



**Master in Planning and
Management of Tourism Systems**

Blockchain, Bitcoin & Web 3.0

Nicola Cortesi

BLOCKCHAIN

Blockchain is important because it changes the way information is shared between people: it de-centralizes it by removing all intermediaries and monopolists



Today most human activities are centralized: they are run by banks, institutions, private companies, multinationals, agencies. We need them to guarantee that the information sharing is properly handled



However, we also need to trust these companies, and to pay them for their service, as there are no free alternatives to them

The background of the slide is a dark blue field filled with a complex, glowing wireframe structure. This structure consists of numerous interconnected points and lines, forming a series of overlapping, rounded shapes that resemble a stylized, futuristic landscape or a network of data points. The lines are thin and light blue, while the points are small, bright blue dots. The overall effect is a sense of depth and digital connectivity.

Blockchain remove these limitations, shifting the trust from human organizations to an algorithm based on math, so it cannot fail



Blockchain algorithm is safe from any financial bankruptcy, social revolutions, hackers, wars, and even from atomics

While in the **physical world** the best way to protect an object is to hide it or keep inside a safe, in the **digital world** you can try a similar approach, by encrypting data and keeping it behind firewalls, but this isn't the best solution



The best way to protect data may seem at first the opposite of common sense: it consists in copying it and distributing it to as many people as possible, so anyone has a copy of your data



The hardware part of a blockchain is any peer to peer network (P2P): a network where each computer (node) is both a client and a server (e.g: BitTorrent)



The **software** of blockchain is the **algorithm** used to store and share the data in the blockchain network. The main difference from a normal storage system is that data is stored in **blocks** of **1 MB** each



Every **node** of the network has a **copy** of **all** data blocks. In this way, there can be **no single owner** of the data: not even a multinational or a government can own all nodes

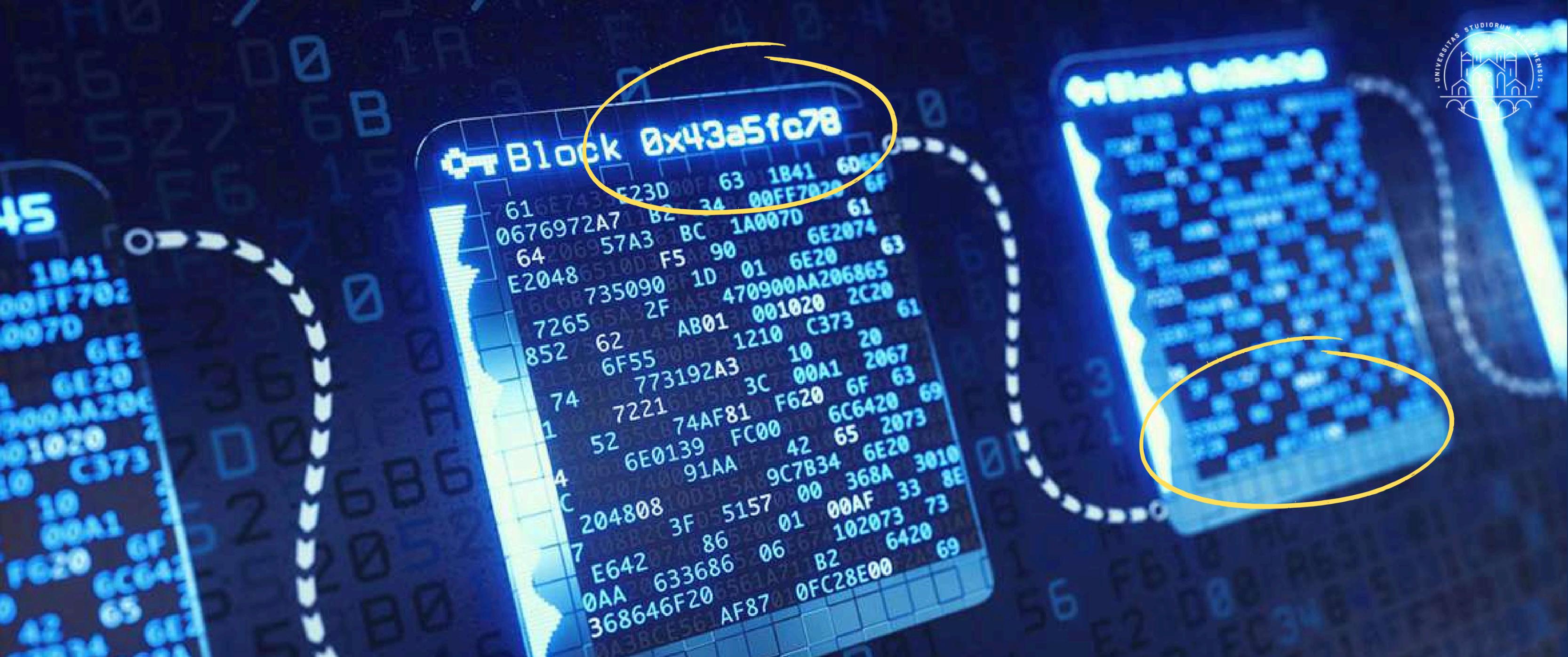
your video



Each 1 MB block is identified by a unique alphanumeric number called hash



Each block also store the hash of the previous block, in this way they form a sequence of blocks, called blockchain



The new hash is now **different** from the hash in the next block that refers to the hash of the previous block



The chain is broken. The only way an hacker has to "repair" it would be to replace that reference with the hash of the previous block



However, as any change to a block modifies its hash, the chain **breaks again** and the hacker has to modify **all the hashes** of all following blocks of the chain to repair it

Hacking a single block takes about 10 minutes, as each block is encrypted. But the hacker must also modify all the other blocks of the blockchain to fix it (e.g: to fix 1000 blocks, he'd need a few weeks)

He also need to modify all blocks of all the millions of blockchains in the other nodes of the network, in order for its modified blockchain to be recognized as valid, as the true blockchain. All these modifications take millions of years. This is why Blockchain technology is so secure

For example, **bitcoins** are a type of blockchain that stores **digital currency**. At present, bitcoins are worth **2.3 trillion dollars** and no one has been able to steal a **single cent** until now.

If you install on your smartphone an app to use **bitcoins** or another cryptocurrency, it becomes a **new node** of the bitcoin network, and you receive a **copy** of its blockchain with the data of all users

Any time you do an operation with the app (e.g: buy bitcoins, make a payment), a **new block** is created in your smartphone and to **all the other nodes** of the bitcoin network.

The other nodes verify that your version of the blockchain is exactly the same they have, with no modification. In this case, each node adds the new block to its blockchain, else the new block is rejected by the nodes

The first blockchain was that of the bitcoins, invented in 2009 by [Satoshi Nakamoto](#), an unknown inventor named as a [legendary japanese hero](#) that fought against tyrannical regimes.



