

# Boarding Meets Biometrics

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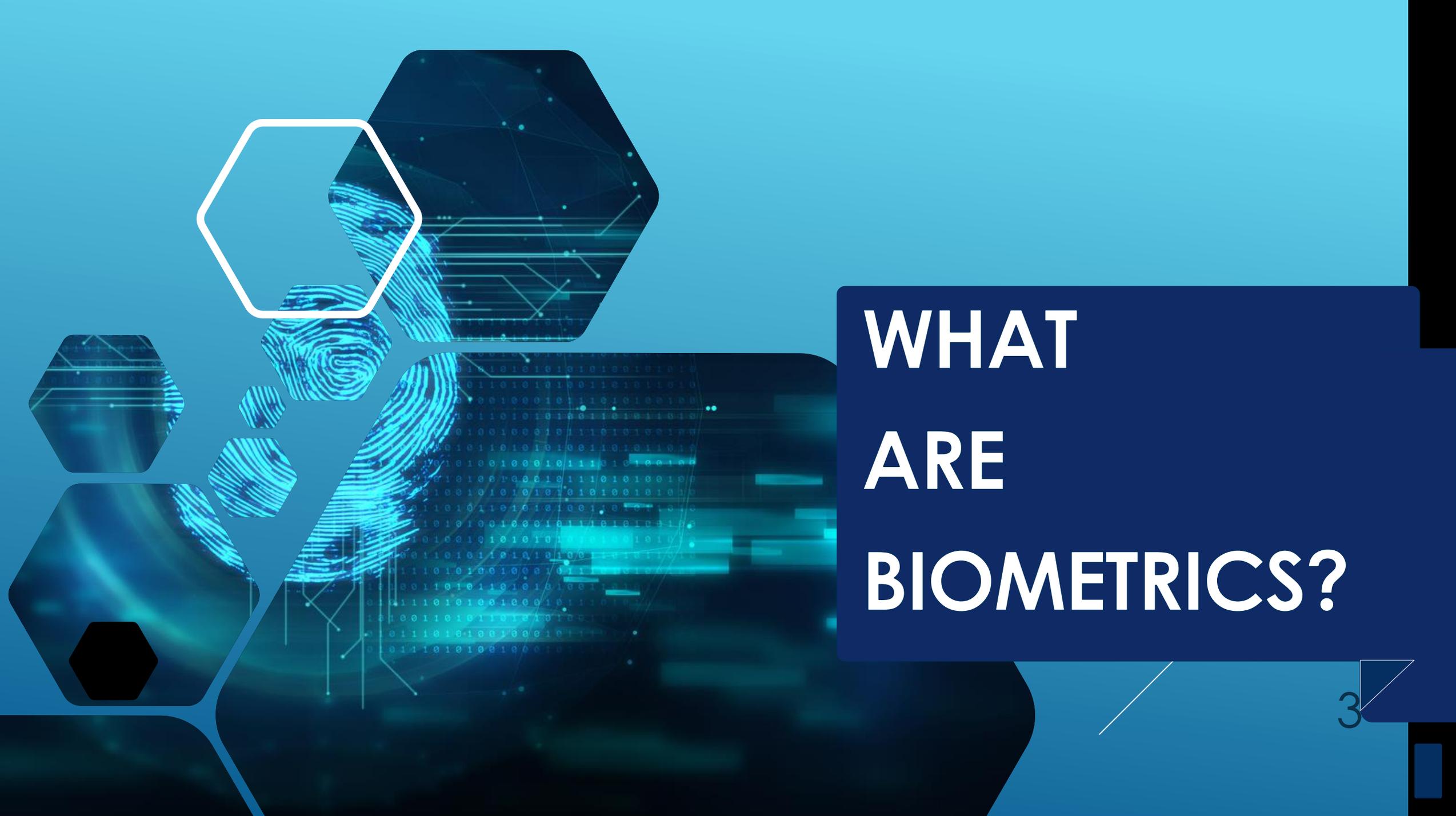
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# WHAT'S THE PLAN?

