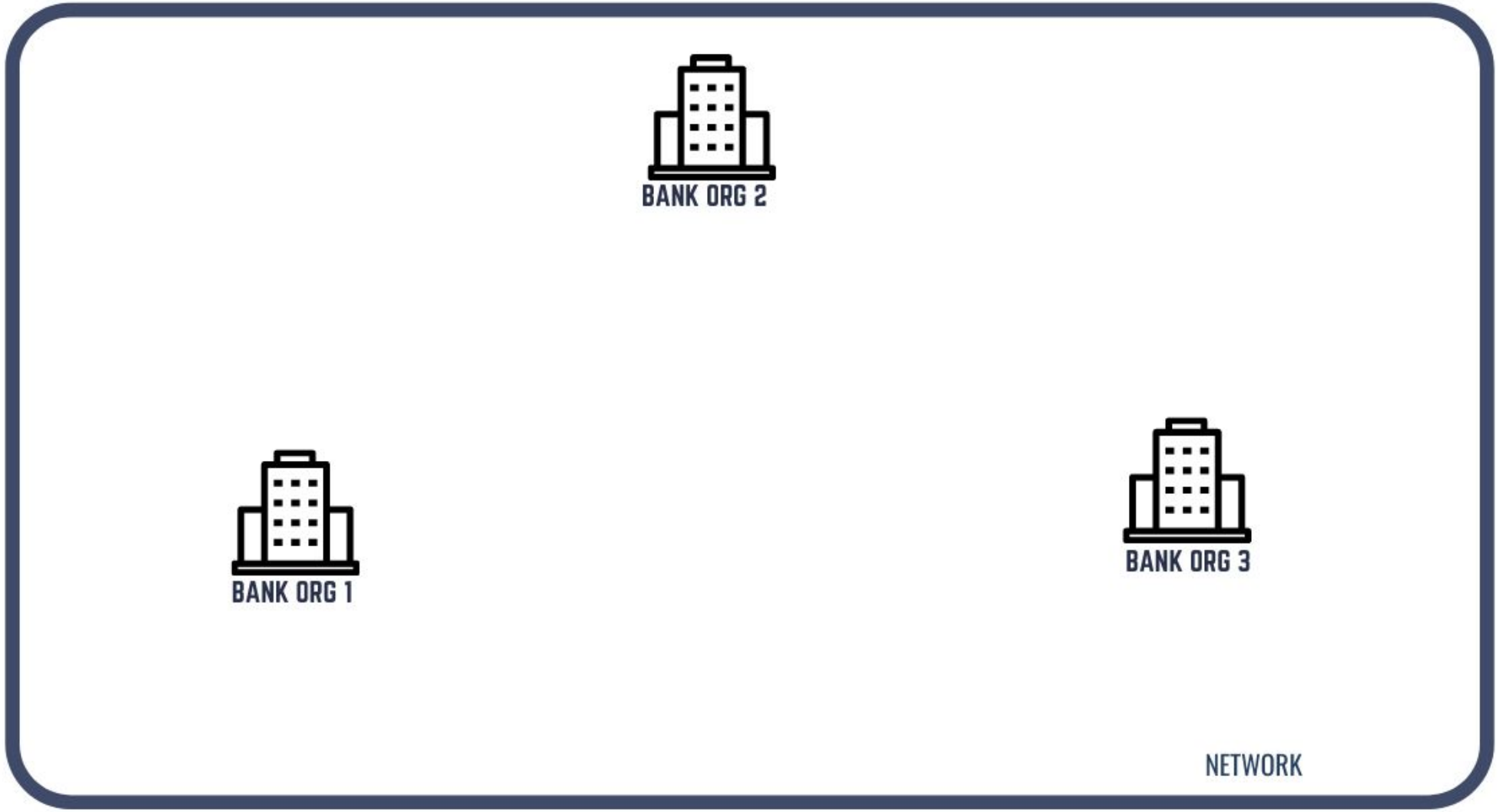
