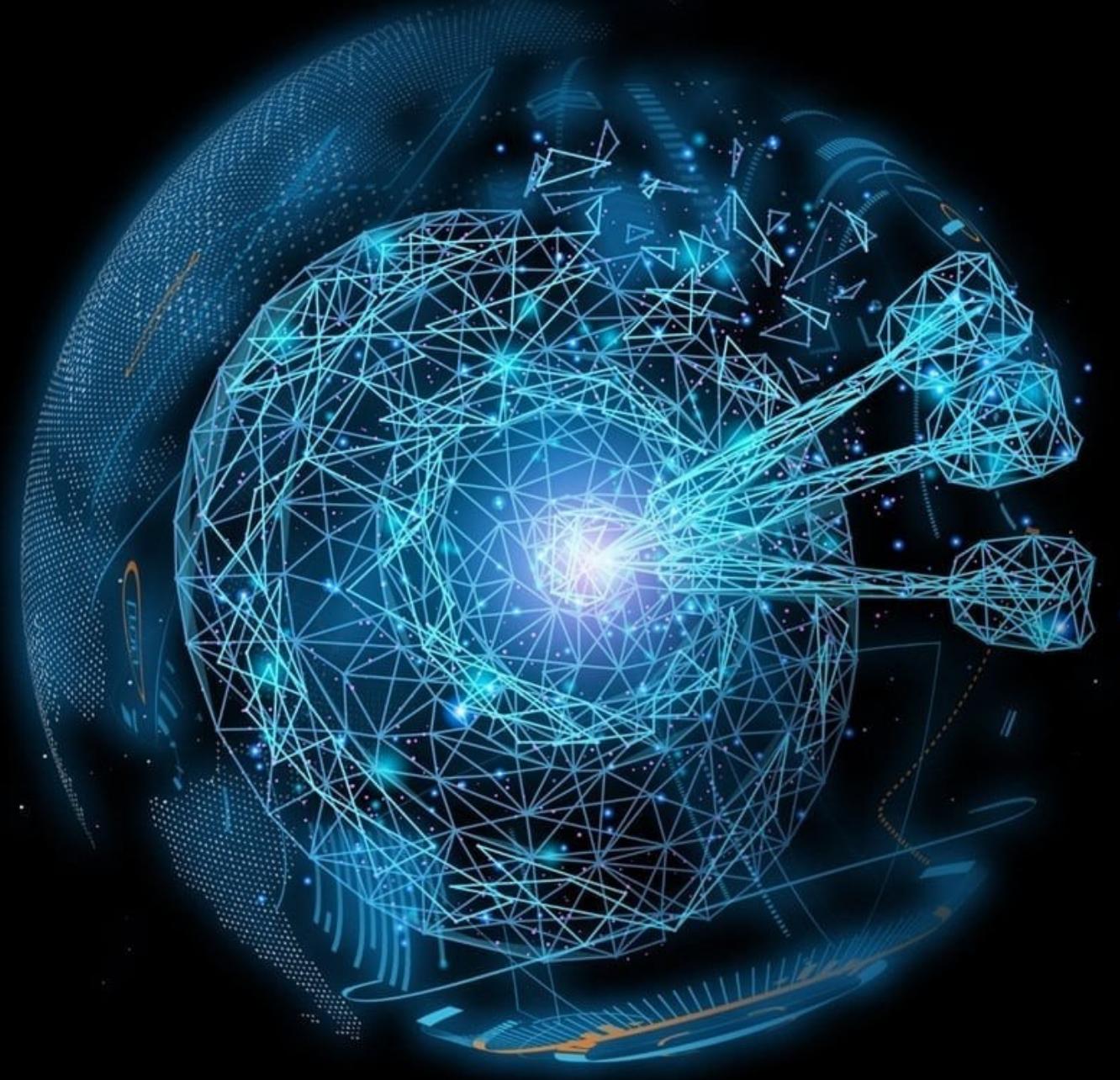


Deloitte.

