Master in Planning and
Management of Tourism Systems

Virtual Reality
& Augmented Reality

Nicola Cortesi

SHORT RECAP OF THE FIRST 3 LESSONS

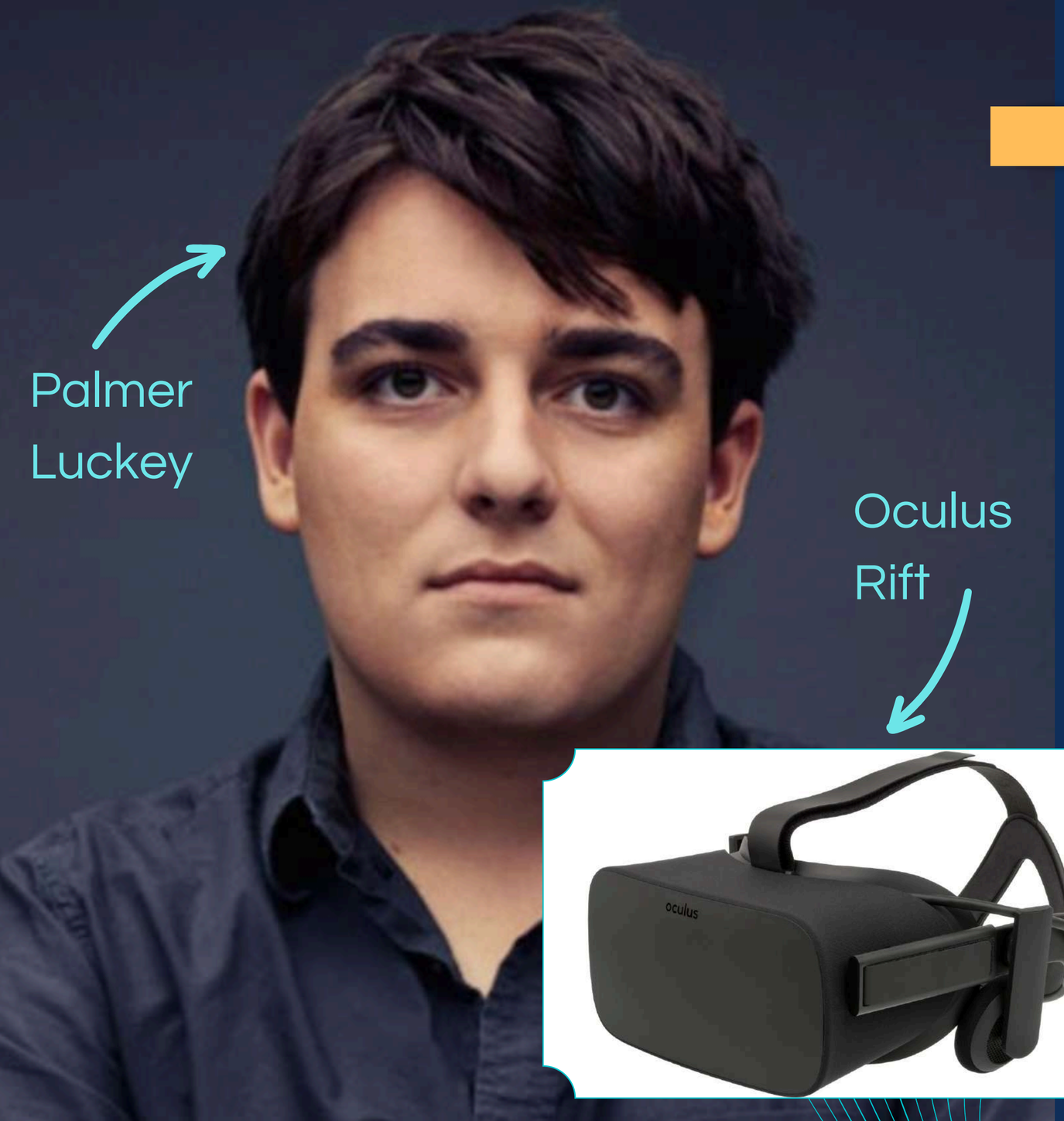
1. Overview of the IT that mostly influence the Tourism Sector
2. Impact of AI on the Tourism Sector and on the job market
3. Video Generators and the 3 skills to develop:
   - Networking skills
   - AI skill
   - Question everything

INTRO

VR and AR were not devised with tourism in mind

INTRO

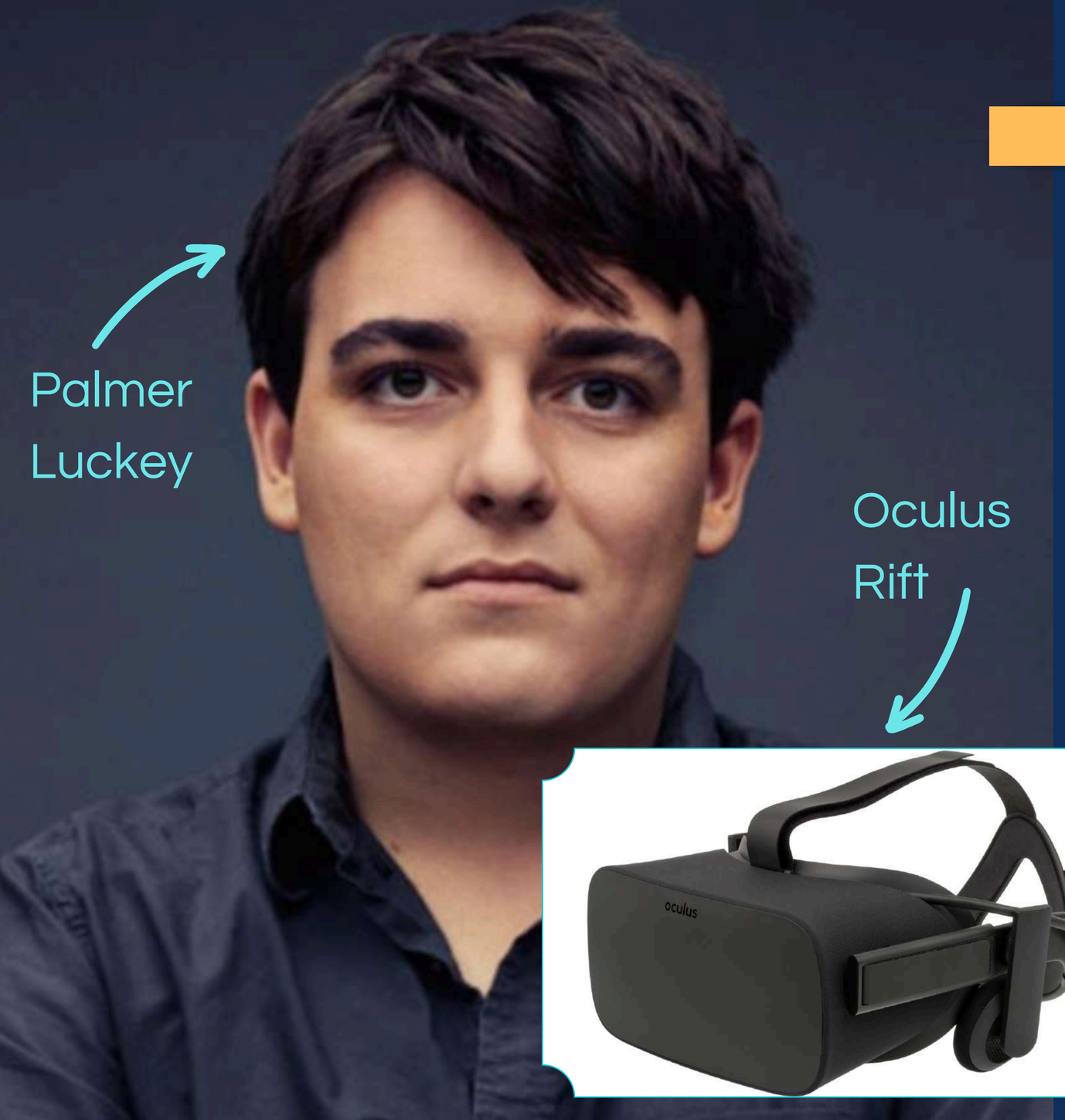
in 1990s SEGA, Nintendo and other videogame companies released to the market the first VR headsets, but technology was not mature yet



INTRO

VR was abandoned until 2010, when Palmer Luckey, an american teenager, built in his garage the Oculus Rift, the first modern VR headset

Oculus
Rift



Palmer Luckey

Oculus Rift

INTRO

He sold it through a Kickstarter campaing that raised $2.4 millions and founded company Oculus, that Facebook acquired in 2014 for $3 billions

The movie Avatar (2009), directed by James Cameron, revolutionized modern 3D cinema and demonstrated how immersive VR can be

Computer-generated video

Real-world simulation

There are two different types of VR videos: the first one employs computer generated imagery (e.g: VR games); the second one simulates the real world instead and is called 360 VR

There are three types of headsets: mobile headsets which combine a smartphone with a mount

...Tethered headsets are just a display controlled by another device, like a PC or a video game console