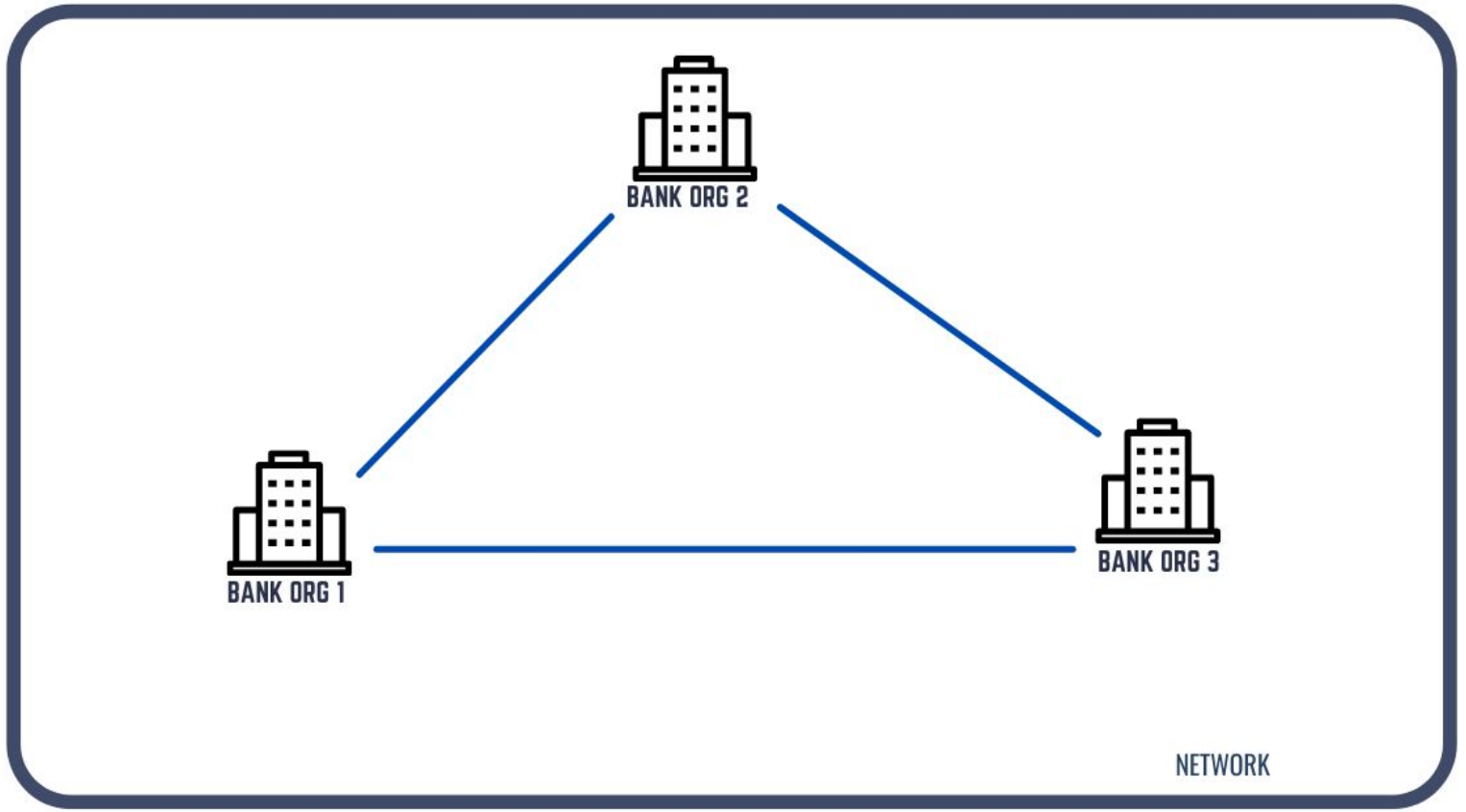
Private Data Collections

