Blockchain for Life Science
Beyond the Hype

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AGENDA

01 Blockchain: Myth vs. Reality

02 Blockchain for Life Sciences

03 A Few Use Cases

04 The Road Ahead

1: Blockchain: Myth vs. Reality

Myths

- Blockchain is a silver bullet for all problems[3]
- Blockchain is secured against misuse of data[4]
- Blockchain and crypto-currency are the same (especially Bitcoin!)[3]
- Blockchain ensures faster speed

Reality

- Transparency, immutability and high availability are key attributes of blockchain[2]
- Some use cases are better done using blockchain:
  - ❑ 'Intermediary-less' systems[1]
  - ❑ Transactions between parties that lack trust/relationship [1]
  - ❑ Immutability of transactions[1]
  - ❑ Incentivization of contributors (including cross-border)

1. https://www.technologyreview.com/s/610781/in-blockchain-we-trust/
2. https://hbr.org/2017/03/how-safe-are-blockchains-it-depends
3. https://medium.com/altcoin-magazine/12-myths-about-blockchain-technology-5b8e2e9d8cb0
4. https://medium.com/blockchainbistro/5-most-common-myths-about-the-blockchain-technology-and-bitcoin-fd7a97fab9c2

2: Blockchain for Life Science

Challenges

Ever-growing need for exchange of data across peer companies, external entities, etc.

Constrained by lack of trust

Re-invention of wheel

A few Blockchain applications

Drug Discovery, Pre-clinical:

- ❑ Secured insights from unpublished experiments
- ❑ Secured insights from partner ecosystem, pharma / healthcare consortium
- ❑ Secured, anonymized insights from patients

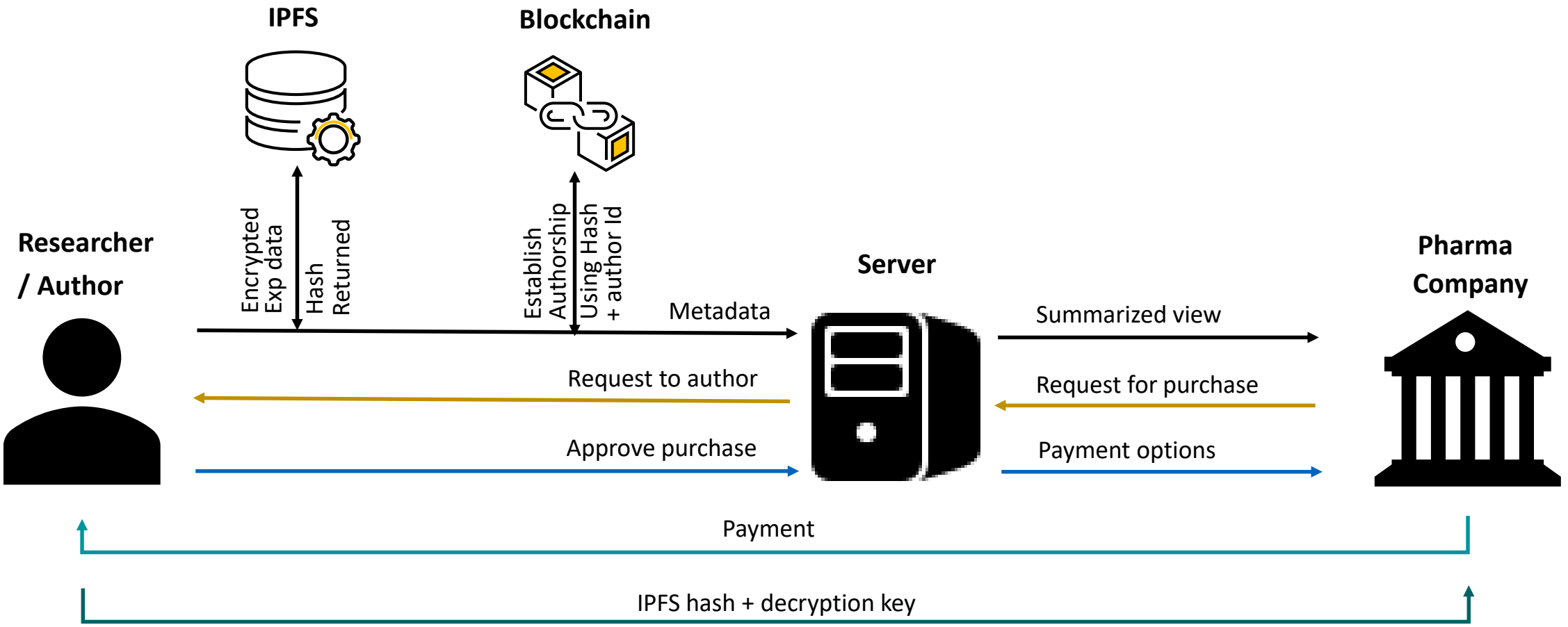
Commercial:

