



**A decentralized and incentivized  
platform for personal health data.**





**Human body produces a large amount of health data everyday**





**Collecting one's health data requires visits to hospitals for expensive measuring equipments**







**PGHD (Patient Generated Health Data) will bring rise of the innovative digital healthcare**





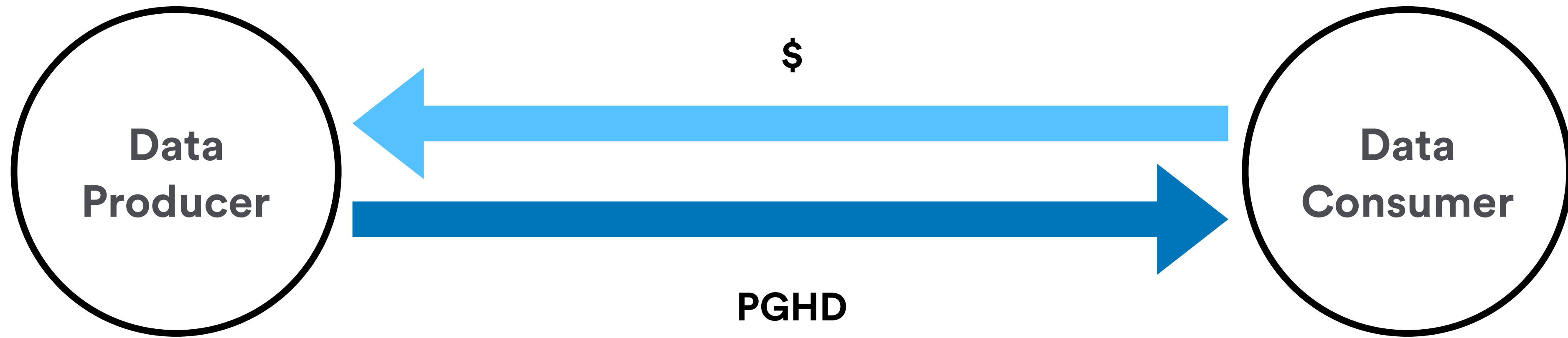
**Problem? Data acquired directly from patients are unreliable**





**Astera wants to solve the aforementioned problems of health data market**









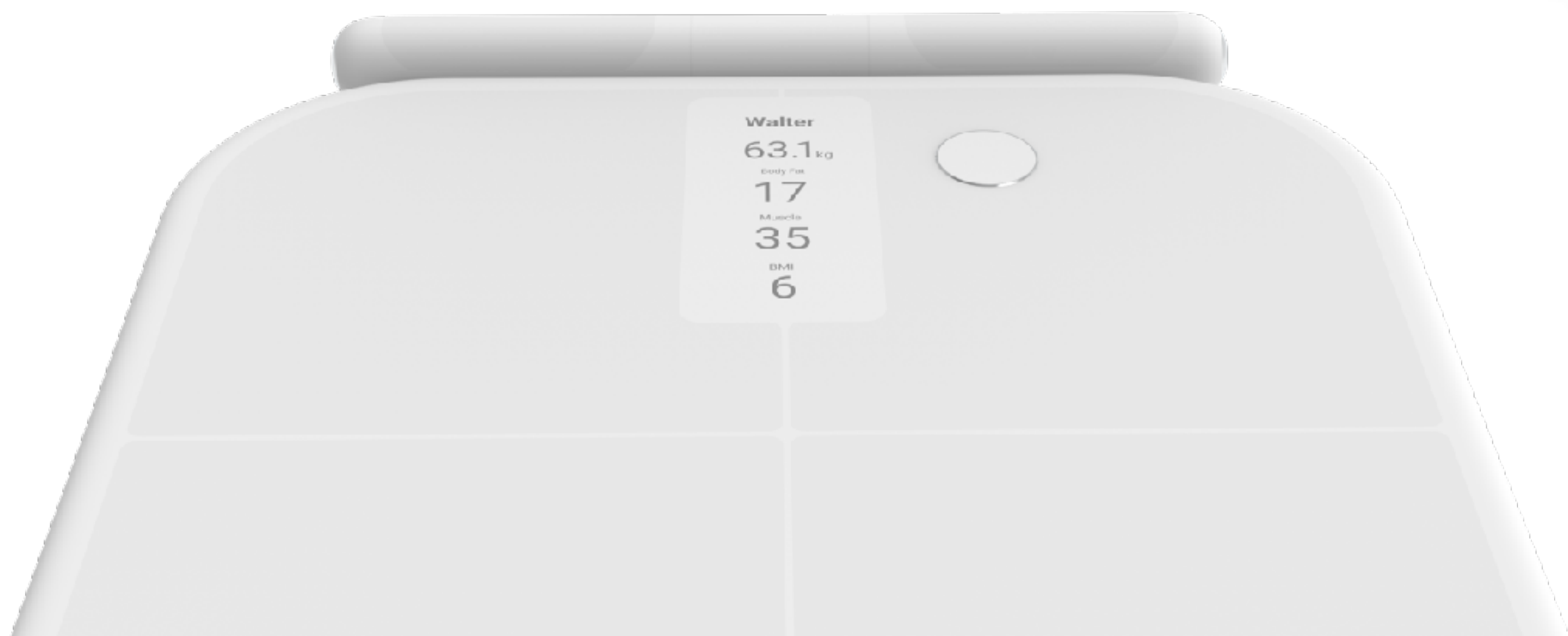
**IoT Hardware**

**Blockchain**





 ASTERA





# Astera B Health Tracking Smart Scale



Weight

Body Temperature

Body Fat Percentage

Heart Rate

Body Water Percentage

ECG (Electrocardiogram)