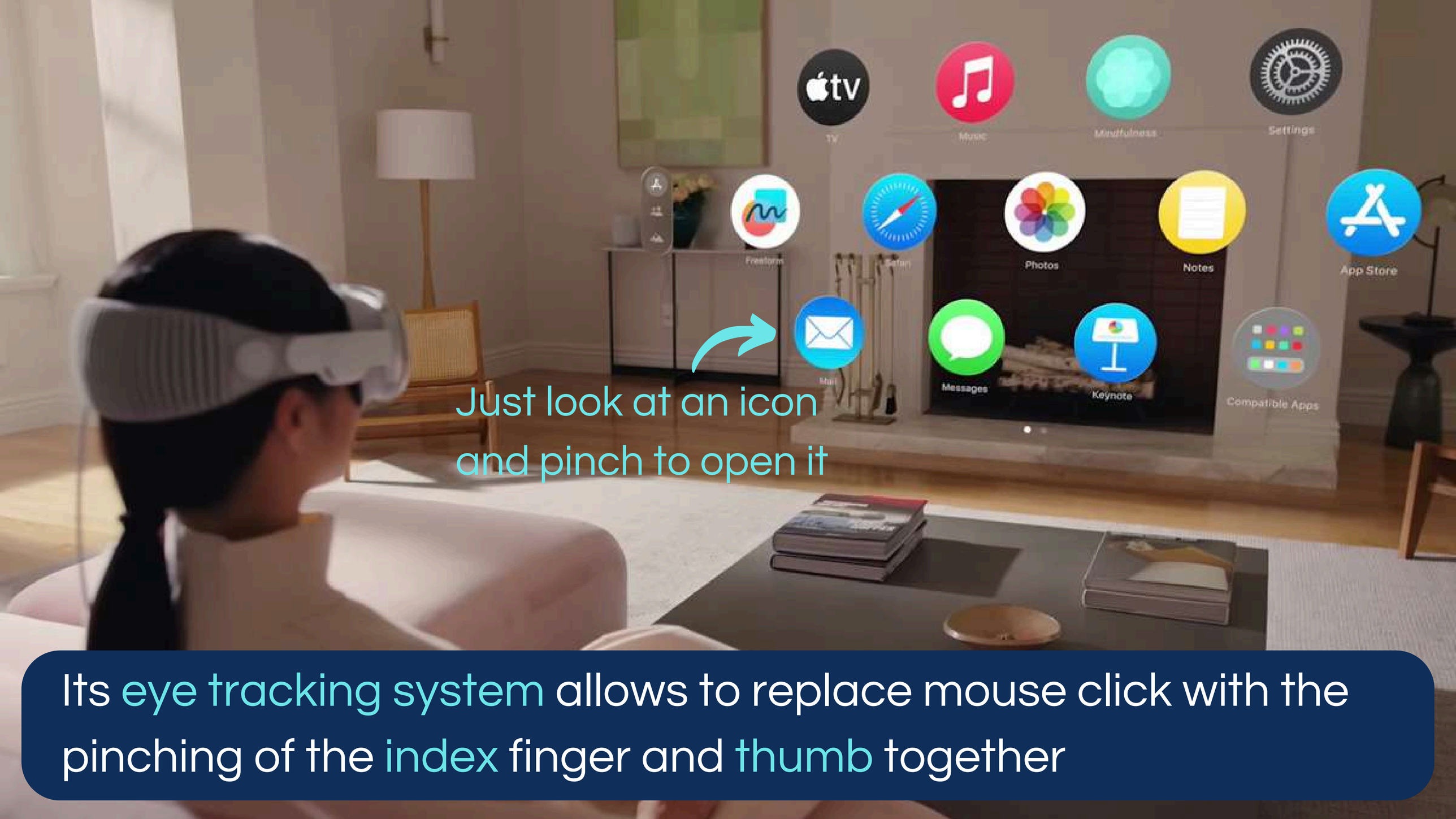
...and standalone headsets that have all necessary components to provide virtual reality experiences integrated into the headset.

Meta Quest 3

Sony PS VR2

The most popular headsets in 2025 are the Meta Quest 3 (standalone) and the Sony Playstation VR2 (tethered)

Apple released its Apple Vision Pro, that combines both VR and AR: “Mixed Reality”



Its eye tracking system allows to replace mouse click with the pinching of the index finger and thumb together

VR TOURIST VIDEOS

There are two types of 360 VR videos/photo for tourism:

- Monoscopic
- Stereoscopic

Stereoscopic VR tourist videos only works for VR headsets and feature head tracking, so the tourists can move their head to explore the surroundings in a more realistic way

Monoscopic VR tourist videos/photo work much like a normal video: they can be viewed on smartphones and PC too. The viewer can click and drag the mouse on the screen to rotate the field of view, similar to turning the head to explore a scene (e.g: Google Street View)

https://www.youtube.com/watch?v=3Zz7M2vLHJ8

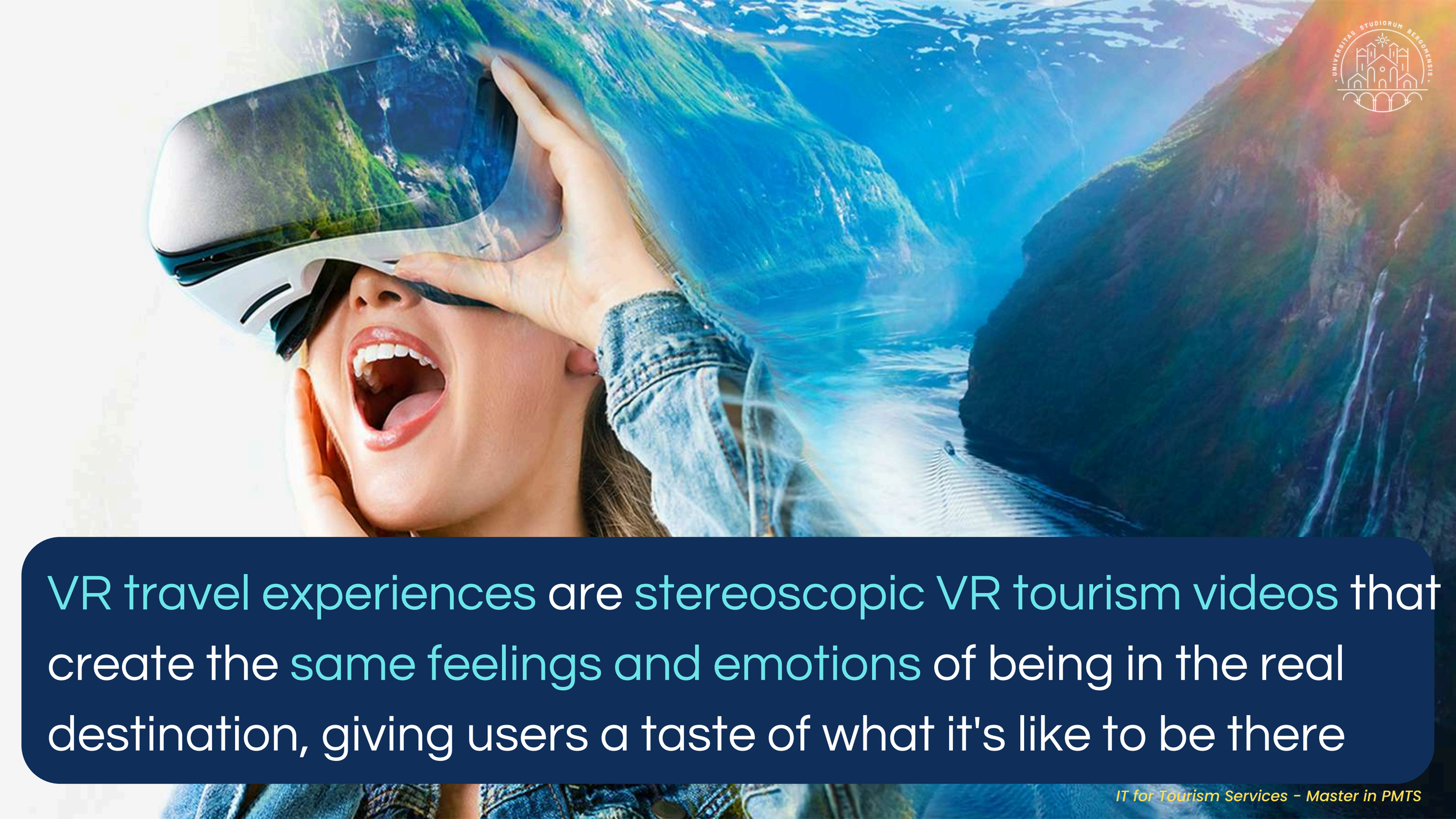
AirPano VR specializes in virtual tours of the most beautiful places of the world, e.g: Angel Falls in Venezuela

https://www.youtube.com/watch?v=L_tqK4eqelA

VR IMPACT ON TOURISM

There are three main types of applications of VR to the tourism sector:

- VR travel experiences
- VR for travel agencies
- Virtual hotel tours



VR travel experiences are stereoscopic VR tourism videos that create the same feelings and emotions of being in the real destination, giving users a taste of what it's like to be there

VR for travel agencies replaces classic brochures and screens inside the travel agencies, to offer prospective clients short video clips of virtual travel experiences instead

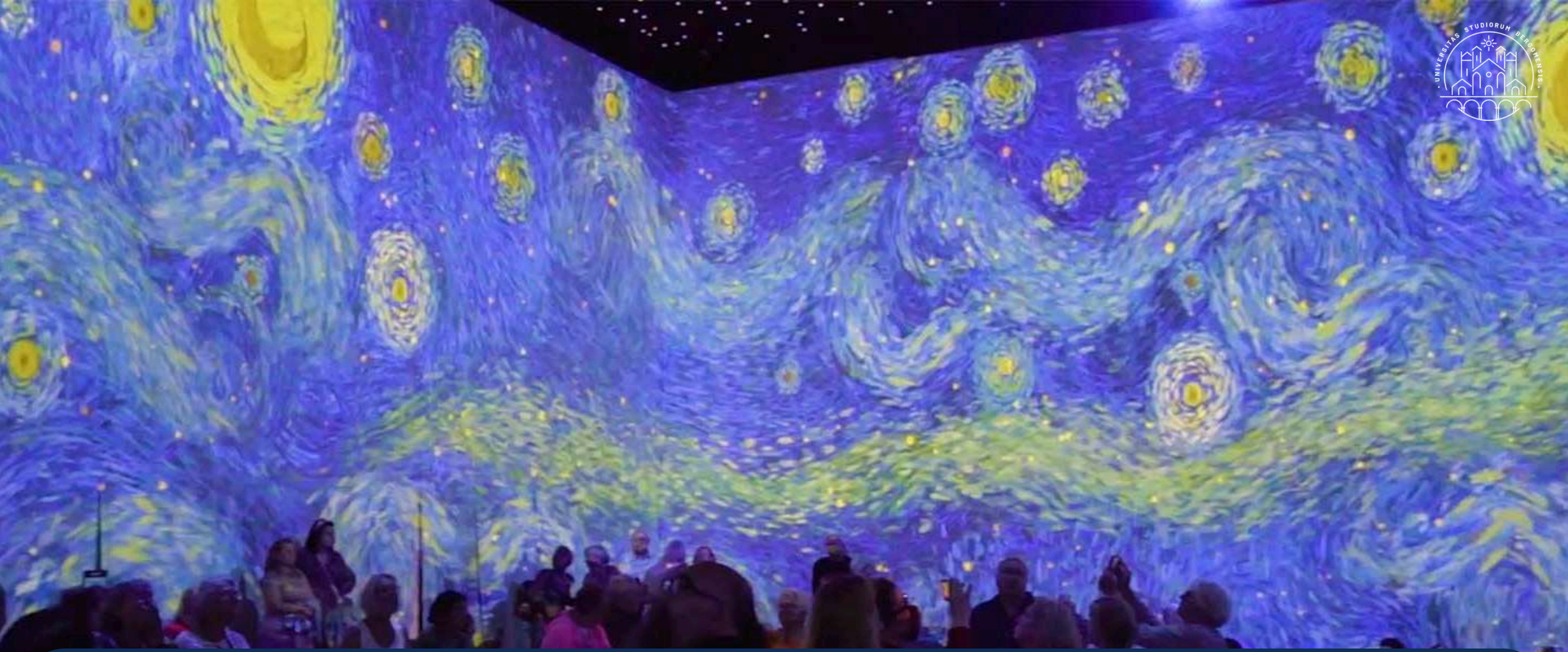
Virtual hotel tours are usually monoscopic VR tourism videos that allow users to explore a hotel with a 360° interactive tour in which the users can choose which rooms to explore

