ZENO

Supply Chain and Logistics DApp for Asset Tracking

MINI PROJECT PHASE III

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THE AGENDA

ZENO

01 **PROBLEM DEFINITION**
SOLUTION AND OBJECTIVES

02 **ARCHITECTURE**
BLOCK DIAGRAM TO HIGHLIGHT
MAJOR MODULES

03 **IMPLEMENTATION**
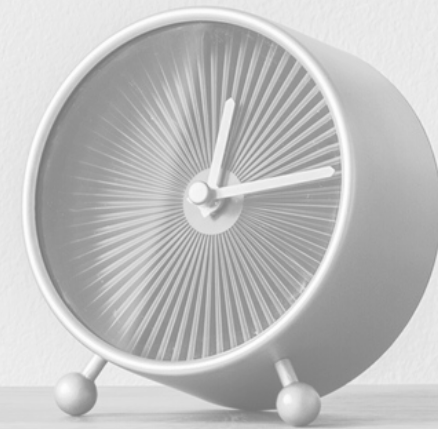TECH STACKS , API AND
MODULES

04 **PROJECT TIMELINE**
REMAINING 30% PROJECT
REVIEW

05 **CONCLUSION**
FUTURE WORK AND
ENHANCEMENTS OF
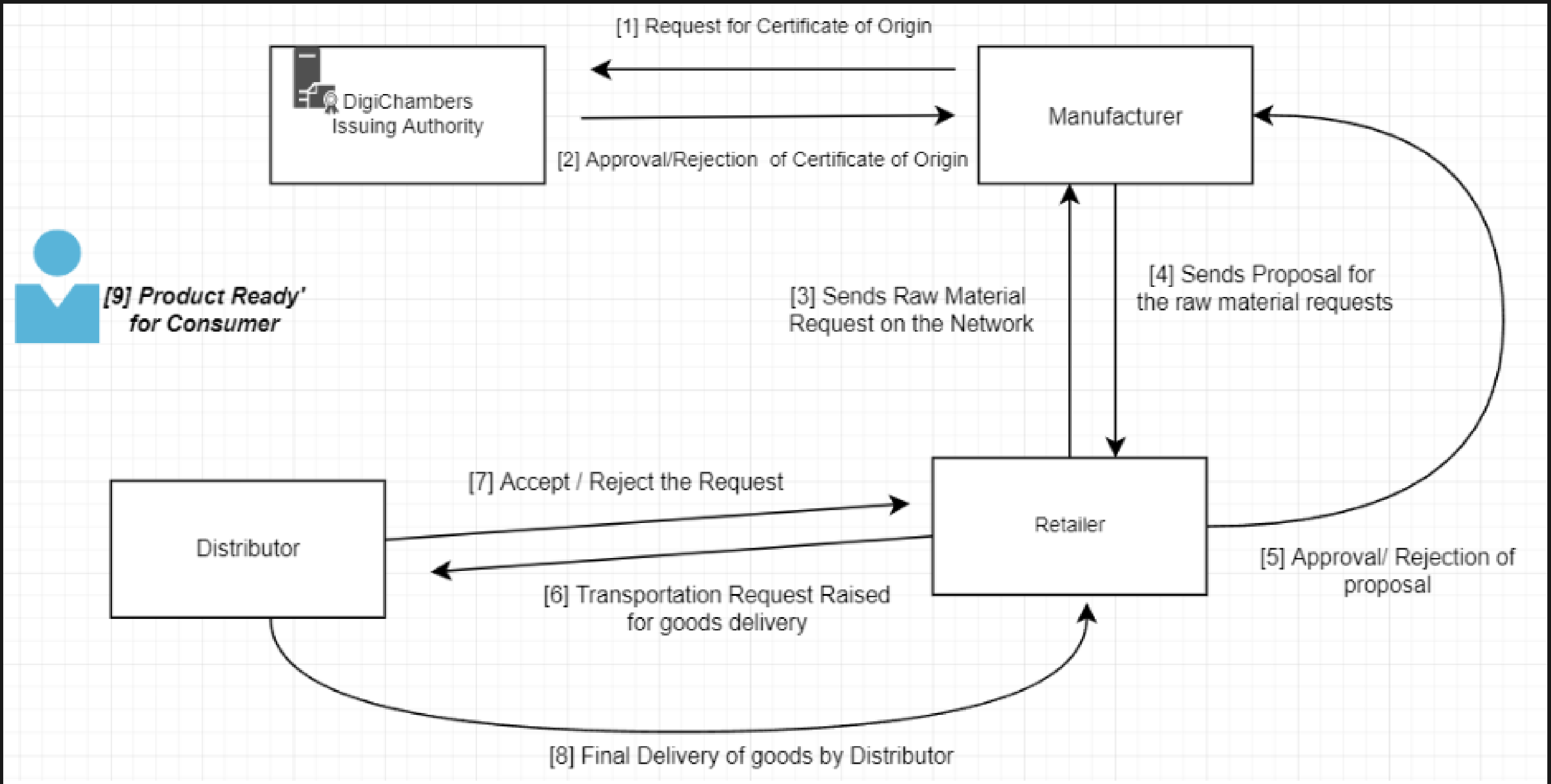PROJECT

PROBLEM DEFINITION

SOLUTION AND OBJECTIVES

In recent years there have been increased efforts to make supply chains transparent and traceable to better protect the end consumer's interests against counterfeiting, contamination, false claims, and inadequate processes. Blockchain is a technology that can allow authenticated data communication between each player in a supply chain without the intermediation of