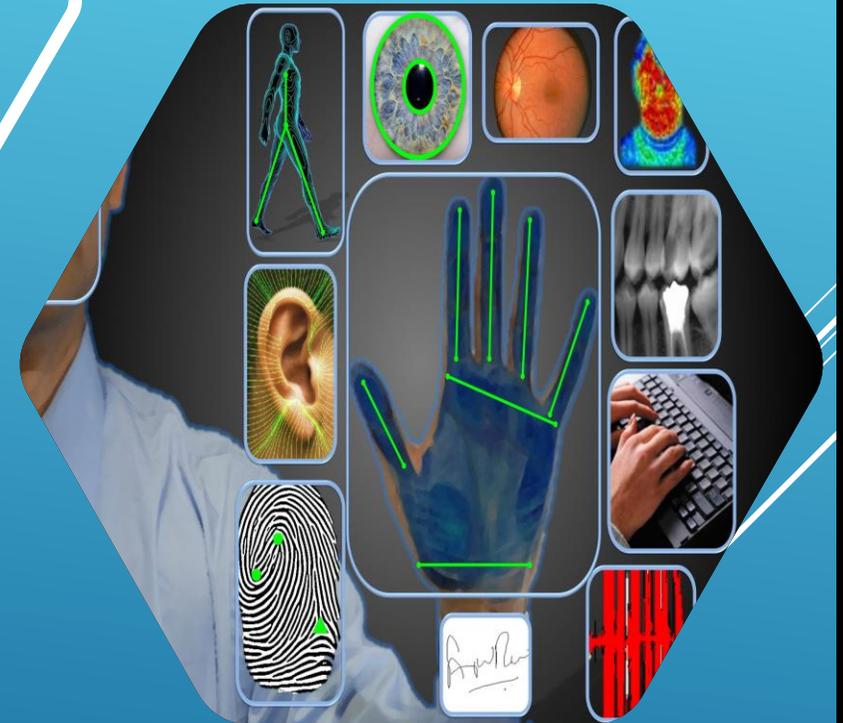




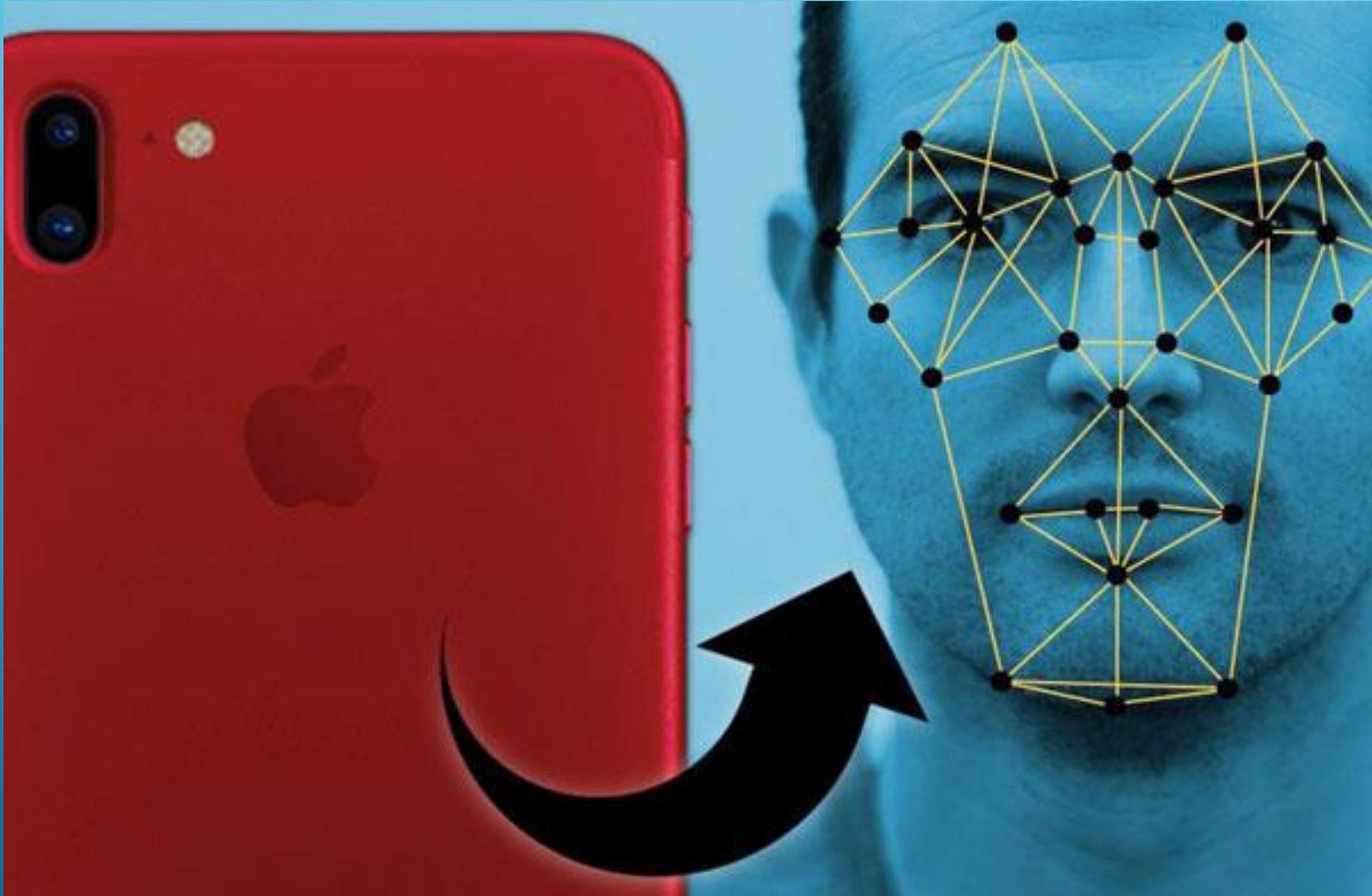
# WHAT ARE BIOMETRICS?