Examples

Thomas Cook Airlines offers touristic helicopter flights over Manhattan. Their bookings tripled when they created a VR tour using 360° recordings of their helicopter flights

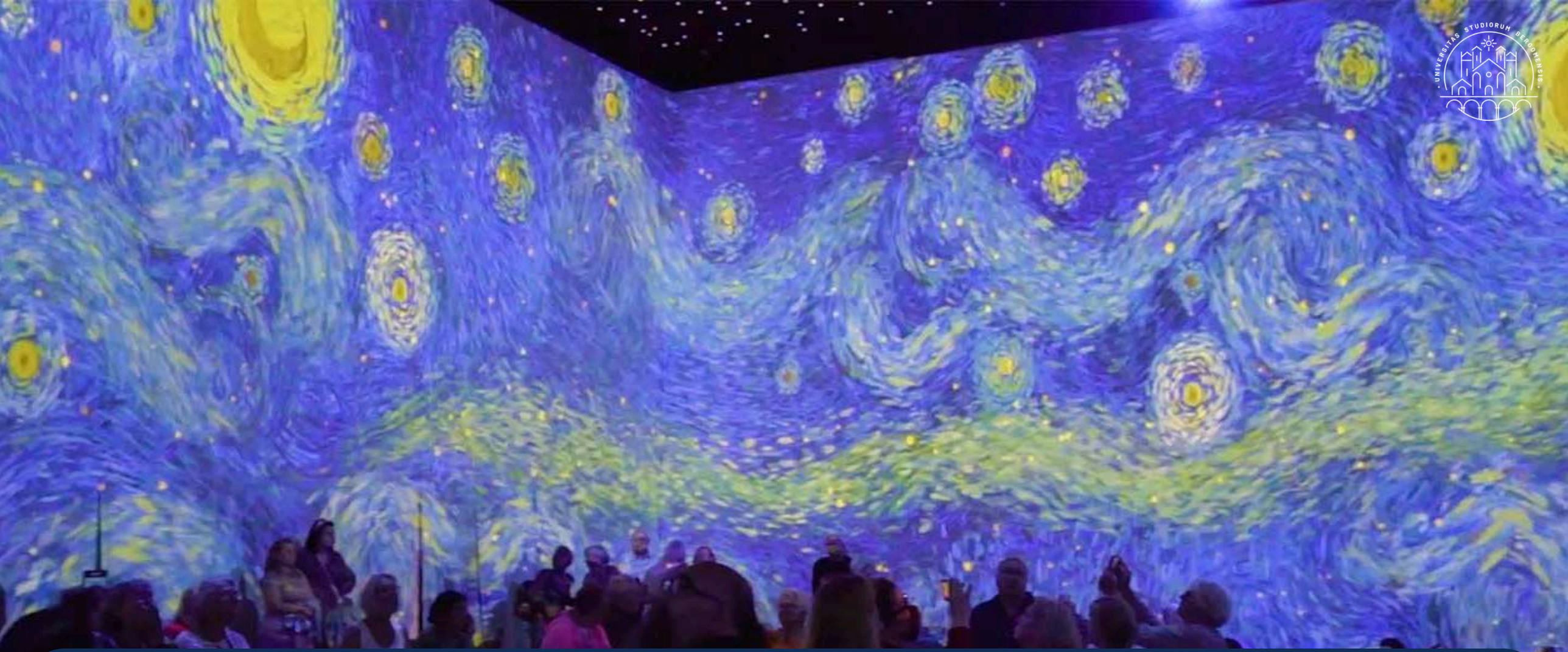
Both British Museum and Louvre offer virtual tours

https://www.britishmuseum.org/blog/how-explore-british-museum-home



In Milan there was an exposition where visitors enter into the paintings of Van Gogh using AI-powered VR

https://vangoghexpo.com/milano/



AI is able to simulate Van Gogh’s style to fill the room (physical or virtual) with every changing painting

https://vangoghexpo.com/milano/

Sandy Lane Hotel, Barbados

https://www.youtube.com/watch?v=Lbq6IQgIHKM&t=181s

A guided virtual city tour of London

https://www.youtube.com/watch?v=m9EClKA1VeQ

National Geographic made underwater VR videos

https://www.youtube.com/watch?v=v64KOxKVLVg&t=51s

TriptoVR is an app for MetaQuest to visit famous destinations

https://www.youtube.com/watch?v=6xOPX0ClJRI

Wooorld is a VR MetaQuest app to travel the world with your friends

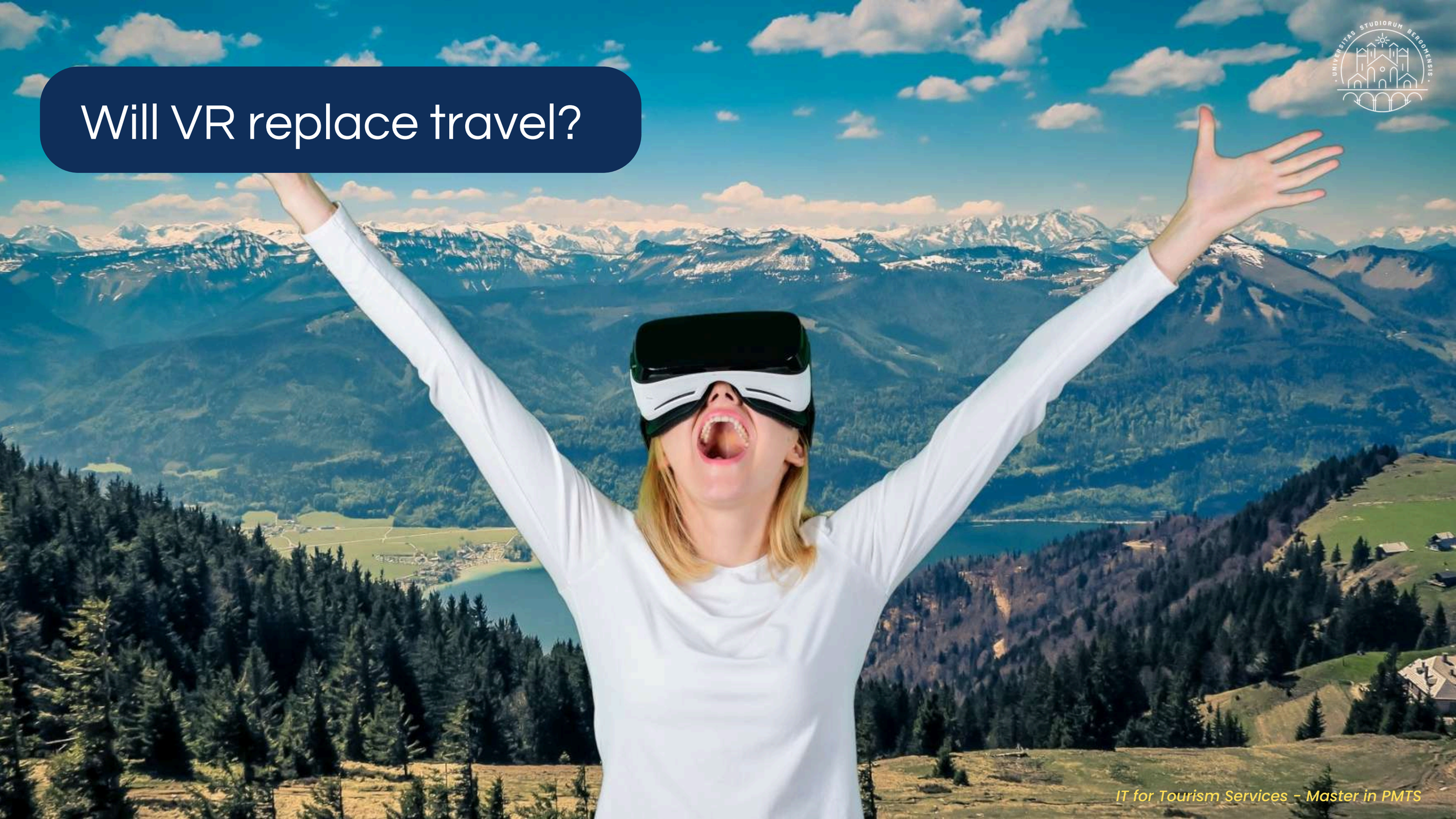
https://www.youtube.com/watch?v=2Q-PpuPEqY0

VR ADVANTAGES

- Try before you buy approach
- Make tourists think about travelling to places that they wouldn't have considered otherwise
- Reduce overtourism by simulating visit to vulnerable destinations
- Inclusive tourism: provide travel experiences to those who cannot travel (even old or sick people)
- Allow new travel companies to stand out from the crowd

Beyond the high cost, VR has some issues to solve before becoming mainstream: motion sickness, eye stress, lack of vision of the surroundings

Will VR replace travel?



Will VR replace travel?