a trusted central organization. By verifying and adding data in real-time, blockchain can increase transparency across a supply chain. Blockchain can greatly improve supply chains by enabling faster and more cost-efficient delivery of products, enhancing product traceability, improving coordination between partners, and aiding access to finances.
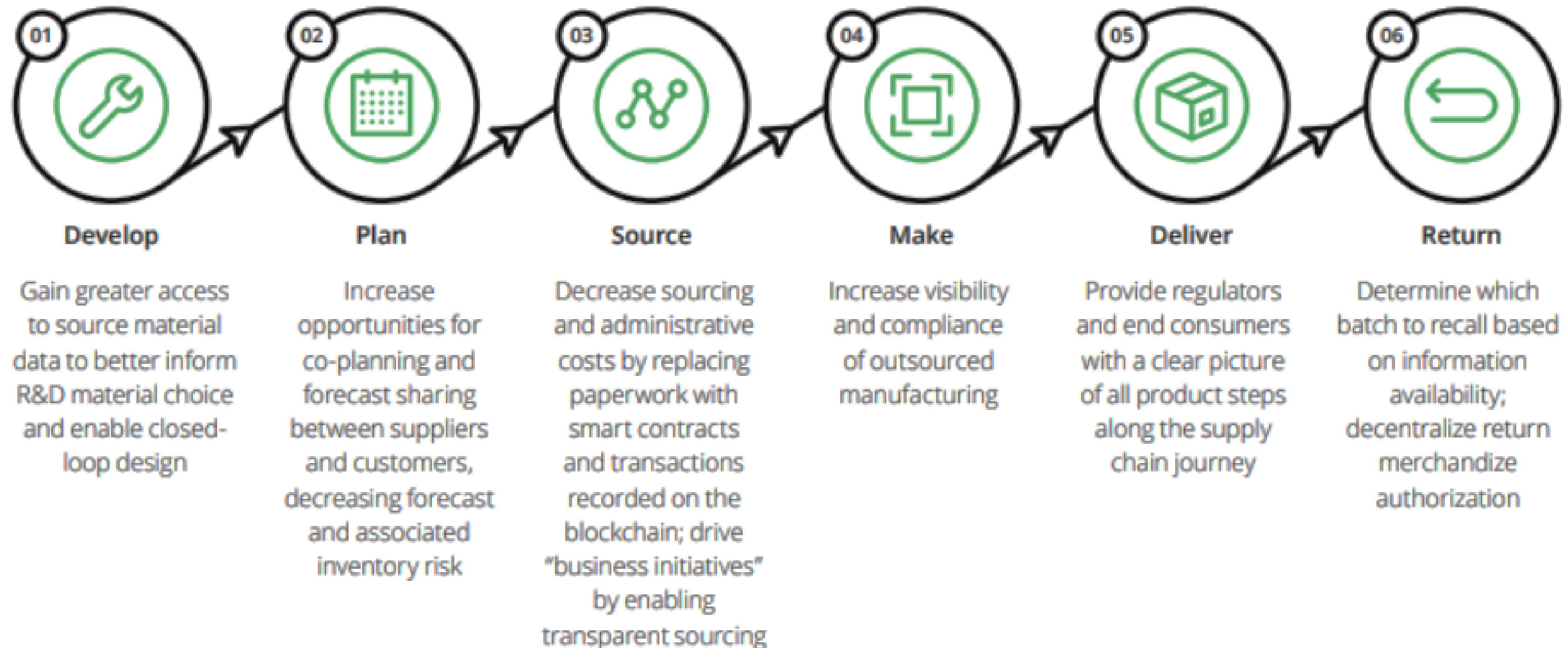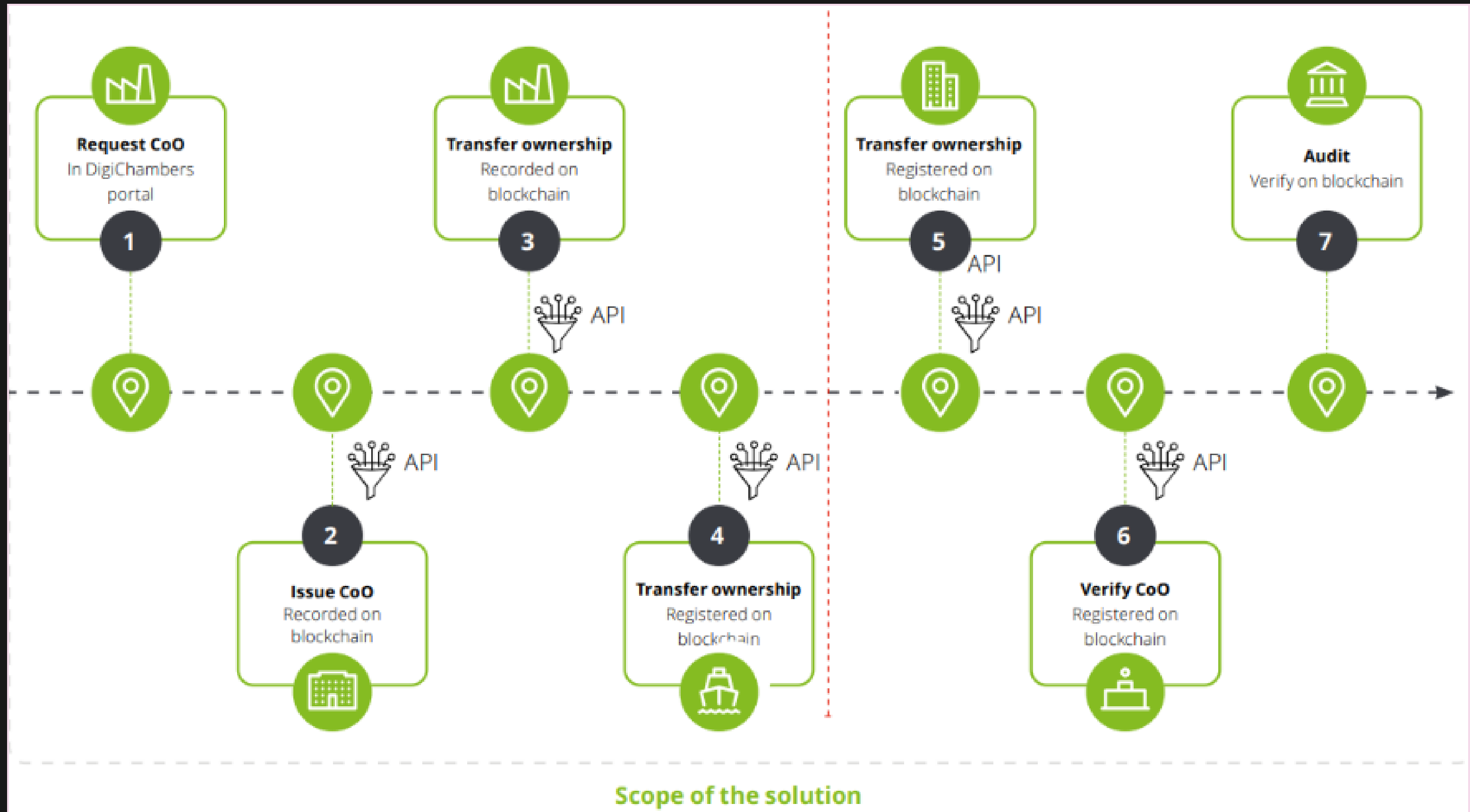
ARCHITECTURE
TIMELINE OF EVENTS