Supply Chain Case Study Meta Pharma

Ari Carter
Michelle Fronmuller
Gina Hanspal
Kelly Kester
Helen Ramchandani



Meta Pharma – At A Glance.

Clinical Trial Details

125 patients, 12 months

7500 units, temperature-controlled drug

Drug Shipment: Brazil → France

Client Challenges

Multi-stakeholder environment

Highly manual process

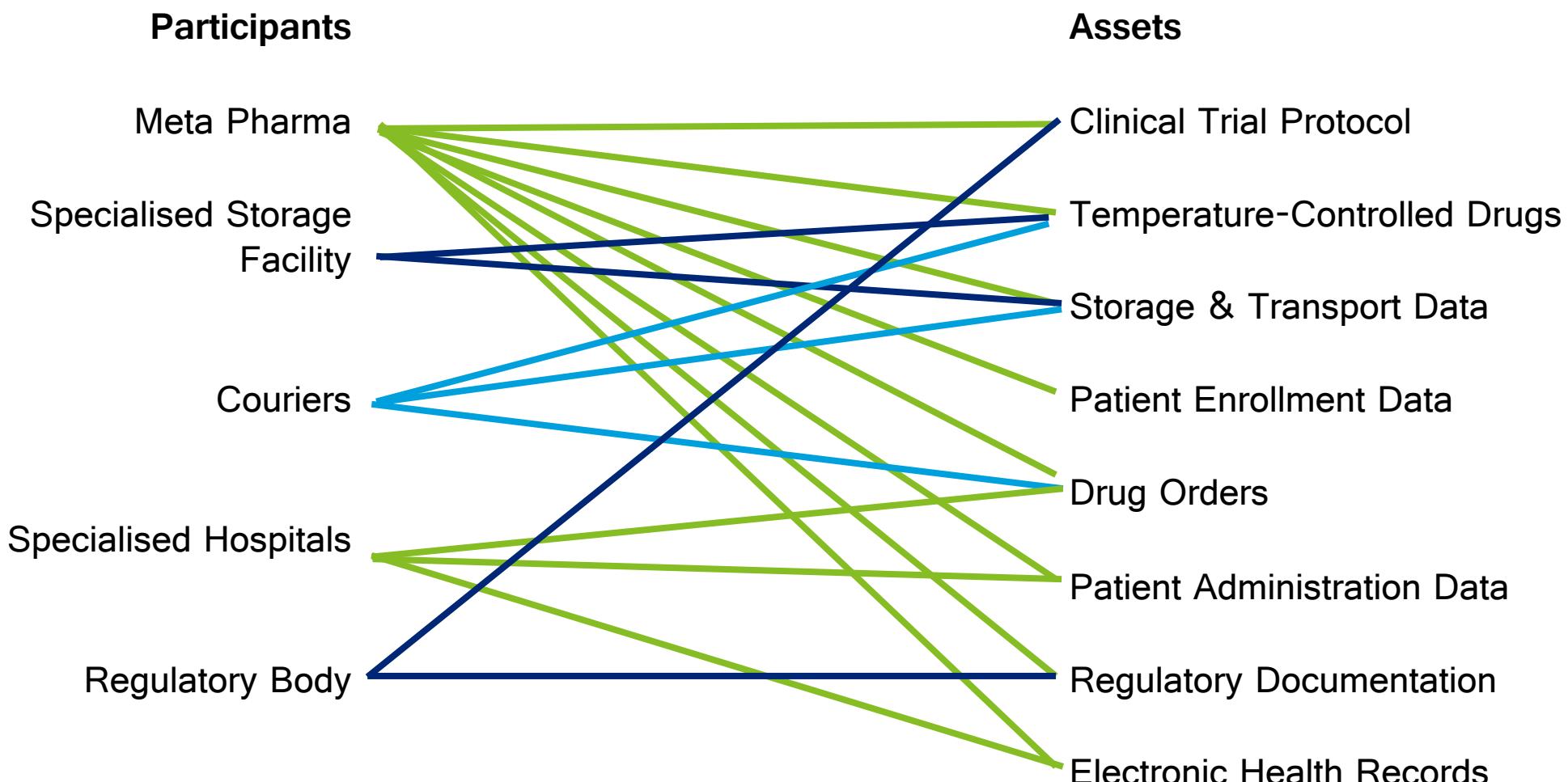
No access to real-time data

Solution: Meta Pharma Blockchain Alliance

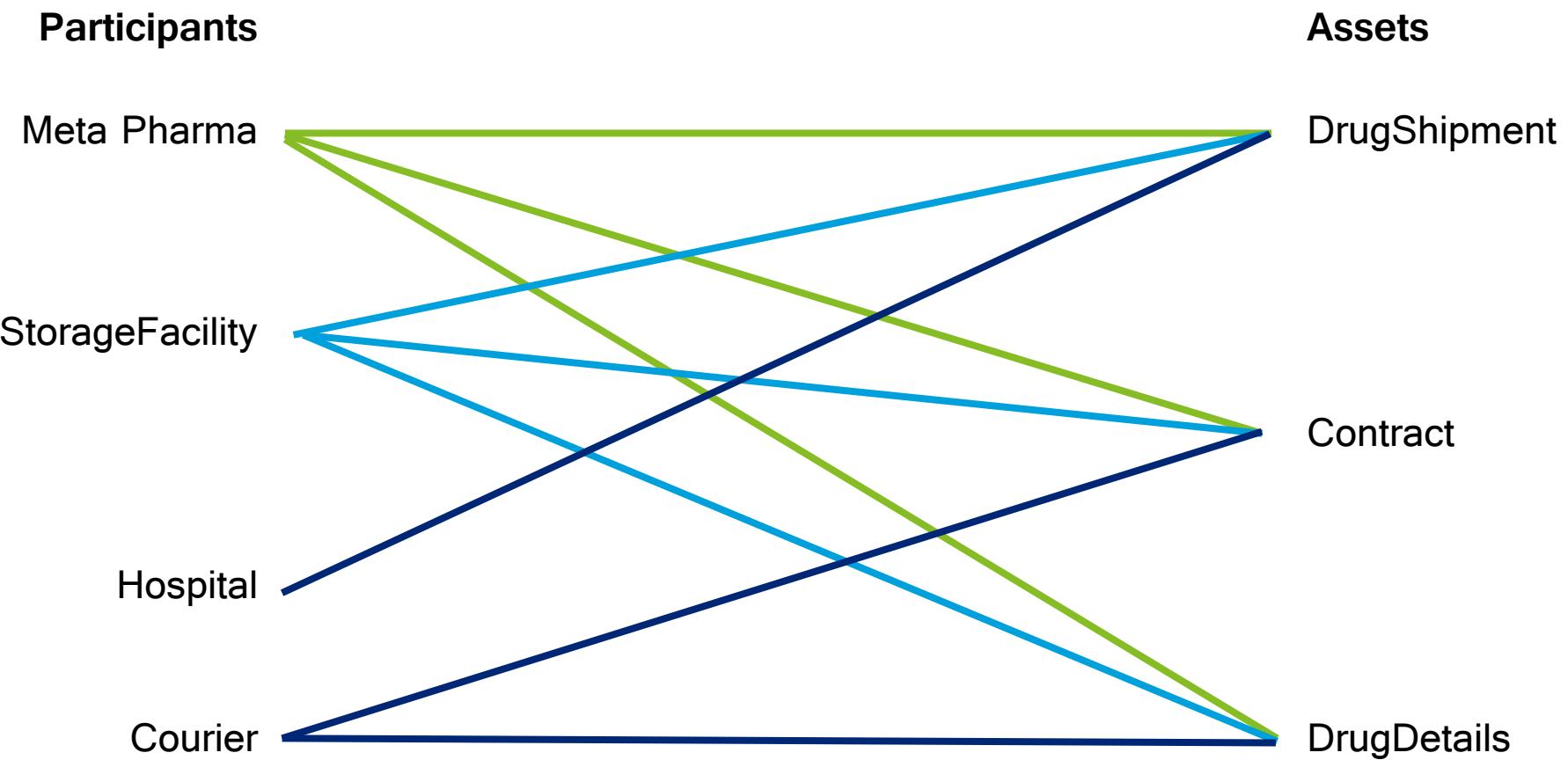
Blockchain Checklist.