80% of people said no

90% said that visiting a destination in VR is not the same as in real life

70% cited tasting local food as being important to them

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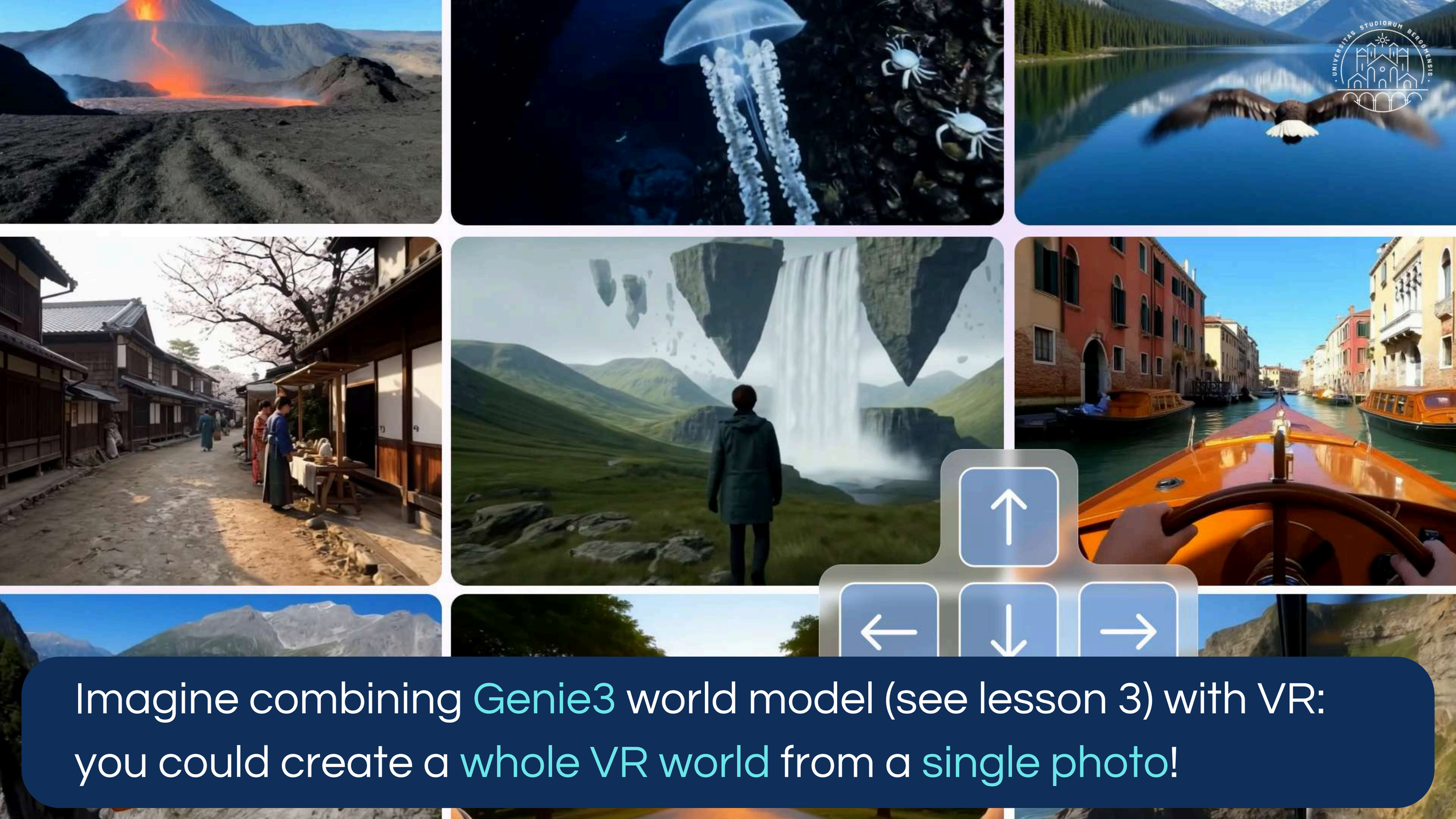
It's pretty safe to assume that VR won't replace travel anytime soon.
It is just a useful tool for marketing



Imagine combining Genie3 world model (see lesson 3) with VR: you could create a whole VR world from a single photo!

AUGMENTED REALITY

AR is an example of disrupting technology: an innovation that 15 years ago did not exist, that no one expected, but it quickly become mainstream

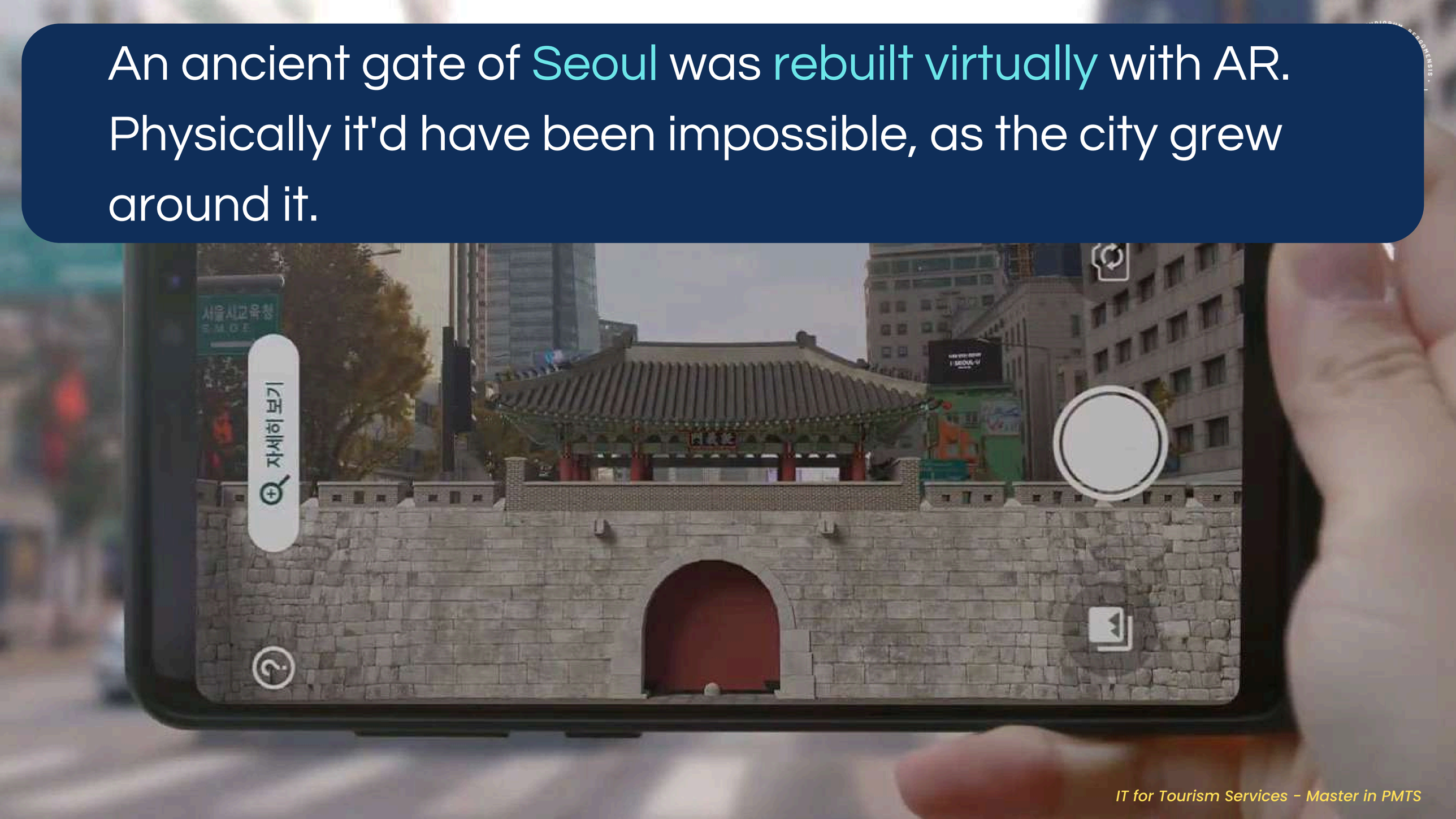
AR consists in overlapping digital content over images or video of the real world thanks to sensors that track the position and orientation of the device (e.g: GPS, compass)

All it takes to access an AR system is a device with GPS, webcam and internet connection (standard in every smartphone, tablet or PC): AR is within the reach of all

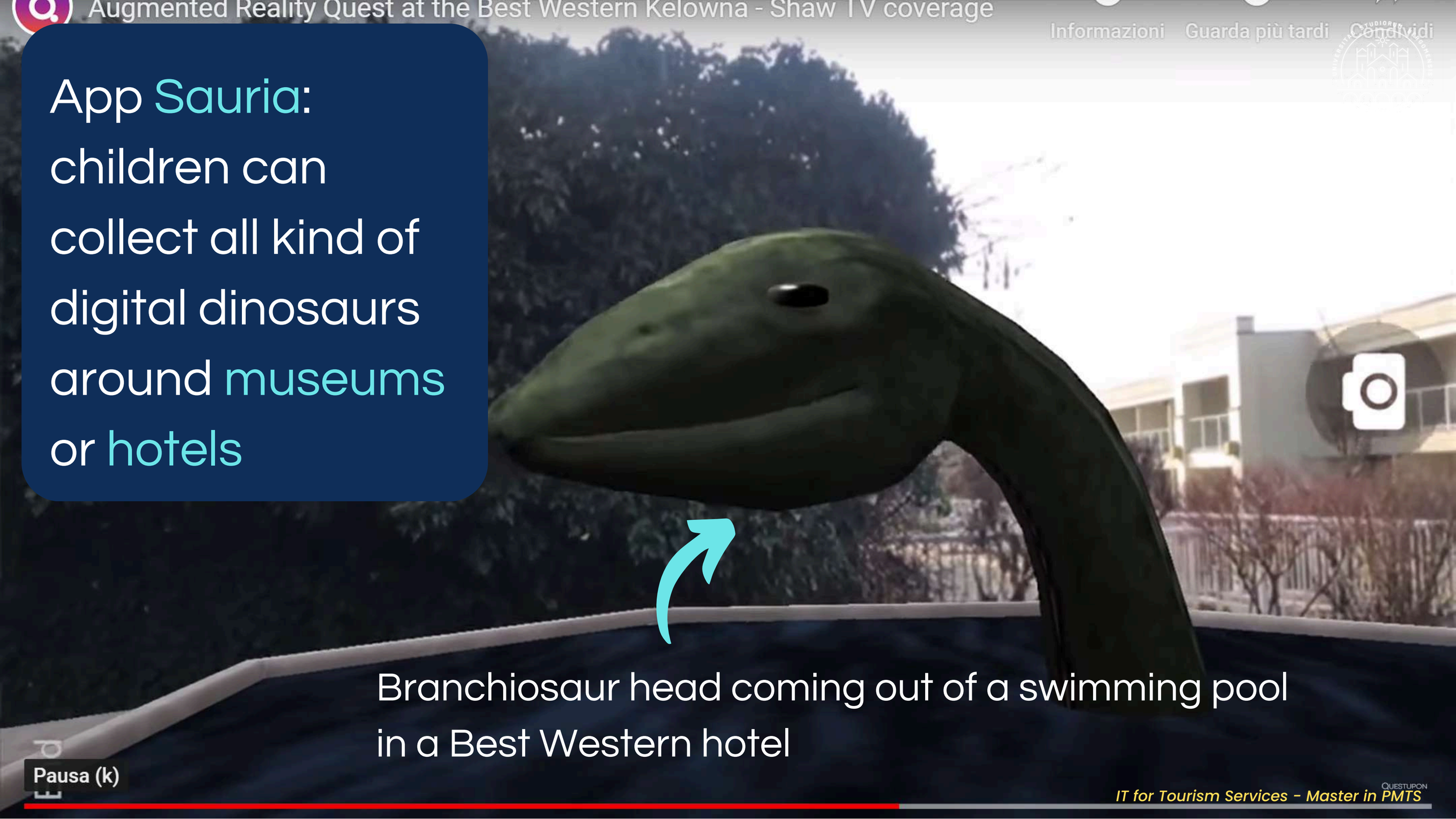
AR was made popular in 2016 by the game Pokemon GO. Its app was downloaded a billion times

Pikachu

An ancient gate of Seoul was rebuilt virtually with AR. Physically it'd have been impossible, as the city grew around it.