ARCHITECTURE
COMMON WORKFLOW WITHIN THE SYSTEM

01

Develop

Gain greater access to source material data to better inform R&D material choice and enable closed-loop design

02

Plan

Increase opportunities for co-planning and forecast sharing between suppliers and customers, decreasing forecast and associated inventory risk

03

Source

Decrease sourcing and administrative costs by replacing paperwork with smart contracts and transactions recorded on the blockchain; drive "business initiatives" by enabling transparent sourcing

04

Make

Increase visibility and compliance of outsourced manufacturing

05

Deliver

Provide regulators and end consumers with a clear picture of all product steps along the supply chain journey

06

Return

Determine which batch to recall based on information availability; decentralize return merchandize authorization

ARCHITECTURE
CERIFICATE OF ORIGIN ISSUING PROCESS

IMPLEMENTATION

TECH STACK

Local Blockchain Network: Ganache CLI server, Truffle suite

Programming Languages:
Backend services: Javascript ES6, Solidity ^5.0.3, Core Solidity
User Interface: HTML5, CSS3, EJS framework
No-SQL database: MongoDB

Tools and Services used:
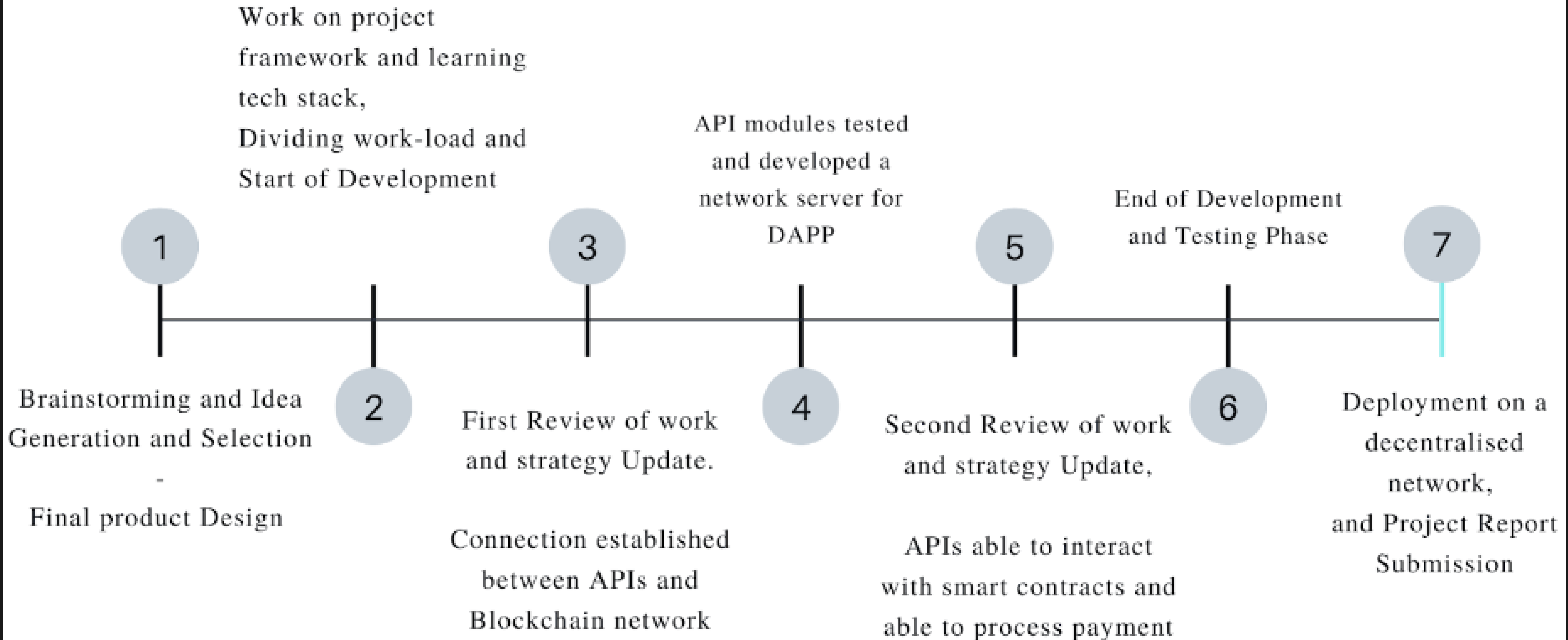**Version Control: Git and Github**
CLI: Git bash, Powershell Command Prompt
Code Editor: Visual Studio Code Editor
Dev-Dependencies: Nodemon, .env