Thanks to blockchain our smartphones could become the **only bank** we need. And a **totally free bank**, as they are now the calendar app or the email app or the clock app

A large, 3D, white and gold sign spelling out "BANQUE" is mounted on the facade of a modern building with a glass and steel structure. The building has a curved facade and is reflected in the glass windows. The sign is positioned above a white architectural element that looks like a classical portico with columns.

Imagine what it could mean for billions of families the possibility to open a bank account for free, and accessing financial services for free too

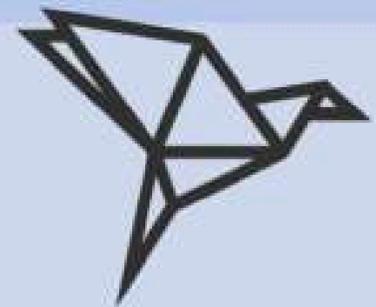
The blocking of bank accounts, withdrawal limitations, the crack of Argentina in 2001 and of Greece in 2007... all these financial crisis would have never happened with Blockchain



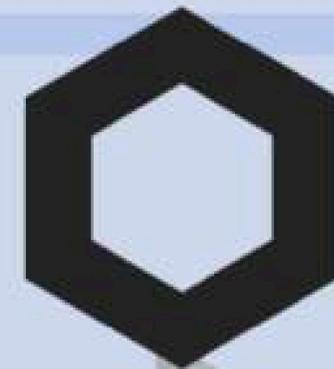
Imagine what it means for **billions of tourists** to book accommodations without **paying commissions** to **online travel agencies**, or for users of **social media** to be free from the **monopoly** of Meta



User reviews of travel destinations will be more truthful because blockchain guarantees that only reviews from verified profiles are taken into account, achieving better transparency and increasing consumer trust



ETHERISC



Chainlink

Etherisc is an blockchain insurance for flight travels. If your flight lands with two hours of delay, instead of getting angry, the blockchain immediately send you a message with the reimbursement already paid

Blockchain improves the accuracy of luggage tracking across the entire travel, as luggage changes hands from one flight operator to the other: all passages are well documented, transparent and of public access



You would no longer need to exchange currency when you travel to another country or fear credit cards thefts if you can pay with cryptocurrencies too (e.g: bitcoins)



Governments of heavily touristic countries are supporting the use of cryptocurrencies and even considering creating their own national cryptocurrencies





ethereum

BLOCKCHAIN APP PLATFORM

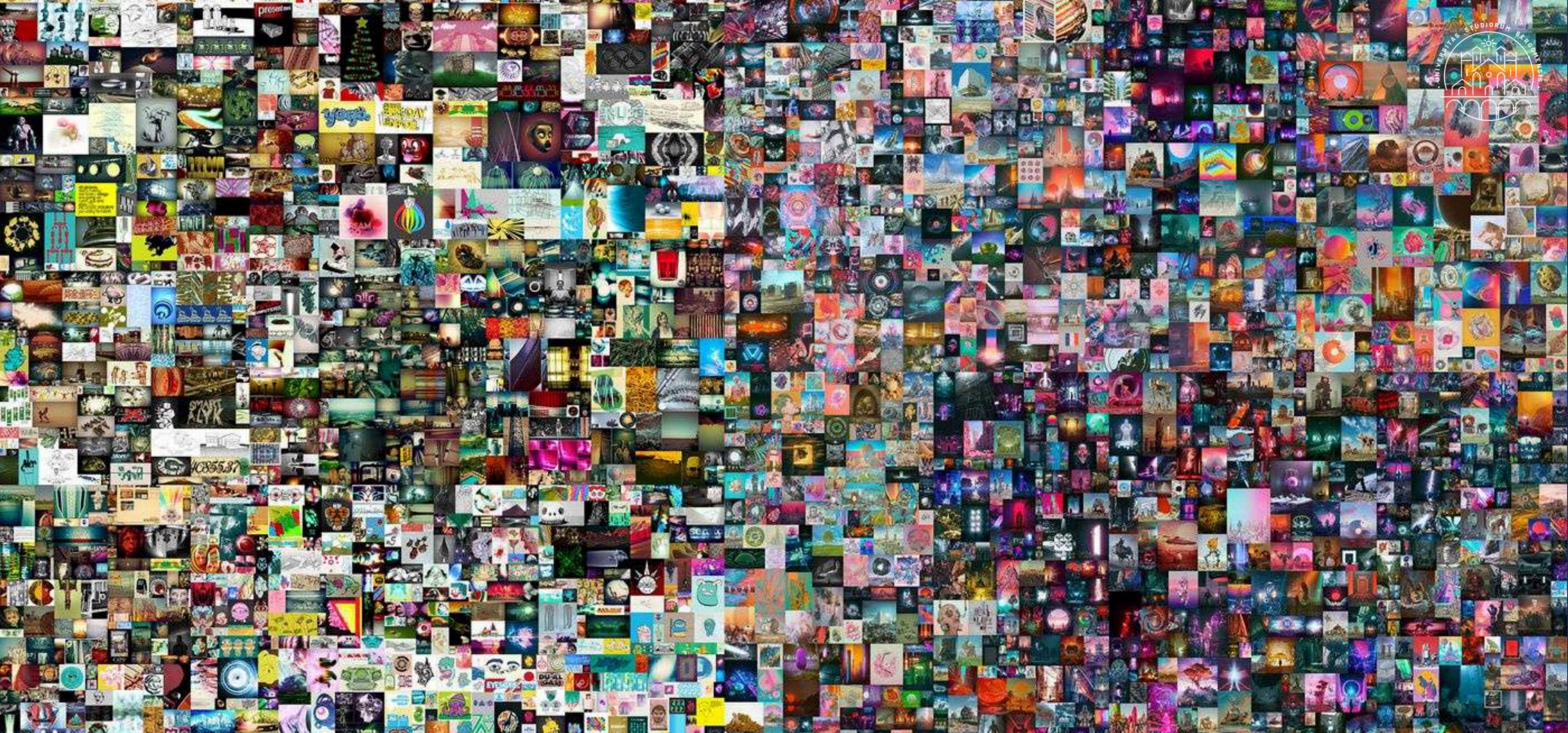
Ethereum is the name of a blockchain platform employed for **Smart Contracts**: contracts that bypass the intervention and fees of notaries, banks and insurance companies



A popular type of Smart Contracts is called **NFT** (non-fungible token). It is an unique digital identifier stored in a blockchain (so it cannot be copied or substituted)



It is used to certify authenticity and ownership of real-world objects like artworks, collections, music registers, articles, but also digital objects like gif images and software