Bank Consortium



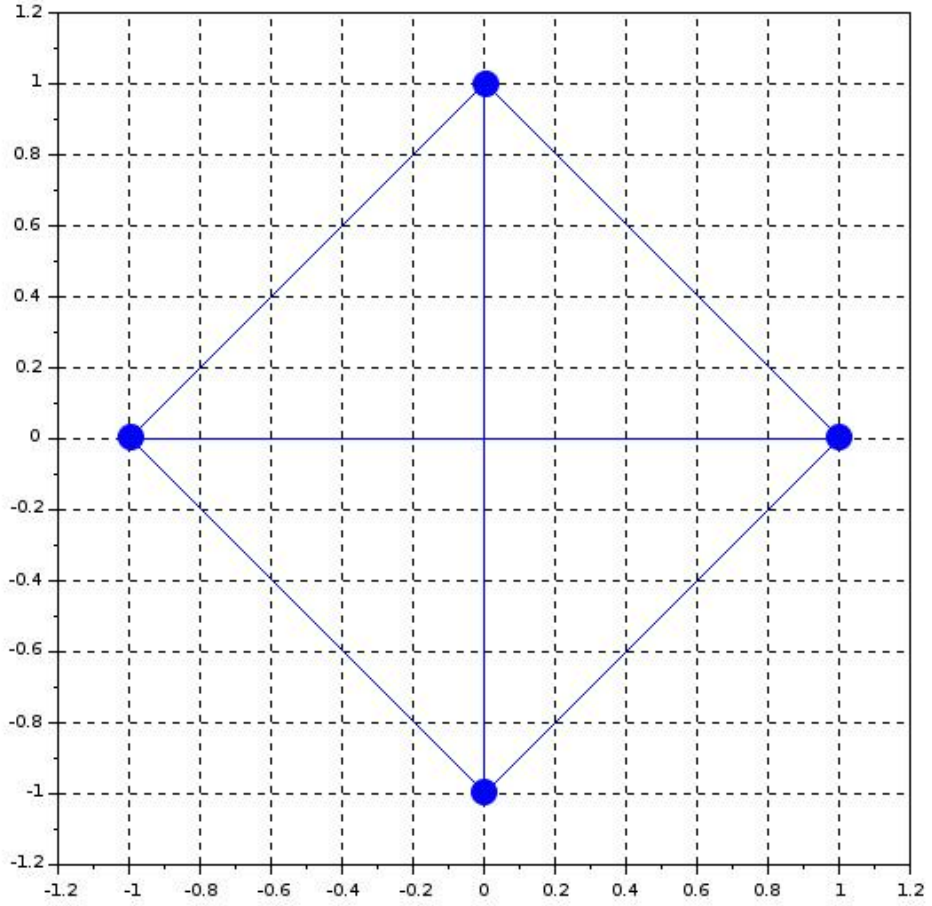
3 Organisations

- 3 Organisations
- n(n-1)/2
- 3(3-1)/2 = 3
- 3 Channels



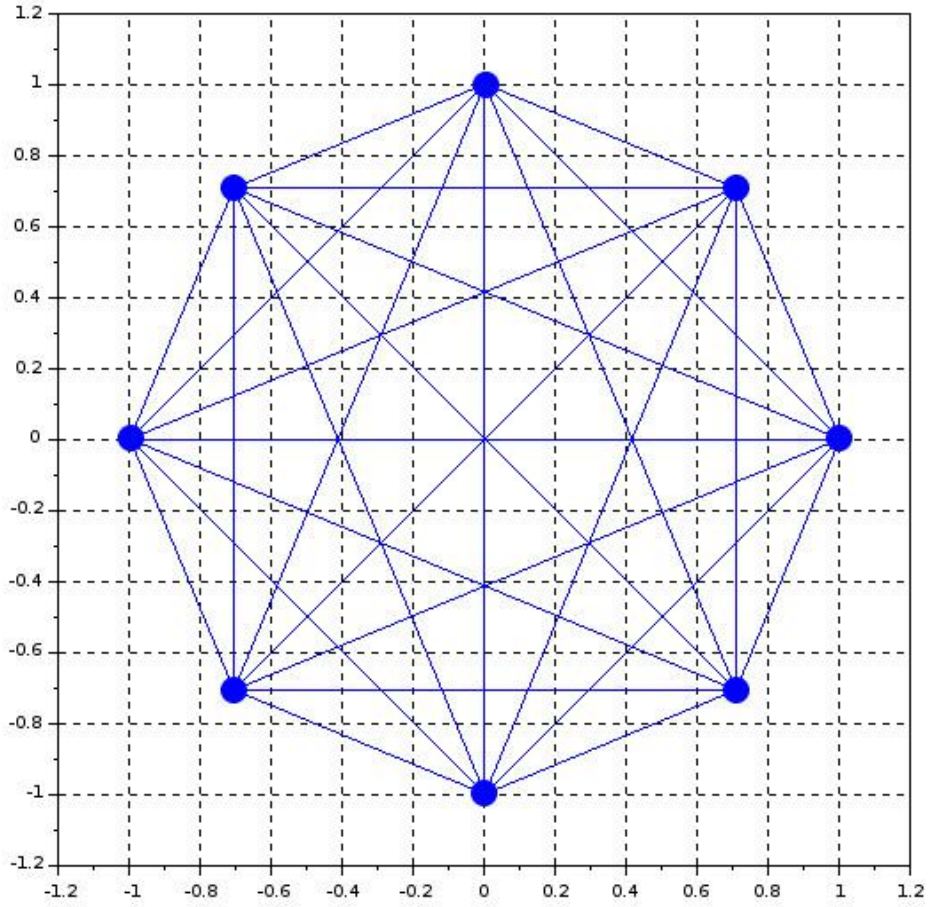
4 Organisations

- 4 Organisations
- n(n-1)/2
- 4(4-1)/2 = 6
- 6 Channels



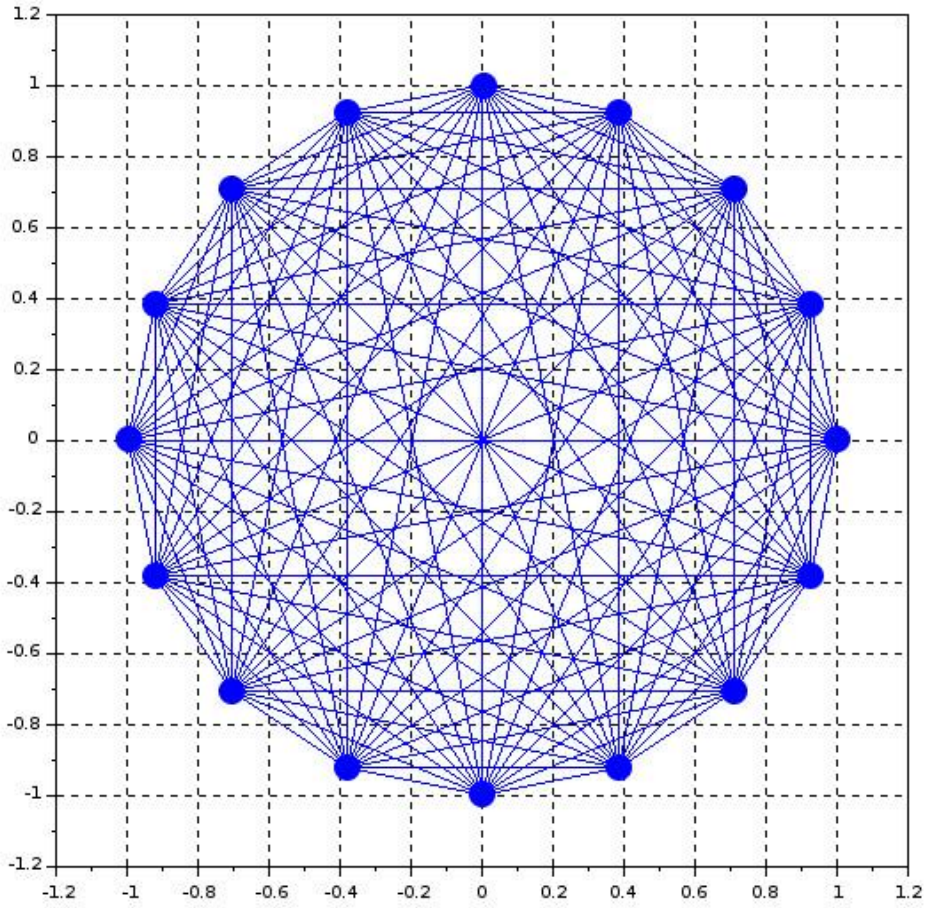
8 Organisations

- 8 Organisations
- n(n-1)/2
- 8(8-1)/2 = 28
- 28 Channels



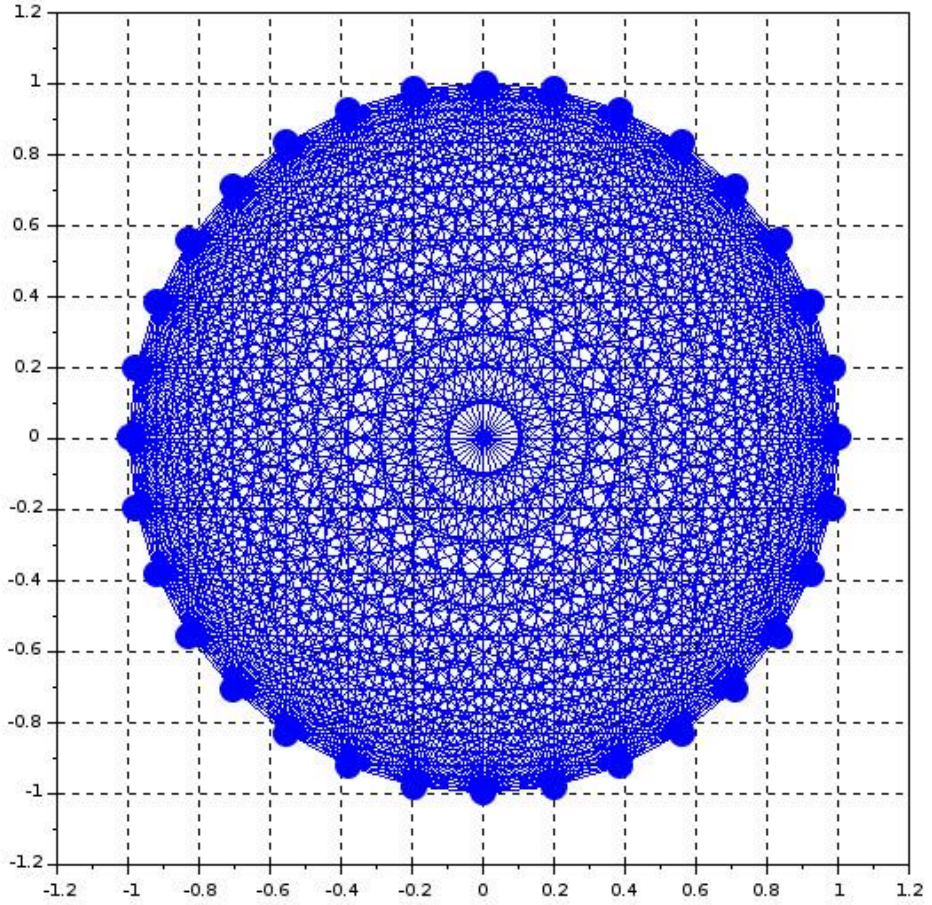
16 Organisations

- 16 Organisations
- n(n-1)/2
- 16(16-1)/2 = 120
- 120 Channels



32 Organisations

- 32 Organisations
- n(n-1)/2
- 32(32-1)/2 = 496
- 496 Channels



Is adding channels a good idea ?

- Difficulty to manage channels (Administrative Overhead)
- Maintaining chaincode versions, policies,Separate ledger, Membership Service Providers (MSPs), etc.
- Higher resource usage

Private Data Collection

- Create a new channel comprising just the organizations who need access to the data ?

- A group of organizations on **a channel need to keep data private** from other organizations on that channel

- **Private Data Collections**, which allow a defined subset of organizations on a channel the ability to **endorse, commit, or query private data** without having to create a separate channel