Skeletal Muscle Mass

Oxygen Saturation

BMI

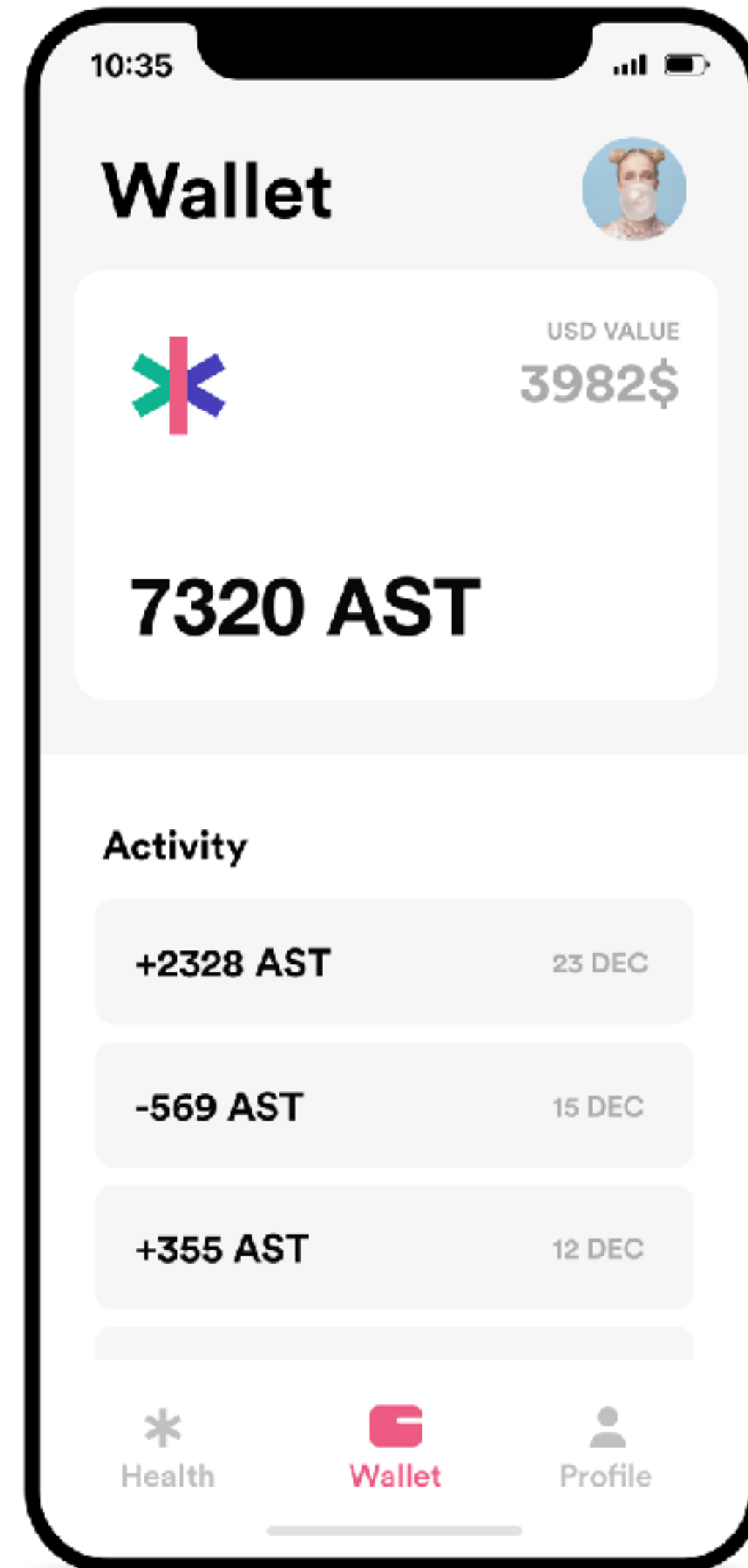
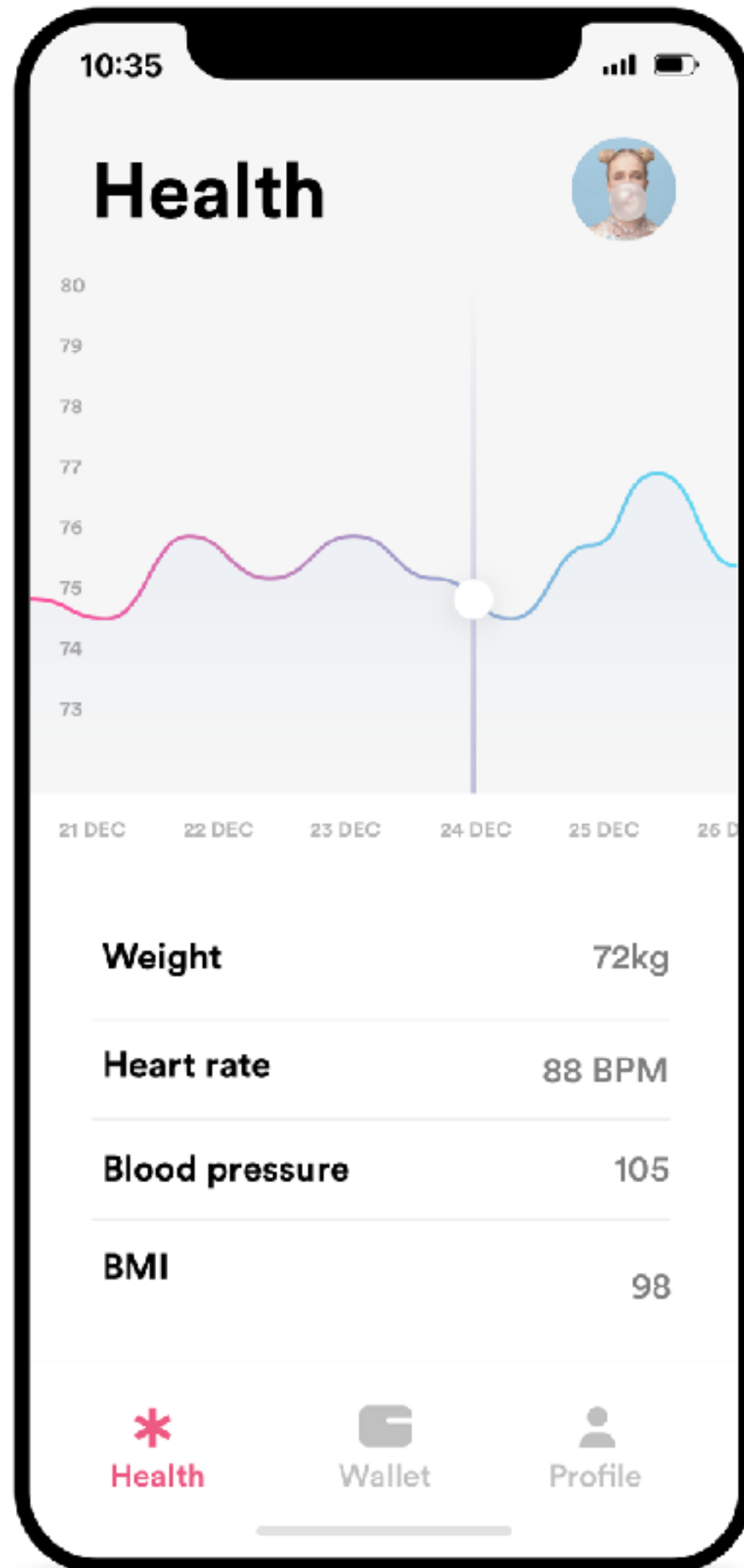
Blood Pressure\*

BMR

Height\*







## Health Data

- View history of health data
- View health trends

## Wallet

- Manage token rewards
- Send and receive tokens

## Chatbot

- Obtain 'claimed data' (PGHD)  
(Location, insurance, disease history, dietary restrictions, etc.)
- Provide feedback for health improvement

