

The background of the slide is a dark, circular microscopic image of a plant stem cross-section. It shows a central vascular cylinder surrounded by cortical cells and a thick, multi-layered cork cambium. The cellular structure is detailed, with various cell types and their arrangements visible.

Good practices in using **Blockchain** for the digital transformation of the medical sector

Cyfrowa przyszłość sektora ochrony zdrowia, 18. 10. 2023 Toruń, Poland



Oliver Slapal

- **2021 - Today: Data Lake, CTO & Co-Founder**
- 2020 - 2022: Metative, Blockchain Advisor to Web2 Brands
- 2019 - 2020: CE, Decentralized Venture Partner
- 2017 - 2020: Independent, Decentralized Finance Advisor

What is Blockchain?

SpO2 98%

SpO2 97%

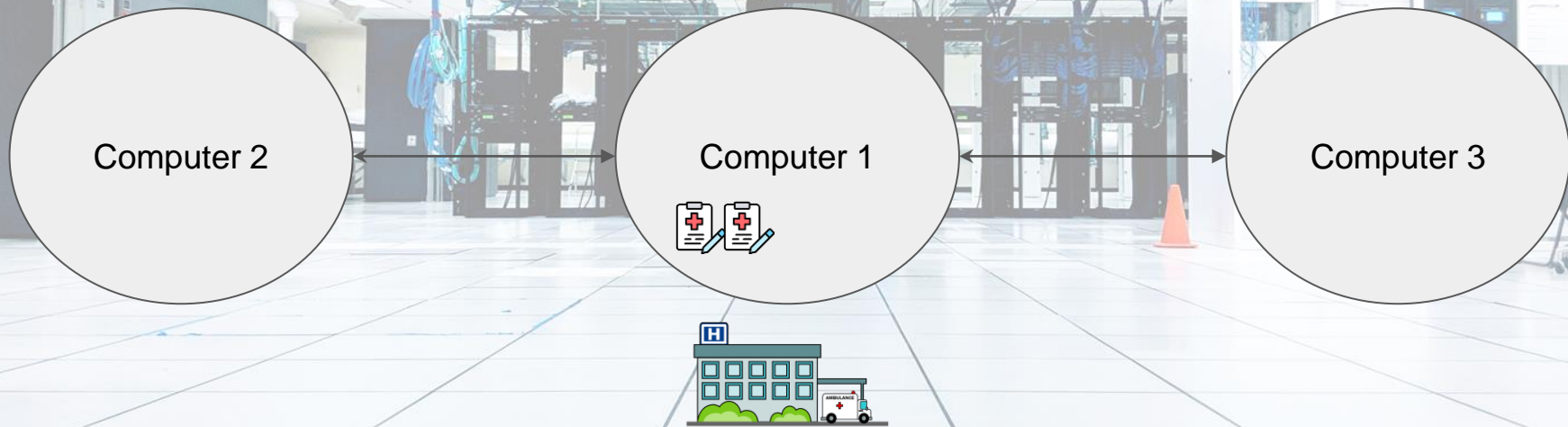
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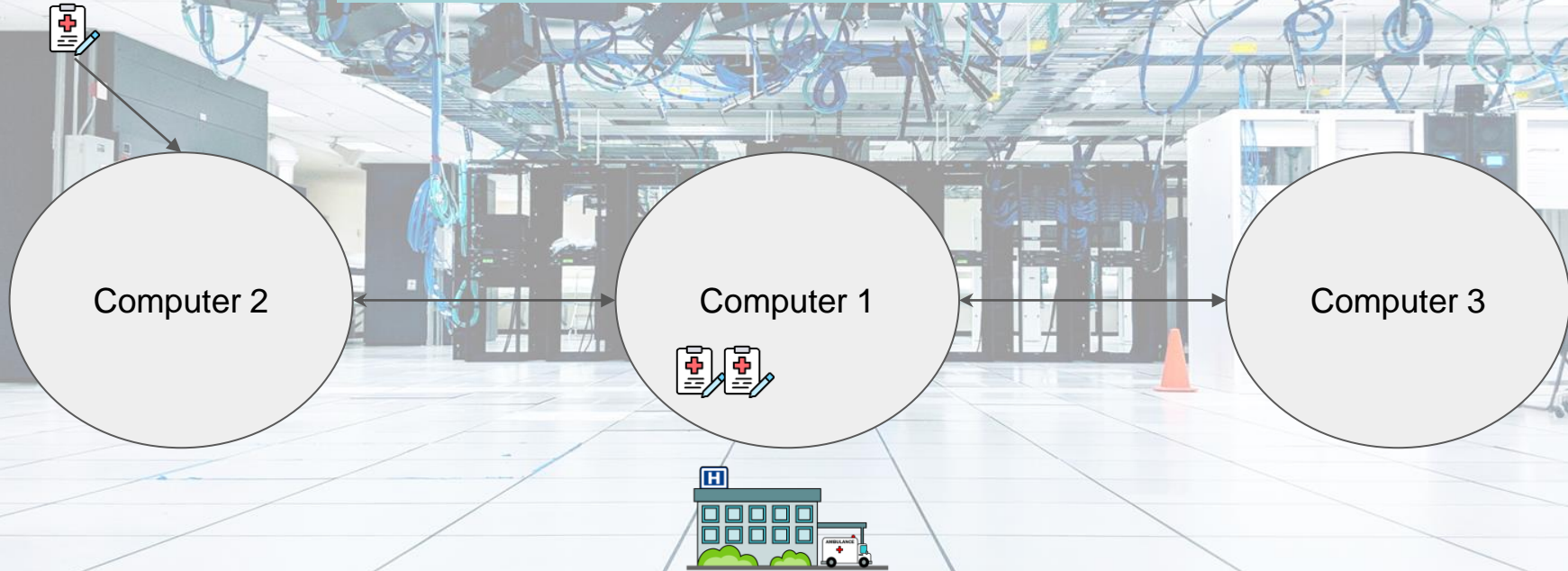
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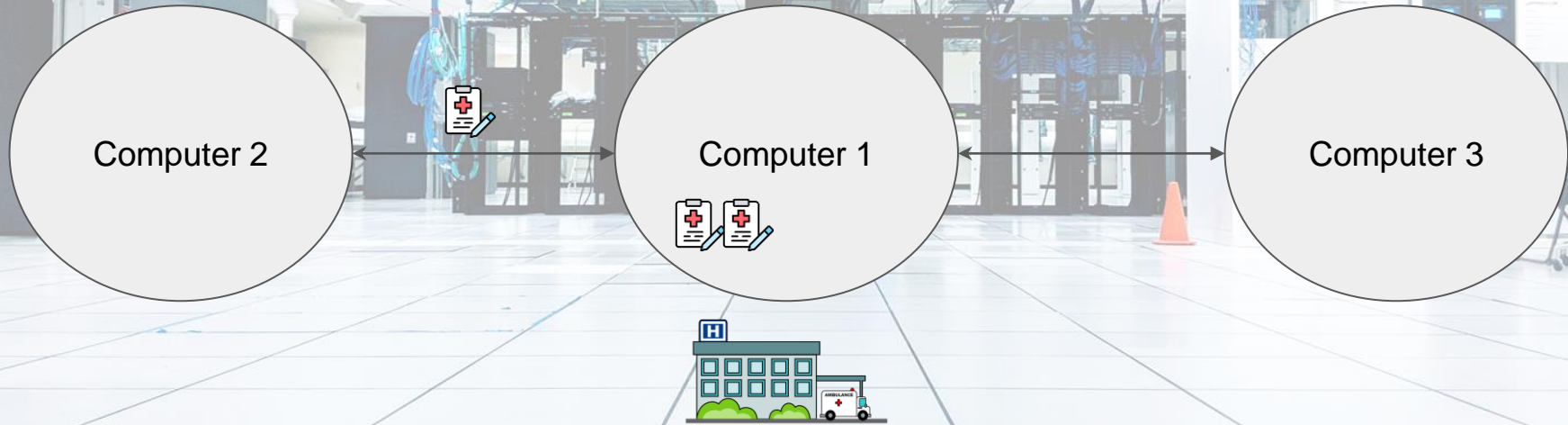
What is Blockchain centralised database?