PROJECT TIMELINE

WEEK WISE

Work on project framework and learning tech stack, Dividing work-load and Start of Development

API modules tested and developed a network server for DAPP

End of Development and Testing Phase

1

3

5

7

Brainstorming and Idea Generation and Selection - Final product Design

2

First Review of work and strategy Update.

Connection established between APIs and Blockchain network

4

Second Review of work and strategy Update,

APIs able to interact with smart contracts and able to process payment

6

**Deployment on a decentralised network, and Project Report Submission**

CONCLUSION

As consumers demand more transparency and the complexity of supply chains increases, an effective and inexpensive way to trace each material used in the final product is important in building confidence with increasing environmental and socially conscious consumers. We can improve the supply chain by Increasing the visibility of material throughout the entire supply chain; decreasing administrative costs; and authenticating against counterfeit products. Technology is still in early trials in supply chains; the industry is still learning about security, cost, and implications; continued difficulty linking blockchain to physical objects; complexity convincing all stakeholders to adopt blockchain. Our next steps will be to continue monitoring advancements in blockchain, which have the potential to improve supply chain transparency and offer new opportunities to reduce sourcing risk, decrease administration cost, and improve stakeholder engagement.

CONCLUSION
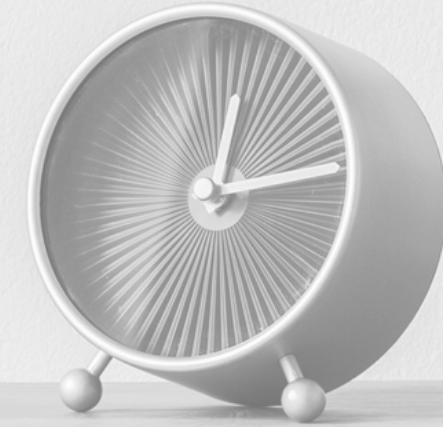
As blockchain gains momentum, we should keep observing the players in their industry who have begun experimenting with blockchain. Blockchain benefits greatly from the network effect; once a critical mass gathers in a supply chain, it is easier for others to jump on board and achieve the benefits. Companies should pay attention to other stakeholders in their supply chain and competitors for indication of the timing to develop a blockchain prototype. Current limitations such as Integration concerns, Linking digital to physical, control, security and privacy, and cultural adoption may need to be addressed by much greater academic research. Finally, the system intends to serve as a generic framework, which can be instantiated with any involving part to address questions in the particular domain.

THANK YOU!