- ❑ Supply chain management with low 'bull-whip' effect
- ❑ Drug combination adverse-effect helpline

3.1.1: Few Use Cases: Use Case 1 – Insights from Unpublished Experiments

Title	Bringing insights from unpublished experiments in a secured way
Parties Involved	Pharma companies doing drug development, individual researchers, organizations, universities
Recommended Blockchain	Public blockchain like EOS
Value to user	Researcher / Author: Establish authorship, safe sharing of data, incentive for trading license Pharma companies: Get insights from unpublished data, select battles to fight
Incentive Type	Fiat currency, crypto-currency
Data Security	Encrypted (32-bit)

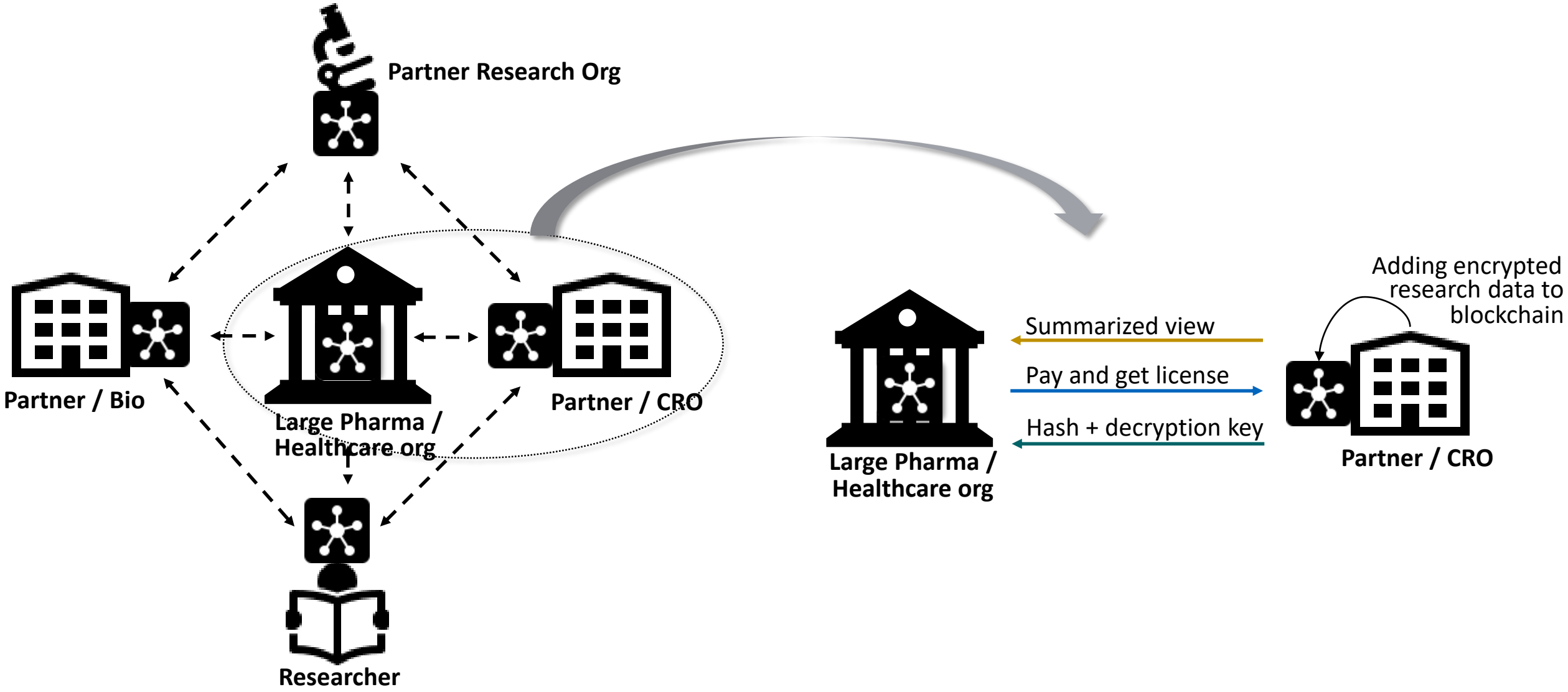
3.1.2: Use Case 1: Acquiring Unpublished Experiments - How it Works?



