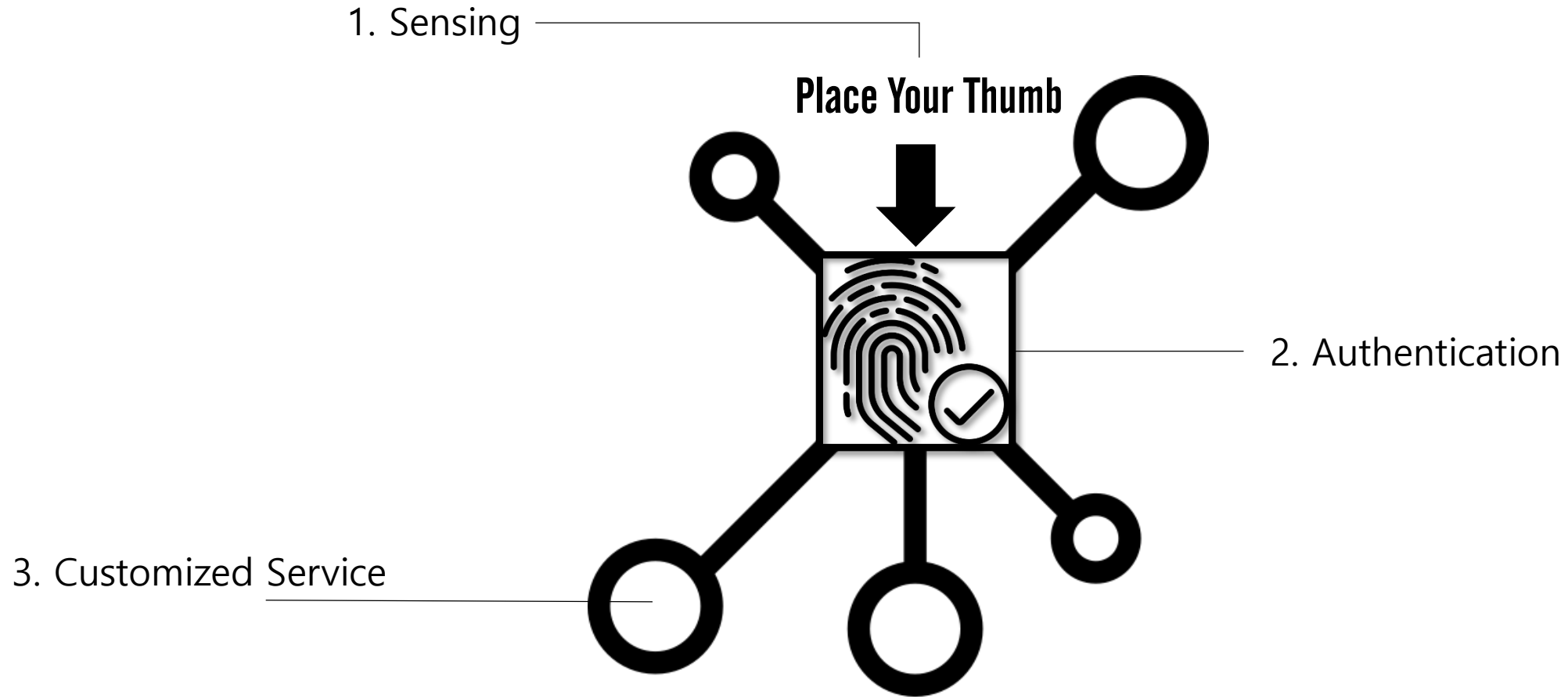


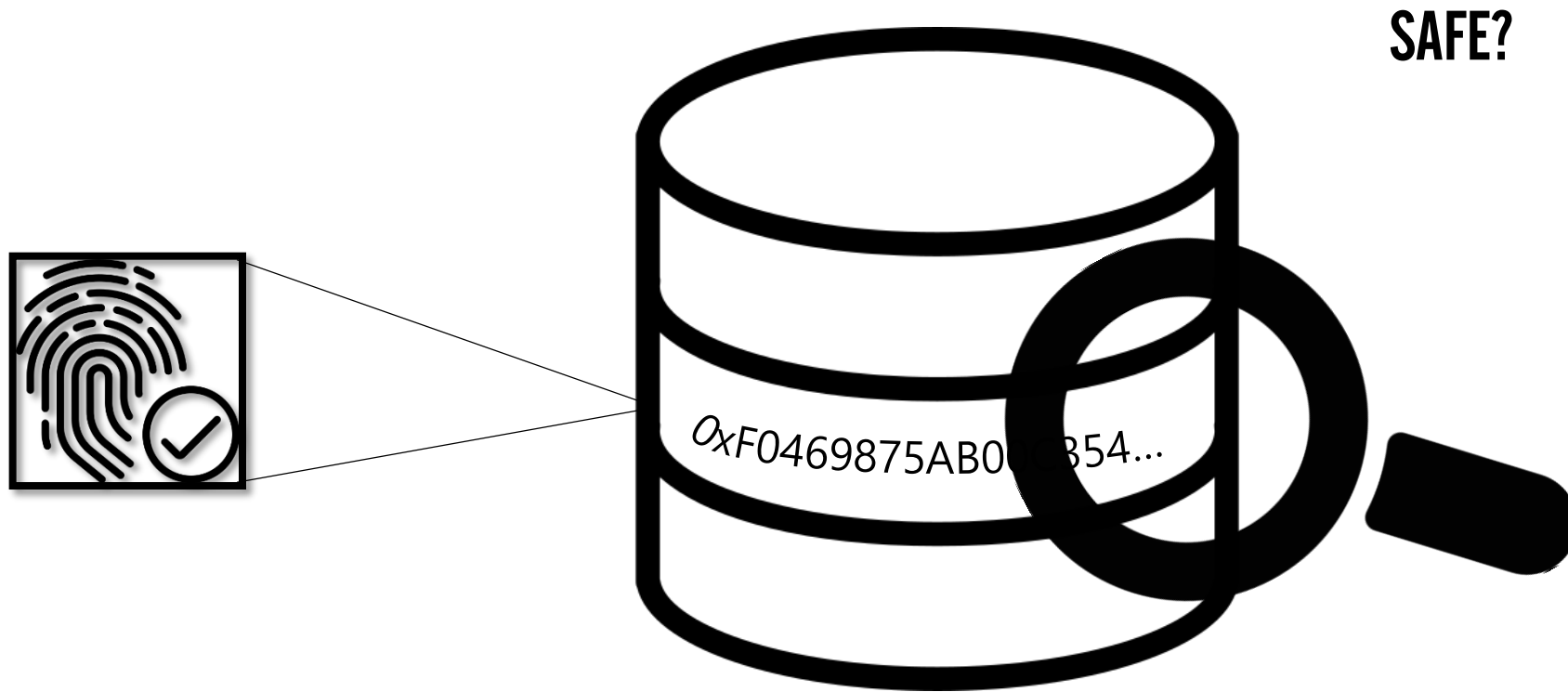
# Biometric Authentication

<https://www.youtube.com/watch?v=fEWF2zo4tfM&list=PLdOq9g7U6Pdt5ZIWeffEU-ViDUS6j-jFS&index=2&t=0s>