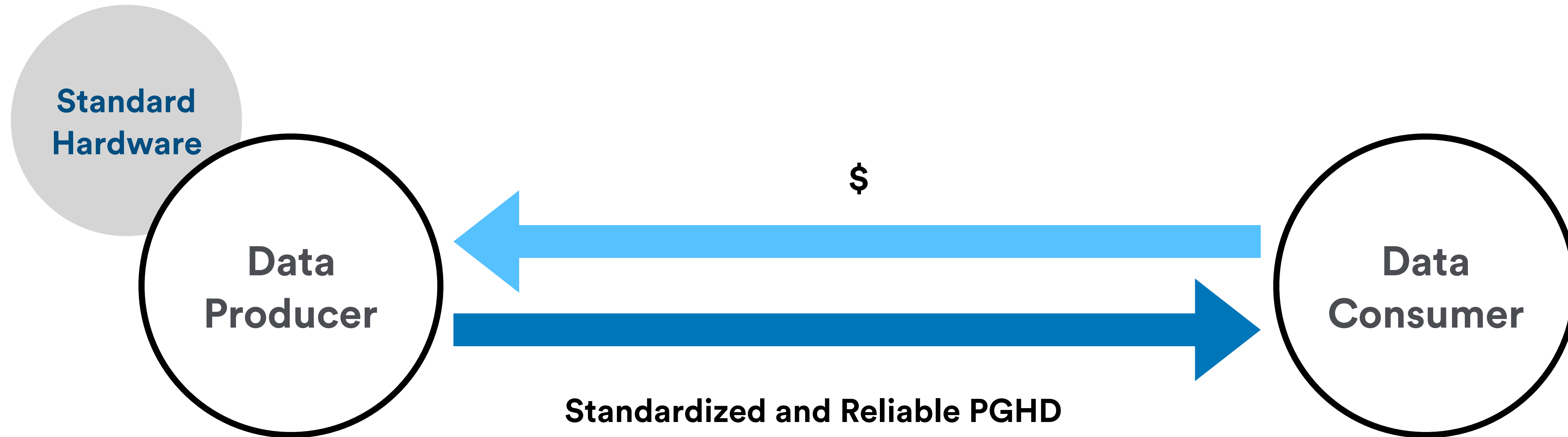




# Why Hardware?



# Why Hardware? 1. Standardized PGHD Acquisition



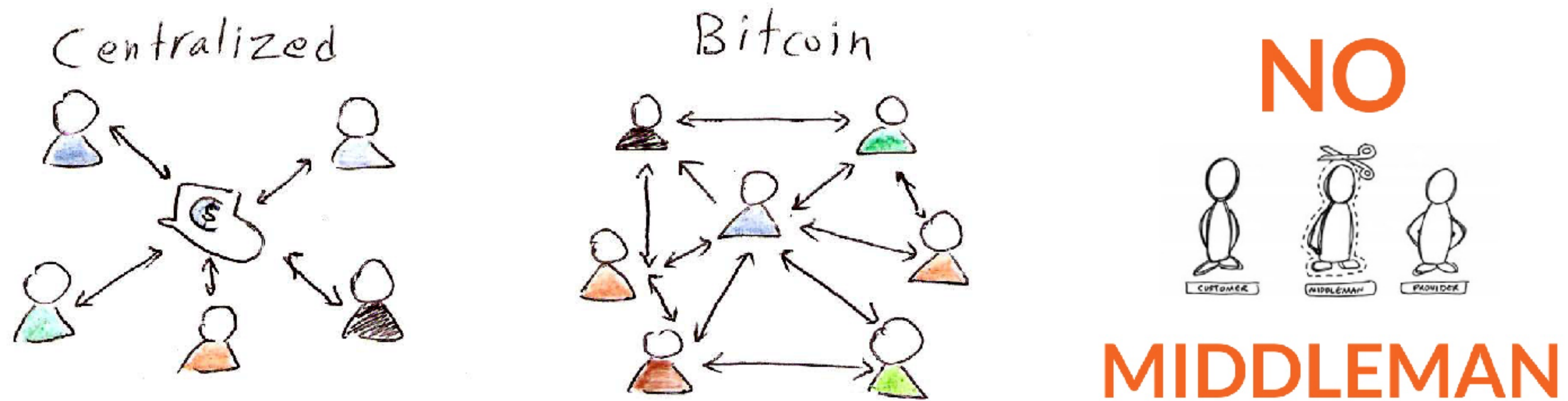
Standardized and accurate PGHD acquisition through user verification



# Why Hardware? 2. Permanent and Scalable Business Model

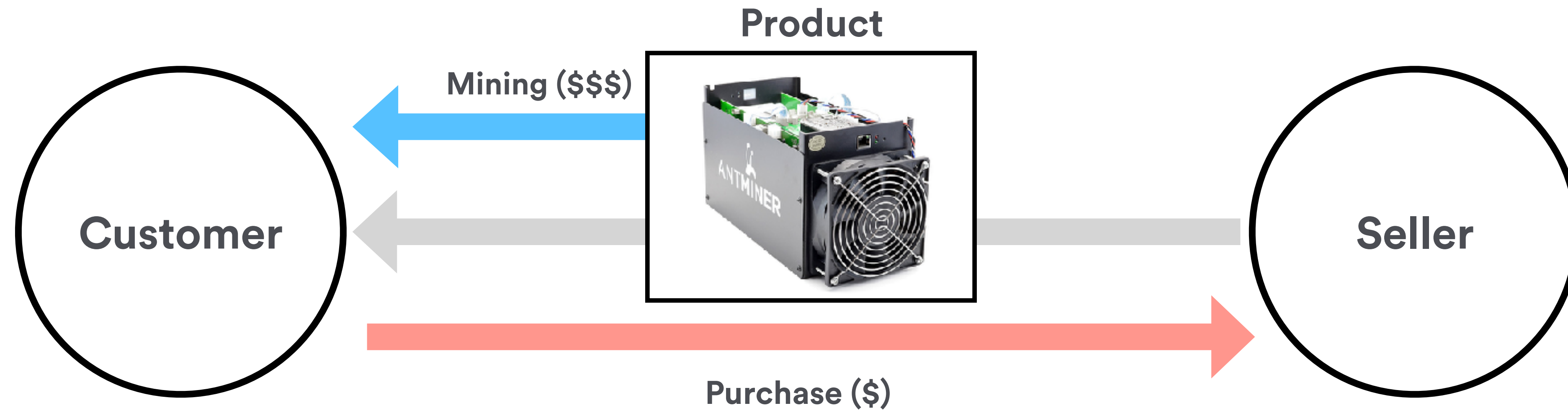


*“The promise of blockchain is a world without middlemen”*



**Selling hardware products as the primary business model,  
instead of taking ‘commission fee’**

# Why Hardware? 3. Revolutionary Way of Selling Products



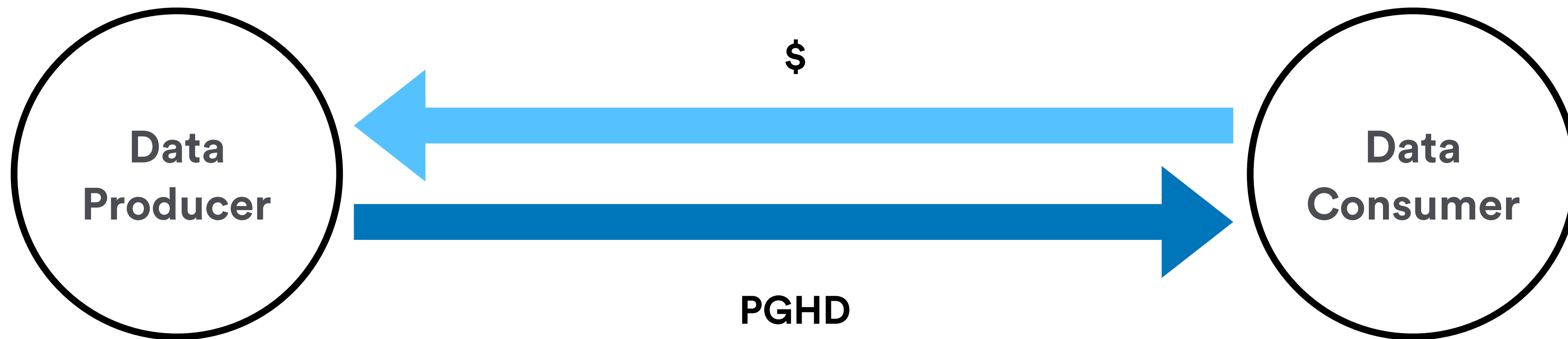
**Users can purchase a device without paying the full price,  
while the manufacturer sells at the full price**





