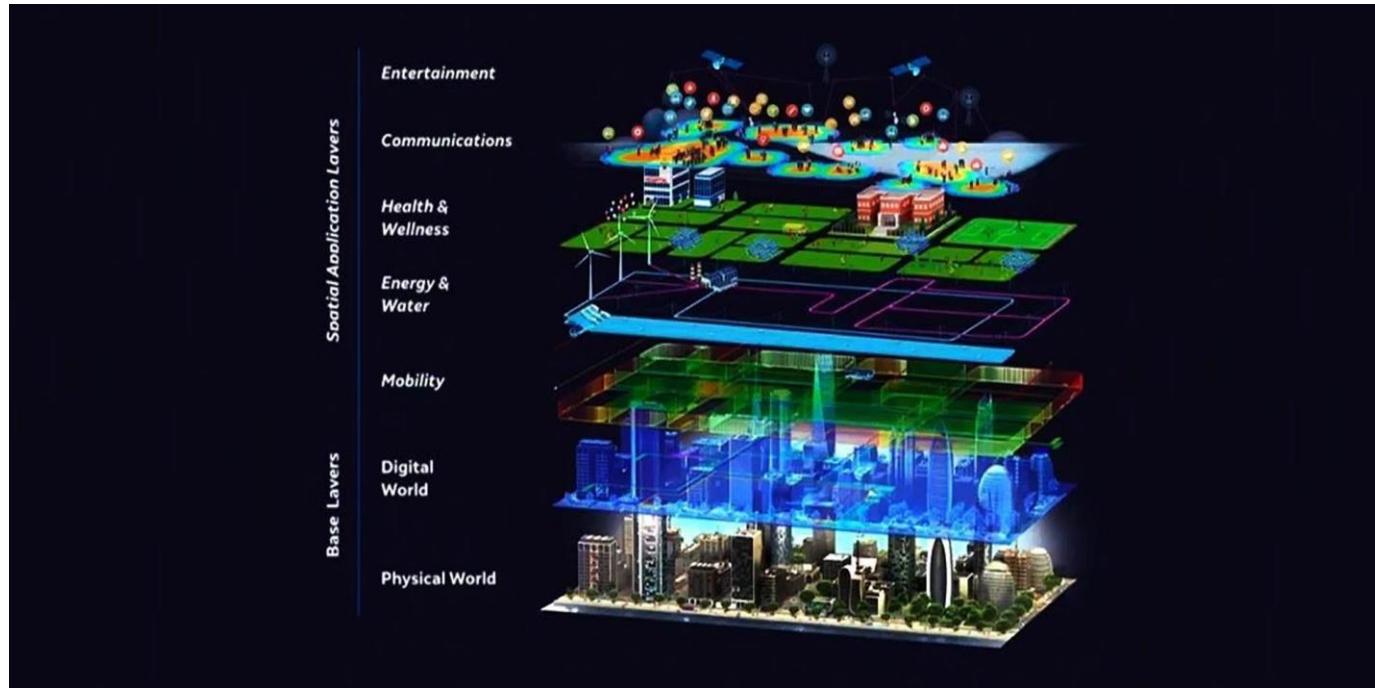
Follow up: references

The early foundations

Antonio Camara, Environmental Systems, Oxford University Press, 2002

Antonio Camara and Jonathan Raper, Spatial Multimedia and Virtual Reality, Taylor & Francis, 1999 and 2021 (digital version)

Three forthcoming books

Antonio Camara, Innovation without a Valley, to be available in 2023

Antonio Camara et al. Spatial Computing, to be available in 2024

Antonio Camara et al. Internet of Nature, to be available in 2024

Follow up: tools

Open source augmented reality SDKs

Follow up: tools

Tracking Specialties

There are four main tracking specialties — plane tracking, SLAM/Markerless tracking, face tracking, and object recognition.

Plane tracking	⊕
SLAM aka markerless tracking	⊕
Face tracking	⊕
Object recognition	⊕

[Augmented reality SDKs compreehensive guide](#)

Follow up: tools

Augmented Reality SDKs Reviewed

There are dozens of Augmented Reality SDKs, but that doesn't mean they all solve every problem. To help you find the one that is right for you, we have put together an overview of the best, most mature AR SDKs currently on the market. They are listed in alphabetical order.

Amazon Sumerian	⊖
ARCore	⊖
ARKit	⊖
ARToolKit and artoolkitX	⊖
DeepAR	⊖
EasyAR	⊖
Lumin SDK (for Magic Leap)	⊖
MAXST AR SDK	⊖
Marxent AR SDK with MxT Tracking	⊖
Visual Studio	⊖
Vuforia	⊖
Wikitude	⊖

[Augmented reality SDKs compreehensive guide](#)

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Explora group

https://www.facebook.com/groups/183536175571026/