3.2.1: Few Use Cases: Use Case 2 – Ecosystem of Partners

Title	Building partner ecosystem for large pharma / Healthcare company for secure exchange of research insights
Parties Involved	Large pharma / healthcare company and its partners (small bio-tech, CROs, etc.)
Recommended Blockchain	Private blockchain like Hyper-ledger Fabric
Value to user	Pharma / healthcare companies: Get insights from partners, thereby saving time Smaller partners: Trusted way of sharing data with the giant pharma / healthcare company, thereby making money
Incentive Type	Fiat currency
Data Security	Encrypted (32-bit)

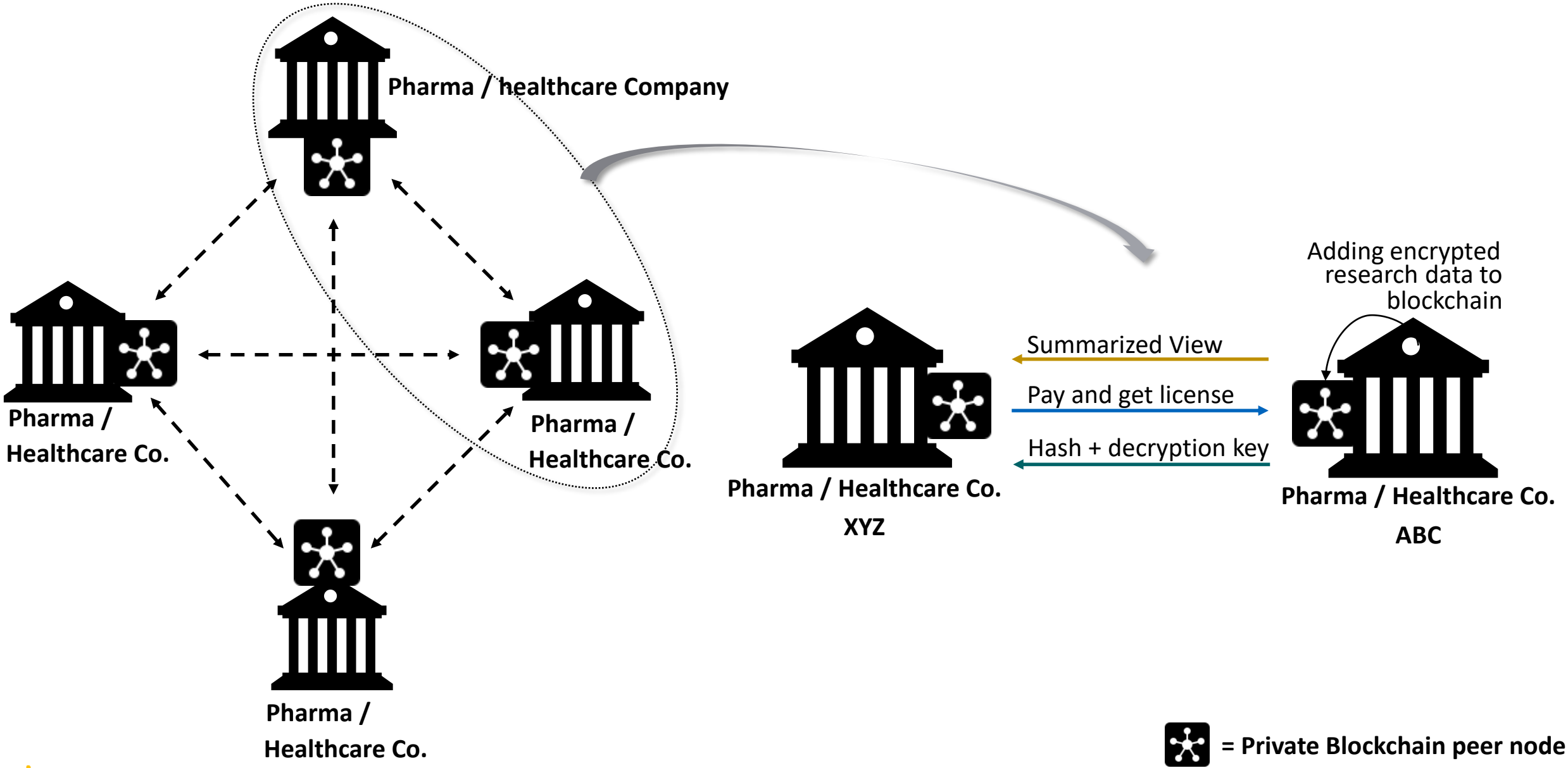
3.2.2: Use Case 2: Ecosystem of Partners - How it Works?



3.3.1: Few Use Cases: Use Case 3 – Consortium of Pharma / Healthcare Companies

Title	Building ecosystem for a consortium of pharma / healthcare companies for secure exchange of data
Parties Involved	Pharma / healthcare companies keen to collaborate in a trust-worthy way
Recommended Blockchain	Private blockchain like Hyperledger Fabric
Value to user	Trusted way of sharing data with the consortium, thereby saving time and money
Incentive Type	Fiat currency
Data Security	Encrypted (32-bit)