This is an example of smart tourism, e.g: of improving the touristic experience thanks to IT (in this case, explore a long-forgotten history of the city)

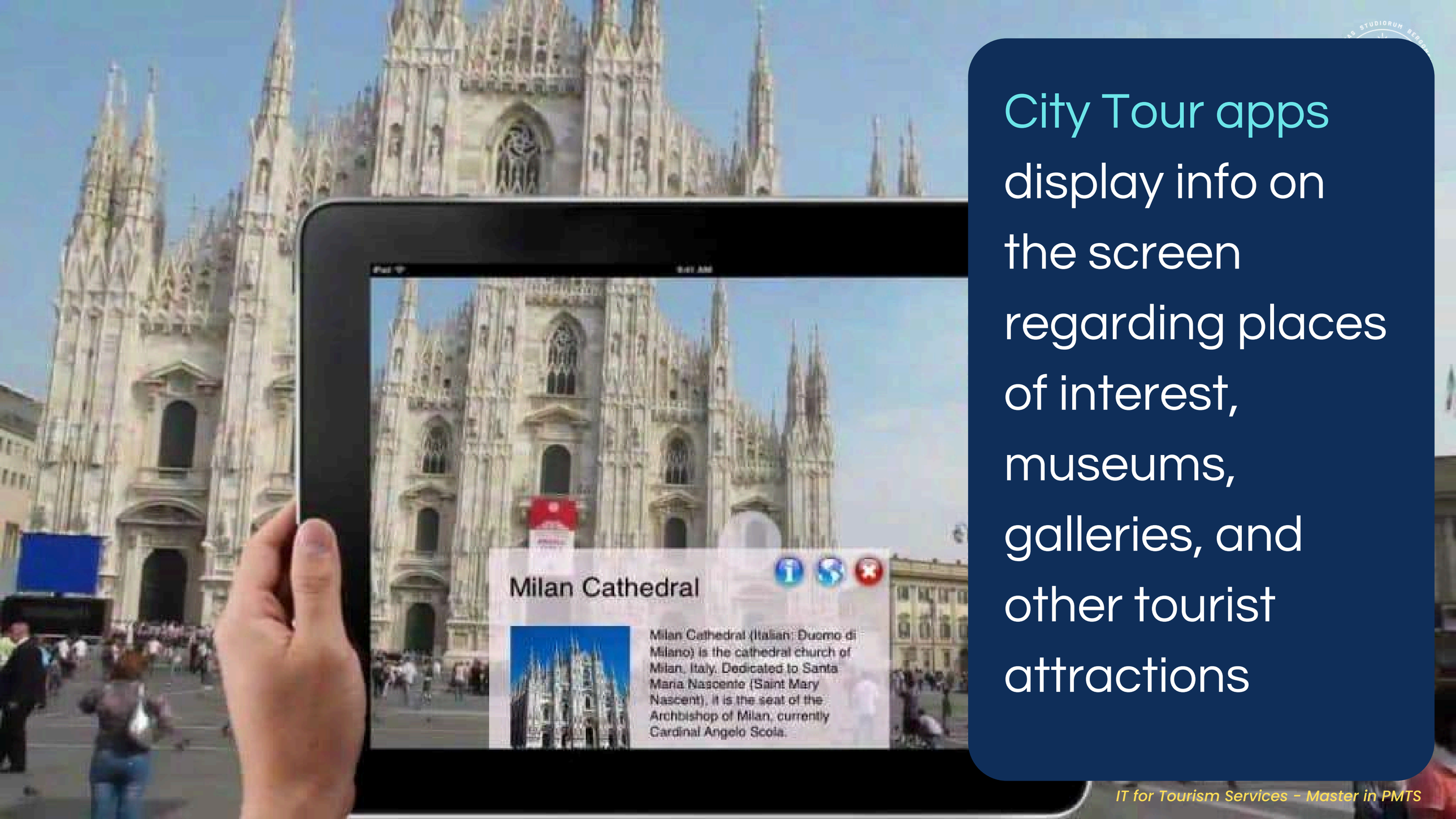

Augmented Reality Quest at the Best Western Kelowna - Shaw TV coverage
Informazioni
Guarda più tardi
Condividi
App Sauria: children can collect all kind of digital dinosaurs around museums or hotels
Branchiosaur head coming out of a swimming pool in a Best Western hotel
Pausa (k)

It works well also in other locations

Some hotels attract guests by offering them AR gamification: interactive experiences (e.g: quests, treasure hunts) overlaying virtual objects into the hotel's rooms

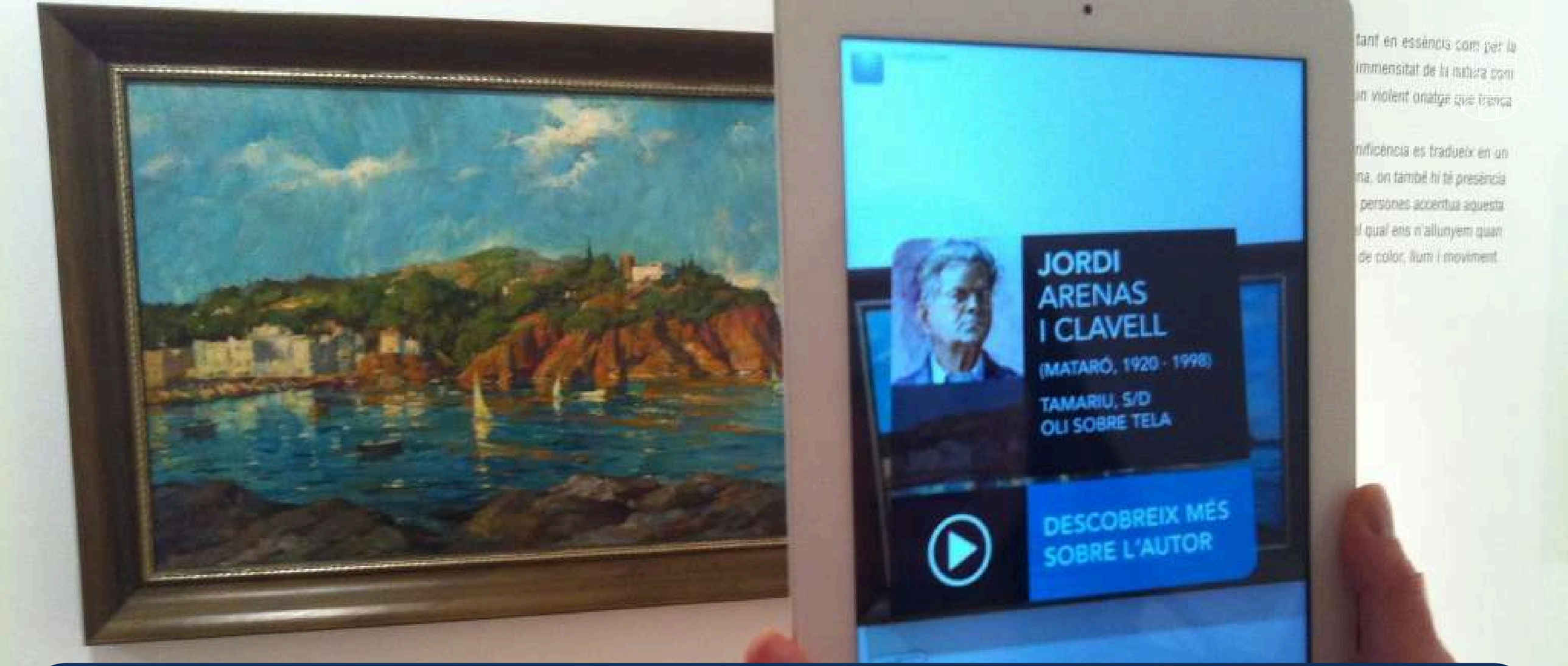
https://www.youtube.com/watch?v=RILcP5B7wbA

Example: promote cities like Alghero (www.playalghero.it)



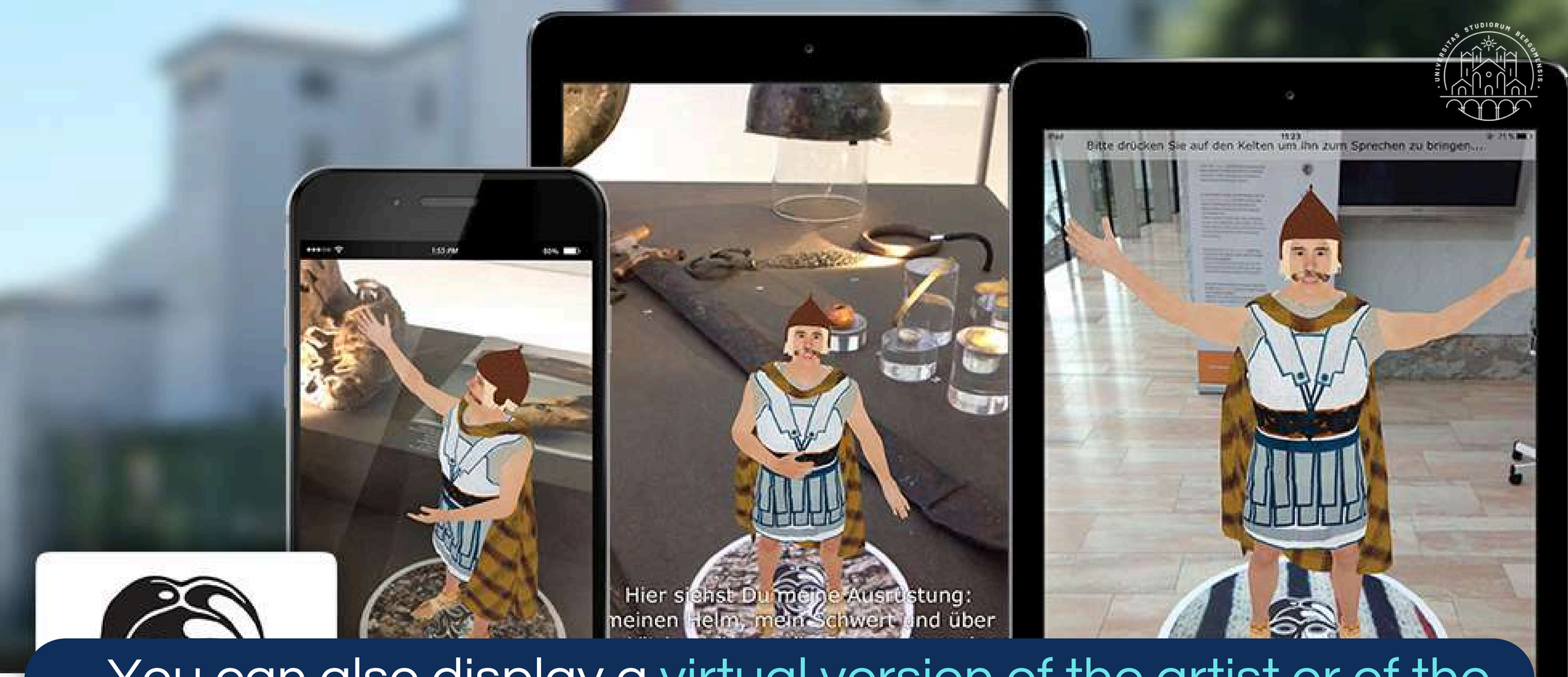
City Tour apps display info on the screen regarding places of interest, museums, galleries, and other tourist attractions