# OUR GOOD FRIENDS SIRI AND ALEXA

- Metrics related to human characteristics
- Either physiological or behavioural
- Physiological biometrics
  - Your physical aspects such as fingerprints, hand geometry, scent, iris scans, facial recognition, teeth scans, etc.
- Behavioural biometrics
  - Your behaviour patterns such as keystrokes, voice recognition, mouse use, signature analysis, gait analysis, etc.
- A biometric system
  - Collects biometric data through ID devices (camera, scanner, etc.)
  - Compares scanned data from those captured
  - Matches the sample
  - Determines if person is the correct match







# ATLANTA'S HARTSFIELD-JACKSON AIRPORT IS SELECTED AS THE SITE FOR DELTA'S FIRST BIOMETRIC TERMINAL IN U.S.

- ▶ <https://news.delta.com/delta-launch-first-biometric-terminal-us>



# U.S. CUSTOMS AND BORDER PATROL: BIOMETRICS AND TRAVEL



Picture and Video Courtesy of U.S. Customs and Border Patrol  
<https://www.cbp.gov/travel/biometrics>

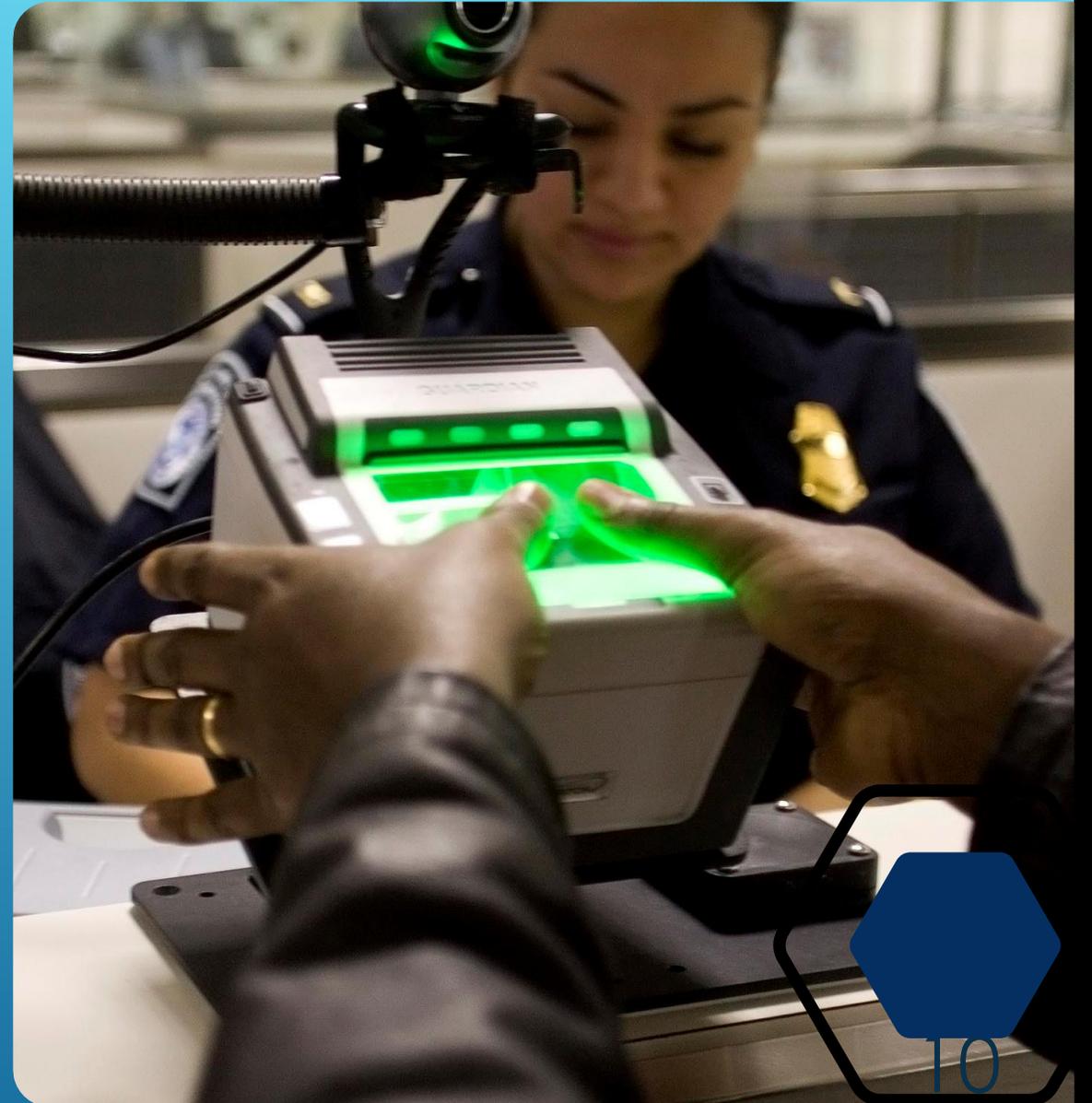
# BYE-BYE BOARDING PASSES

- “Single Token Travel”
  - All-biometric airports would ultimately use biometrics to go through all checkpoints without physical documentation
  - The Process
    - A photo before check-in to match passport
    - Face scan at check-in
    - Biometric bag drop
    - Face scan at gate
- Currently, fingerprints and facial scans are becoming common at airports
  - See airlines such as Delta Air Lines and JetBlue
- SITA
  - Leading the biometrics field for the aviation industry
  - Trials around the world, including Brisbane, Boston, etc.
- Clear
  - The traveller membership program
  - Partnering with Delta