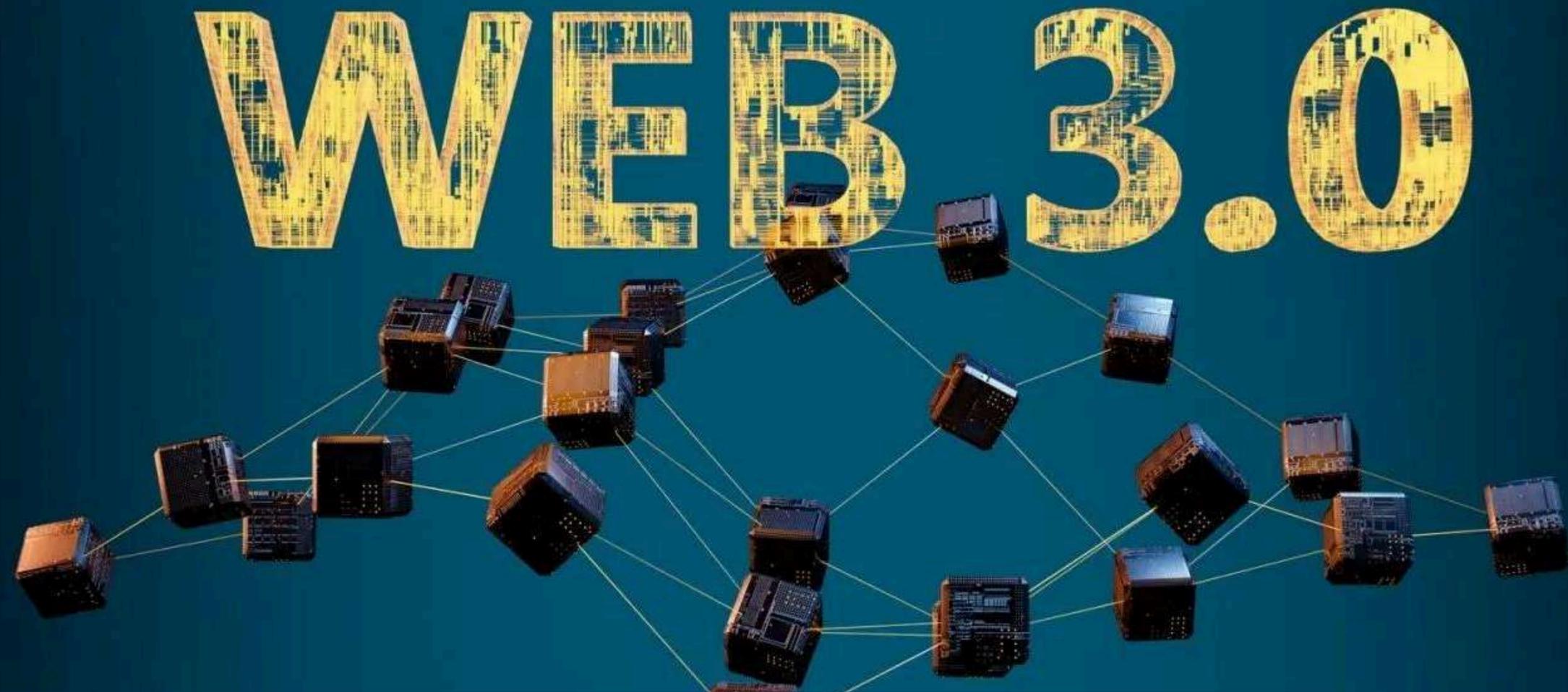
Artist Beeple sold the NFT of this digital artwork for 69M \$



Medical records, identity cards, passports, driving licences, birth certificates too may be saved in a blockchain



If a user loses its **private key** to access a blockchain, there is no central entity that can give back his/her access back: the access is **lost forever**



Web 3.0 is the next evolution of the Web, and it is based on blockchain

2015-present

1991-2014



Web 3

No Intermediaries,
Decentralized



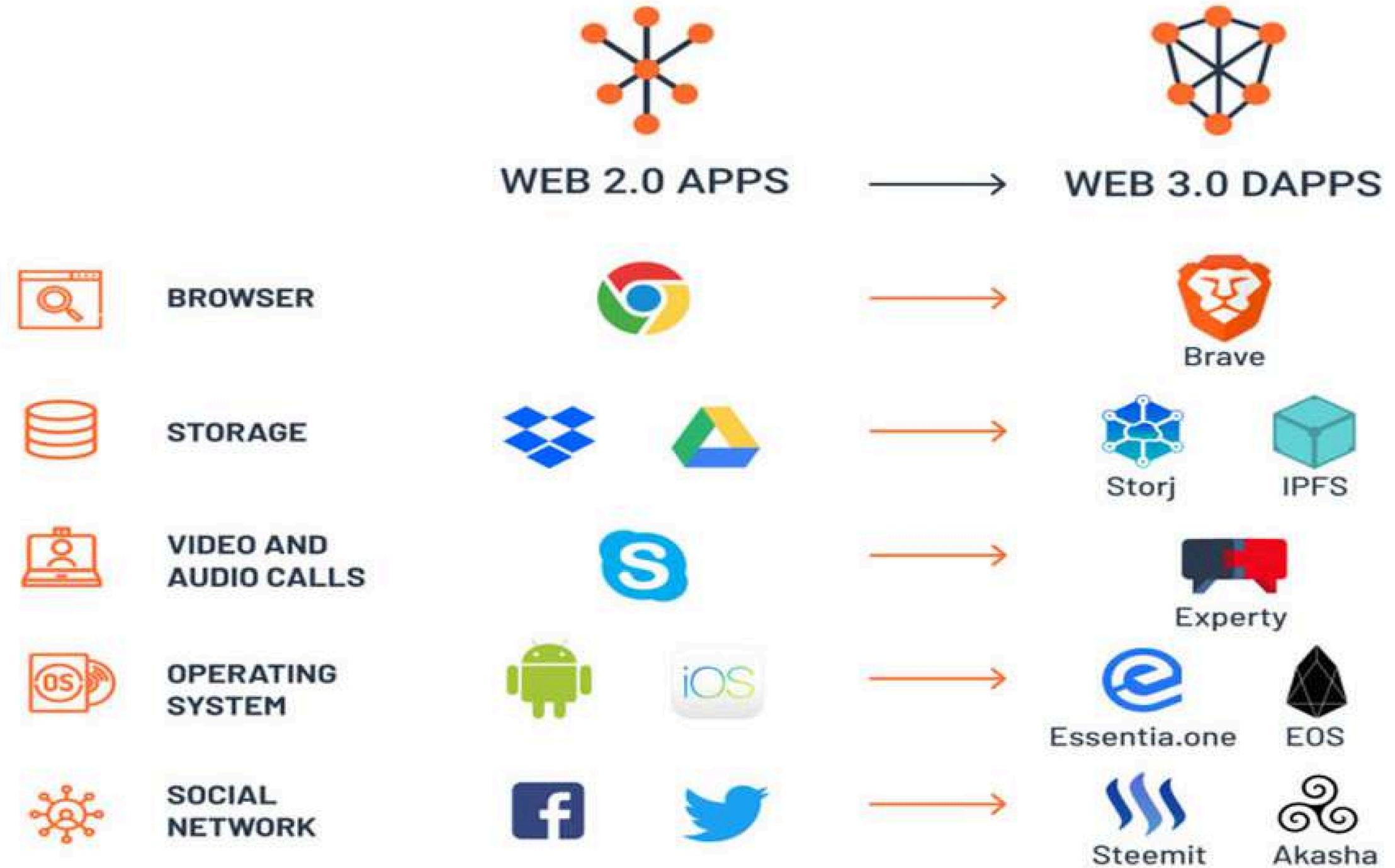
Web 2.0

Participatory,
Centralized



Web 1.0

"Read Only",
Decentralized



There will be a **blockchain equivalent** of each app and service we employ today: "**Dapps**" (decentralized apps)