They can also include audio, announcing features of interest at a particular site when they become visible to the user



There are many possibilities for the use of AR in museums.

E.g: to show more information when visitors view exhibitions



You can also display a virtual version of the artist or of the portrait subject next to the artwork, and make him/her speak to provide a narration of the artwork

You can bring objects or scenes to life

You can bring objects or scenes to life

Or restore broken objects to their original form

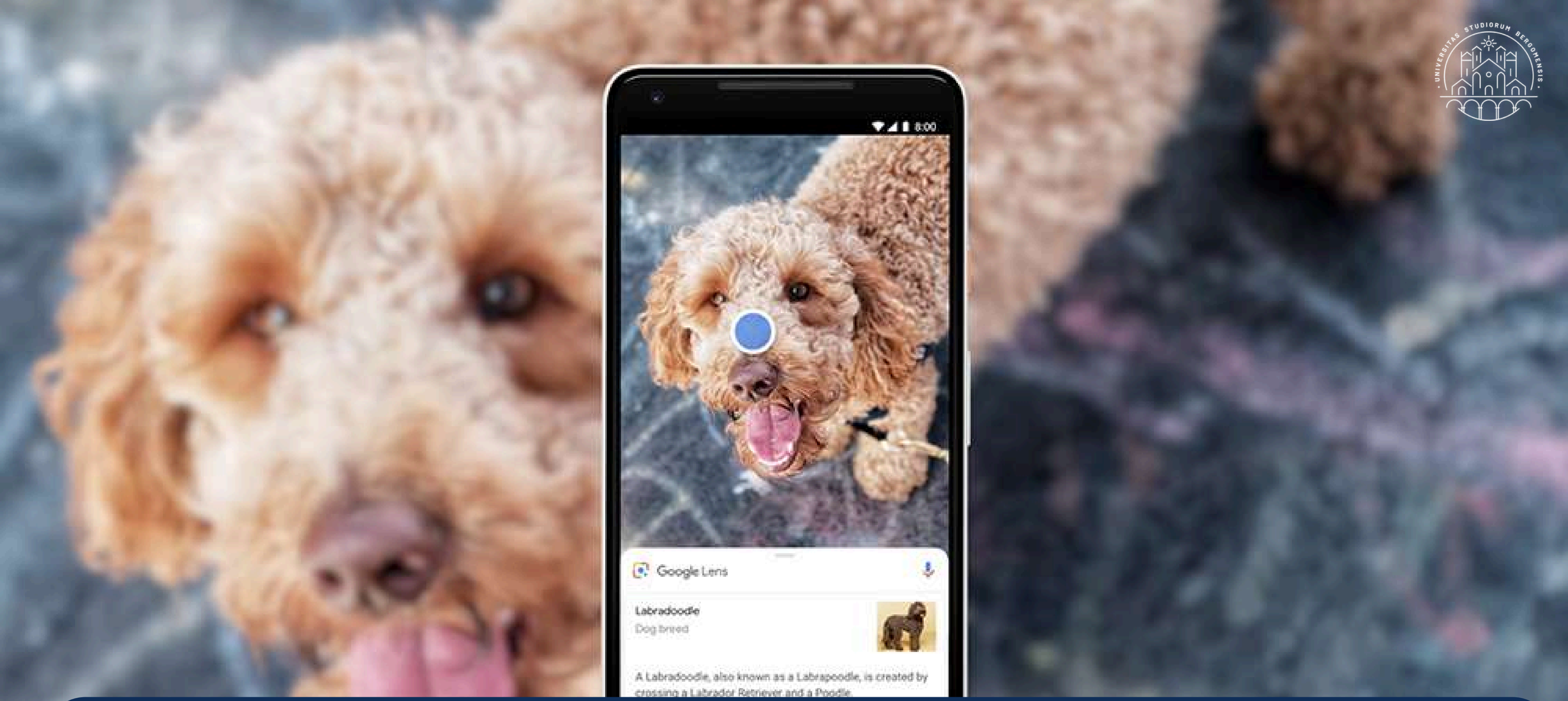
...and even recover paintings that were stolen

Possibilities are endless

Travel agencies can also employ brouchures that AR trasforms in a 3D version to advertise the location

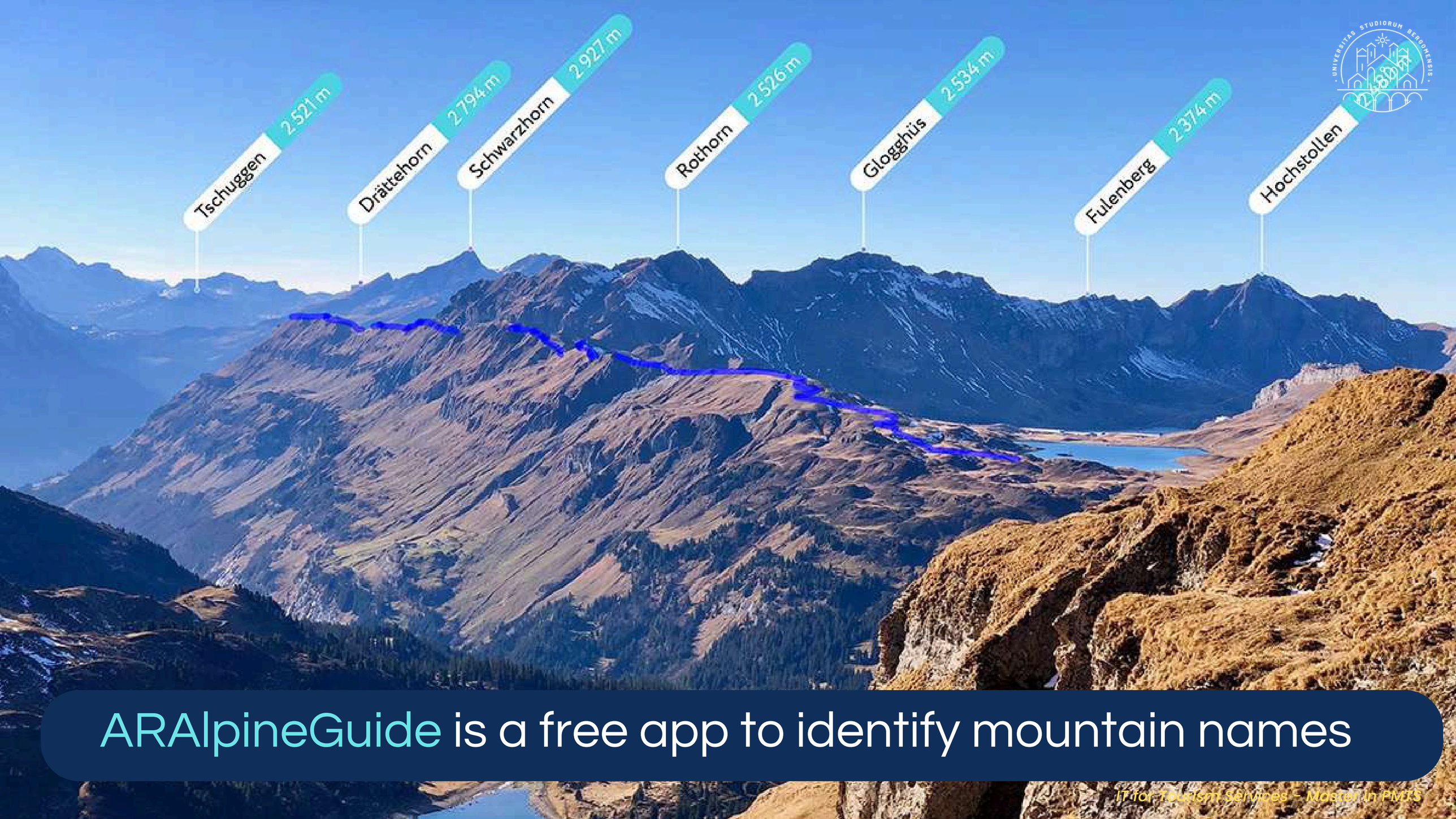
AR is less used than VR to advertise travels and locations.
It is usually employed to enhance the touristic experience

A simple app like Google Translate is the mix of many sophisticated information technologies



Google Lens is a powerful IT: users point the smartphone at an object to identify what it is, give informations about it and eventually where to buy it

Google Maps has a feature called "Live View" that directs you to your destination thanks to virtual arrows and pointers