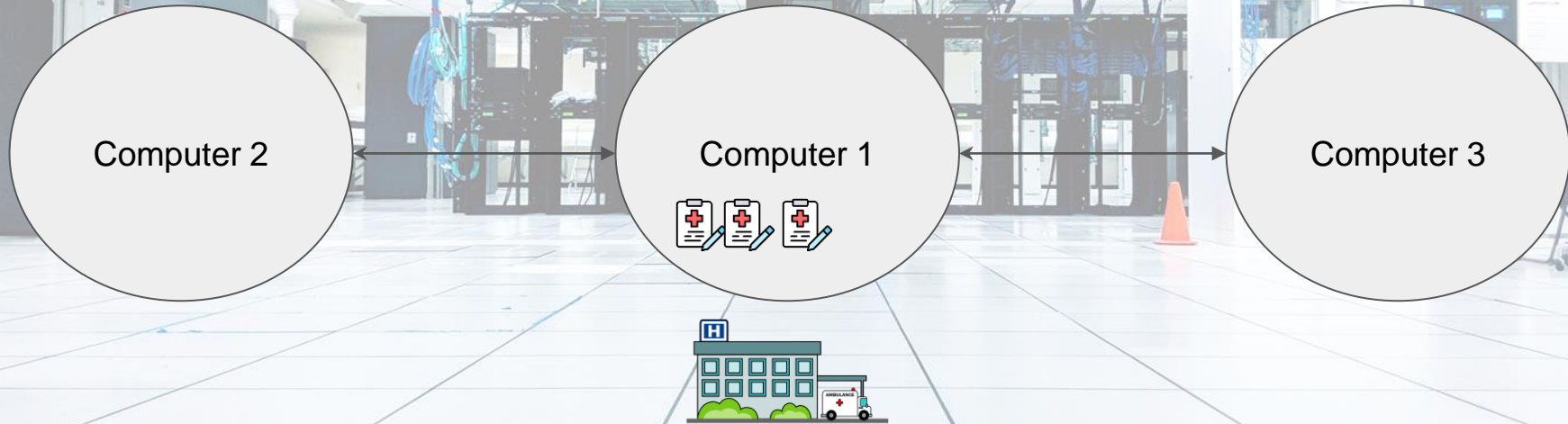
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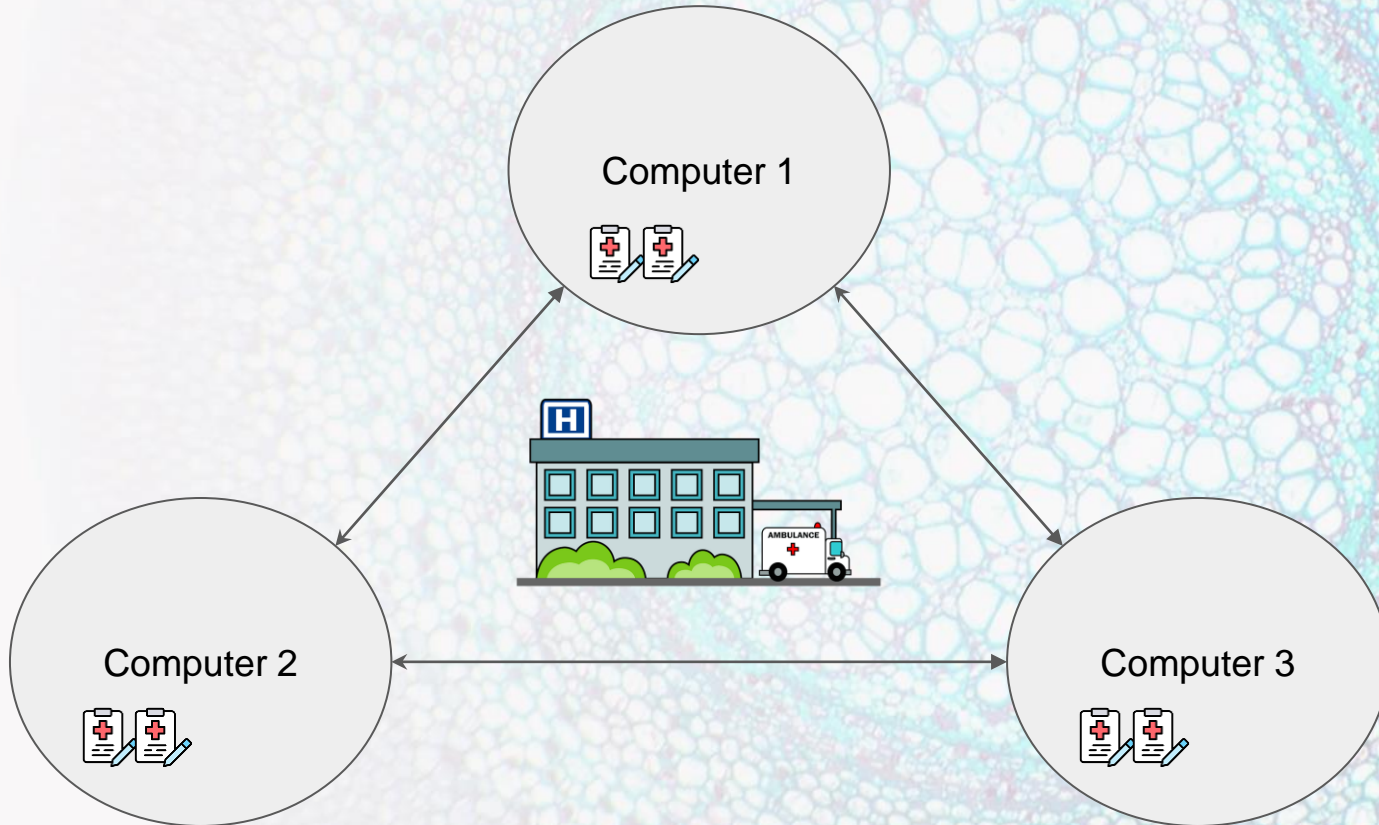
