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PHARMACEUTICAL SUPPLY CHAIN

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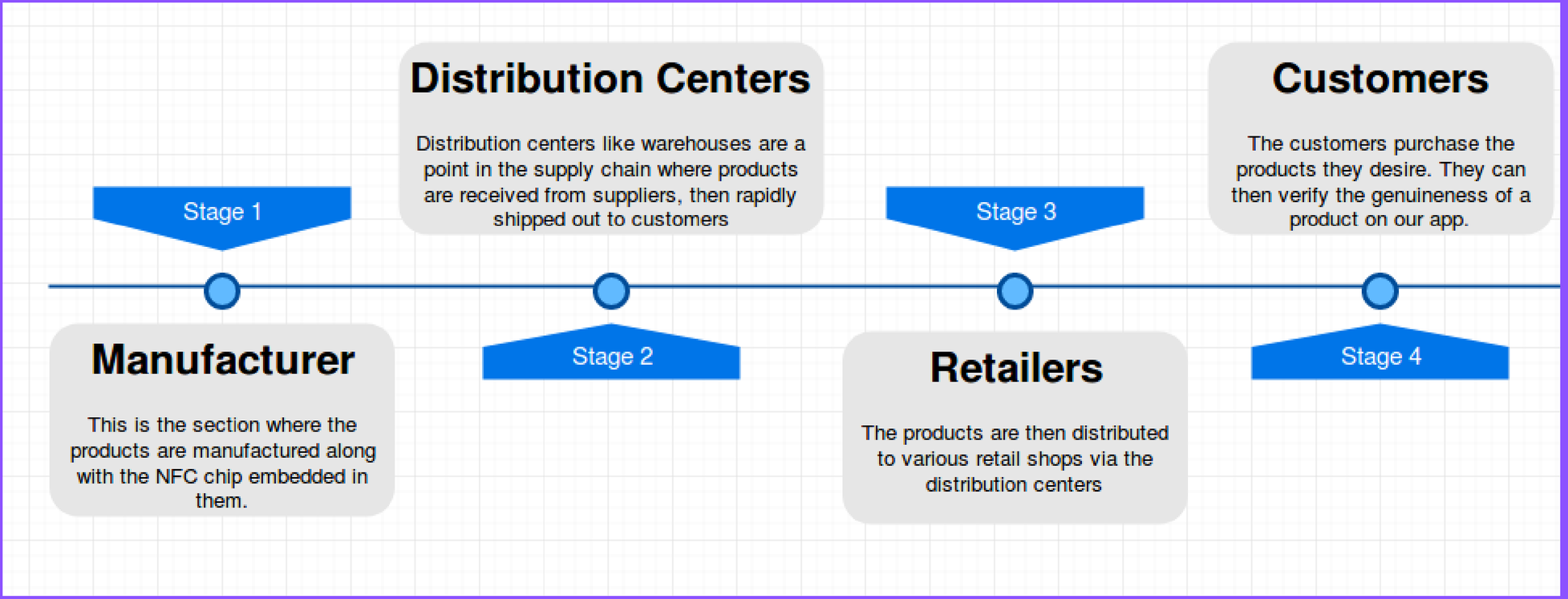
The pharmaceutical supply chain involves multiple stakeholders, from manufacturers to wholesalers, distributors, and retailers.



PHARMA SUPPLY CHAIN

CHALLENGES

Lack of visibility

- The lack of visibility in the pharma supply chains is the root cause of many challenges faced by the healthcare supply chains.
- Drug shortages, opioids, and frauds are some of the hard-hitting headlines and indicate how the retailers and hospitals do not often know the source of these drugs.

Logistics coordination

- Many times, supply chain issues come down to differences in processes or systems. Differences in coordination and processes permeate the industry, making challenges different to control.
- A single drug may be distributed to hundreds of hospitals through a single distributor, which brings differences in tracing the drug and logistics coordination.