DAO Operating Systems

ARAGON DaoStack DaoHaus
COLONY Syndicate Orca CW

Investment DAOs

MetaCartel theLAO Flamingo
Komorebi UdacityFund BitDAO
Free Company Duck DAO

Grants DAO

MetaCartel Ventures MolochDAO
Audius Grants Uniswap Grants
Mint Fund Sevens Foundation
Compound Grants Aave Grants

Protocol DAOs

MAKER Compound UNISWAP AAVE Yearn Sushi
SYNTHETIX Curve Index Coop PieDAO tornado GITCOIN
LIDO pool KeeperDAO Badger RaribleDAO Olympus
hDAO Rari Capital Balancer Cream Finance AUDIUS
Universe inverse finance Aavegotchi INSTADAPP OceanDAO

Service DAOs

RAIP GUILD DXdao PartyDAO
MetaFactory Fire Eyes DeepDAO
Reverie NeptuneDAO Llama
MetaverseDAO LexDAO dOrg
DaoHaus VitaDAO ShinyDAO
OPOLIS DoinGud DEEP WORK YGG

Social DAOs

FWB s/c Seed Club
Radicle FiatLuxDAO
Metafam KrausHaus
ProsperDAO Bright Moments
Meta Gamma Delta
SongCamp CabinDAO

Each Dapp is managed not by intermediaries like Meta or Google but by Decentralized Autonomous Organization (DAO)

DAO Operating Systems

ARAGON DaoStack DaoHaus
COLONY Syndicate Orca CW

Investment DAOs

MetaCartel theLAO Flamingo
Komorebi UdacityFund BitDAO
Free Company Duck DAO

Grants DAO

MetaCartel Ventures MolochDAO
Audius Grants Uniswap Grants
Mint Fund Sevens Foundation

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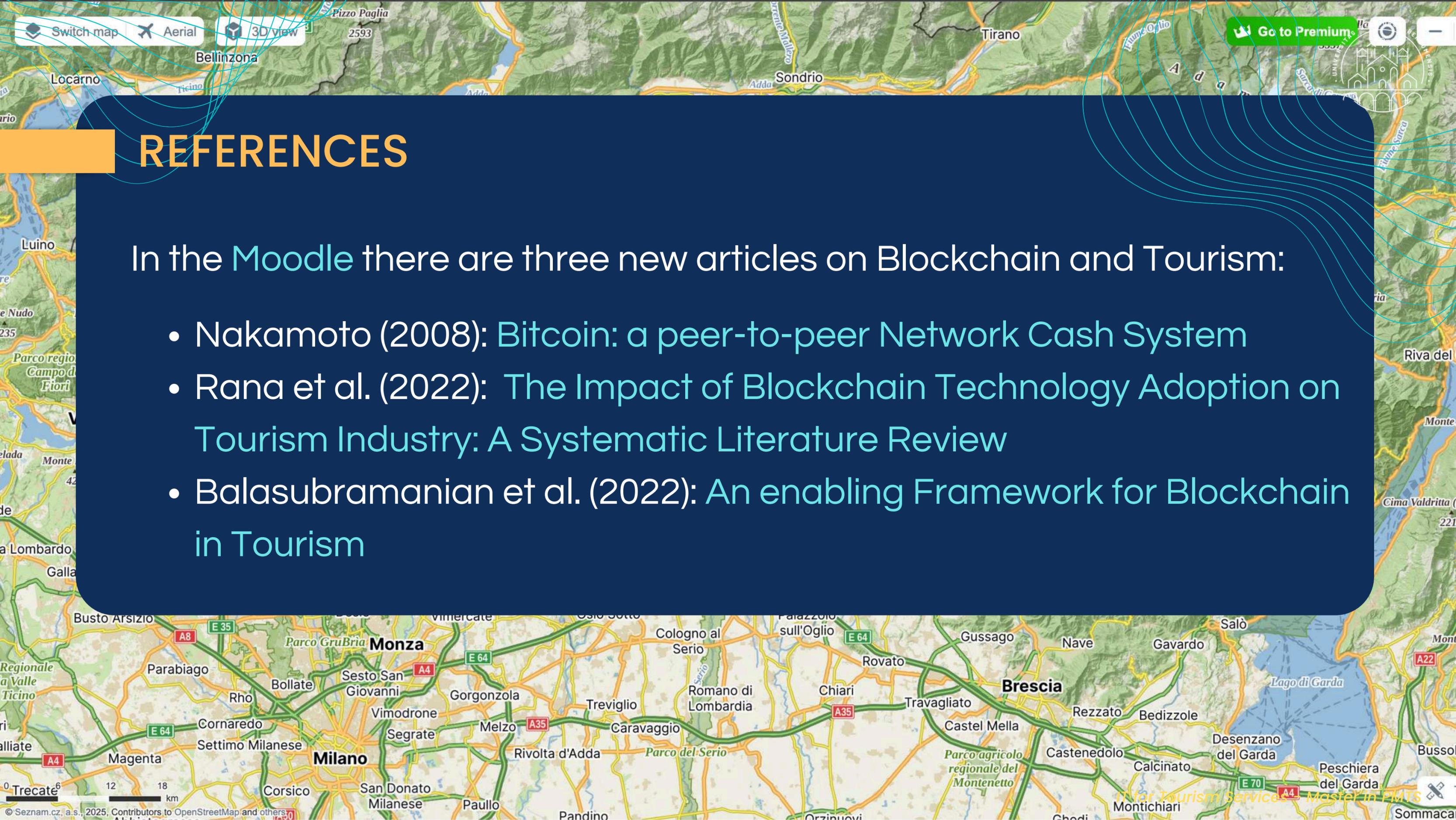
Service DAOs

RAIP GUILD DXdao PartyDAO
MetaFactory Fire Eyes DeepDAO
Reverie NeptuneDAO Llama
MetaverseDAO LexDAO dOrg

Social DAOs

FWB Seed Club
Radicle FiatLuxDAO
Metafam KrausHaus
ProsperDAO Bright Moments

DAOs are digital platforms that are co-owned and governed by the same users of the dapps. DAOs don't have a commercial interest and all of what they build is open-source.