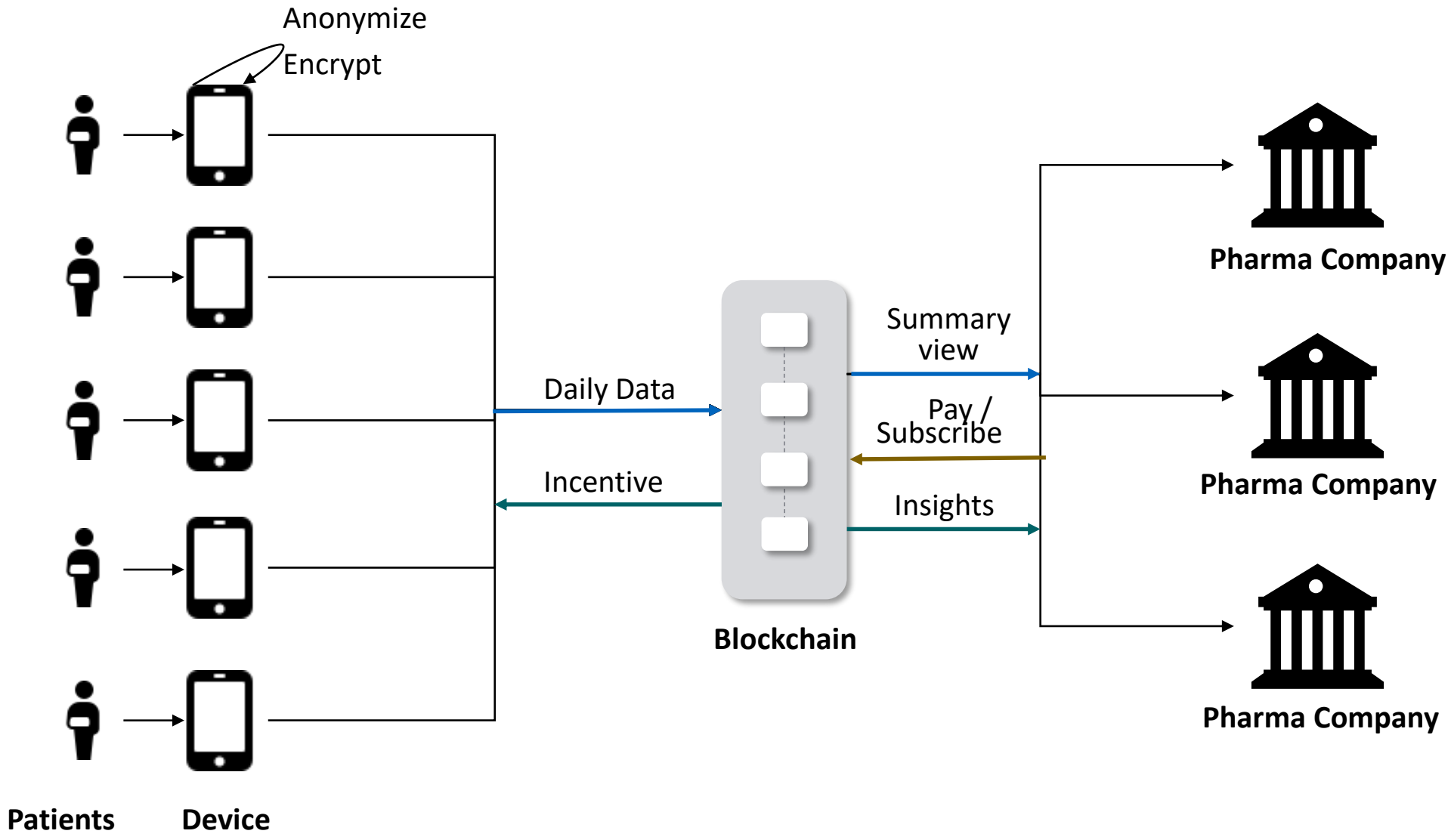
3.3.2: Use Case 3: Consortium of Pharma / Healthcare Companies - How it Works?



3.4.1: Few Use Cases: Use Case 4 – Insights from Patients

Title	Secured capturing of anonymized patient data and sharing aggregated insights to Pharma companies
Parties Involved	Pharma / Healthcare companies doing drug development, patients keen to share anonymized data in a trust-worthy way
Recommended Blockchain	Public Blockchain like EOS
Value to user	Pharma / Healthcare companies: Get insights directly from patients Patients: Cures can be made available faster; incentives
Incentive Type	Crypto-currency
Data Security	Anonymized at source, Encrypted (32-bit)

3.4.2: Use Case 4: Patient Insights - How it Works?



Note: Crypto-currency based incentive is most suitable here

4. The Road Ahead..

Blockchain enables trusted-way of data sharing which will be super-helpful for pharma / healthcare companies

Industry may see several collaborations (horizontal, vertical) through the use of Blockchain

Integration of unpublished data can revolutionize drug development

Crypto-currency can play an important role in engaging patients (across border as well)

Several new use cases may emerge as the hype fades away and rationality starts to prevail

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