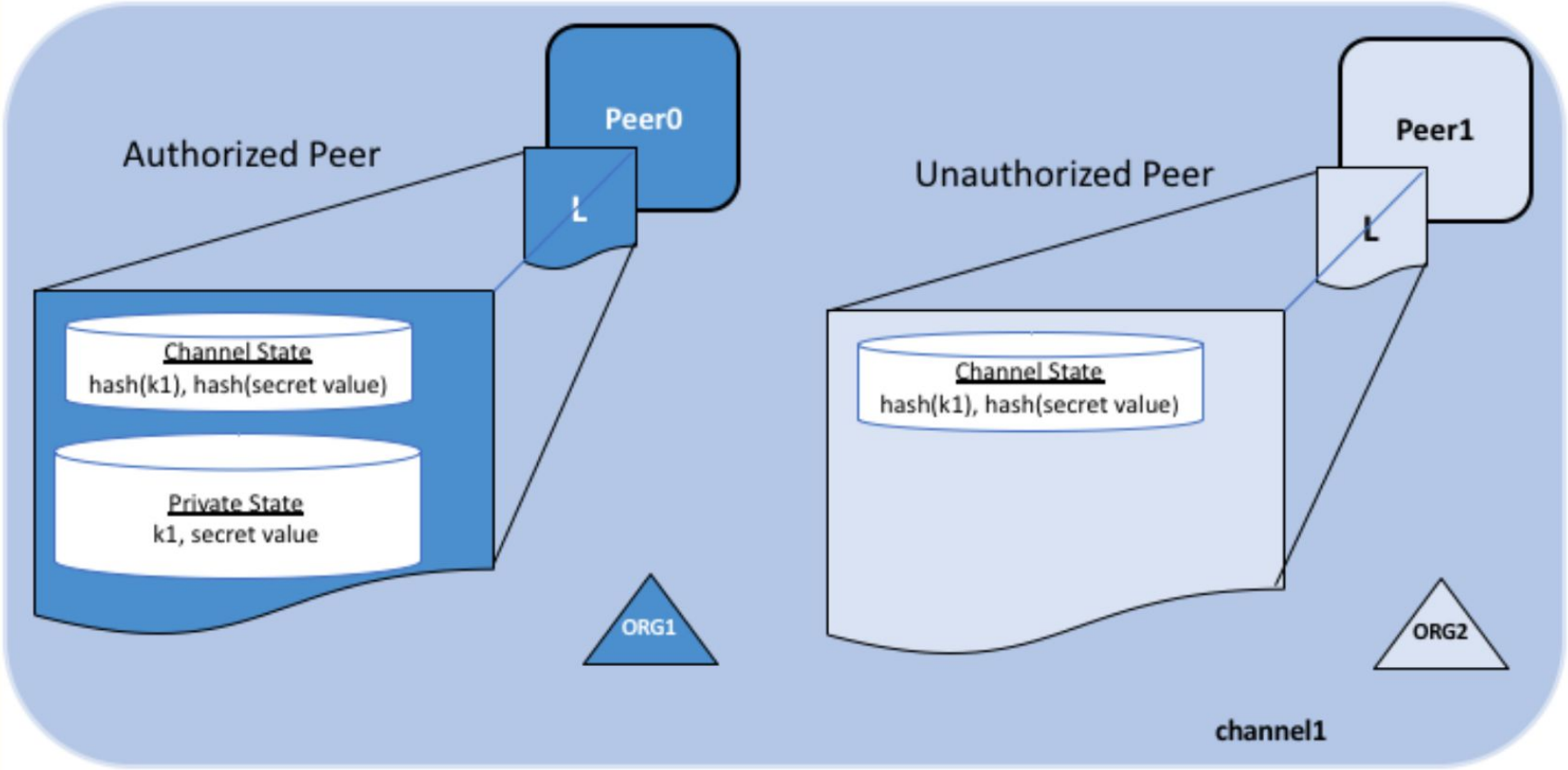
Private Data Collection

A collection is the combination of two elements:

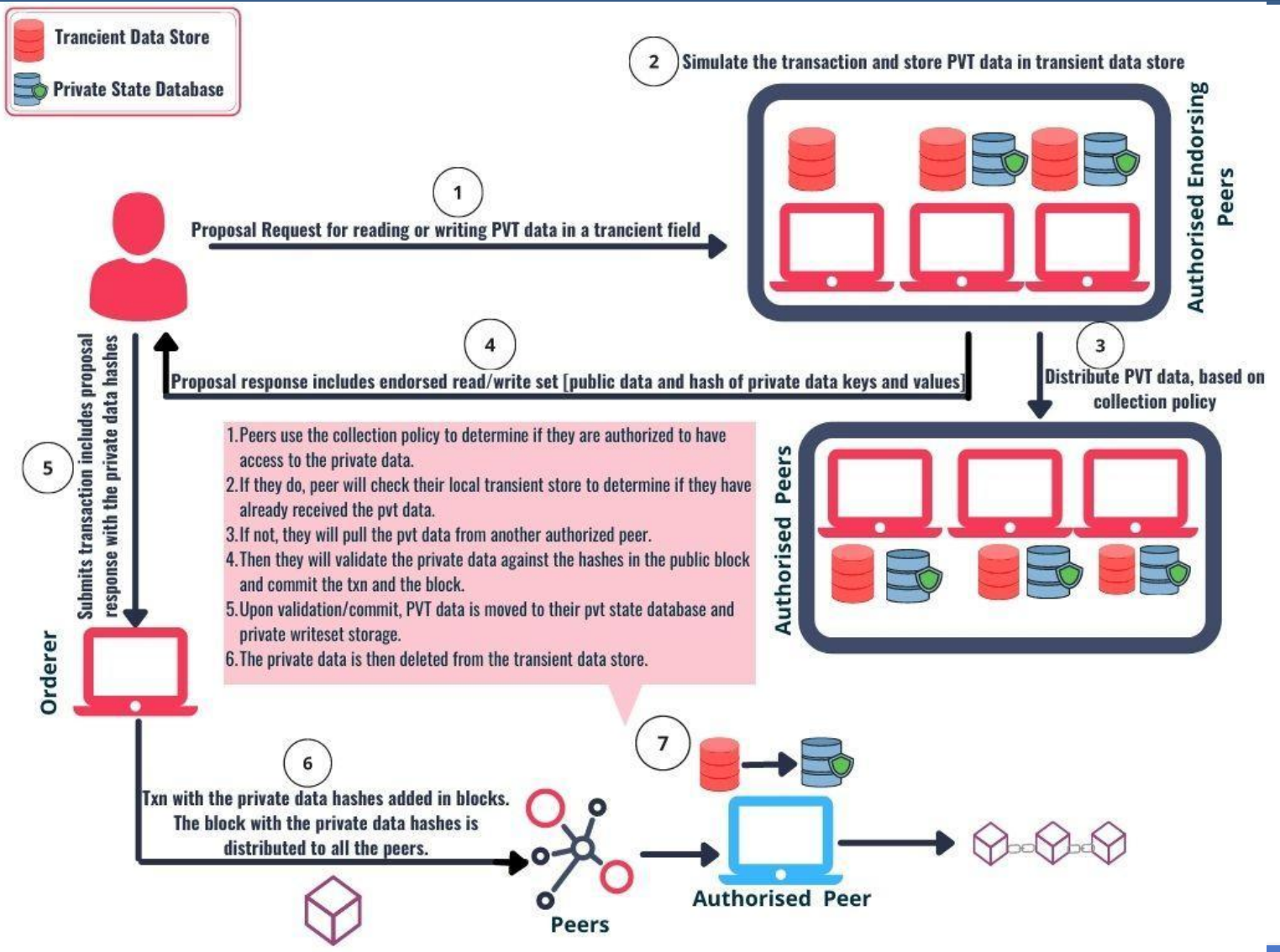
- **The actual private data**
  a. Stored in a private state database on the peers of authorized organizations,
  b. It can be accessed from chaincode on these authorized peers.
  c. The ordering service is not directly involved and does not see the private data.

- **A hash of that data**
  a. It is endorsed, ordered,
  b. Written to the ledgers of every peer on the channel.
  c. The hash serves as evidence of the transaction and is used for state validation and can be used for audit purposes.

Private State DB



Detailed Transaction Flow



Collection Definition

```
[
  {
    "name": "CollectionOrder",
    "policy": "OR('manufacturer-auto-com.member', 'dealer-auto-com.member')",
    "requiredPeerCount": 1,
    "maxPeerCount": 1,
    "blockToLive": 10000,
    "memberOnlyRead": true
  }
]
```

PDC Definition

The collection definition gets deployed to the channel at the time of chaincode instantiation

- **name**: Name of the collection.
- **policy**: The PDC distribution policy defines which organizations' peers are allowed to persist the collection data expressed
- **requiredPeerCount**: Minimum number of peers that endorsing peer must successfully disseminate private data to before the peer signs the endorsement and returns the proposal response back to the client.
- **maxPeerCount**: Maximum number of other peers that each endorsing peer will attempt to distribute the private data to.
- **blockToLive**: Represents how long the data should live on the private database in terms of blocks.
- **memberOnlyRead**: enforce that only clients belonging to one of the collection member organizations are allowed read access to private data