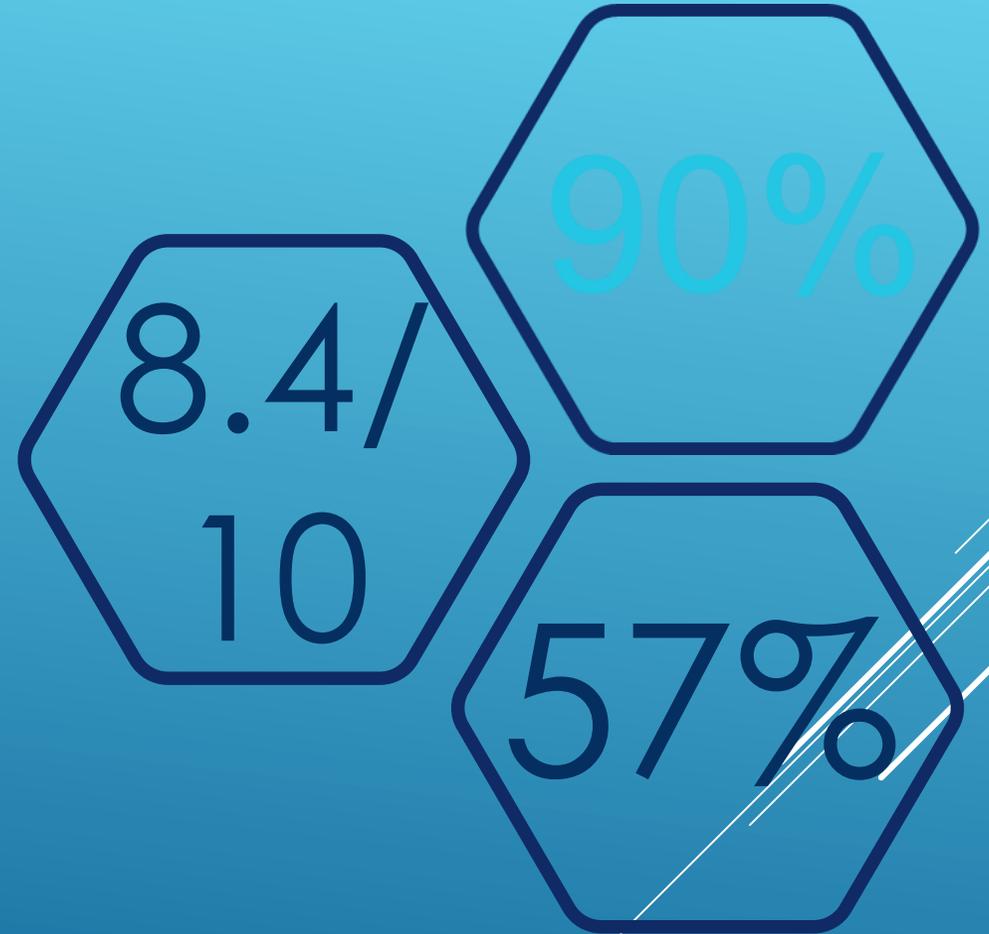
# TIME IS MONEY

- Improved traffic and security at the airport
  - Less time to scan faces
  - No more comparing documentation to person and match to traveller
  - More secure
    - Technology can better confirm identities
    - Less human error
- More leisure time
  - Travellers have more time before flights
  - Less time in lines and less waits at security
  - Allows travellers to spend more money at airports
  - More revenue and increased customer satisfaction
- Costs and Employees
  - Cut down on employees needed to check identification
  - Can allocate employees and costs elsewhere



# WHAT ABOUT THE PEOPLE?

- ▶ A major concern with any new technology is how people feel about it
- ▶ People prefer self-service, as well as saved time and money
- ▶ Study by Passenger IT Trends
  - ▶ 57% of passengers prefer biometrics to boarding passes and passports
  - ▶ 8.4/10 customer satisfaction and 4x more satisfaction than normal
- ▶ JetBlue's SITA test
  - ▶ 90% of passengers chose to use facial scans
- ▶ Privacy Concerns & Personal Information
  - ▶ Collection, Storage and Use of Data

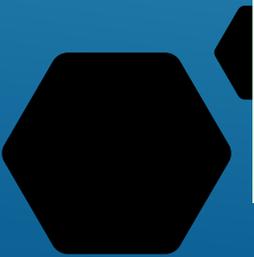
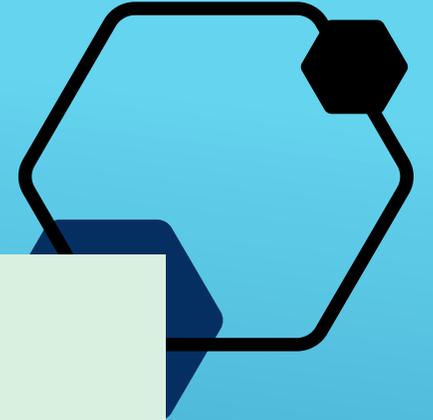




# LEGISLATION

# BIOMETRICS:

## Impacts and Initiatives



# U.S. LEGAL FRAMEWORK

Origins – 9/11 Commission recommended the creation of a “biometrics-based entry-exit system as soon as possible.”