REFERENCES

In the Moodle there are three new articles on Blockchain and Tourism:

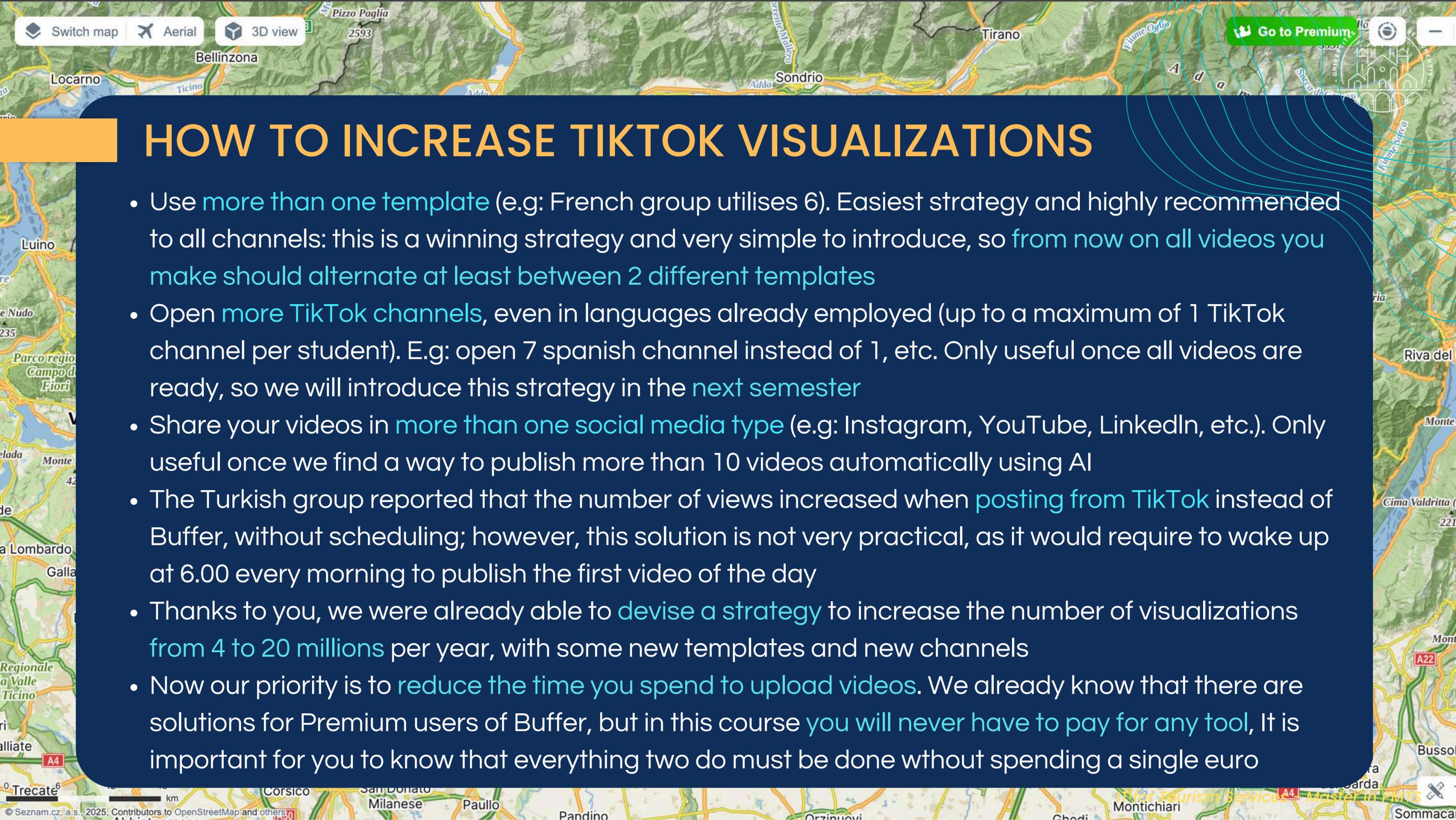
- Nakamoto (2008): [Bitcoin: a peer-to-peer Network Cash System](#)
- Rana et al. (2022): [The Impact of Blockchain Technology Adoption on Tourism Industry: A Systematic Literature Review](#)
- Balasubramanian et al. (2022): [An enabling Framework for Blockchain in Tourism](#)

PROJECT WORKS



WEEKLY UPDATE

- **First project work:**
 - Alps for Beginners in one week has **doubled again** its members!
- **Second project work:**
 - New column P with link to one of your **canva folder** with all your videos. Share it with me and give me editing permission
 - Check if every group is using whatsapp
 - New entries in the Japanese group:
 - **Elisa Caldana**: admin of the Italian channel
 - **Elisa Enrica Sandri**: admin of the second Italian channel
 - **Mouhamadou Ben A. Sylla**: join the french group
 - Update on tools alternative to Buffer that allow a queue of posts longer than 10. The group that will find a tool alternative to Buffer that allow to queue more than 10 videos for free will gain a **bonus of +2 points at the exam**
 - By now all groups should have the **selfies** taken on the stairs of Bergamo. If you want, you can convert your selfies in full videos using **HeyGen**, but before to have to sign the **Media Release form** in the Moodle to authorize the University to use your selfies (send me by email)



HOW TO INCREASE TIKTOK VISUALIZATIONS

- Use **more than one template** (e.g: French group utilises 6). Easiest strategy and highly recommended to all channels: this is a winning strategy and very simple to introduce, so **from now on all videos you make should alternate at least between 2 different templates**
- Open **more TikTok channels**, even in languages already employed (up to a maximum of 1 TikTok channel per student). E.g: open 7 spanish channel instead of 1, etc. Only useful once all videos are ready, so we will introduce this strategy in the **next semester**
- Share your videos in **more than one social media type** (e.g: Instagram, YouTube, LinkedIn, etc.). Only useful once we find a way to publish more than 10 videos automatically using AI
- The Turkish group reported that the number of views increased when **posting from TikTok** instead of Buffer, without scheduling; however, this solution is not very practical, as it would require to wake up at 6.00 every morning to publish the first video of the day
- Thanks to you, we were already able to **devise a strategy** to increase the number of visualizations **from 4 to 20 millions** per year, with some new templates and new channels
- Now our priority is to **reduce the time you spend to upload videos**. We already know that there are solutions for Premium users of Buffer, but in this course **you will never have to pay for any tool**, It is important for you to know that everything two do must be done without spending a single euro

HOW TO INCREASE TIKTOK VISUALIZATIONS

- **Mootions AI** (<https://storyteller.mootion.com/>): nice, but only useful to create visual stories, while our travel citations are too short to convert them in a visual story
- Post **avatar videos** generated by HeyGen instead of normal textual videos.
Main limitation: many short citations are so short that it only takes 2-3 seconds for the avatar to finish pronouncing them, so this type of video is better for **long citations** (8+ second). Moreover, HeyGen avatars are well known by the algorithm, so it may penalize their videos; the solution is to use **randomly generated avatars** with the **AI-face-generator** tool (<https://perchance.org/ai-face-generator>)