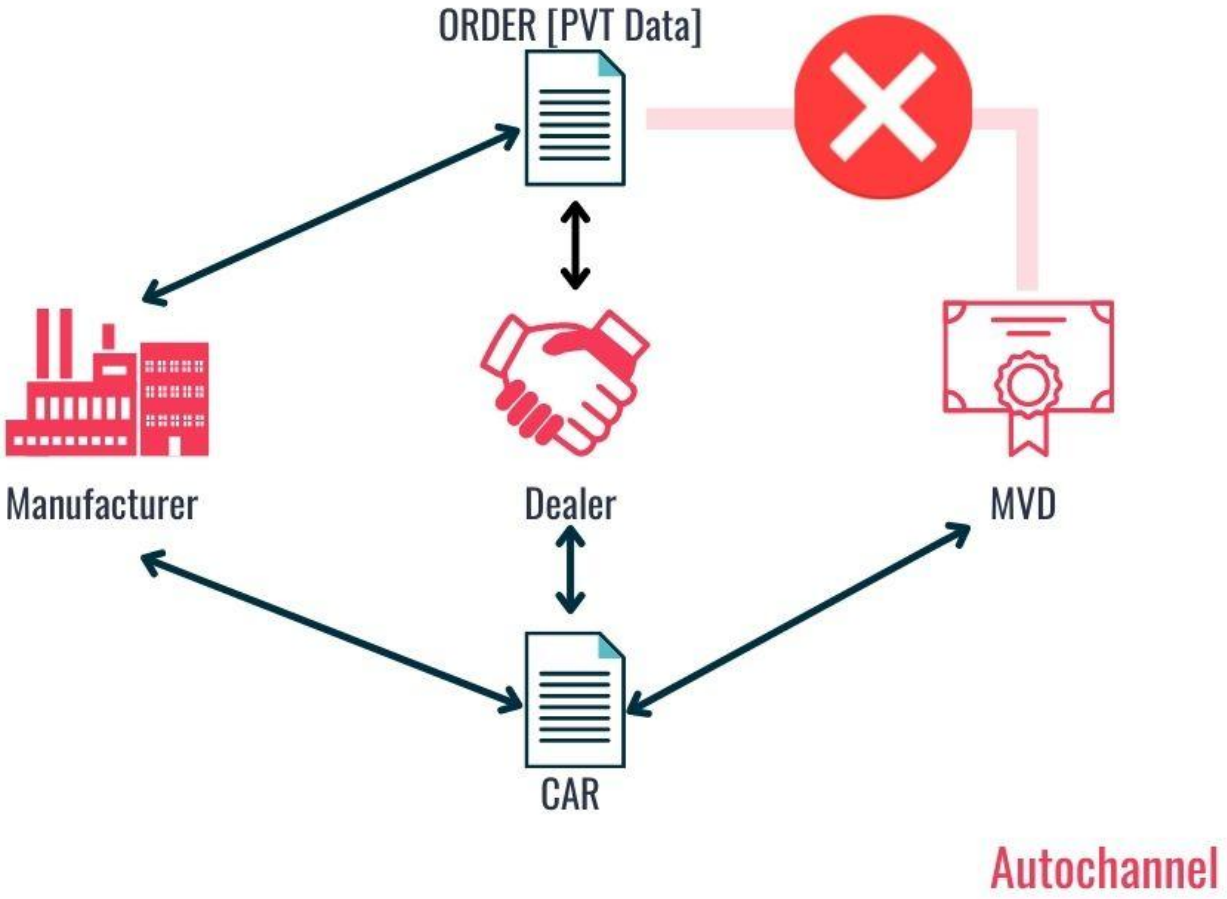
Purging Private Data

For very sensitive data, even the parties sharing the private data might want — or might be required by government regulations — **to periodically "purge" the data on their peers**, leaving behind a hash of the data on the blockchain to serve as immutable evidence of the private data.

Purged private data cannot be queried from chaincode, and is not available to other requesting peers.

API PurgePrivateData() is available in v_2.5

PDC in Automobile App



THANK YOU