# Why Blockchain?

# Why Blockchain? 1. Token Economy

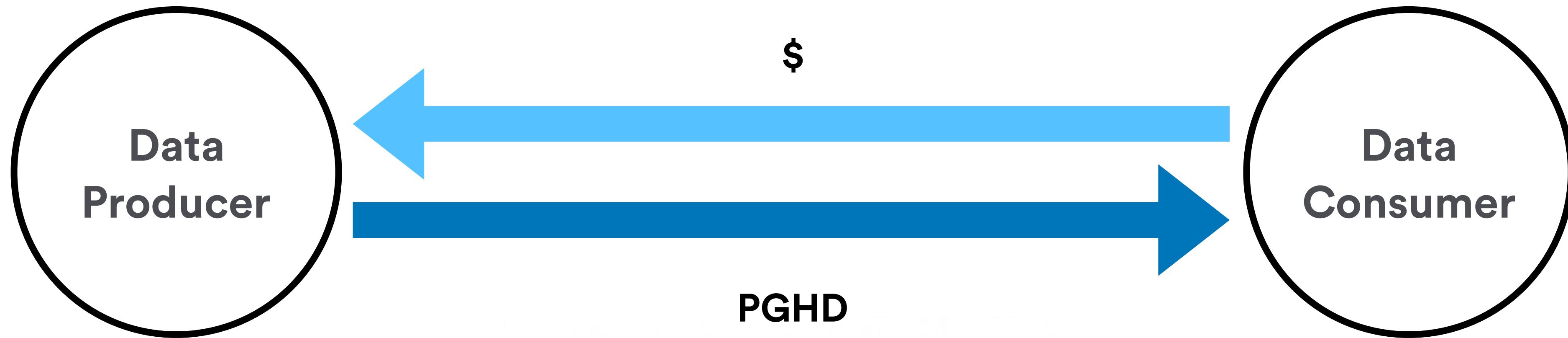




# Why Blockchain? 1. Token Economy



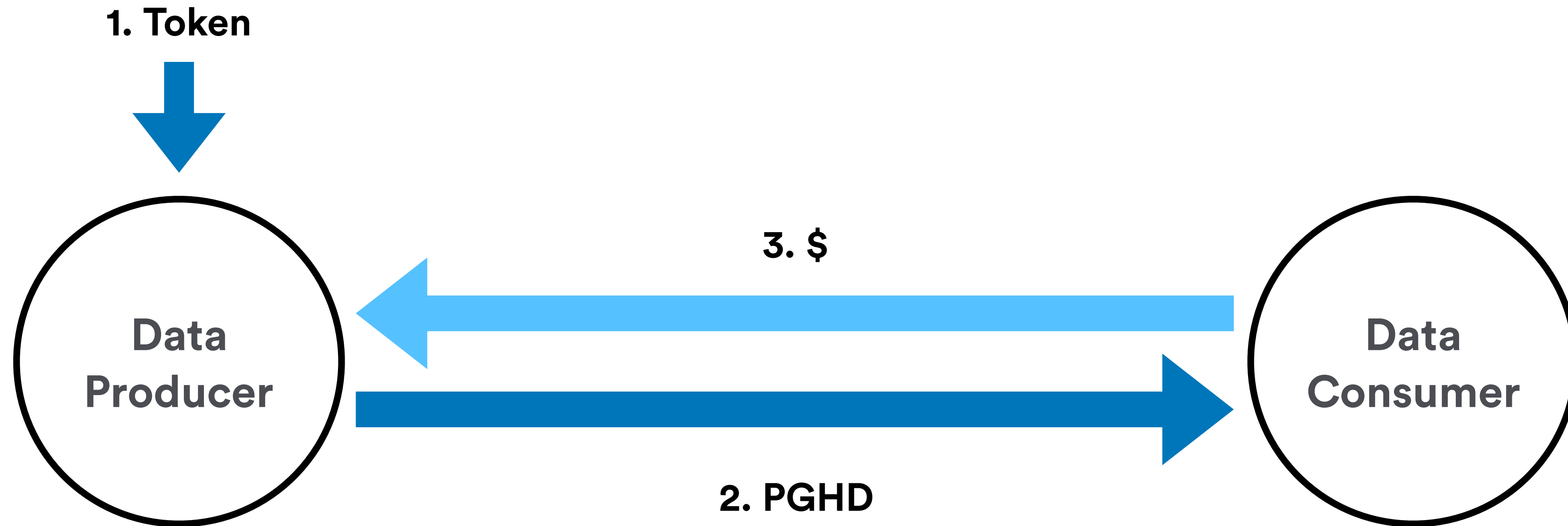
Which first? Collecting PGHD first? or finding data consumer first?



Chicken or Egg?



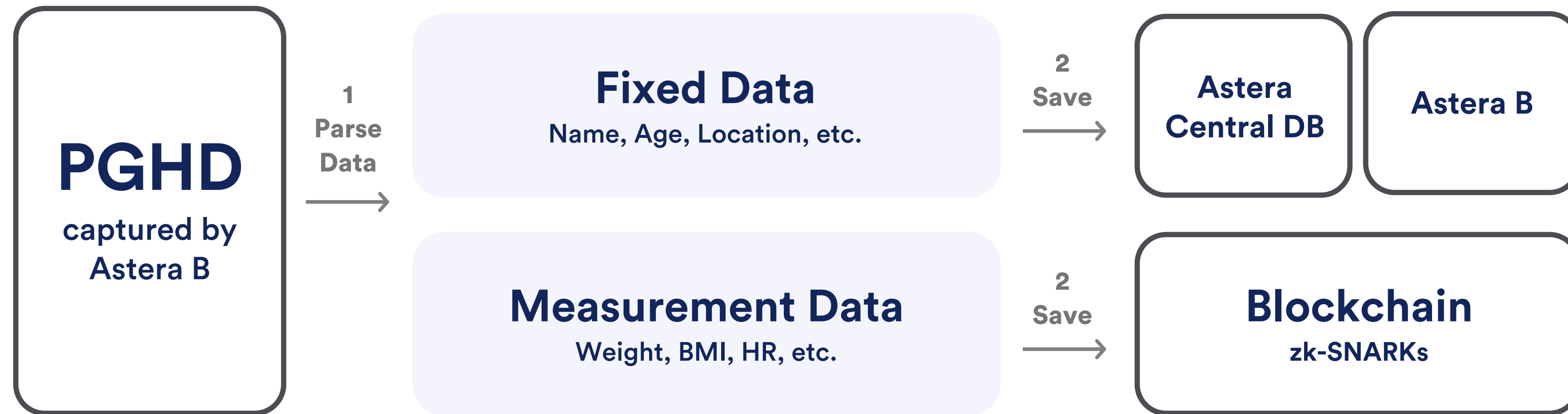
# Why Blockchain? 1. Token Economy



1. Obtain reliable data first by using issued tokens to reward data producers
2. Provide accumulated PGHD to data consumers
3. Capital provided by data consumers motivates data capturing (repeat 2, 3)



# Why Blockchain? 2. Secure & Transparent Data Handling

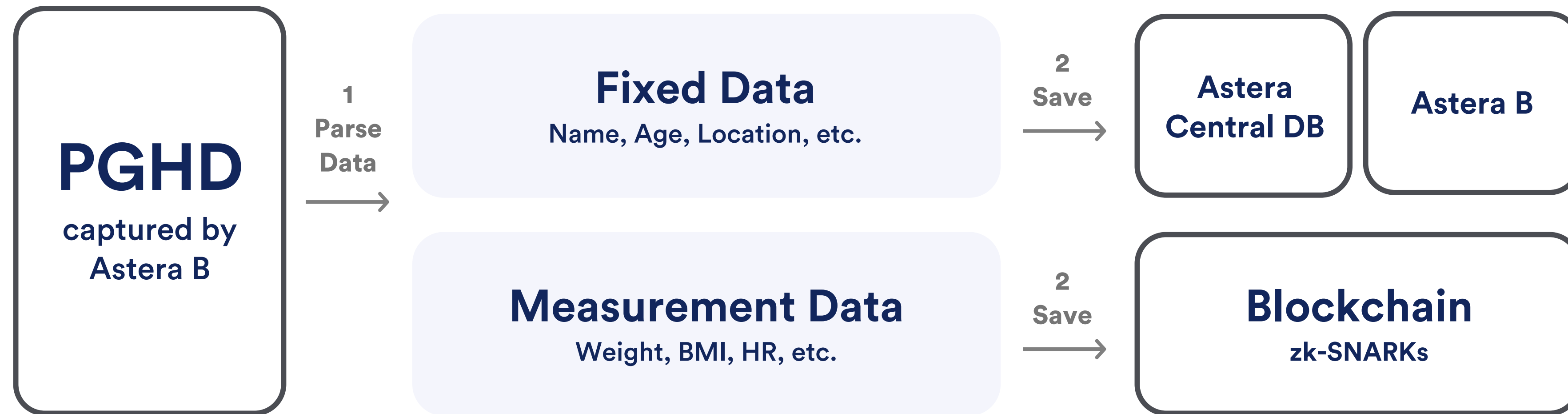


A. User Data Segmentation

B. Data Distribution Upon Data Type

C. On-Chain Data Protection with Zero Knowledge Proof

# Why Blockchain? 2. Secure & Transparent Data Handling



Data uploaded by consensus algorithm are 'immutable'