CHALLENGES

Compliance

- About 80 percent of the active pharma ingredients and 40 percent of the finished drug products are imported from the U.S each year. Adhering to rules and regulations is thus necessary to ensure the authenticity of these products.
- Not just manufacturers, shippers, and distributors also have to comply with these regulations. This means that significant changes and investments need to be done throughout the pharma supply chain.

Cold chain shipping

- Many medicines are of biological origin and are heat sensitive. These types of medicines require special temperatures for their transportation.

- This improvement in traceability would facilitate the optimization of the goods and gives us an efficient stock management system and cold shipping system.

The World Health Organization (WHO) estimates that 10% of all drugs worldwide are counterfeit.

In developing countries, this number can be as high as 30%.

Counterfeit drugs are estimated to generate approximately $200 billion in annual sales globally.

CLEAR PROBLEM

User POV

STAKEHOLDERS

Manufcaturer

-Add drugs
-active requests
-unique id to drugs
produced

Retailer

-Add drugs
-active requests
-unique id to drugs
produced

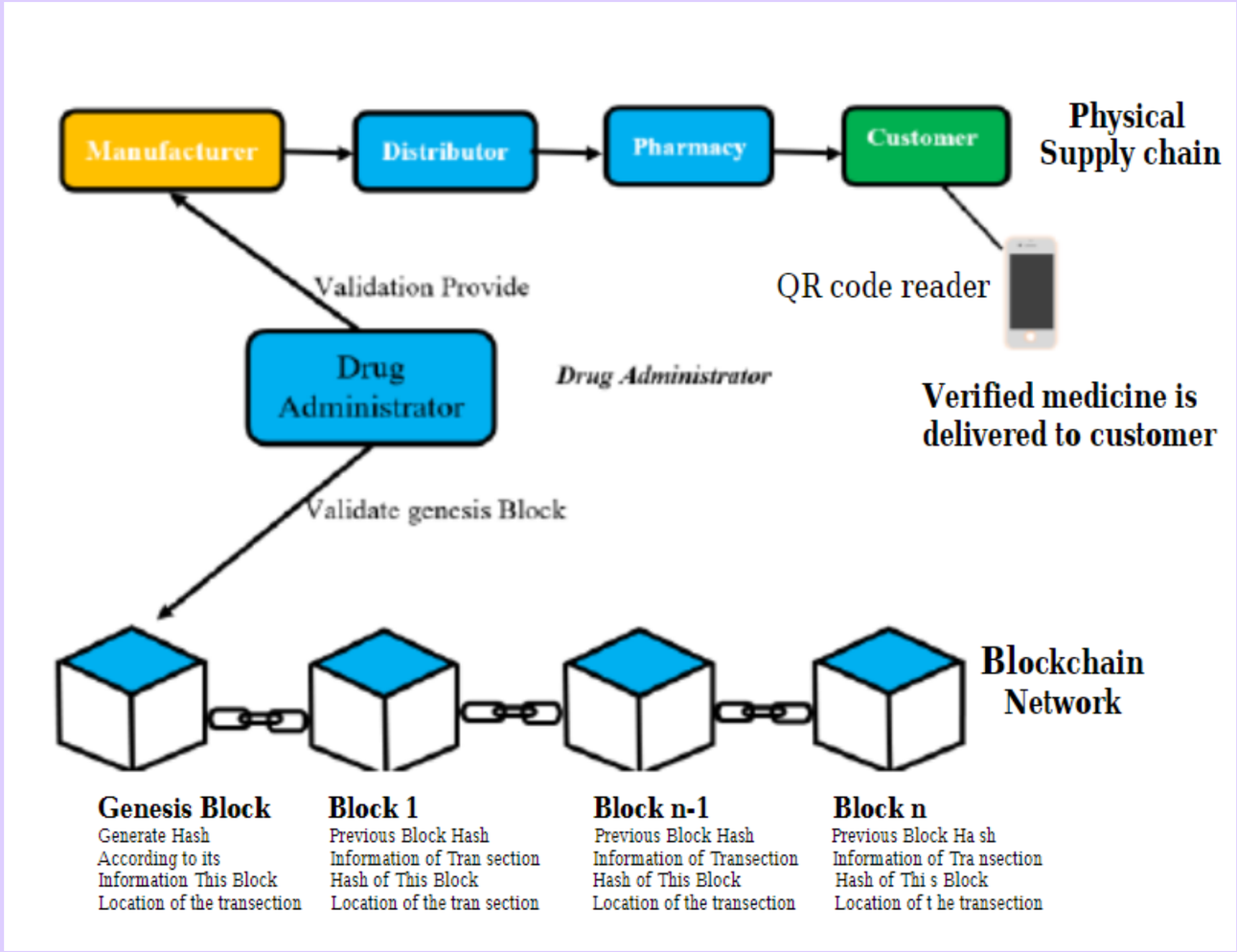
Distributor

--Retailer requests
-Accept shipment
-Track shipment

Transporter

-Active requests
-Send shipments

SUPPLY CHAIN



HOW BLOCKCHAIN SOLVES THIS?

- Blockchain is a distributed ledger technology that allows multiple parties to share and update a secure and tamper-proof record of transactions and data.

- The core features of blockchain technology include decentralization, immutability, transparency, and security.

- The three main components of a blockchain include a network of nodes, a consensus mechanism, and a cryptographic hash function.