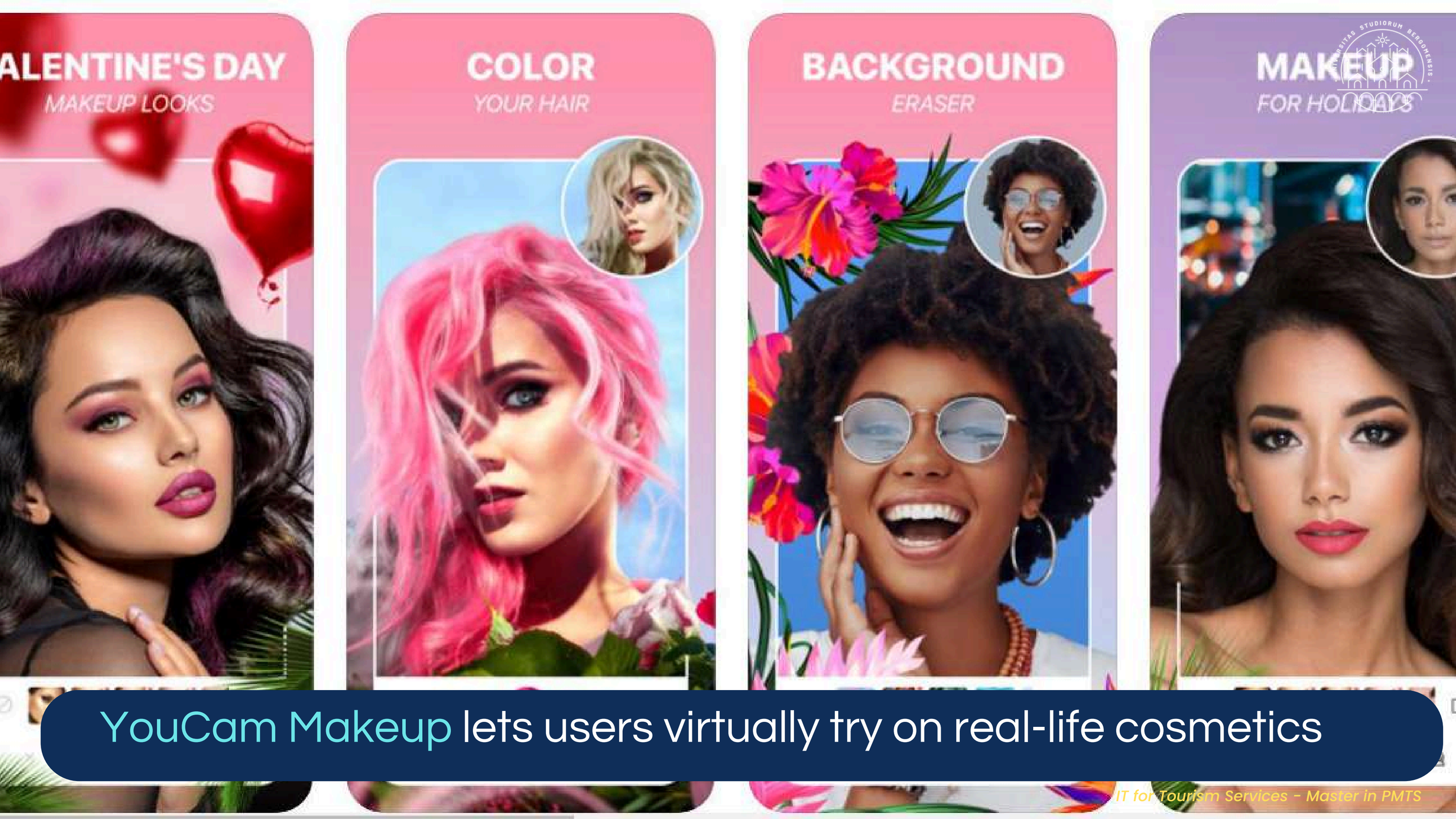
ARAlpineGuide is a free app to identify mountain names

IKEA Place allows users to preview IKEA furniture in their houses

Cartoon 3D Style

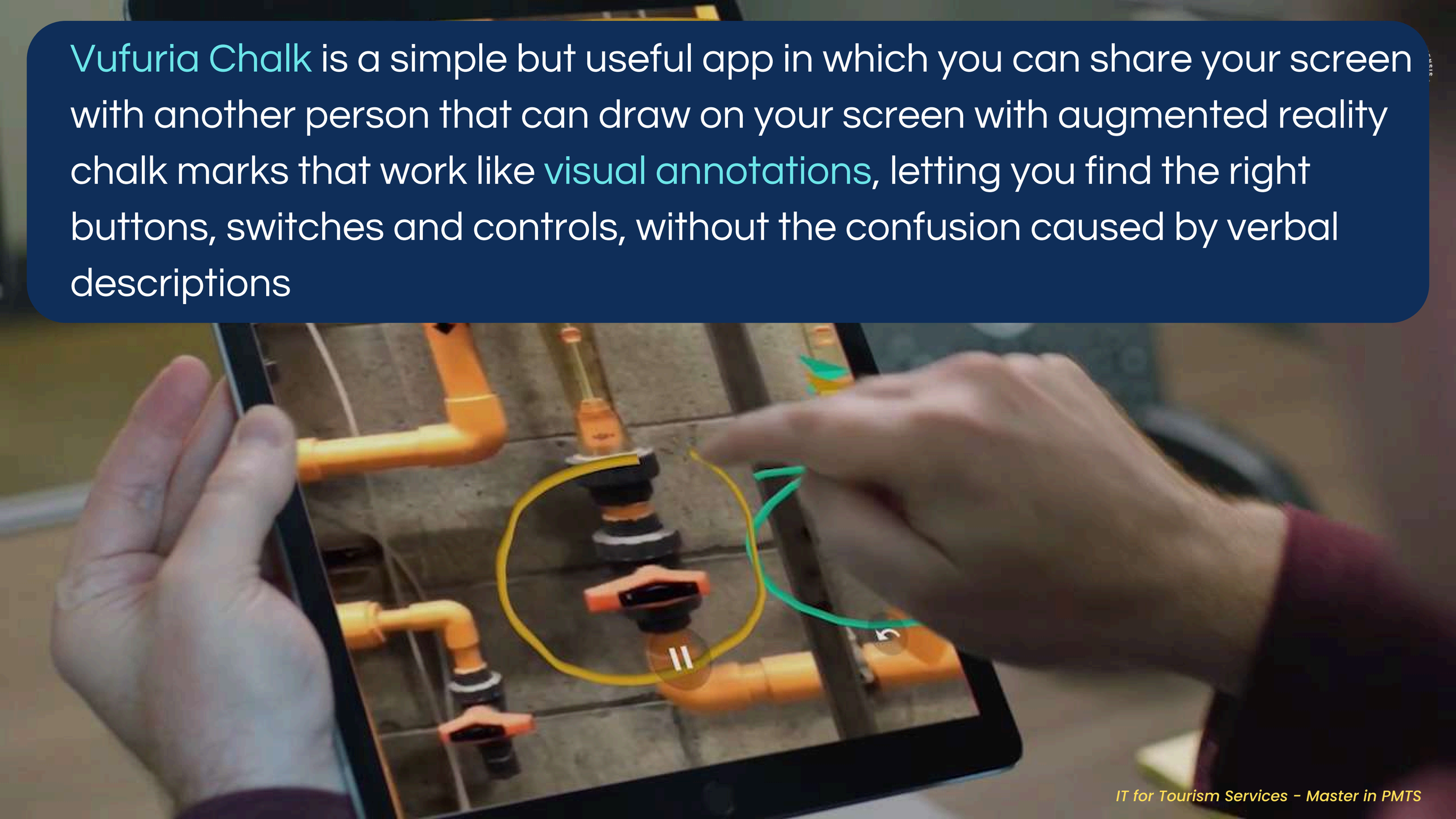
by Snapchat

Snapchat employs a form of AR to apply filters and add special effects



YouCam Makeup lets users virtually try on real-life cosmetics

Vufuria Chalk is a simple but useful app in which you can share your screen with another person that can draw on your screen with augmented reality chalk marks that work like visual annotations, letting you find the right buttons, switches and controls, without the confusion caused by verbal descriptions



Sky Tonight is one of the best stargazing apps: it displays star names, constellations, planets and other celestial bodies in real time over the sky

Holo app allows insert holograms inside your photos or videos

Google

The new Google’s Smart Glasses will also translate what you hear and show you the text with the translation inside the lenses

SUMMARY

VR

- popular but expensive and not yet widespread (100 million VR headsets sold)
- in the tourism sector VR is usuful for travel promotion, to preview a destination thanks to promotional videos

AR

- widespread and easy to use. Just less known than VR.
- in the tourism sector AR is usuful for enhancing the touristic experience (smart tourism)

FIRST PROJECT WORK

FIRST PROJECT WORK

- First real member!
- Spam filter
- Facebook algorithm and new user accounts
- Check student accounts with “?”
- Insert eventual new arrivals in the groups
- Example post

FACEBOOK ALGORITHM

Unfortunately, all the posts and comments of the students with a newly created facebook account are not considered by the algorithm