'Anonymity' ensured through segmentation and decentralization of data

Data access is only available through 'multi-sig approvals'

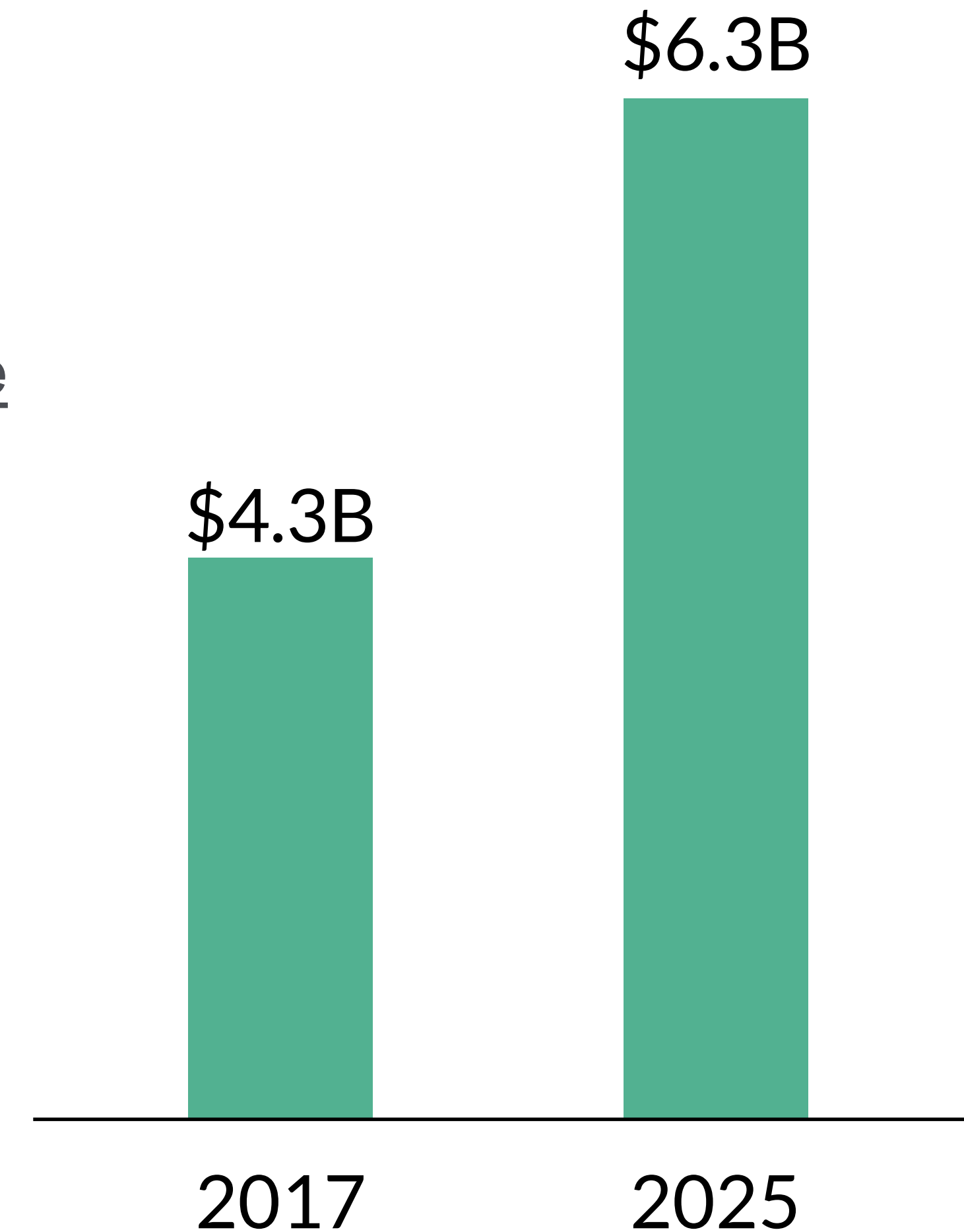


# Smart Scale Market Selling Hardware to Data Producers



Weight management is the biggest concern for modern people

- \* It requires to check one's weight periodically
- \* Smart scales are the fastest popularity gaining device in the current sports and health industry



\$4.3B as of 2017 (CAGR 5%) → \$6.3B by 2025.