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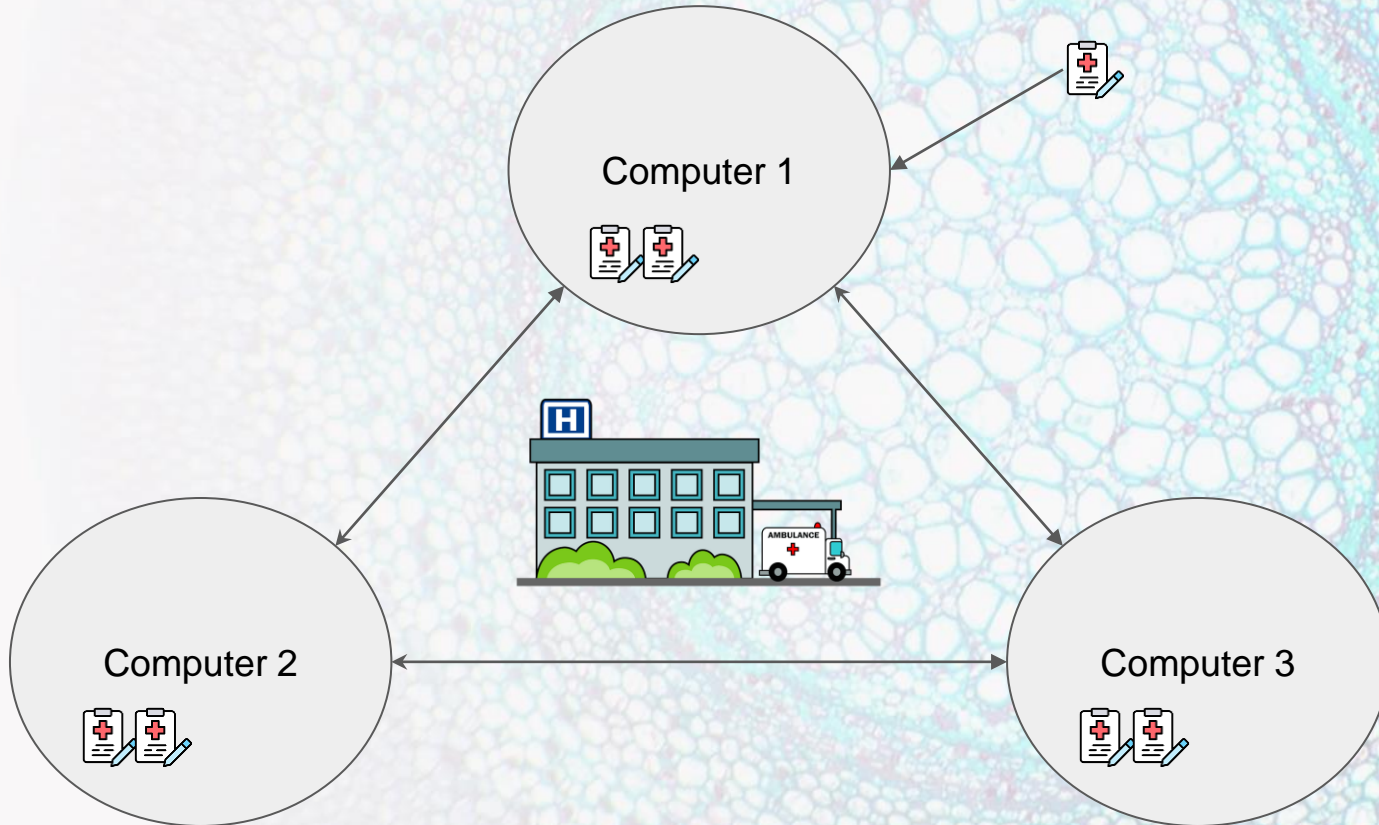
What is Blockchain centralised database?