HOW BLOCKCHAIN SOLVES THIS?

Reduced losses related to counterfeiting

- A blockchain-based implementation can enable visualization of a particular drugs journey from manufacturing to the final destination. This would help to identify vulnerable points throughout the supply chain, which further helps in reducing frauds related to it.

Transparency to enhance accountability

- Usage of Blockchain would facilitate the receiving and shipping of the health products through the entire supply chain. This would help to trace the drugs in the supply chain.
- If any problem arises in the supply chain of the drugs, Blockchain would help to identify the last stakeholders through which the products passed and hence tackle the source of the error.

Efficient recall management

- Blockchain in the pharma supply chain can allow the stakeholders to identify the exact locations of the medicines.
- Regular reminders can be sent efficiently between the stakeholders to maintain an increased safety and authenticity of the drugs.

Pfizer and IQVIA:

In 2019, Pfizer and IQVIA announced a pilot project to use blockchain technology to track the movement of prescription drugs in the supply chain. The project aimed to improve the transparency and efficiency of the supply chain, and it was successful in reducing the time it took to track drugs from weeks to seconds.

FDA Drug Supply Chain Security Act (DSCSA):

The FDA has been working to implement blockchain technology in the pharmaceutical supply chain as part of its efforts to comply with the DSCSA. The goal of the DSCSA is to improve the security and integrity of the supply chain, and the FDA has been working with industry partners to develop blockchain-based solutions to meet these goals.