# Smart Scale Market Business Strategy



Withings Body Cardio  
**\$150**  
**6 Data Values**



Inbody Dial  
**\$300**  
**10 Data Values**



Garmin Index  
**\$150**  
**5 Data Values**



Asteria B  
**\$0**  
(when used continuously)  
**12 Data Values**

**Compete with price advantage over other available products**

# Health Data Market Selling Data to Data Consumers



Hospital/Doctor



Health Insurance



Gym



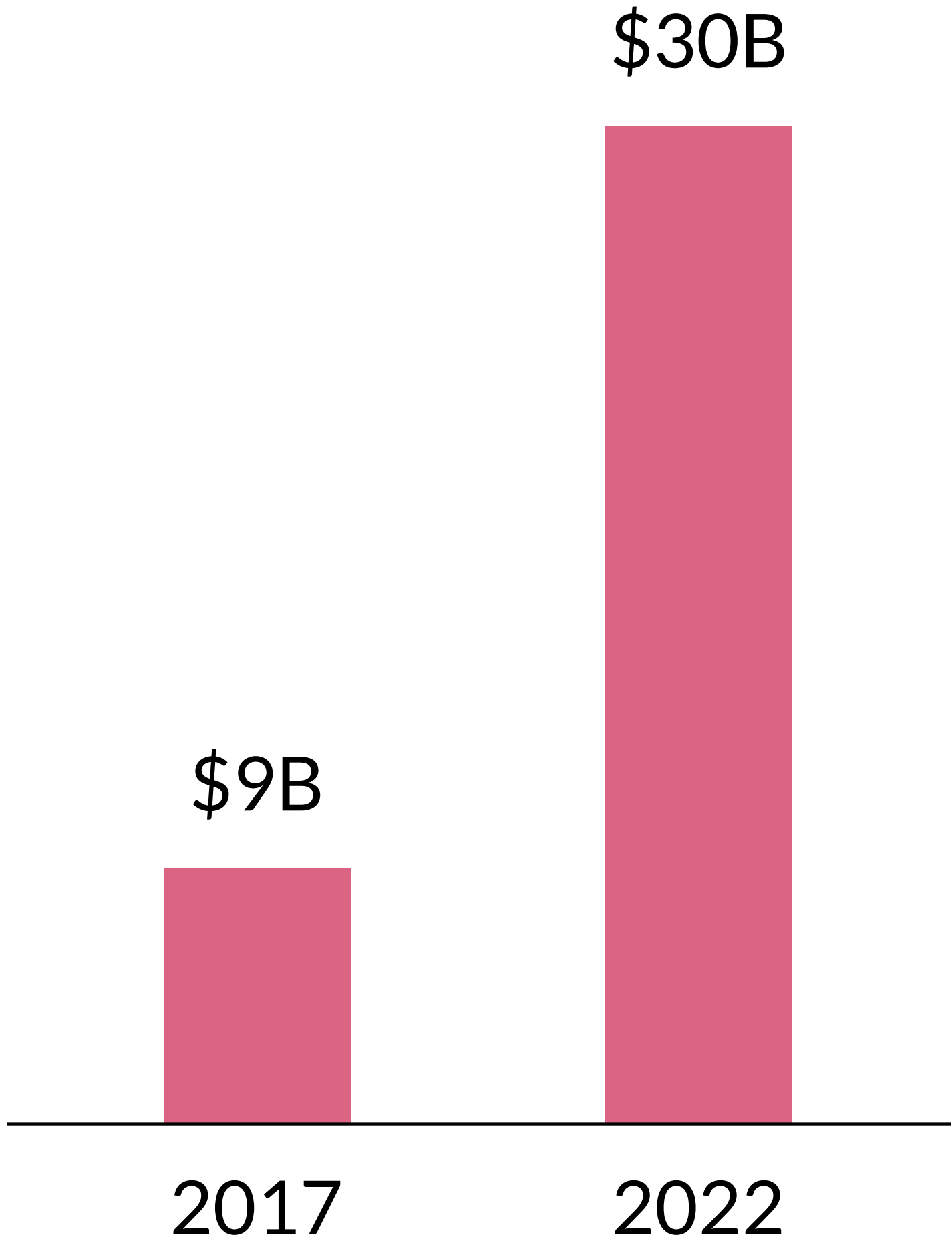
Research Institution



Company



Users



\$9B as of 2017 (CAGR 10%) → \$30B by 2030



# Health Data Market Business Strategy



A) Finding potential customers for weight management, health consulting companies



B) Providing tools and solutions for population health management companies working to change patient behaviors



# Team



Astera is a team of engineers with combined 30 years of experiences in IoT hardware engineering, and software development



*Experiences from Cisco Systems, LG Electronics, Qualcomm Technologies, Sony Mobile, Kakao, Naver, ST-Ericsson, Sunnyloft, etc.*



**SONY**

kakao

**NAVER**



LG Electronics

Qualcomm



**ST  
ERICSSON**

Our past projects include hardware development work with Sharp, Foxconn and Visa



**ASTERA**  
Vision

- 1. Create standardized and reliable PGHD market**
- 2. Leverage the value of data people create**
- 3. Motivate active health managing habit**