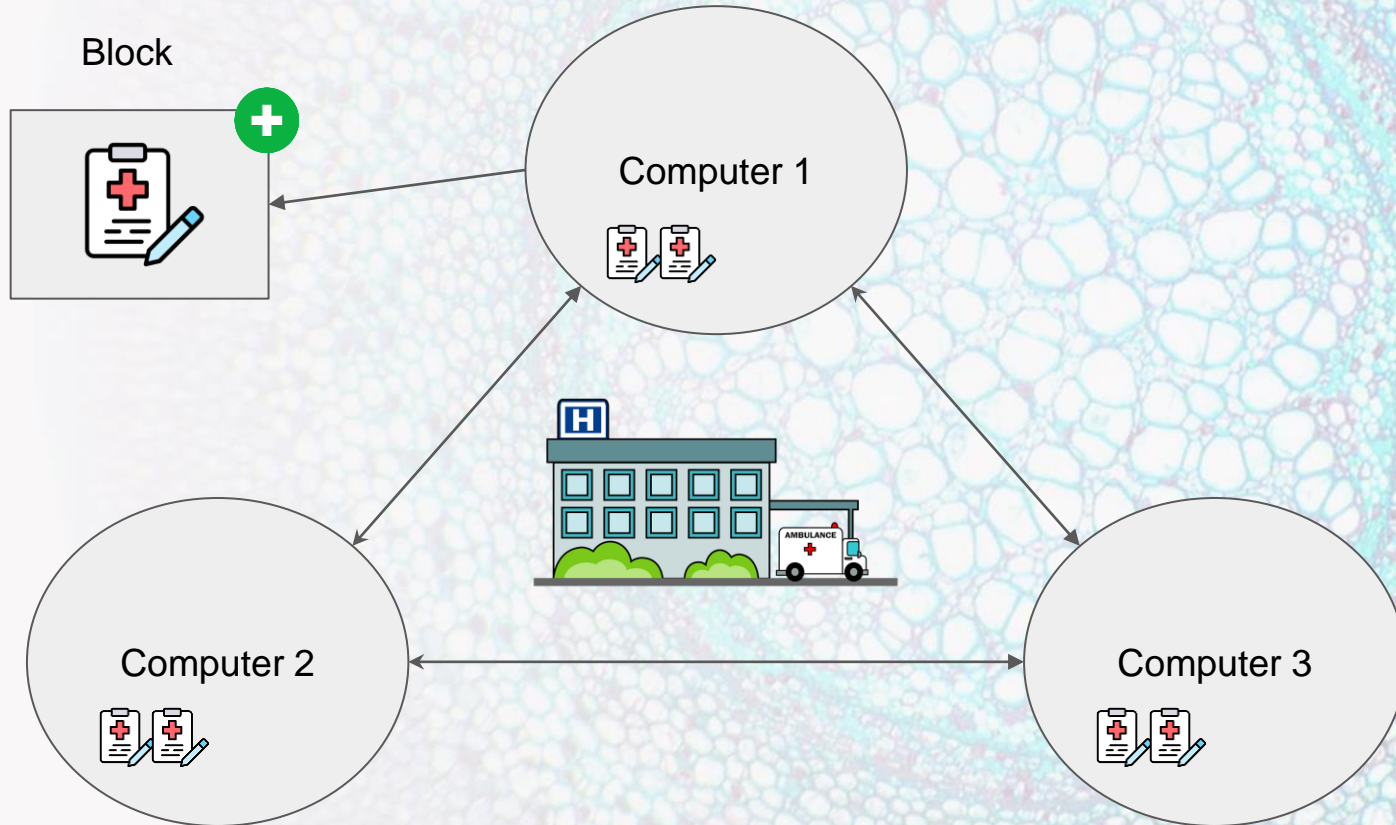
What is Blockchain?