- ✓ Are you working with digital assets?
- ✓ Can you create a permanent authoritative record of the digital asset in question?
- ✓ Do you want/need a trusted party?
- ✓ Are you managing contractual relationships or value exchange?
- ✓ Do you need to be able to control functionality?
- ✗ Should transactions be public?

Defining the Network.

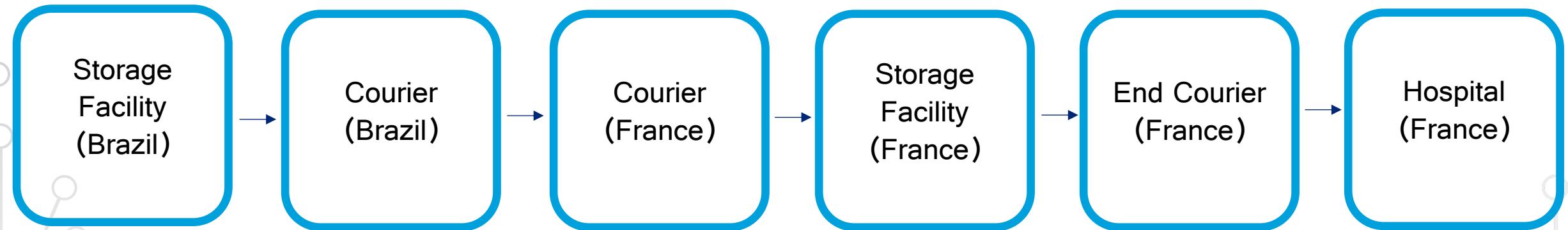


Defining the Network.