February 2017 Report: **DHS Has Made Progress in Planning for a Biometric Air Exit System and Reporting Overstays, but Challenges Remain**

January 2017 Executive Order 13780: Directs CBP to “expedite the completion of a biometric entry exit tracking system.”

**\$1,000,000,000** in Funding

One of the U.S. Government's stated goals is to detect visa overstay travel fraud.

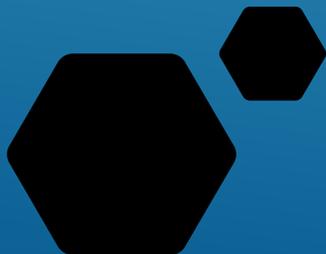
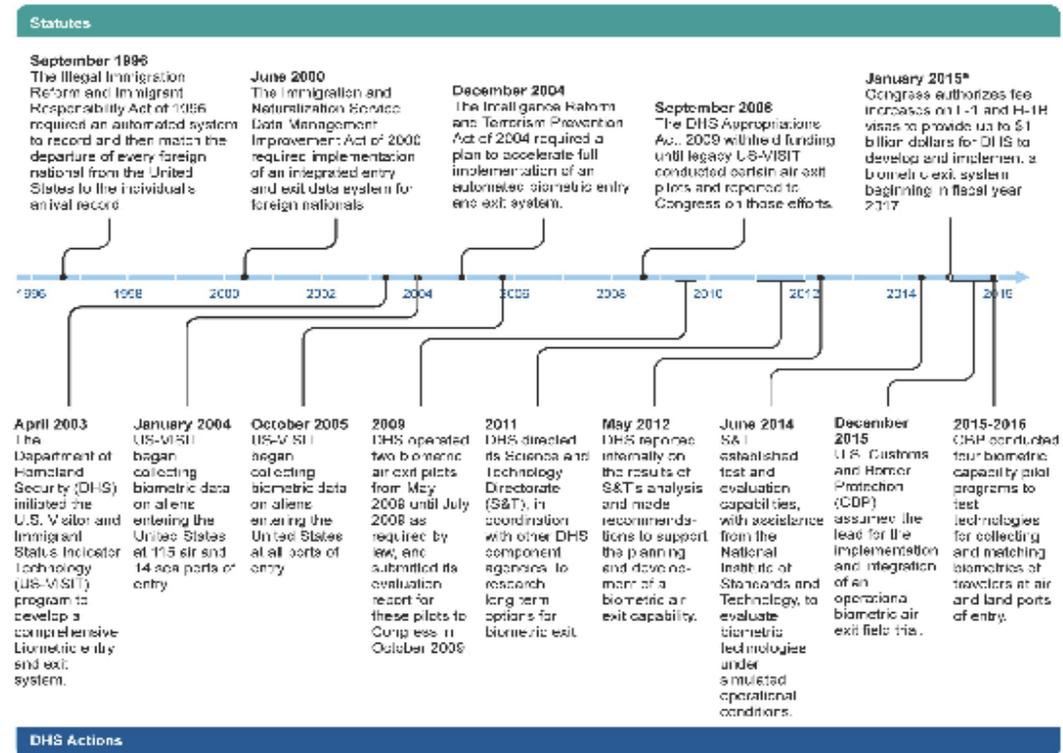


Figure 1: Timeline of Events Related to Biometric Entry and Exit System



Source: GAO analysis of DHS documents. | GAO-17-140

\*I-1 and H-1B visas are nonimmigrant visas for foreign workers transferring from their employer's foreign office to an office in the United States to work in a management or executive role, or in a position requiring specialized knowledge; or who U.S. companies are seeking to hire for work in specialty occupations, respectively, to come to the United States temporarily to engage in such employment. See 8 U.S.C. § 1101(a)(15)(H),(L).

## Overstay Reporting and Enforcement

Federal law also requires that DHS implement a program to collect data for each fiscal year, regarding the total number of foreign visitors who

# U.S. LAW VS. TECHNOLOGY



- **Federal Aviation Administration (FAA) Reauthorization Act (2018).**
  - TSA Modernization Act - § 1919 Biometrics Expansion
  - Federal Agencies (TSA and CBP) “shall consult with each other on the deployment of biometric technologies.” FAA Reauthorization Act § 1919(a).
- **Nonbinding Guidance.** (Federal Trade Commission and the Department of Commerce National Telecommunications and Information Administration).
- **Examples of Other Federal Privacy Laws.**
  - Health Insurance Portability and Accountability Act)
  - American with Disabilities Act
  - Genetic Information Nondiscrimination Act.
- **STATE BIOMETRIC INFORMATION PRIVACY ACTS (BIPA)**
- In the United States, the majority of states (47) do not have laws specifically addressing the collection and use of biometrics.
  - Illinois (740 ILCS 14, et seq.)
  - Washington(Wash. Rev. Code §19.375)
  - Texas ( Tex. Bus. & Com. Code Ann. 503.001)