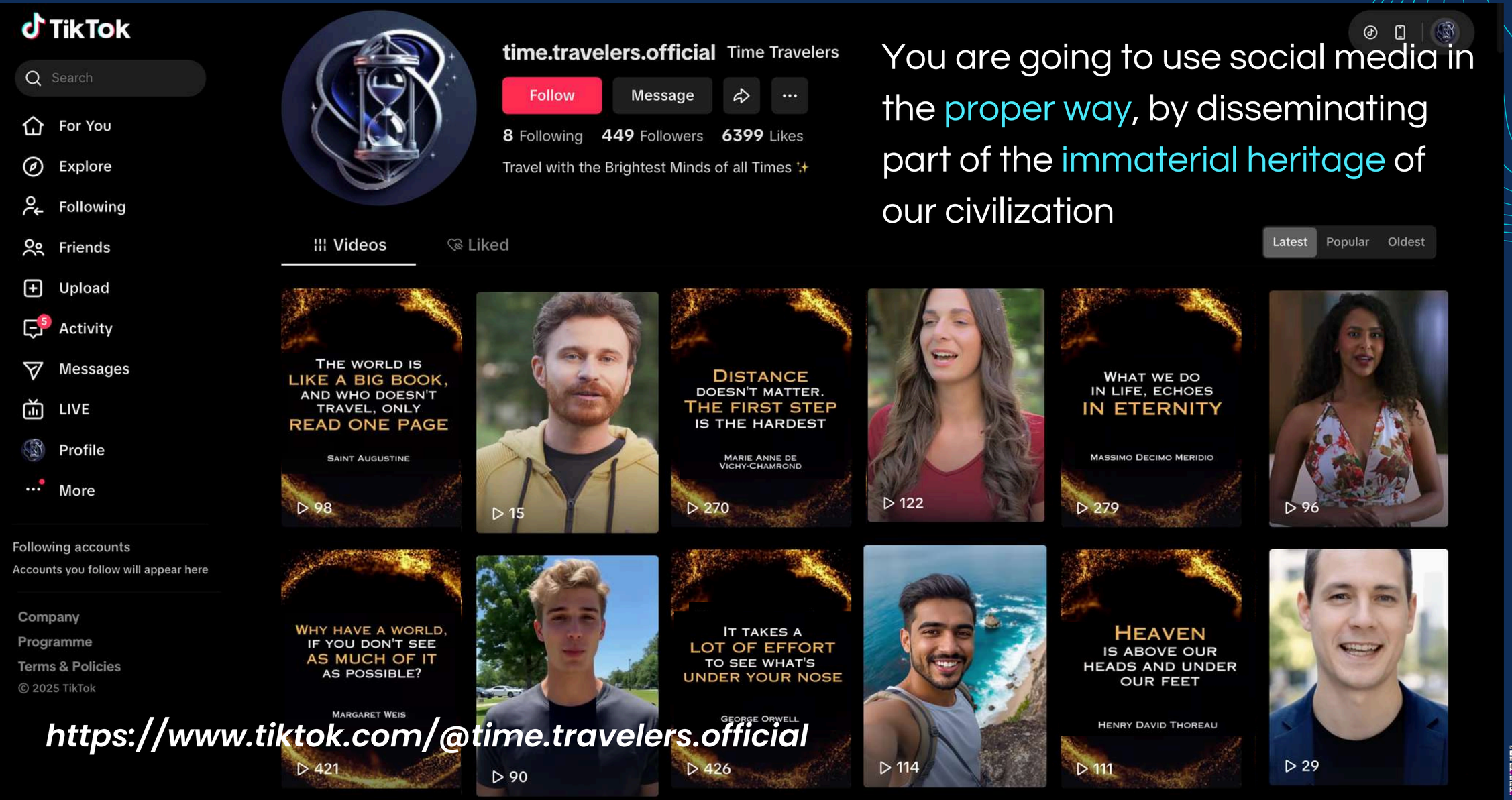
FACEBOOK ALGORITHM

This means that only students with an old fb account should post in the group, while the other ones can still comment

Students with an old fb account are highlighted in green in the “Project Work: Groups” spreadhseet

SECOND PROJECT WORK

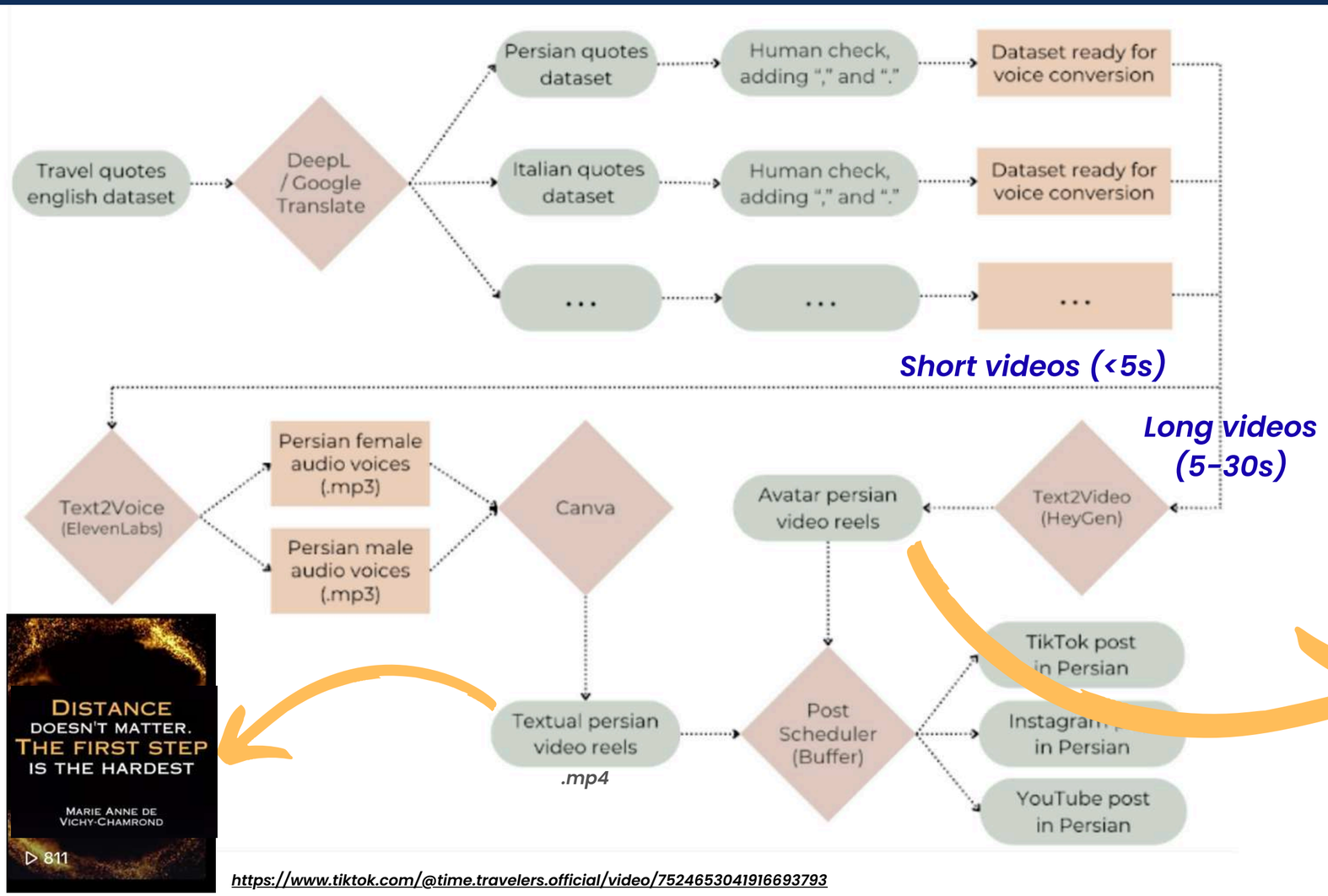
AN APPLICATION OF HERITAGE FOR ALL



You are going to use social media in the proper way, by disseminating part of the immaterial heritage of our civilization

https://www.tiktok.com/@time.travelers.official

FLOWCHART OF THE VIDEO MAKING METHODOLOGY



https://www.tiktok.com/@time.travelers.official/video/7524653041916693793

Figure 22. Flowchart with the illustration of the methodology employed to make all videos and schedule them. Diamond-shaped brown boxes show AI tools.

Figure 22 of the master thesis of Asad Abbas (available in the Moodle)

https://app.heygen.com/videos/4c2d1551ee4a40b38be4831bdb00ce04

CITATION DATASET OF OUR IMMATERIAL HERITAGE

(available in the Moodle)

Citation dataset of our immaterial heritage

File Edit View Insert Format Data Tools Extensions Help

Number	Quotes in English	Authors in English	Quotes in English for voice translator	Quo
1	Why have a world, if you don't see as much of it as possible?	Margaret Weis	Why have a world, if you don't see as much of it as possible?	A ch
2	The most important moment of our journey is when we throw away the map	Loreena McKennitt	The most important moment, of our journey, is when we throw away the map.	Il m
3	Distance doesn't matter. The first step is the hardest	Marie Anne de Vichy-(	Distance, doesn't matter. The first step, is the hardest.	La c
4	What we do in life, echoes in eternity	Massimo Decimo Meri	What we do in life, echoes in eternity.	Ciò
5	Every journey is a contemplation in motion	Marguerite Yourcenar	Every journey, is a contemplation in motion.	Ogn
6	When the road doesn't exist, invent it!	Robert Baden-Powell	When the road, doesn't exist, invent it.	Qua
7	There is a difference between knowing the path and walking the path	Morpheus	There is a difference, between knowing the path, and walking the path.	Una
8	Find the activity you enjoy and you will never have to work	Confucius	Find the activity you enjoy, and you will never have to work.	Trov
9	The Way that can be named is not the Way	Lao Tzu	The Way that can be named, is not the Way.	La V
10	It takes a lot of effort to see what's under your nose	George Orwell	It takes a lot of effort, to see what's under your nose.	Per
11	People don't take trips: trips take people	John Steinback	People, don't take trips. trips, take people.	Le p
12	When a being stop desiring, all treasures come to him	Old esoteric proverb	When a being, stop desiring, all treasures, come to him.	Qua
13	There is great disorder under heaven and on earth, and the situation is excellent	Old chinese proverb	There is great disorder under heaven and on earth, and the situation is excellen	Sott
14	Human race will die of civilization	Ralph Waldo Emerson	Human race, will die of civilization.	La r
15	Change, before you have to	Jack Welch	Change, before you have to.	Can
16	Heaven is above our heads and under our feet	Henry David Thoreau	Heaven, is above our heads, and under our feet.	Il pa
17	Traveler, there is no path, the path is made by walking	Antonio Machado	Traveler, there is no path, the path is made by walking.	Viar

LANGUAGES AVAILABLE IN DEEPL

English	Japanese	Norwegian
Italian	Russian	Danish
Spanish	Polish	Finnish
Portuguese	Indonesian	Chinese
German	Swedish	Bulgarian
French	Ukranian	Estonian
Arabic	Romanian	Latvian
Korean	Hungarian	Lithuanian
Turkish	Czech	Slovak
Dutch	Greek	Slovenian

Table 11. List of languages available in DeepL.

Only languages not available in DeepL ar Urdu and Hindi.

TASKS FOR NEXT LESSON

- First project work:
  - If your fb account is an old one (green color in the google sheet with your name), publish a new post in english in the fb group Alps for Beginners, modifying an existing post in Dolomites for Beginners (choose one). Ask Gemini to modify the text and the image of the original post (choose only 1 image if the post has many); see the README
  - Comment 5 posts of your companions (10 if your fb account is a new one created in 2025). You can also ask Gemini to suggest a comment to the post; one or two of your comments should be comments to other comments
  - Then, like all the new posts published by your companions in the community
- Second project work:
  - Join the English TikTok channel of the "Time Travelers": https://www.tiktok.com/@time.travelers.official
  - Choose a channel creator (admin) for each language
  - Choose the name of each new TikTok channel
  - Translate the tags of each new TikTok channels
  - Revise citations 1-875 of the language of your group (split the work between group members). Instead of editing citations directly, insert a comment over their cell. Hindi and Urdu languages are not included in DeepL and should be translated from English using Google Translate and revised manually
  - New deadline for taking a selfie over the high stairs of Bergamo: 10th of november
- Suggested movie: "Avatar" (2009), directed by James Cameron