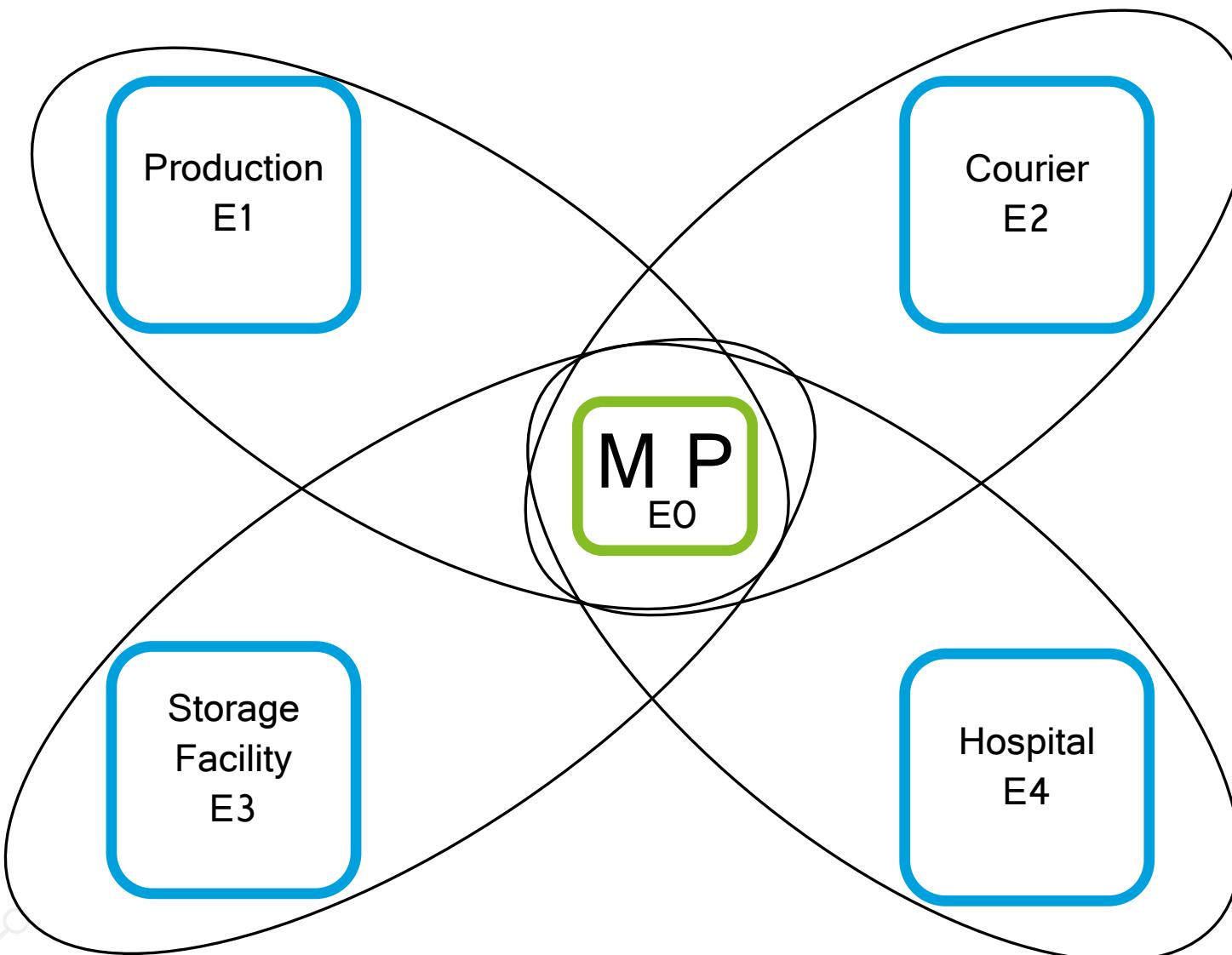


Supply Chain Overview.