# U.S. LAW VS. TECHNOLOGY



***“Biometrics are unlike other unique identifiers that are used to access finances or other sensitive information. For example, social security numbers, when compromised, can be changed. Biometrics, however, are biologically unique to the individual; therefore, once compromised, the individual has no recourse, is at heightened risk for identity theft, and is likely to withdraw from biometric-facilitated transactions.” 740 ILCS 14, et seq.***

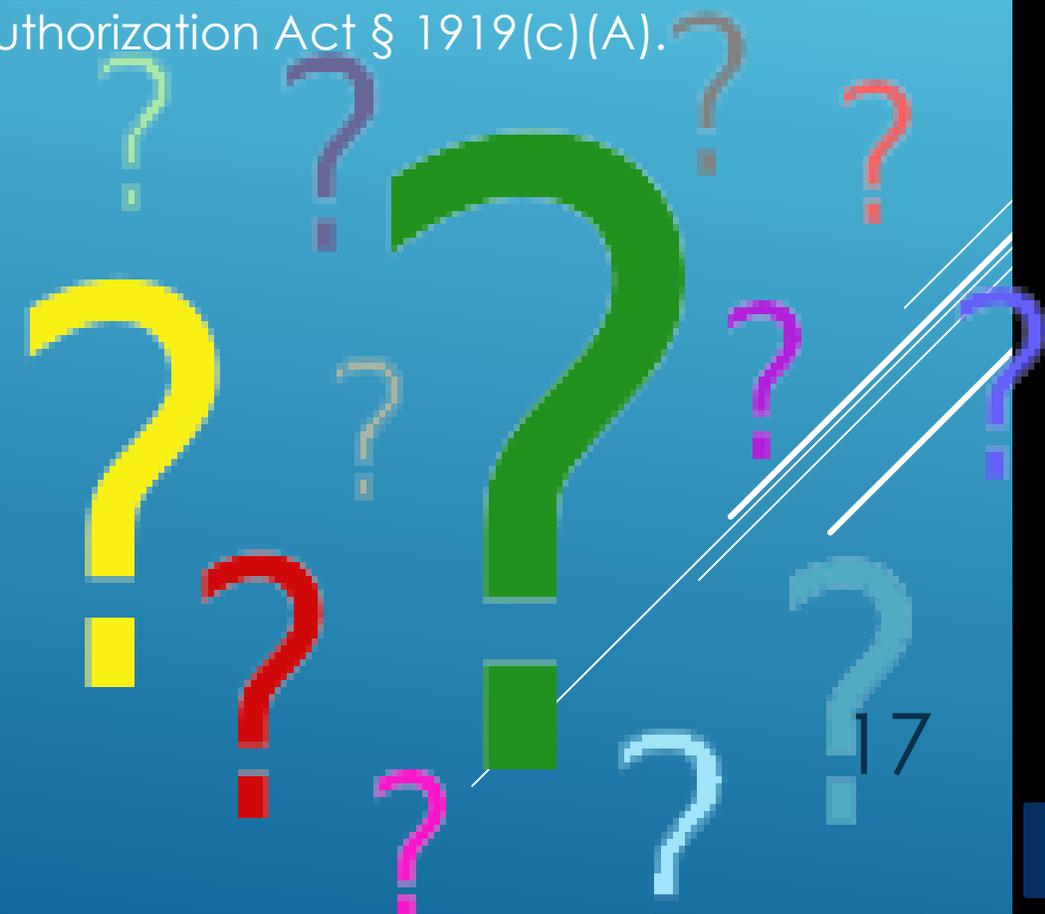
## *BIPA General Provisions*

- Requires Informed Consent
- Limits Disclosure (exceptions: (1) consent; (2) financial transactions; (3) required by federal, state or local, law; or (4) the disclosure is required by a valid warrant or subpoena.)
- Establishes guidelines for data maintenance, and retention of information.
- Bars commercial use.
- Private rights of action for violations.
- \$1,000/negligent violation
- \$5,000/intentional or reckless violation.
- Class action lawsuits.



# U.S. LEGAL QUESTIONS & LOGISTICS

- Privacy Protections – How safe is our information?
- U.S. Air Travel - Federal agencies will be required to assess: “the effects on privacy of the use of biometric technologies, including methods to mitigate any risks to privacy identified by the [TSA] Administrator or the Commissioner of U.S. Customs and Border Protection related to the active or passive collection of biometric data. FAA Reauthorization Act § 1919(c)(A).
- Reporting & Oversight –  
Who is responsible?
- Data Retention –  
Where is the information stored?  
For how long?



# A BRAVE NEW WORLD



Several Countries Have Established Regulations. A few examples:

On May 25, 2018, the current data protection framework for the EU, known as the European Union Data Protection Directive 95/46/EC was amended by replaced by the General Data Protection Regulation (the “GDPR”).