# Thank You

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# Advisors



**Yongkil Kwon - CTO of Neowiz**  
NEOPLY CEO  
EOSeoul CEO



**Hyunwook Han**  
Professor at CHA University  
Medibloc Advisor



**Yongwoo Park**  
CEO at Reset Clinic  
Director at KOSSO



**Hyungrok Jung**  
CEO at Cellapy  
Samsung Electronics Digital Healthcare



**Junki Lee**  
Director at Yonsei Graduate School  
President at Korea Big Data Forum

# Investors & Partners



**NEOPLY**  
Cryptofund



**EOSeoul**  
EOS BP Candidate



**Reset Clinic**  
Healthcare Product



**SM Entertainment**  
K-Pop Entertainment



**ESteem**  
Model Agency

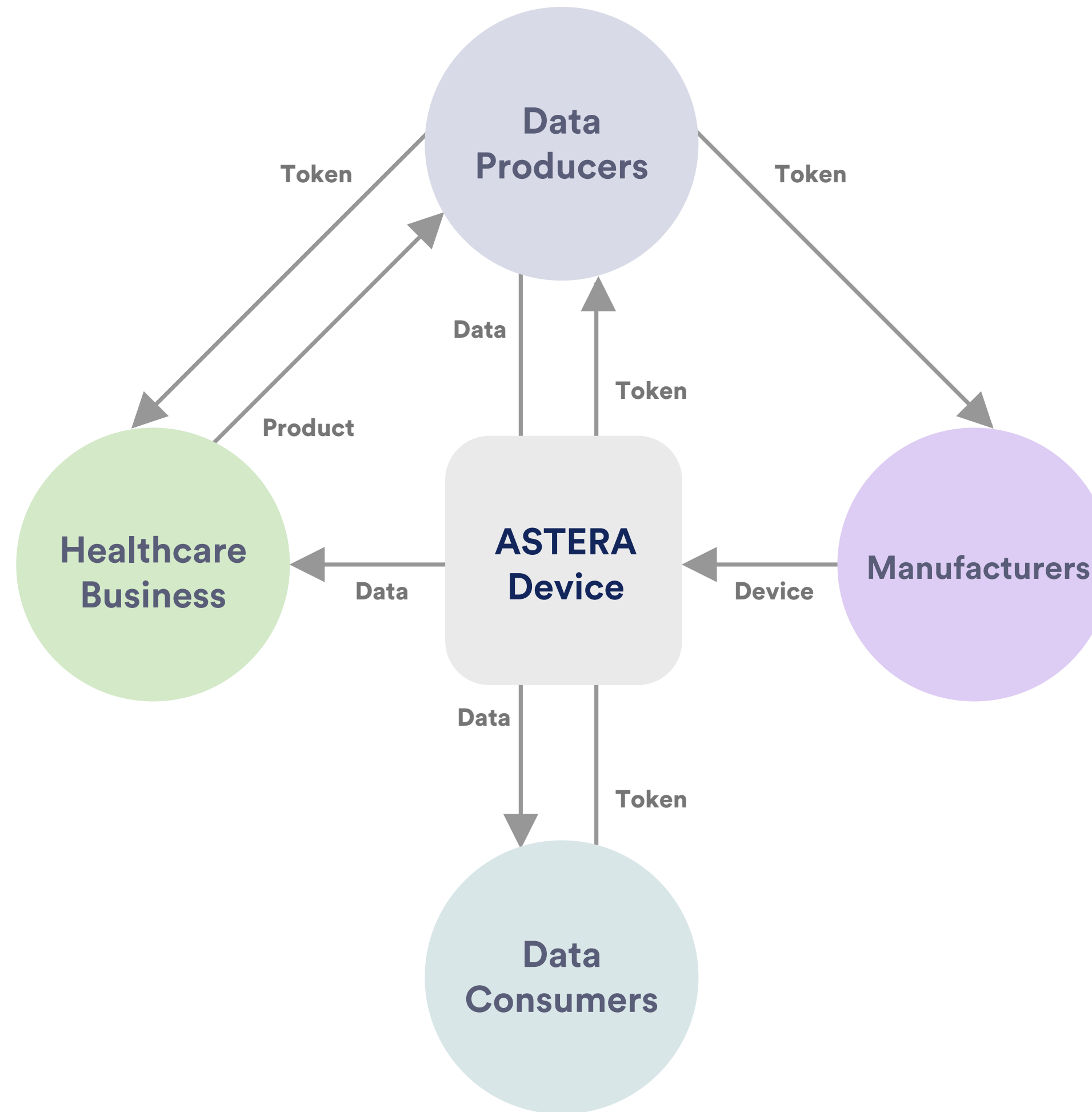


**Cellapy**  
Cosmetics Derma

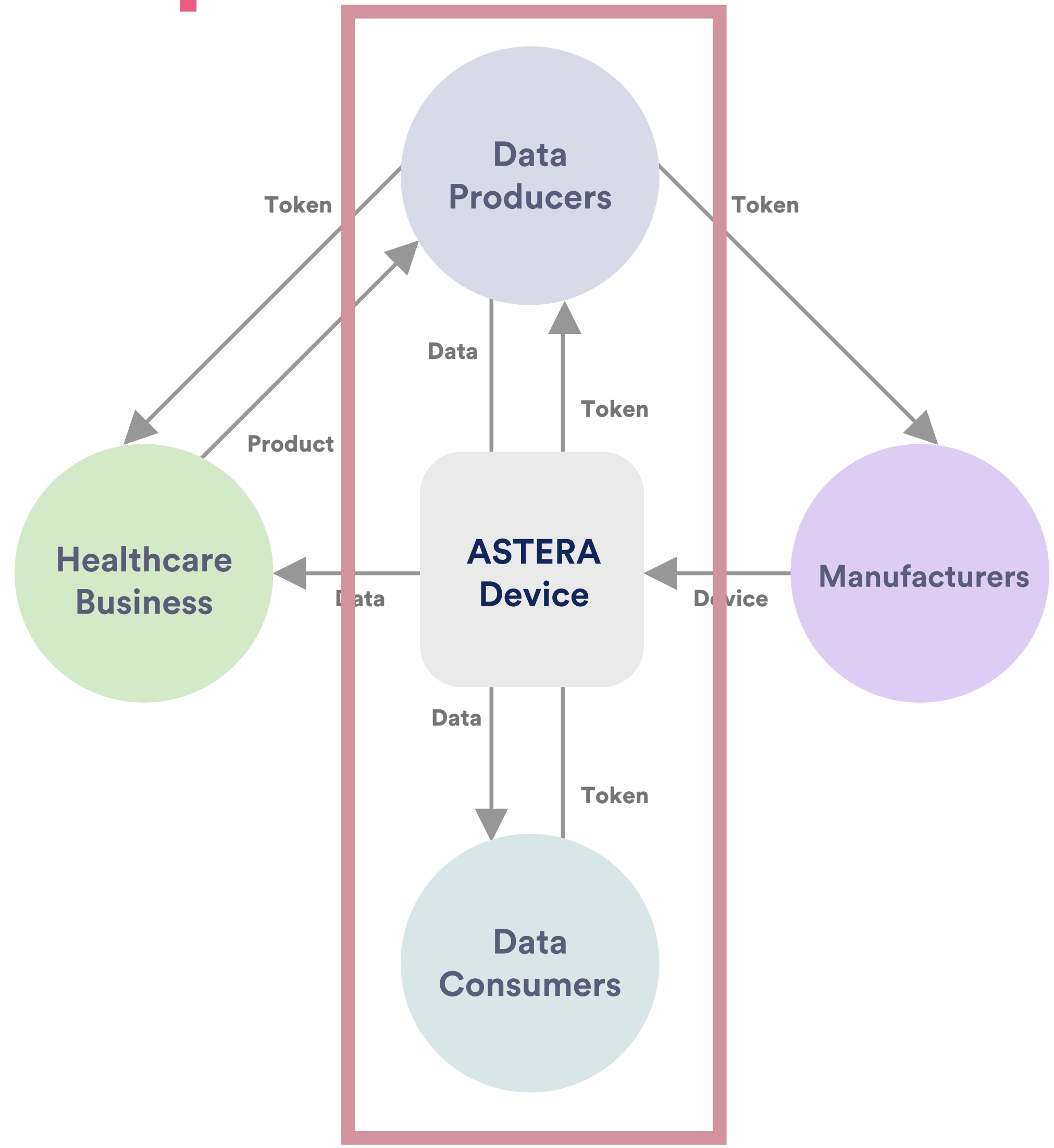
# Astera Ecosystem



 ASTERA





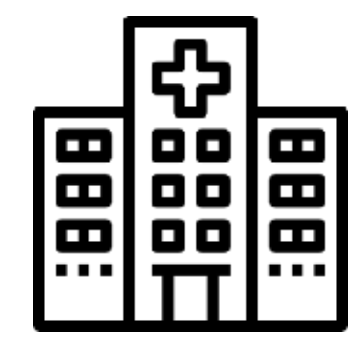


## Data Producers



Users

## Data Consumers



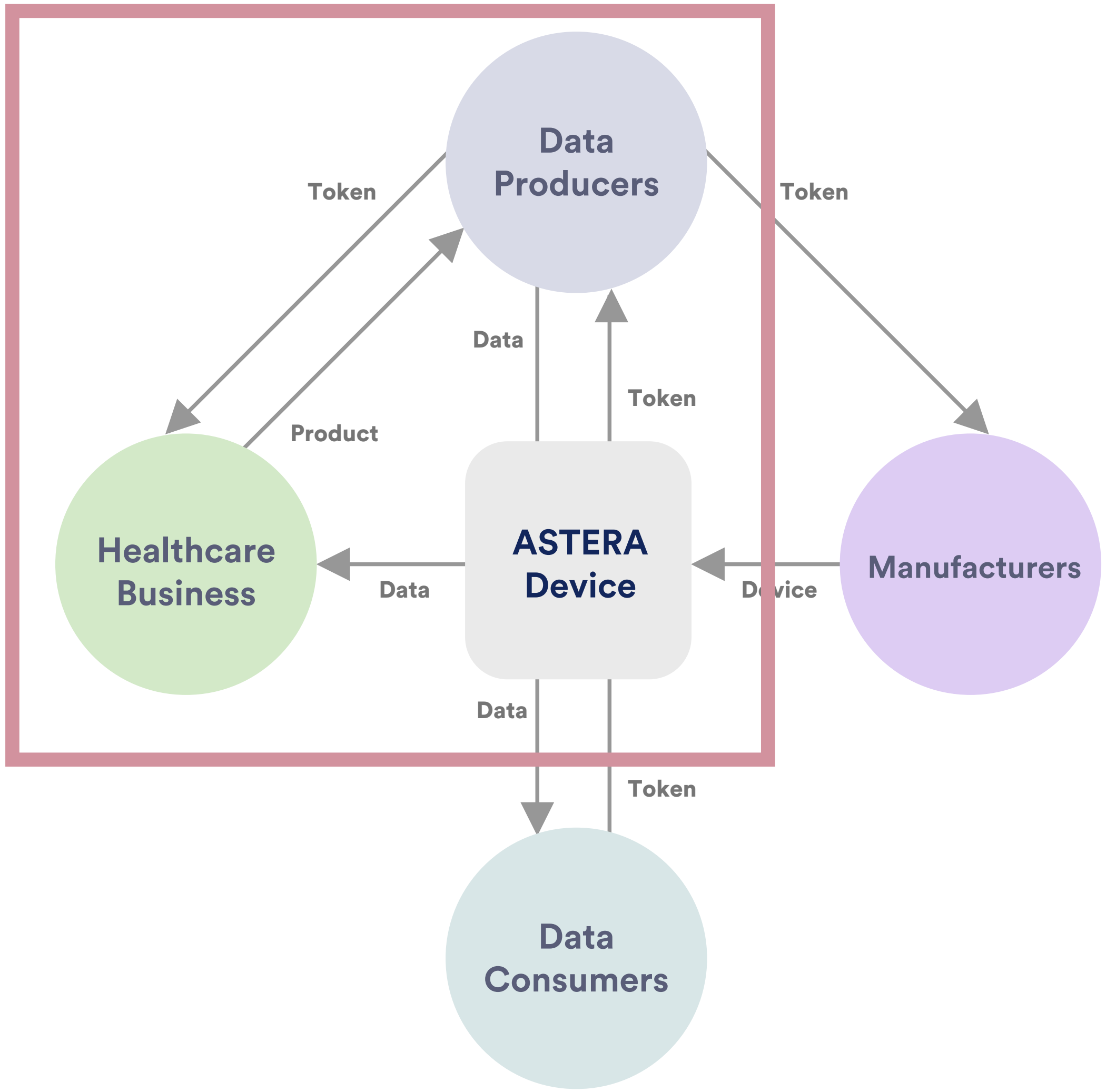
Hospitals  
Clinics



Insurance  