Meta Pharma

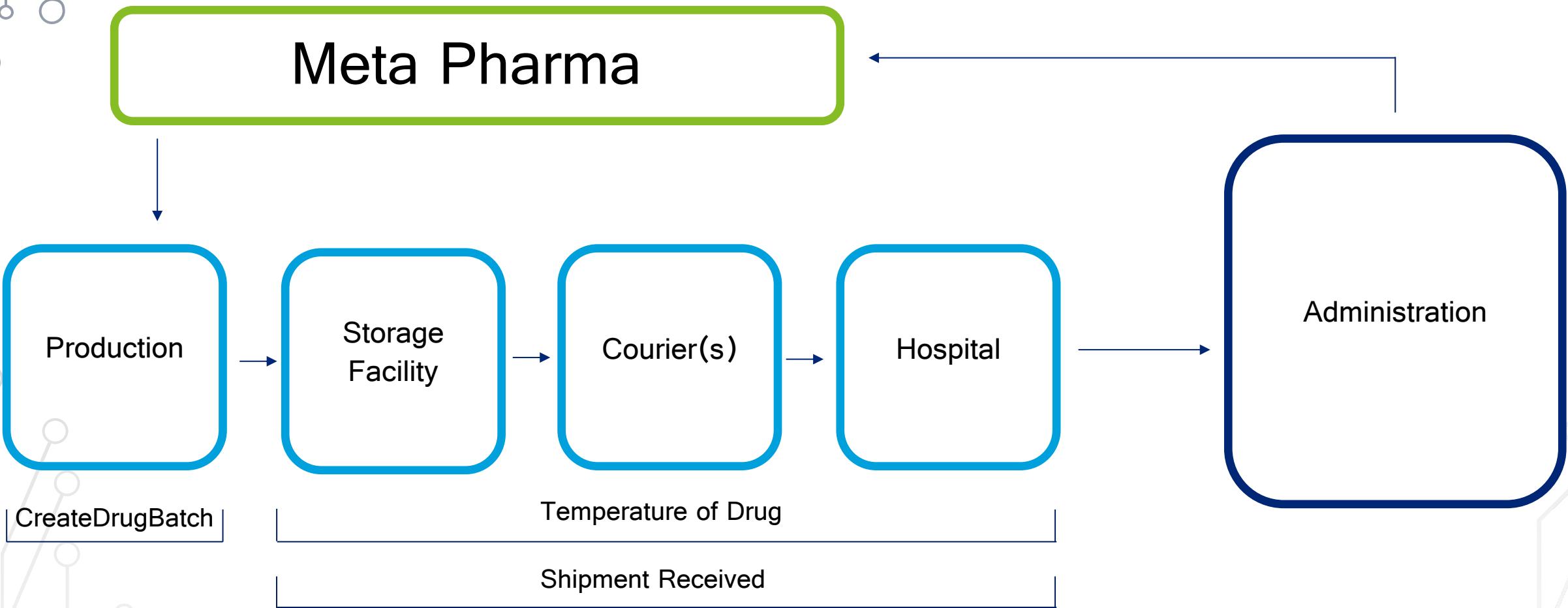


The Agreement.