# Services Using Biometric Data



# Storing Problem



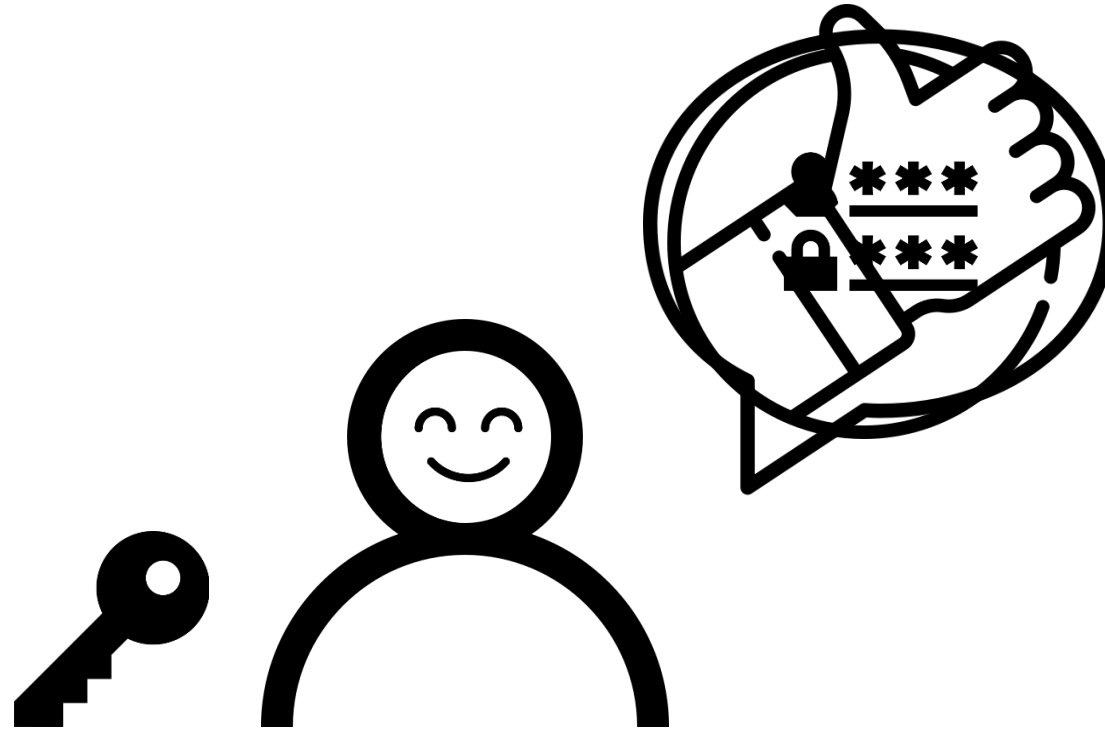
# Leakage Problem

- **Can Be Me**
  - **Normal Problem When We Lost Key**
- **Can Know Me**
  - **Additional Problem**

# In spite of these Problem

No Need To  
Have, Memorize

> CONVENIENT



# In spite of these Problem

**Public, Private Services  
Using Biometric Authentication**



# Importance Of Biometric Data

- **GDPR(General Data Protection Regulation)**
  - **Biometric Data**
    - **Categorized as a Special Kind of Private Data**

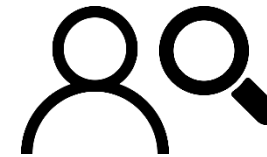


- **Domestic Law**
  - **Many Suggestion like GDPR**



# If You Lost Biometric Data

- **Problem 1 as a Key Data**  
→ Can't Use Anymore
- **Problem 2 as a Privacy Data**  
→ Can Profiling Someone Well
- **Problem 3 as a Sensitive Data (Health, Genetic Data)**  
→ Can Misuse