Companies



Research  
Institutions



## Data Producers



Users

## Healthcare Business



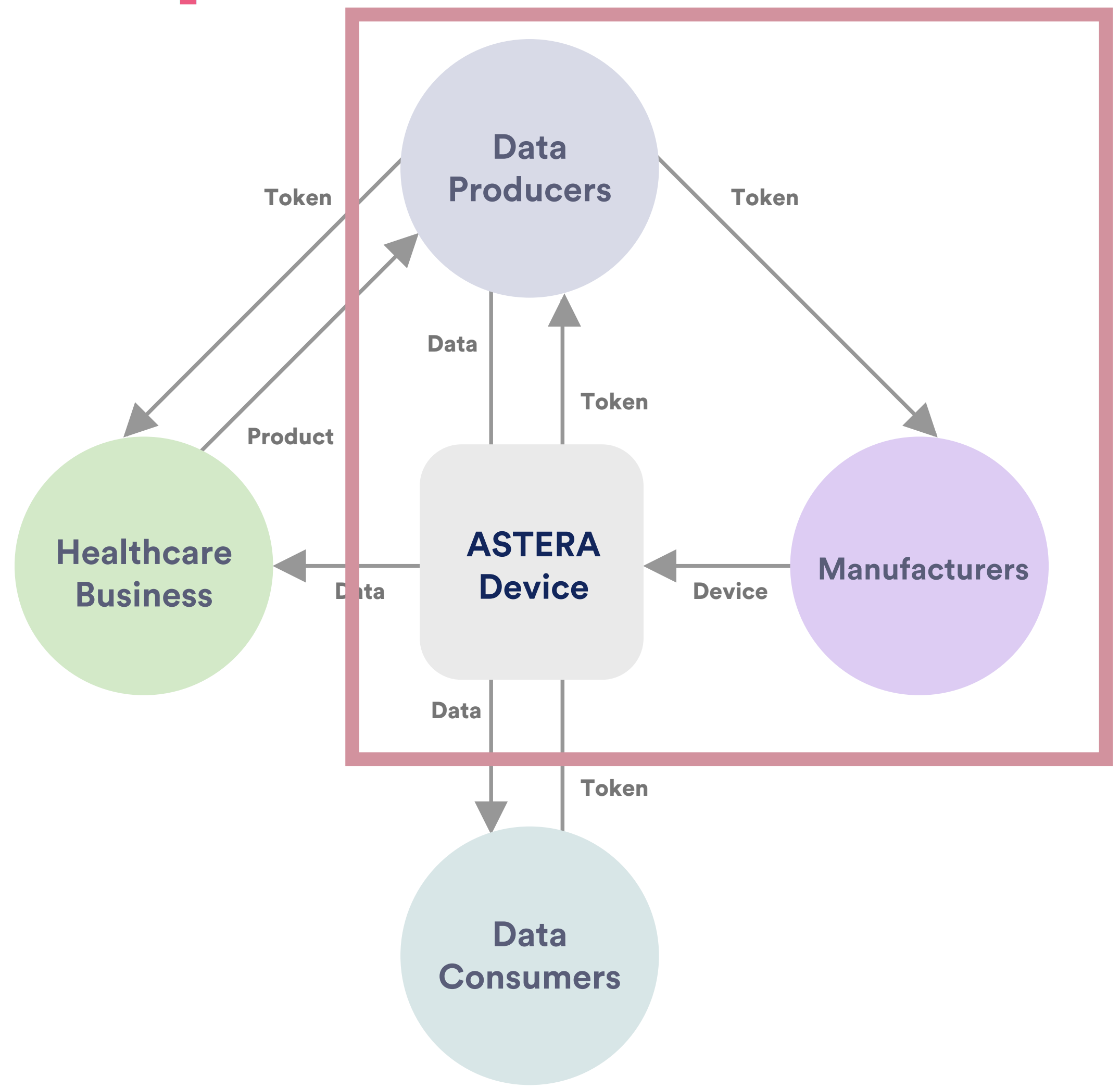
Healthcare Companies



Pharma



Fitness Center



## Data Producers



Users

## Manufacturers

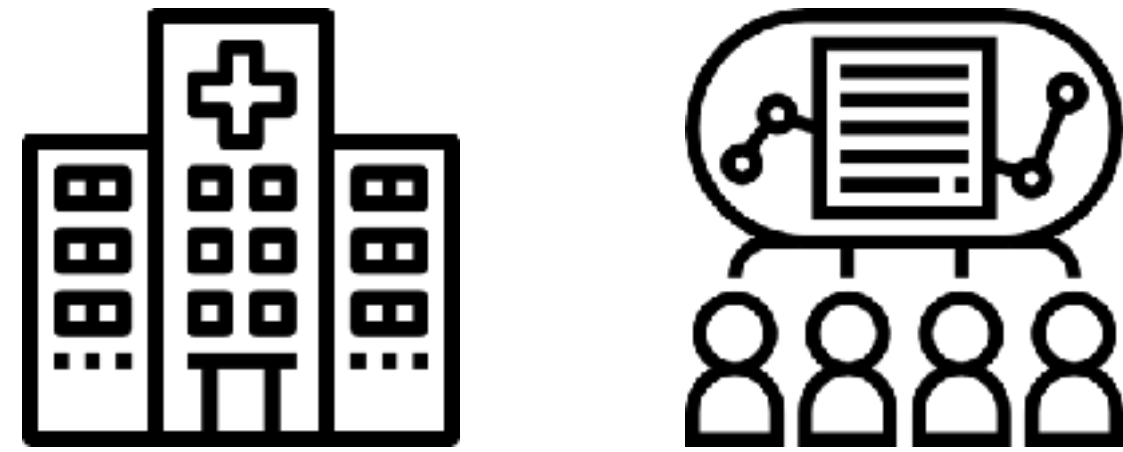


Healthcare Device  
Manufacturers

DPS (Decentralized Product Selling)



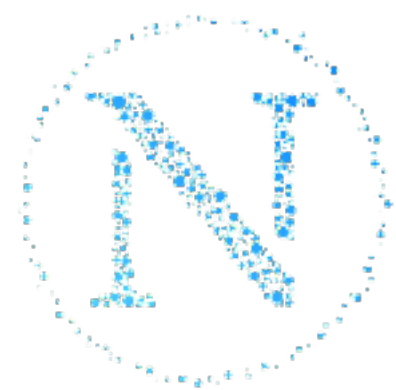
# Other Healthcare Blockchains



Hospital / Clinic

Sensitive  
EHR/EMR Data

Data Ownership  
Different Law  
Different Instruments



PGHD

Standardized &  
Reliable PGHD



User



# Valuation / PER



**InBody**



**Abbott**

**Tactile**  
MEDICAL

**GARMIN**

**GENORAY**

**SEJONG**  
MEDICAL



**ASTERA**

Market Cap

Net Profit

AST Price: \$0.025  
Market Cap: \$75M

PER: 46.35

Industry Average PER: 46.35

Net Profit: \$1.6M  
Sales per Astera B: \$300  
Profit per Astera B: \$60 (Profit Rate: 20%)  
 $\$1.6M / \$60 = \underline{26000 \text{ Units}}$