CURRENT THINGS

CURRENT THINGS

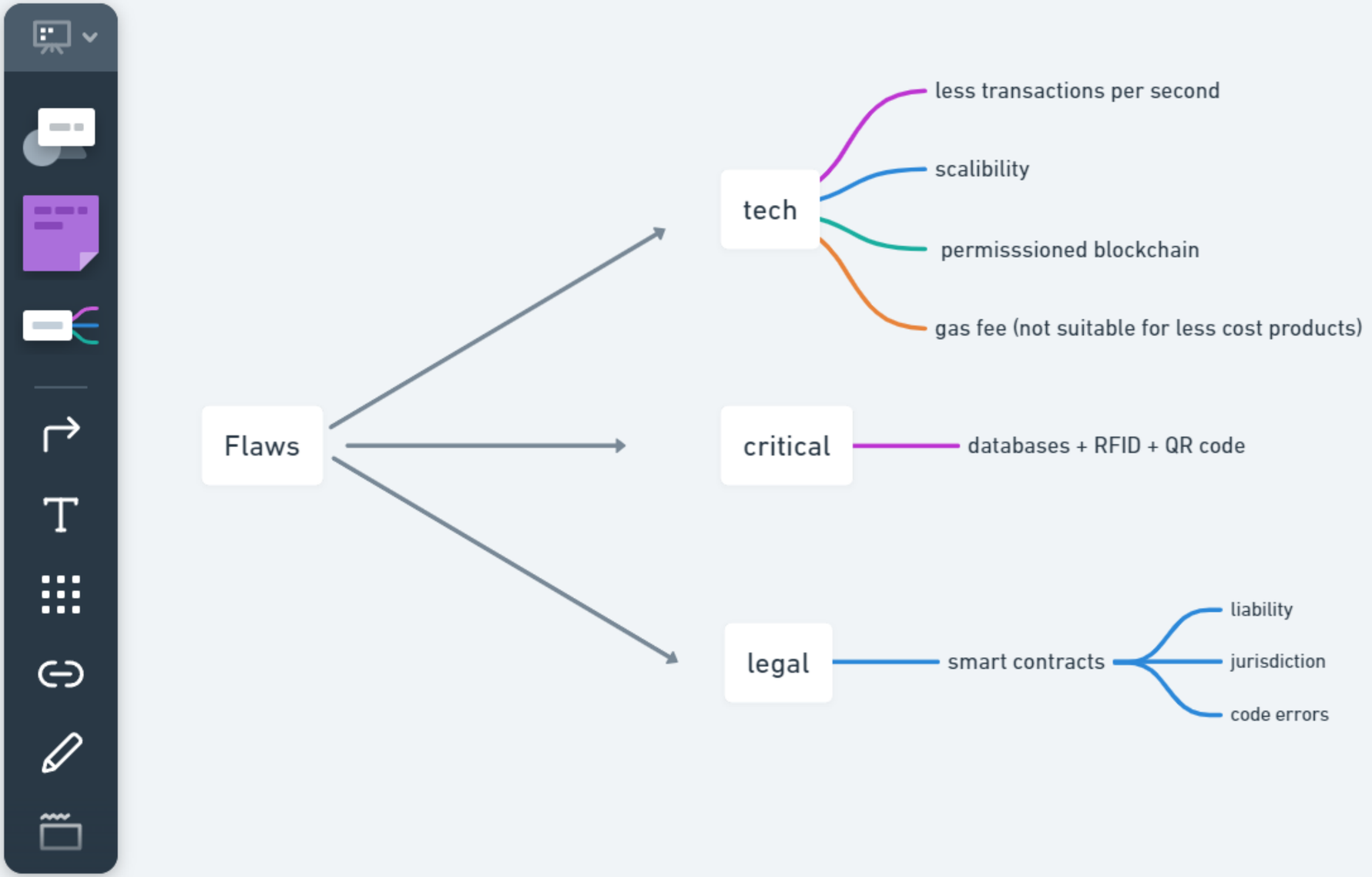
TRACELINK : IBM & MAERSK

VeCHAIN

MediLEDGER by chronicled

DHL and Accenture

FLAWS


Flaws
tech
less transactions per second
scalibility
permisssioned blockchain
gas fee (not suitable for less cost products)
critical
databases + RFID + QR code
legal
smart contracts
liability
jurisdiction
code errors

THANKS!

:)

Basic Functionalities

Overview

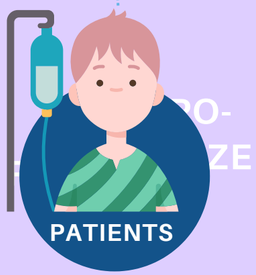
Patients

-Patients register
-upload medical documents
-grant access to the doctor they are visiting
-can view their record

Doctor

-Doctors can view the record of their patients
-Add prescriptions/comments
-Upload medical documents for certain patients