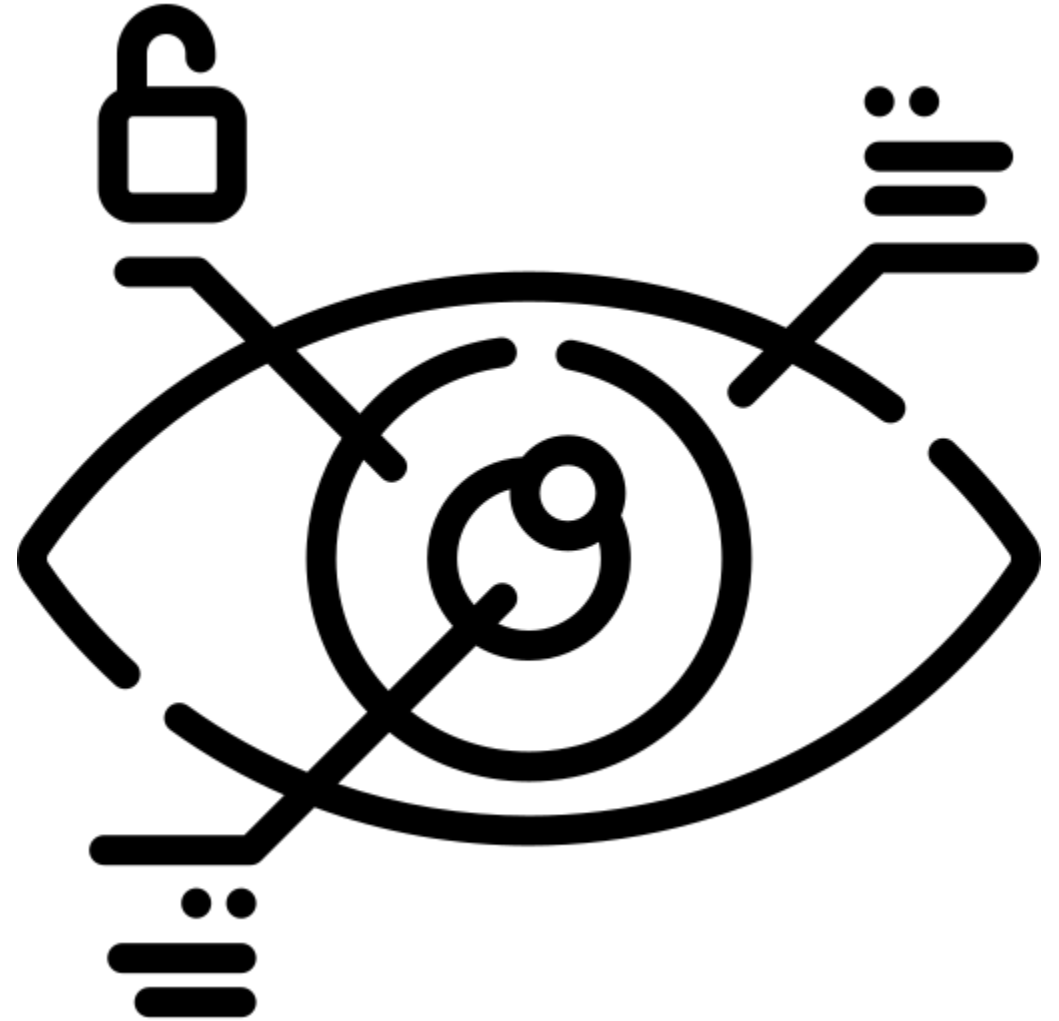
# Fingerprint Data

- Optical Method
- Capacitance Method
- Ultrasonic Method
- False Rate
  - 1/1000000000000 but



# Iris Data

- Camera Method
- False Rate
  - $1/1000000$  for a Eye
  - $1/100000000000000$  for Eyes



# Vein Data

- Infrared Ray Method
- False Rate
  - 1/10000



# Biometric Authentication Technology

- **Authentication Using Physiological / Behavioral Data**

# Biometric Data

Biometric Data	Method	Traits
Fingerprint*	Shape of Fingerprint	Convenient to use, Small Sensor, Rely on Environment
Iris/Retina*	Color, Shape, Pattern for Iris Pattern of Capillaries for Retina	Low FR, Hard to Forge
Vein*	Pattern of Vein	High Cost, Hard to Forge
Face*	Shape of Eyes, Nose, Mouth	Low Cost, Aging, Environment
Signature**	Speed & Pressure of Signature	Low Cost, Easy to Forge
Voice**	Pattern of Voice	Environment, Record Attack

Physiological Data\*

Behavioral Data\*\*

# Requirement of Biometric Data

- **Universality**
- **Uniqueness**
- **Permanence**
- ...

# Behavioral Data

- **Recently, Most Services Use Physiological Data for Authentication**
  - **Difficult to Gain, Process**
  - **Affected by Environment**

# Behavioral Data

- **Abacus Project(Google)**
  - **A Project to Replace Password**
- **Use Behavioral Data**
- **Trust Score**
- **API**