FIRST: GENERATE A RANDOM FACE

The screenshot displays the user interface of an AI face generator. At the top, there is a 'Scratchpad' section with a 'show' button. Below it is the 'Description' field containing the text: 'brazilian woman, early 20s, dark curly hair, green eyes, Carnival backdrop, extreme close-up shot'. A white circle highlights a small globe icon to the right of the description field, with an arrow pointing to it from the text 'generate a random face'. Below the description field are several settings: 'Anti-Description (optional)' with the text 'things you don't want in the image', 'Art Style' set to 'Cinematic', 'Shape' set to 'Portrait', and 'How many?' set to '3'. A 'share these settings' button is located below these settings. A large 'generate' button with a star icon is positioned below the settings. At the bottom of the interface, three generated images of a Brazilian woman are shown. The first image is an extreme close-up of her face with green eyes and dark curly hair. The second image shows her wearing a large, colorful straw hat with feathers and jewelry. The third image is a medium shot of her with curly hair and jewelry. In the bottom right corner, there is a 'feedback' button.

generate a random face

<https://perchance.org/ai-face-generator>

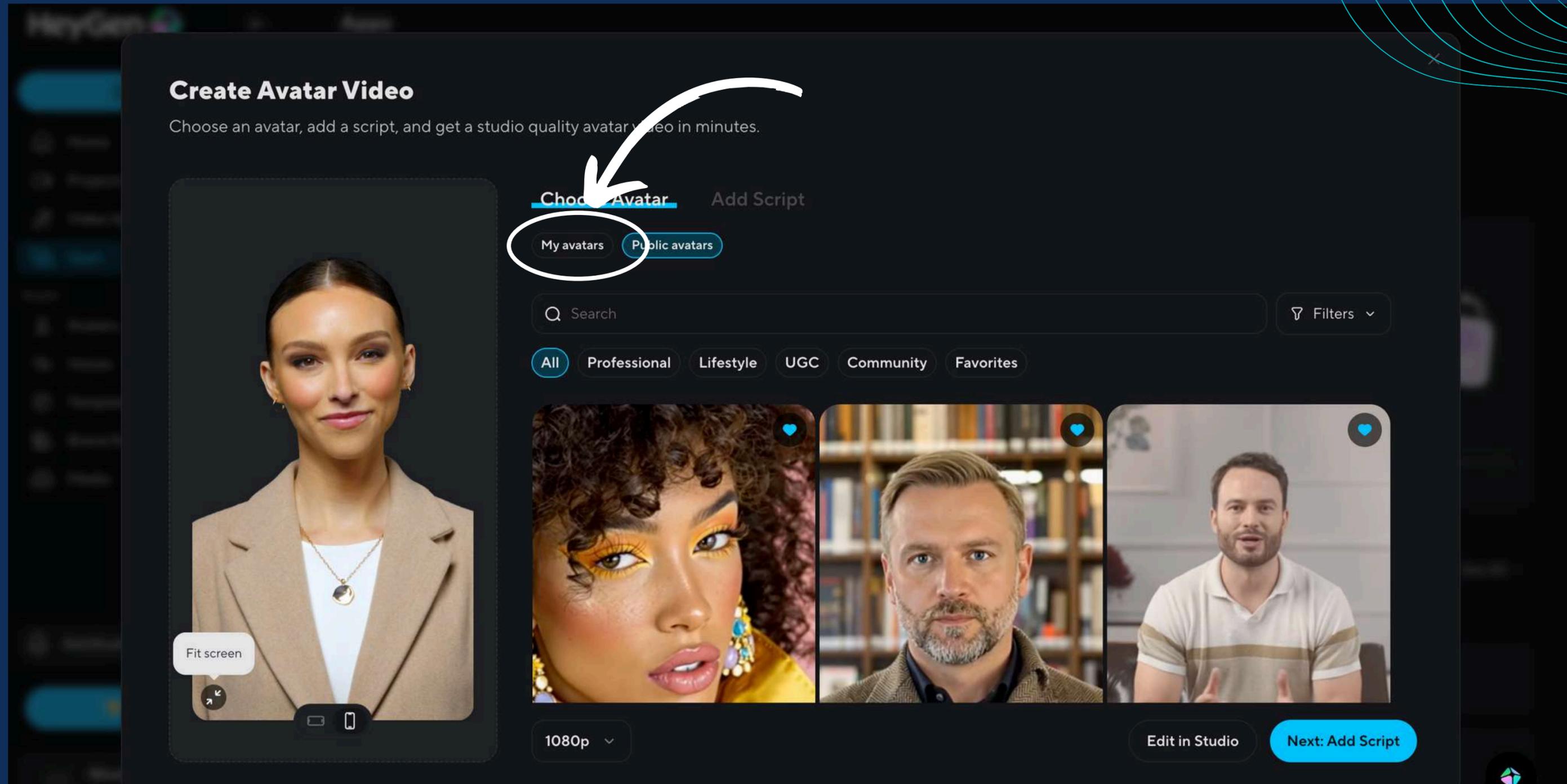


SECOND: GENERATE AN AVATAR MOVIE

The screenshot displays the HeyGen website interface. On the left is a dark sidebar with the HeyGen logo at the top, a 'Create' button, and navigation links for Home, Projects, Video Agent (Beta), Apps (circled in white), Assets, Avatars, Voices, Templates, Brand Kit, and Media. At the bottom of the sidebar are a Notifications bell icon with '10', an 'Upgrade' button, and a user profile for 'Nicola' with '1 Free' and a right arrow. The main content area is titled 'Apps' and includes tabs for 'Recommended', 'All Apps', and 'Integrations'. Below this is the 'Featured Apps' section with the subtitle 'Discover powerful tools and features to enhance your video creation'. It features four app cards: 'Photo to Video' (Turn photo and script into talking video), 'Translate Video' (Translate with original voice and lip sync), 'Product Placement' (Create a video ad for your product, marked 'VEO 3.1'), and 'Quick Avatar Video' (Studio quality avatar video in minutes, circled in white). A large white arrow points from the 'Quick Avatar Video' card back to the 'Apps' link in the sidebar. Below the featured apps is the 'Explore all Apps' section with the subtitle 'Browse the entire app collection' and a 'See All >' button. This section contains a grid of app cards: 'Instant Highlights' (Extract highlights from your long video), 'UGC Ad Video' (Create engaging UGC-style ads with Sora 2), 'Create AI Images' (Create images to supplement your videos), 'PPT/PDF to Video' (Convert presentations into videos), 'Face Swap' (Make any avatar your own with your face), and 'Generate AI Videos' (Generate background footage).

<https://app.heygen.com>

SECOND: GENERATE AN AVATAR MOVIE



<https://app.heygen.com>

SECOND: GENERATE AN AVATAR MOVIE

Create Avatar Video
Choose an avatar, add a script, and get a studio quality avatar video in minutes.