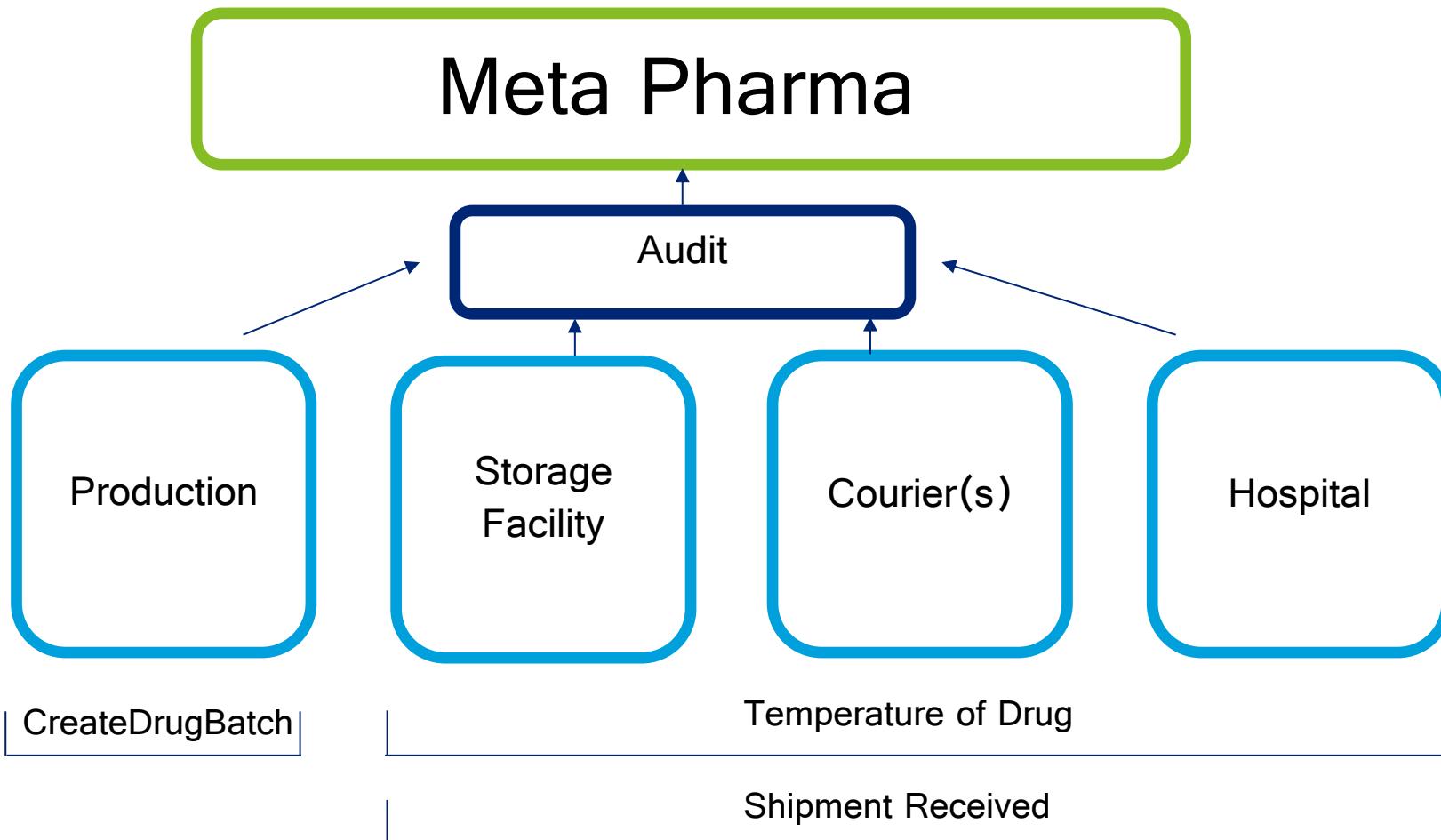


Endorsement Policy:
EO AND (E1 OR E2 OR
E3 OR E4)

The Channel Process.



The Channel Process - Events.



The Data (Queries).

Daily Report

✓ Shipment Rejections

✓ Shipment Status

Monthly Report

✗ Data Monitoring

✓ Shipment Rejections

✓ Shipment Status

The Data (Queries).

Reports

Query

```
query selectCreateDrugBatches {  
  description: "Select all the created drug batch  
transactions"  
  statement:  
    SELECT  
  org.acme.shipping.clinical_trials.Create_Drug_Batch  
}
```

Console View

```
3 Establishing main.09d38dc...bundle.js:1  
admin connection ...  
▶ Array(12) VM173:89  
▶ Array(12) VM173:89
```

FILES

About

README.md, package.json

Model File

models/org.example.model.cto

Script File

lib/script.js

Access Control

permissions.acl Add a file... Export

UPDATE NETWORK

From: *0.2.6-deploy.138*To: *0.2.6-deploy.139* Deploy changesModel File *models/org.example.model.cto* 

```
1  /**
2   * Create a business network for initiation of clinical
3   * trial by pharmaceutical company,
4   * Meta Pharma.
5   * Meta Pharma company produces 7,500 units of
6   * temperature control drug and transports
7   * to hospitals
8   * in France. The first step is to ship the drug to a
9   * storage facility where couriers
10  * will deliver the goods to *respective locations for
11  * patients to use in clinical trials.
12  */
13
14 namespace org.acme.shipping.clinical_trials
15
16 /**
17  * This is a sample business network for clinical trials.
18  * It defines a simple clinical trial process involving
19  * pharmaceutical companies, hospitals, and couriers.
20  * The process starts with a pharmaceutical company
21  * producing a drug and transporting it to a storage
22  * facility. Couriers then deliver the drug to hospitals
23  * for use in clinical trials.
```

Everything looks good!

Any problems detected in your code would be reported here

Blockchain Interfaces.

API

The screenshot shows the Hyperledger Composer REST server API explorer at `localhost:3000/explorer/`. The interface lists various blockchain participants and assets:

- Admin : Rest server methods
- Administration : A participant named Administration
- Audit : A participant named Audit
- Contract : An asset named Contract
- Courier : A participant named Courier
- Create_Drug_Batch : A transaction named Create_Drug_Batch
- DrugDetails : An asset named DrugDetails
- DrugShipment : An asset named DrugShipment
- Hospital : A participant named Hospital
- Patient : A participant named Patient
- PostAudit : A transaction named PostAudit
- Production : A participant named Production

Each item has "Show/Hide", "List Operations", and "Expand Operations" buttons.

Angular App

The screenshot shows an Angular application interface for the `mpharmanew` blockchain at `localhost:4200`. The title bar indicates the environment is `mpharma@0.2.6-deploy.136.bna`. The interface features three tabs: "Assets", "Participants", and "Transactions". The "Participants" tab is currently selected, displaying the name `mpharmanew`.

Conclusion - Future of Blockchain.

Blockchain
&
IoT

Machine Learning

Content Domain
Network

Deloitte.

Thank you!

Questions?