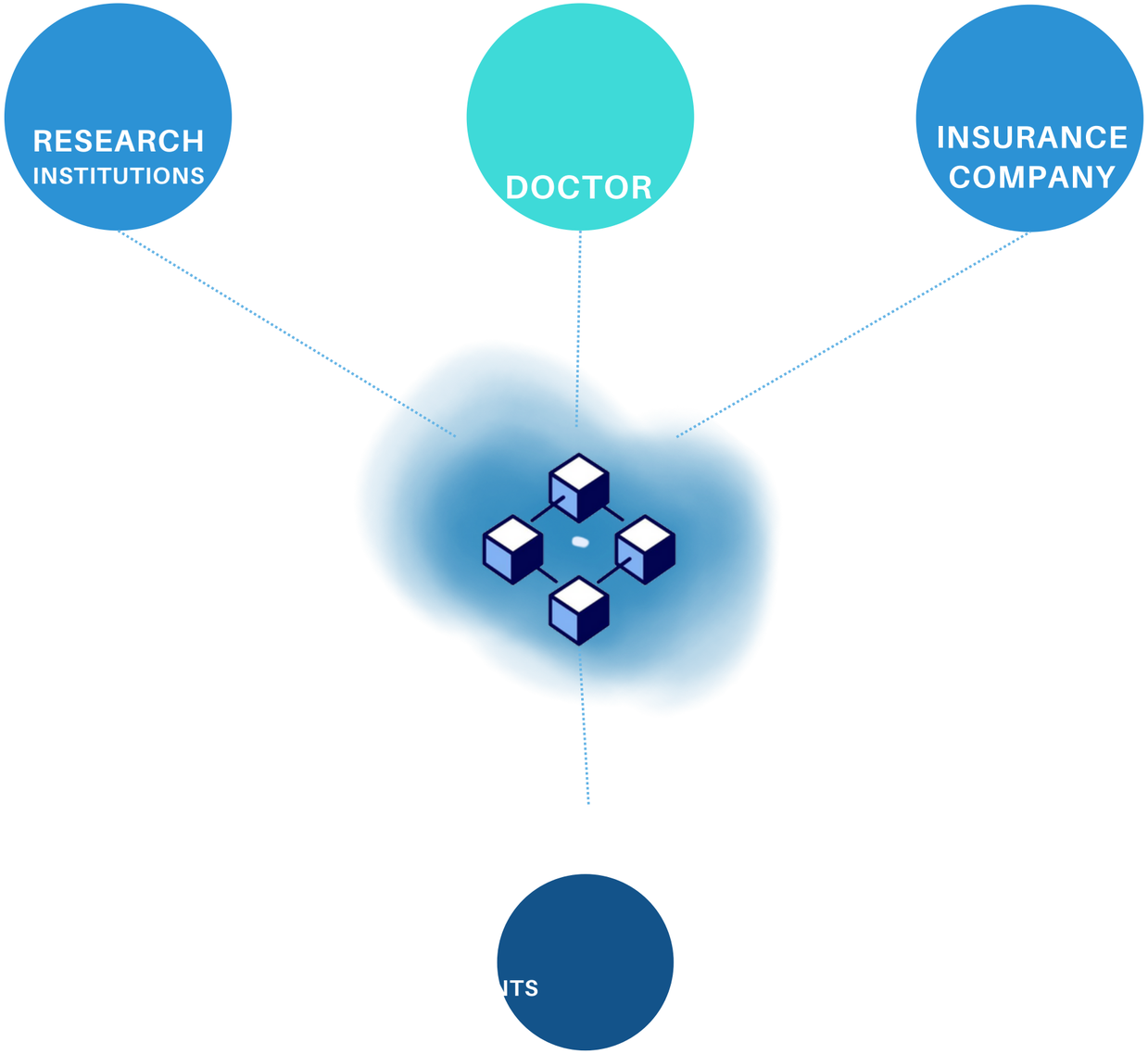
INSURANCE
COMPANY



Basic Functionalities

Overview

- patient can give their record access (limited time) to insurance companies
- patient can share their records to research institutes directly for clinical trails and other research purposes