Choose Avatar Add Script

My avatars Public avatars

All test2 test

All avatar looks

1080p Edit in Studio Next: Add Script

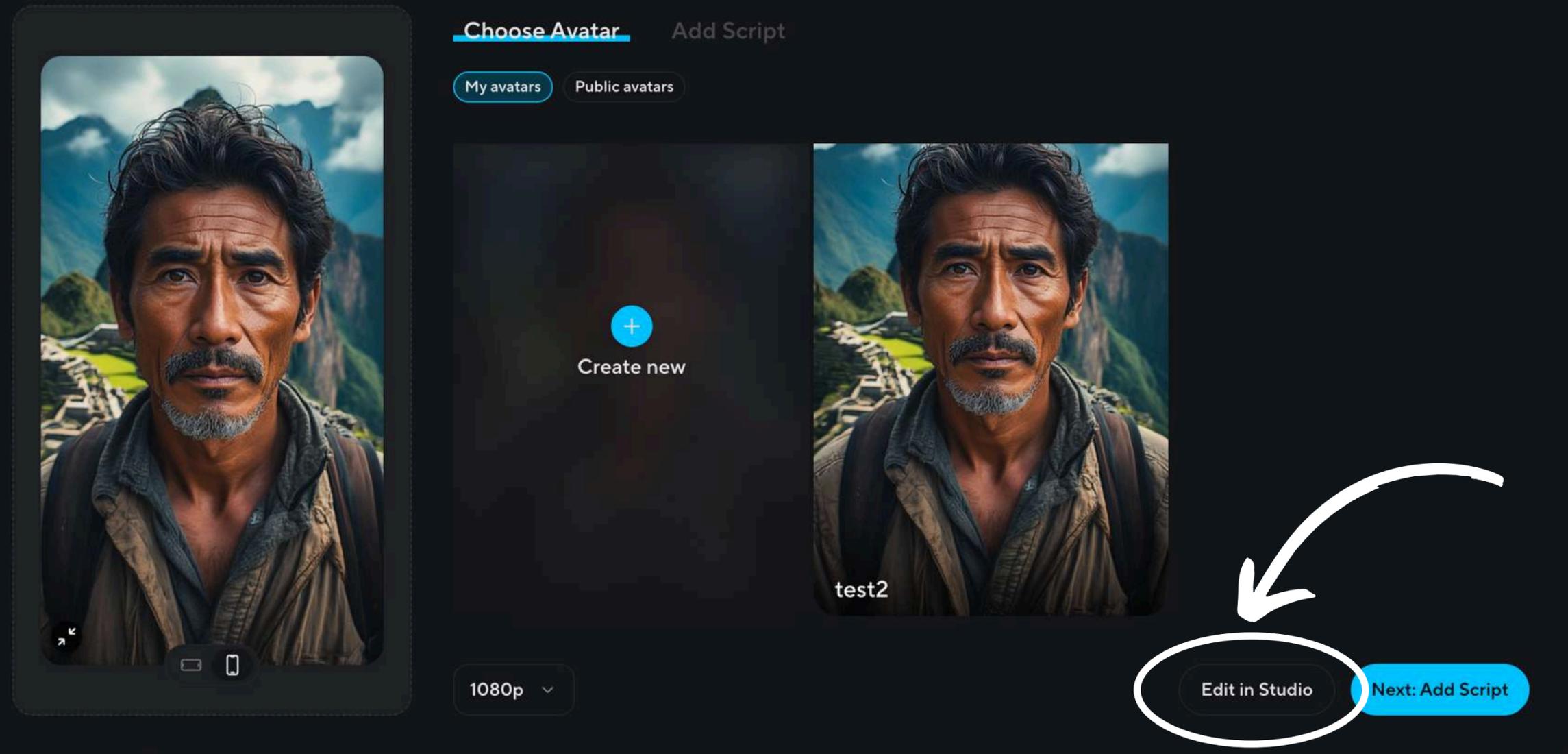
Create new → Start from a photo → Upload photo → Select photo

<https://app.heygen.com>

SECOND: GENERATE AN AVATAR MOVIE

Create Avatar Video

Choose an avatar, add a script, and get a studio quality avatar video in minutes.