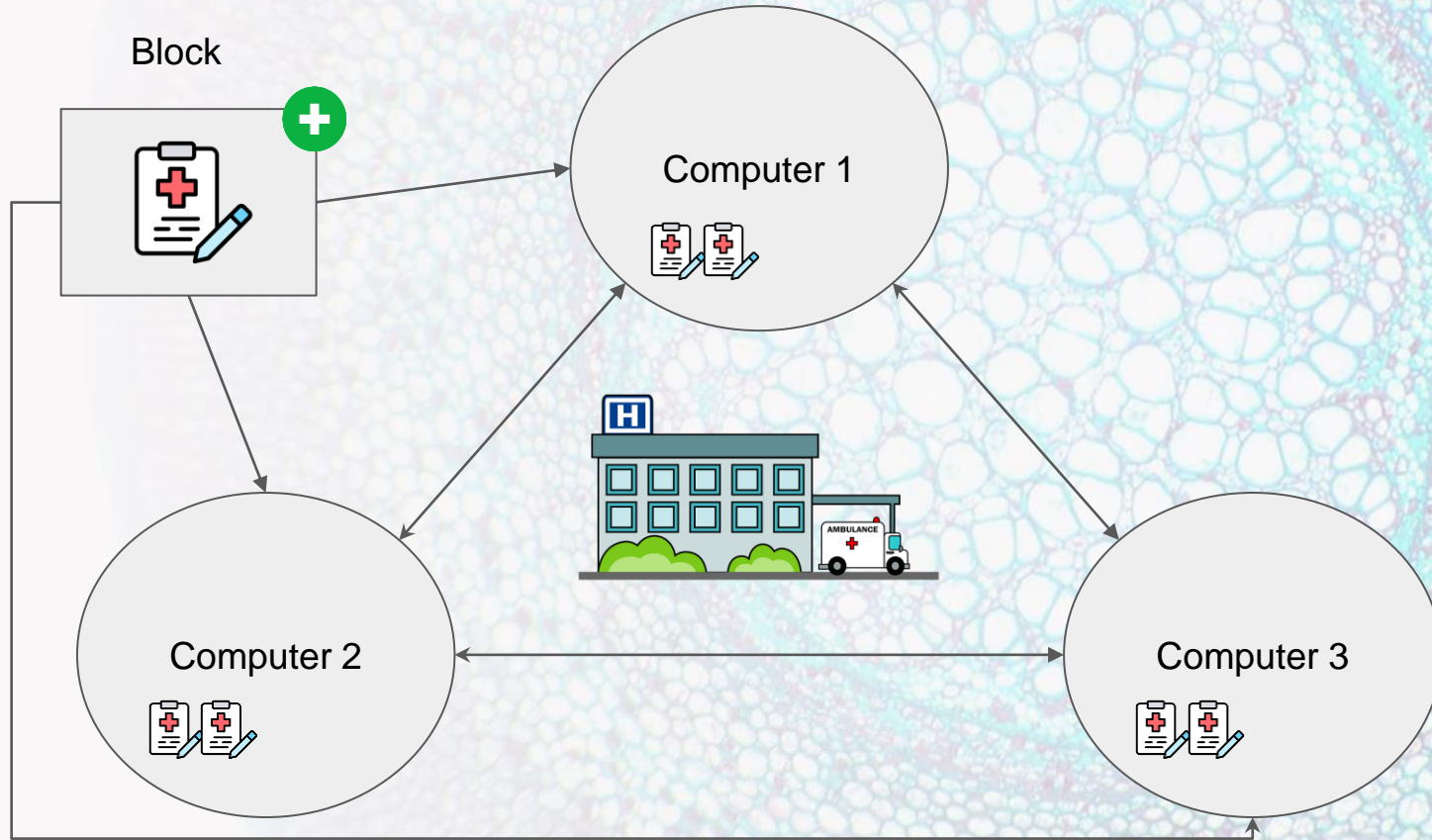
What is Blockchain?