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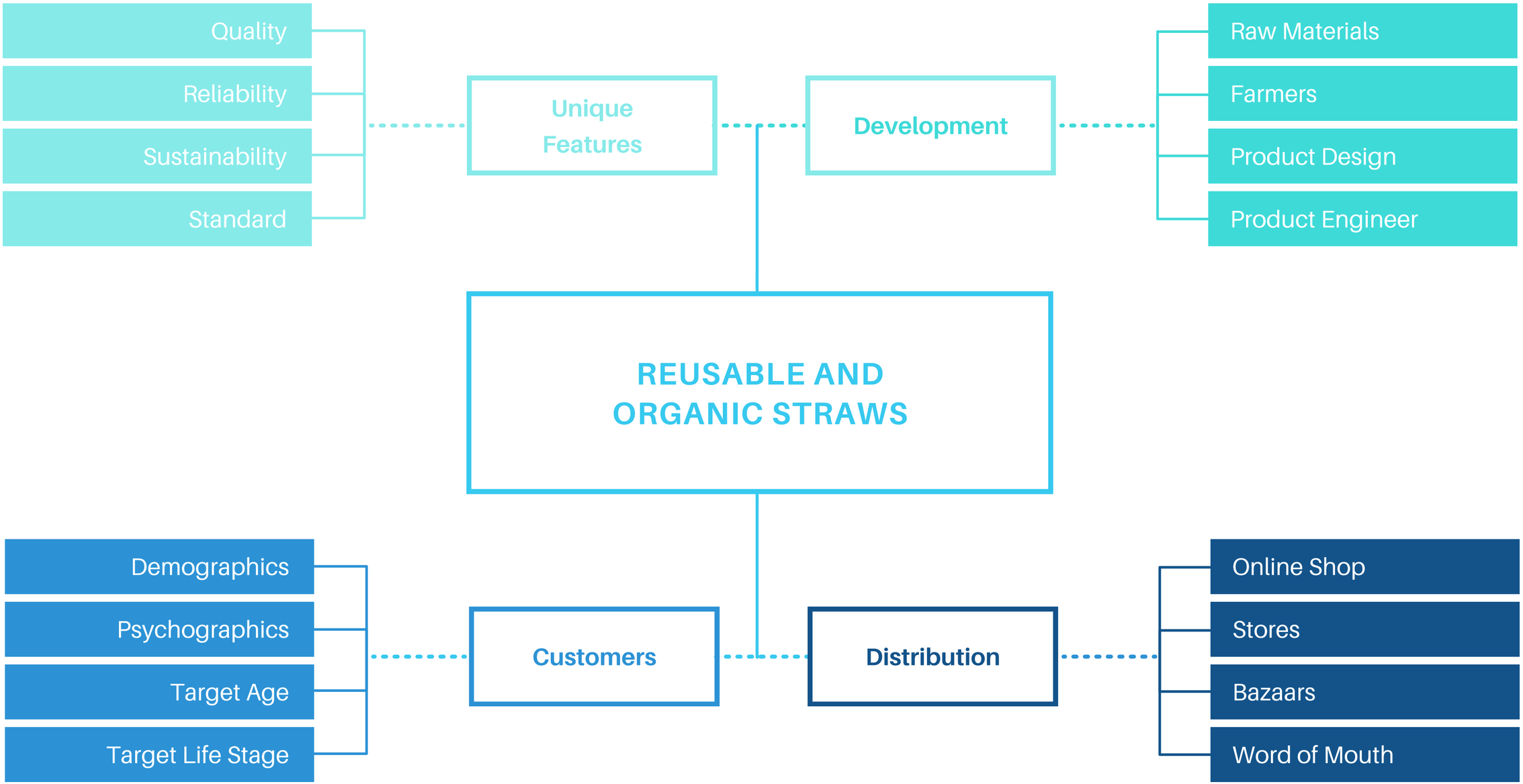
Quality
Reliability
Sustainability
Standard
Unique Features
Development
Raw Materials
Farmers
Product Design
Product Engineer
REUSABLE AND ORGANIC STRAWS
Demographics
Psychographics
Target Age
Target Life Stage
Customers
Distribution
Online Shop
Stores
Bazaars
Word of Mouth