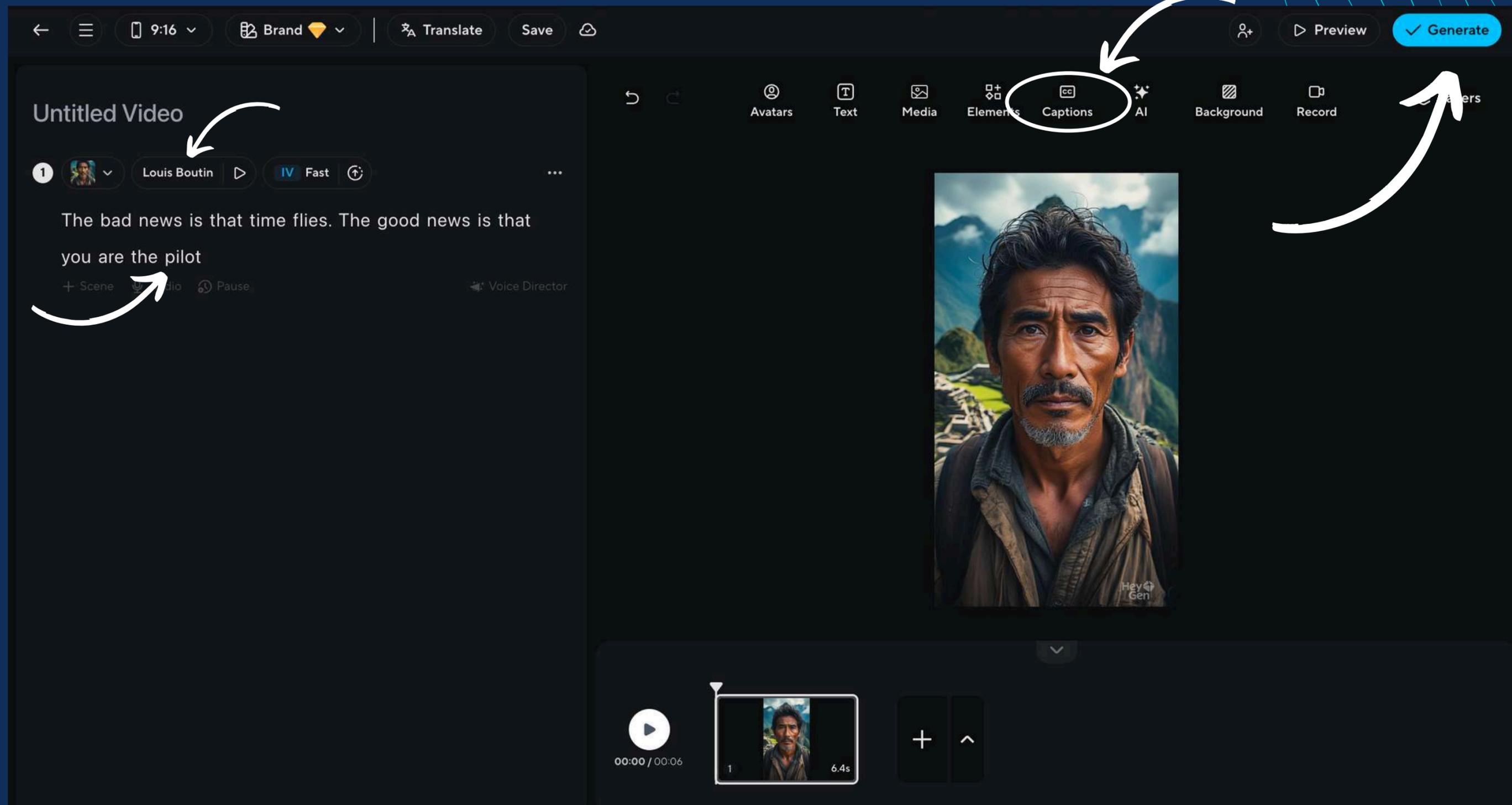


The screenshot shows the 'Create Avatar Video' interface. On the left is a large preview of an avatar. In the center, there are tabs for 'Choose Avatar' and 'Add Script'. Under 'Choose Avatar', there are buttons for 'My avatars' and 'Public avatars'. A 'Create new' button with a plus sign is also visible. To the right, a smaller preview of the same avatar is shown with the label 'test2'. At the bottom, there is a '1080p' resolution selector and two buttons: 'Edit in Studio' (circled in white with an arrow pointing to it) and 'Next: Add Script'.

<https://app.heygen.com>



SECOND: GENERATE AN AVATAR MOVIE



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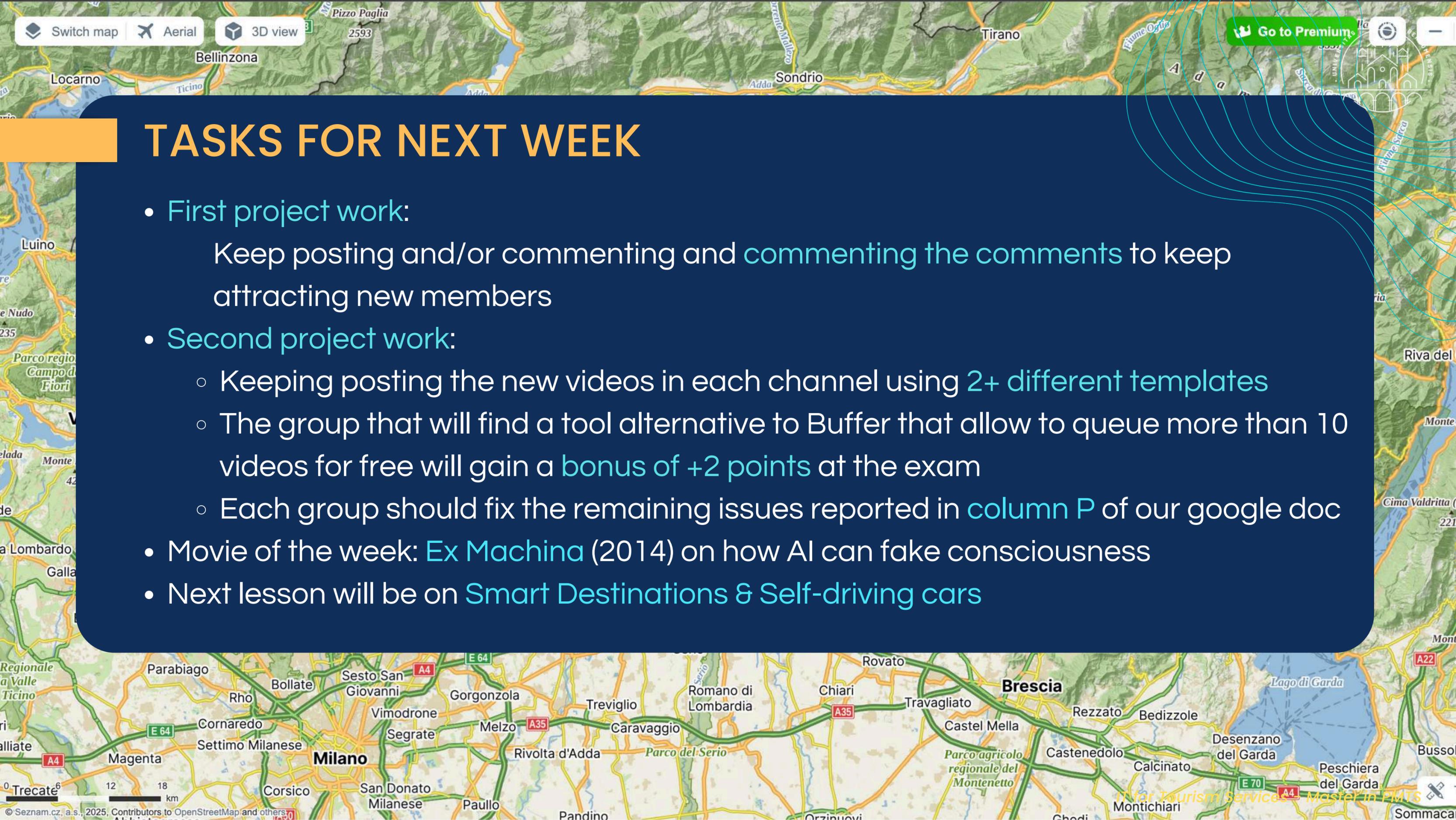
The screenshot shows the HeyGen app interface. At the top, there are navigation icons and a 'Generate' button. Below that, there are tabs for 'Avatars', 'Text', 'Media', 'Elements', 'Captions', 'AI', 'Background', and 'Record'. The 'Captions' tab is highlighted with a white circle and an arrow. The main area shows a video preview with a man's avatar and the text 'The bad news is that time flies. The good news is that you are the pilot'. There are also buttons for 'Scene', 'Audio', 'Pause', and 'Voice Director'. At the bottom, there is a play button and a thumbnail of the video.

Main limitations for non-premium users:

- 1. Videos are in 720p instead of 1080p**
Solution: upscale to HR using <https://www.topazlabs.com/tools/hd-video-converter>
- 2. HeyGen logo at the bottom right**
Solution: remove it using <https://online-video-cutter.com/remove-logo>
- 3. Only 3 videos can be created per month**
Solution: use the accounts of all the channel members

→ Better to use HeyGen to generate **long videos** instead of short videos

<https://app.heygen.com>



TASKS FOR NEXT WEEK

- **First project work:**
 - Keep posting and/or commenting and **commenting the comments** to keep attracting new members
- **Second project work:**
 - Keeping posting the new videos in each channel using **2+ different templates**
 - The group that will find a tool alternative to Buffer that allow to queue more than 10 videos for free will gain a **bonus of +2 points** at the exam
 - Each group should fix the remaining issues reported in **column P** of our google doc
- Movie of the week: **Ex Machina** (2014) on how AI can fake consciousness
- Next lesson will be on **Smart Destinations & Self-driving cars**