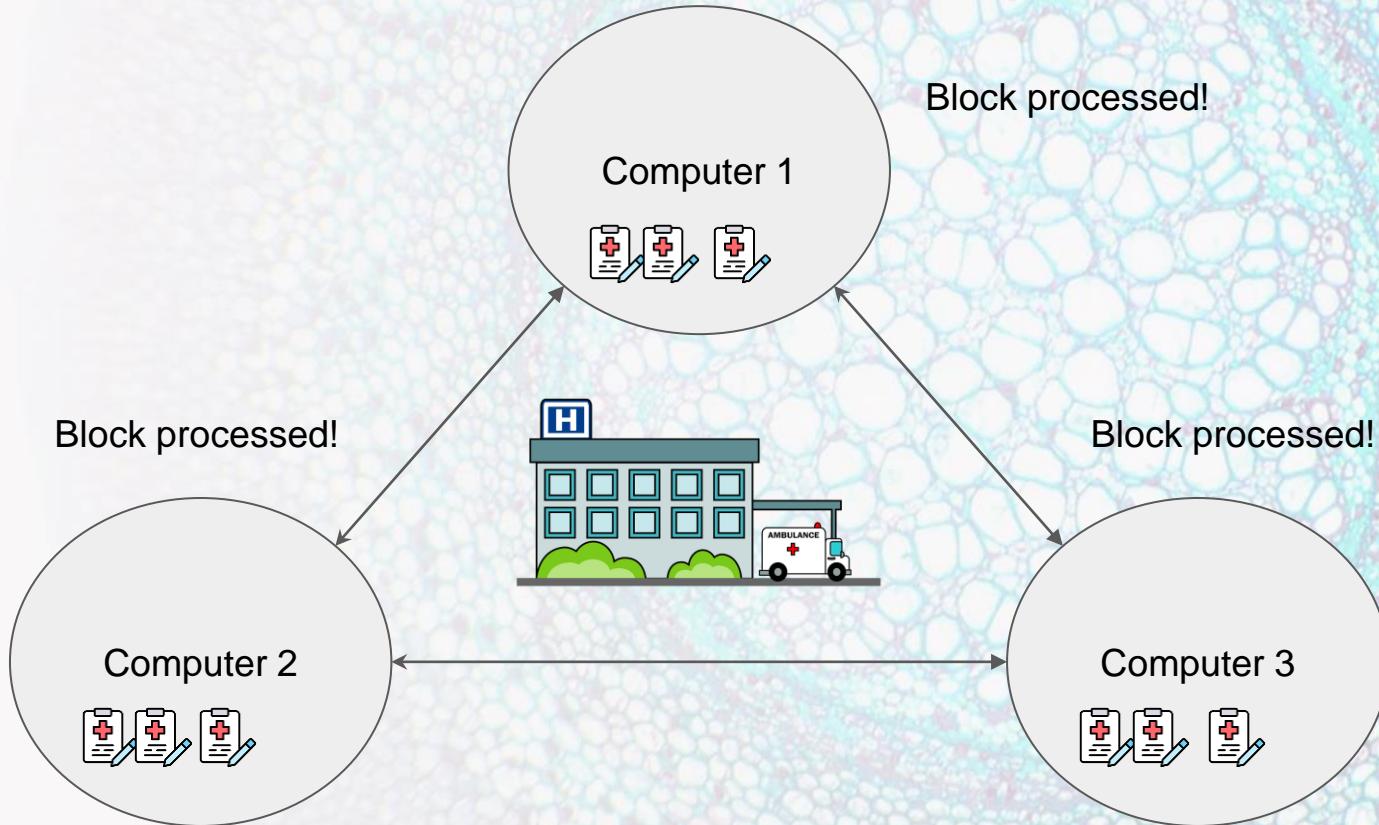
What is Blockchain?