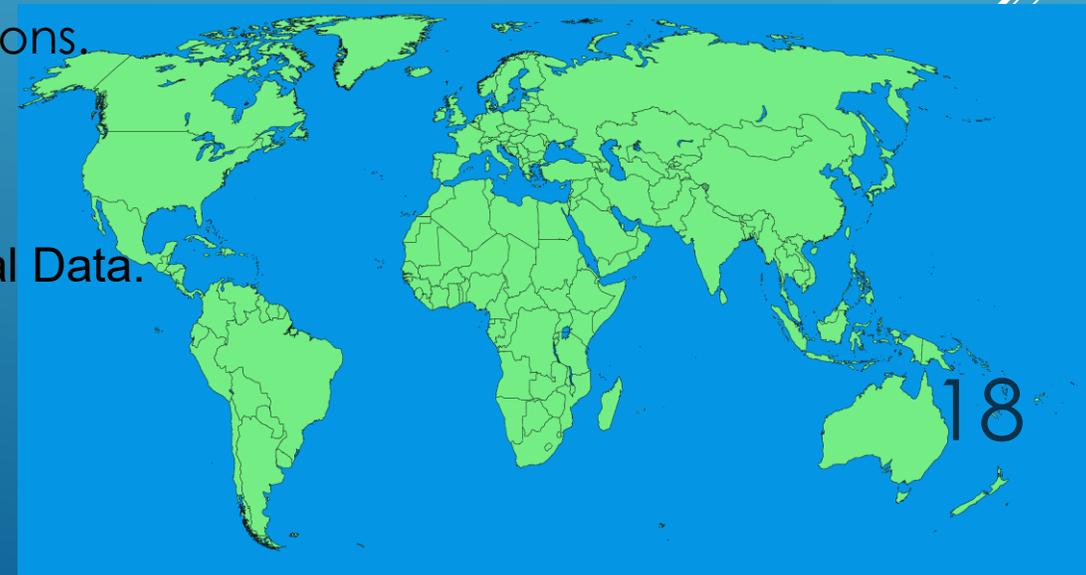
- This law defines biometric data as: *“personal data resulting from specific technical processing relating to the physical, physiological or behavioral characteristics of a natural person, which allows or confirms the unique identification of that natural person, such as facial images or dactyloscopic data”*.
- Member states can introduce additional regulations.

Australia Privacy Act of 1988, amended in 2014.

Hong Kong’s Office of the Privacy Commissioner for Personal Data.

Canada Office of the Privacy Commissioner.

Japanese Personal Information Protection Act.





# ACCURACY + DEMOGRAPHICS

# TRAVELING & TECHNOLOGY

## Biometric Exits

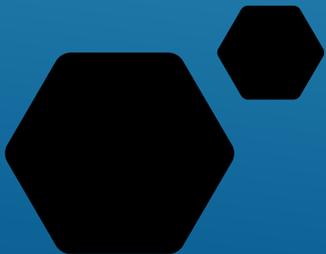
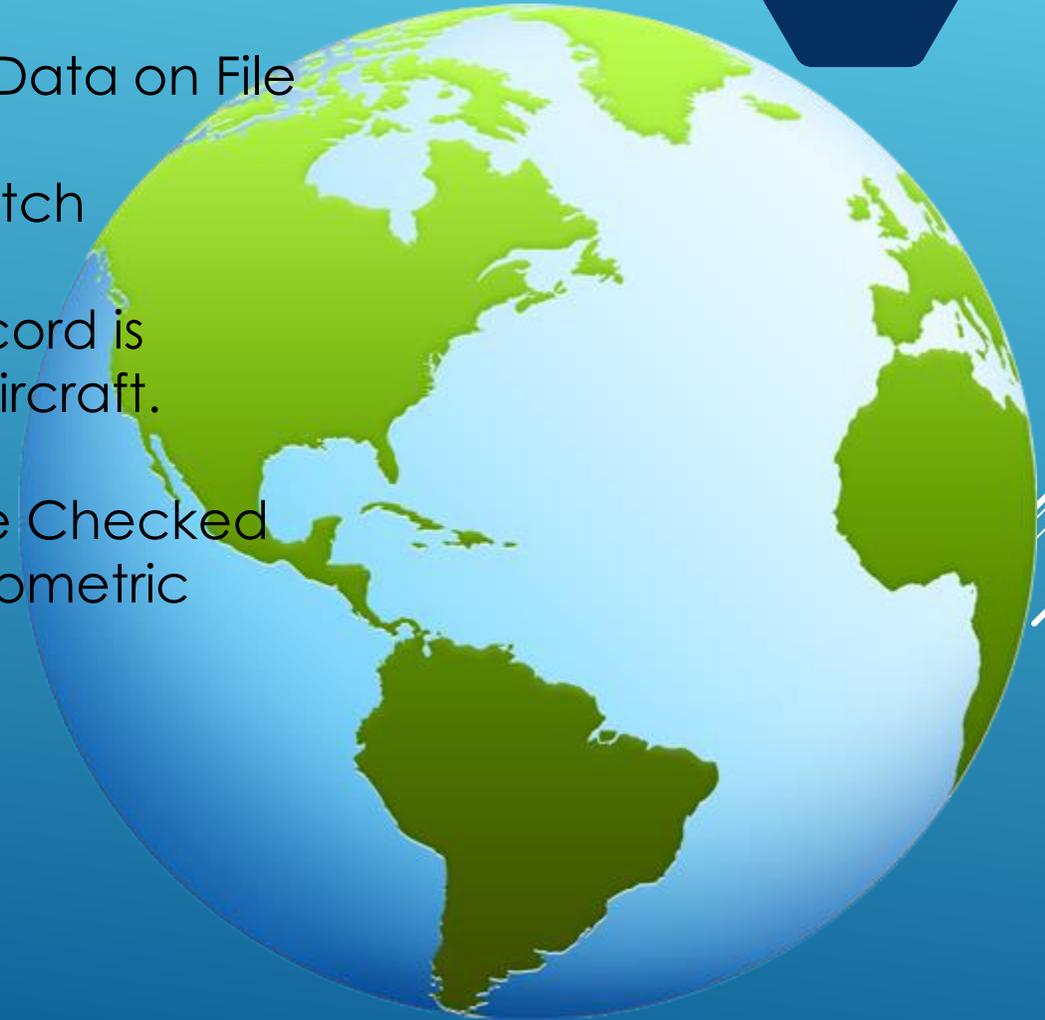
Step 1. Travelers Photos Collected At Departure Gate