What is Blockchain?



What is Blockchain?



What is Blockchain?

Decentralized

No single point of failure

Shared Infrastructure

Transparent

Every actor sees every operation

Operations can be verified

Immutable

State cannot be changed or altered

What is Blockchain?



+ 1000 more



Not every Blockchain is public.

Who uses Blockchain?



Who uses Blockchain?



Who uses Blockchain in Healthcare?



Who uses Blockchain in Healthcare?



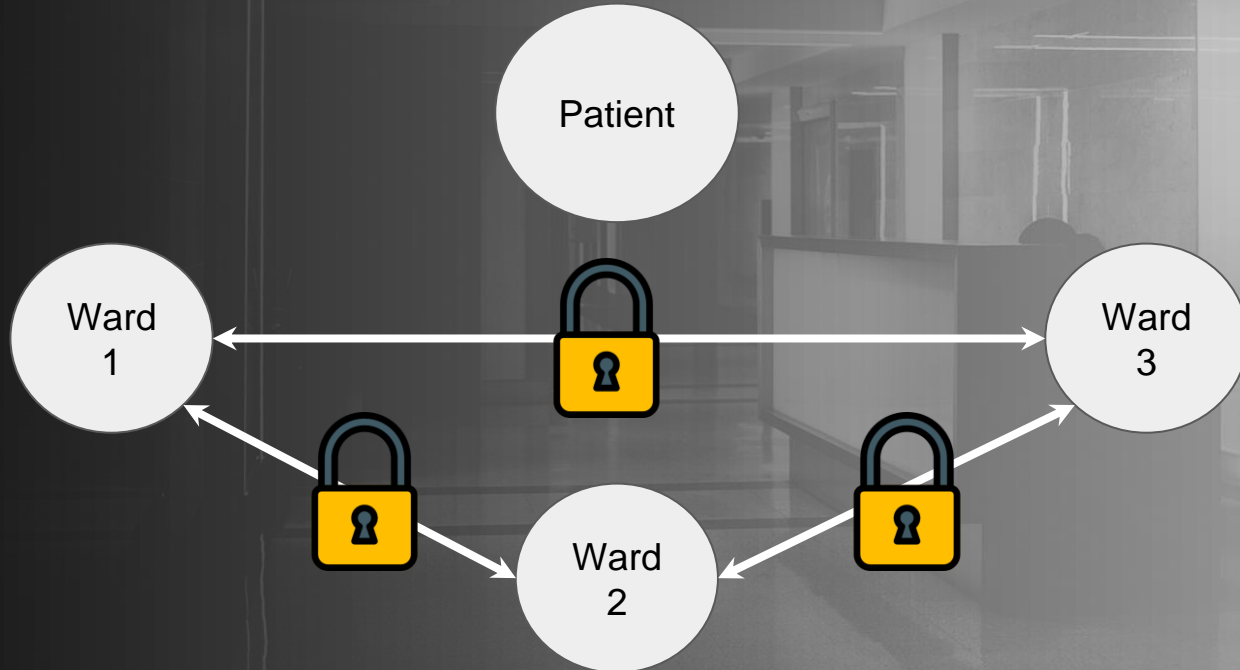
Yet, there are solutions to overcome that Blockchain needs to be public to break the misconception



A dark, teal-tinted photograph of a modern office interior. The scene is dimly lit, with light coming from recessed ceiling fixtures and reflecting off the polished floor. In the foreground, a reception desk is visible, with a person sitting behind it. The background shows a long hallway with glass-walled offices on either side. The overall atmosphere is professional and high-tech.

Private Blockchains

Only certain types of users have permission – it is **permissioned**



Examples:

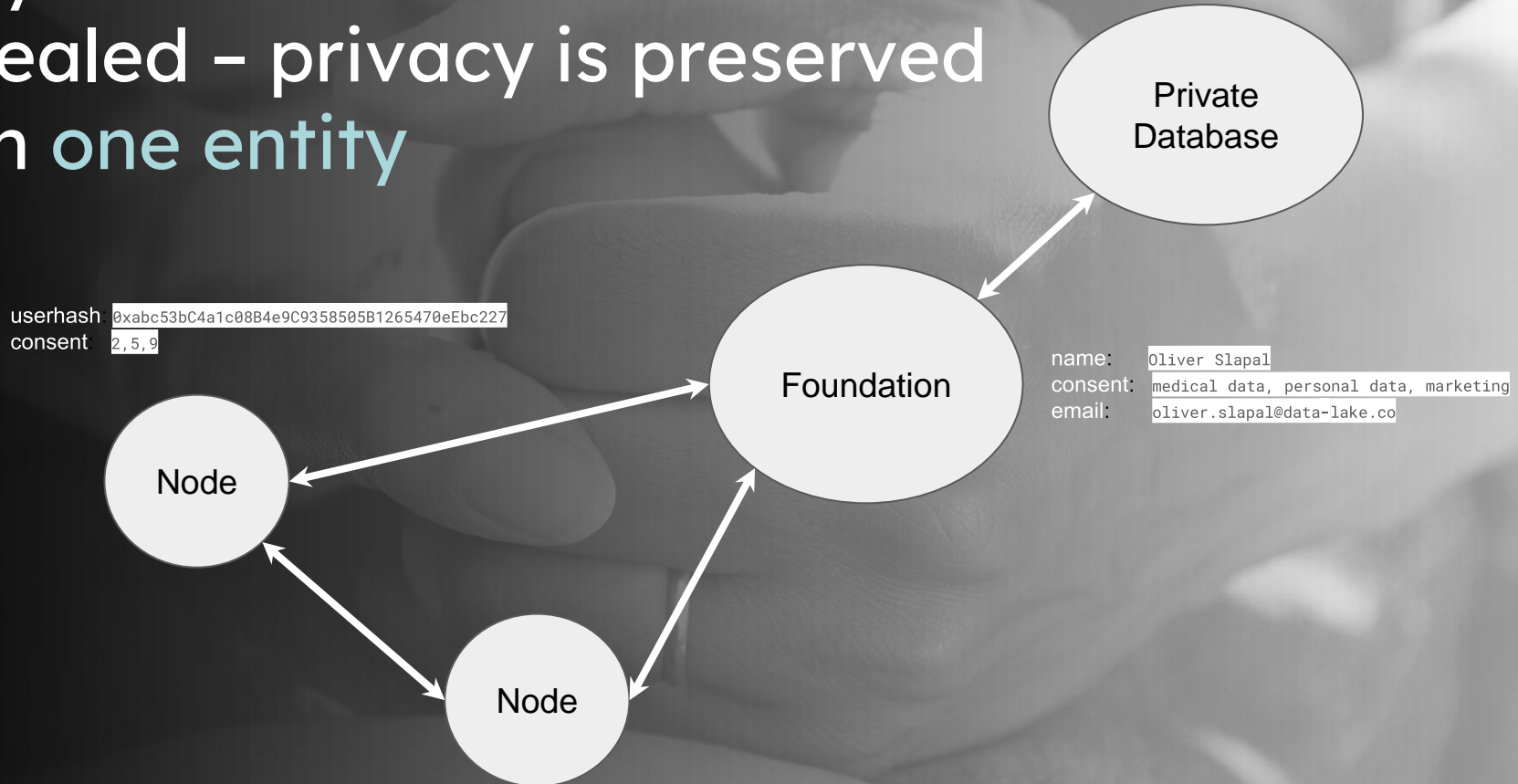
- Hedera
- IBM Blockchain
- Hyperledger Fabric





Privacy-Preserving Blockchain Architectures

Only certain information are revealed – privacy is preserved with one entity



Information is anonymized and kept in a matching table

userhash `0xabc53bC4a1c08B4e9C9358505B1265470eEbc227`
consent `2, 5, 9`

name: `Oliver Slapal`
consent: `medical data, personal data, marketing`
email: `oliver.slapal@data-lake.co`

Examples: Data Lake / Podaruj Dane

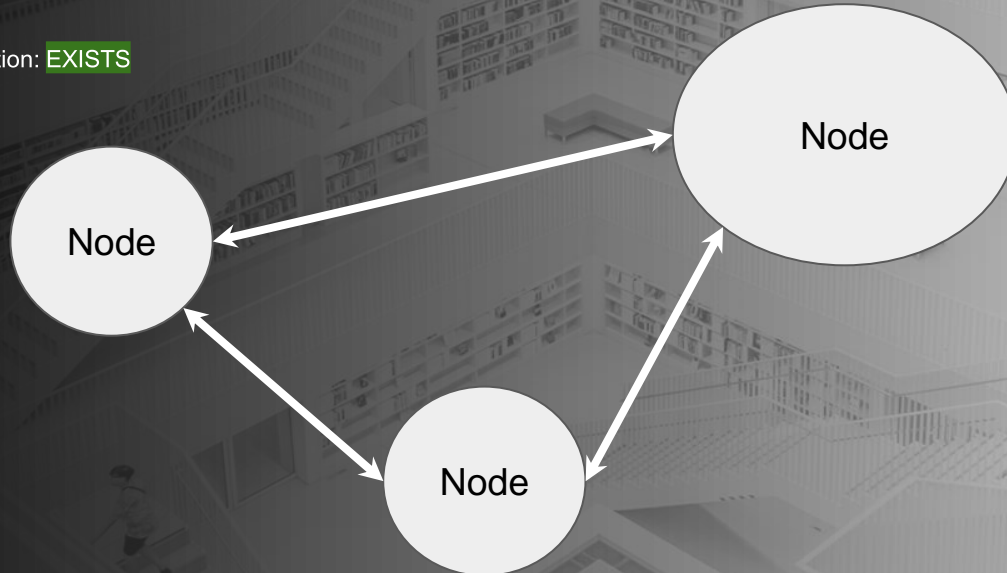
A high-angle, monochromatic blue-tinted photograph of a modern, multi-level library. The building features numerous levels connected by white railings and stairs. Each level is lined with floor-to-ceiling bookshelves filled with books. Several people are visible: one person is walking on a lower level, another is sitting on a bench, and two others are standing on an upper level. The overall atmosphere is quiet and studious.

Zero Knowledge Proofs on Blockchain

The statement isn't revealed,
just the answer – you know if a
conditions is true

Name: Oliver Slapal
Citizen: Czech Republic
True: TRUE

Transaction: EXISTS



Examples:

- Zcash
- Loopring
- zkSync



So which to choose?

Private Blockchain


Higher costs, need to run your own chain or outsource from private blockchain providers. Limited inclusivity. High centralization.

Centralized Matching Table

Need to store personal information in a centralized environment. Little to no public information. Transparency only to the ones knowing certain information about each record made.

Zero Knowledge Proofs

Data might be malformed, there are thousands of calculations made, yet they are lengthy. Difficult verifying the correctness. Limited capabilities (entries must be numbers).

A microscopic cross-section of a plant stem, showing various tissue layers. The image is dark with a teal/cyan tint. The text is overlaid on the left side of the image.

They all work...as long as patient's
privacy is preserved

Thank you!



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