Step 2. System Compares In-Person Photos to Data on File

Step 3. System Generates a Match or Non-Match

Step 4. Match – “Biometrically Verified Exit Record is Created.” Traveler Cleared to Board Aircraft.

Non-Match – Traveler’s Credentials Are Checked Manually and/or Subject to Another Biometric Check, Such as a Fingerprint.



# TRIAL & ERROR

TRUE ACCEPT	FALSE REJECT
FALSE ACCEPT	TRUE REJECT

U.S. - Federal agencies are required to assess and issue a report on: (i) the **error rates**, including the rates of false positives and false negatives, and accuracy of biometric technologies; (ii) the effects of biometric technologies, to ensure that such technologies do not **unduly burden categories of travelers**, such as a certain race, gender, or nationality; (iii) the extent to which and how biometric technologies could address instances of travelers to the United States overstaying their visas....”

FAA Reauthorization Act § 1919(c)(A).



- Limited Testing.
- Error Rates Vary Among Systems.
- DHS: Accuracy Rate of 90%+
- True Acceptance Rate vs. True Rejection Rate
- Difficulty Distinguishing People with Similar Characteristics.

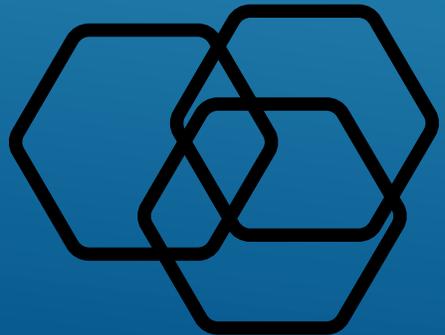
# BIAS IN BIOMETRICS

False Results Can Be Caused By:

- Race
- Facial expressions
- Age
- Gender

Mixed Data:  
Variable Accuracy Rates  
Statistics

- National Institute of Standards and Technology(NIST) Findings (2017).



# INFORMED CONSENT?

- What Are Some Reasons That People May Want to Opt Out of Biometric Passenger Screening?
  - Cultural, Generational, Individual
- Possibility that refusal will lead to suspicion or profiling. Potential for disparate impacts.

*“**Privacy Risk:** There is a risk to individual participation because individuals may be denied boarding if they refuse to submit to biometric identity verification under the [Traveler Verification Service.] This privacy risk is partially mitigated. ... [T]he **only** way for an individual to ensure he or she is not subject to collection of biometric information when traveling internationally is to refrain from traveling. Individuals seeking to travel internationally are subject to the laws and rules enforced by CBP and are subject to inspection.”*

- DHS Privacy Impact Assessment Update, June 12, 2017. See also FAA Reauthorization Act § 1919(c).  
FAA Reauthorization Act § 1919(c) (requesting a description of the process by which domestic travelers are able to opt-out of scanning using biometric technologies.)

# SOURCES

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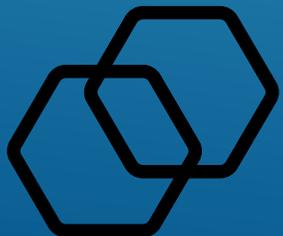
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United States Government Accountability Office, *Border Security – DHS Has Made Progress in Planning for a Biometric Air Exit System and Reporting Overstays, but Challenges Remain*, GAO 18-170, February, 2017.

The New York Times, Ron Nixon, *Facial Scans at U.S. Airports Violate Americans' Privacy, Report Says*, December 21, 2017.

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**QUESTIONS?**

THANK YOU!



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