



SOCIAL SECURITY BOARD

SSB AND BIOMETRICS: SAFEGUARDING YOUR IDENTITY AND YOUR MONEY

October 2019

Social Security Board: Safeguarding YOU, your FAMILY, your FUTURE!



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**WHAT IS
“BIOMETRICS”
ANYWAY?**

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Definition

bio / metric

From Greek, meaning

“life / measurement”

In our context...

“Using a person’s unique physical and other traits for the purposes of automating identification and security.”

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EVERY DAY BIOMETRICS

How do you know...

Dave



is not



Joe



How do you recognize another person?



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Types of BIOMETRICS

Face

Height

Voice

BODY SHAPE

Signature

**Hair length
and color**

Gait

Keystroke

Iris

Fingerprint

Hand Geometry

DNA



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Common BIOMETRIC Types

- Facial Recognition – Most “natural” of all biometrics and now most widely used; issues of accuracy (e.g., Iphone X in China) but getting much better
- Fingerprint Recognition – Most commonly associated and very accurate
- Iris Recognition – Fastest and most accurate form
- Palm Print Recognition – Mainly in law enforcement
- Palm Vein – Contactless but not fast enough for scale
- Voice Recognition – Good for secondary authentication

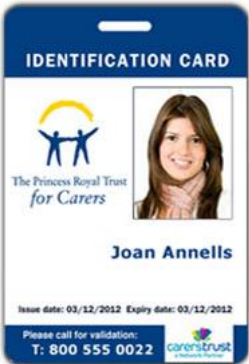
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Levels of Security:

Have



Know

PASSWORD:

 1292014

 wH01292014etV



Are



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WHY USE BIOMETRICS?

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The Purpose – Verify (1:1)

- You are who you say you are!

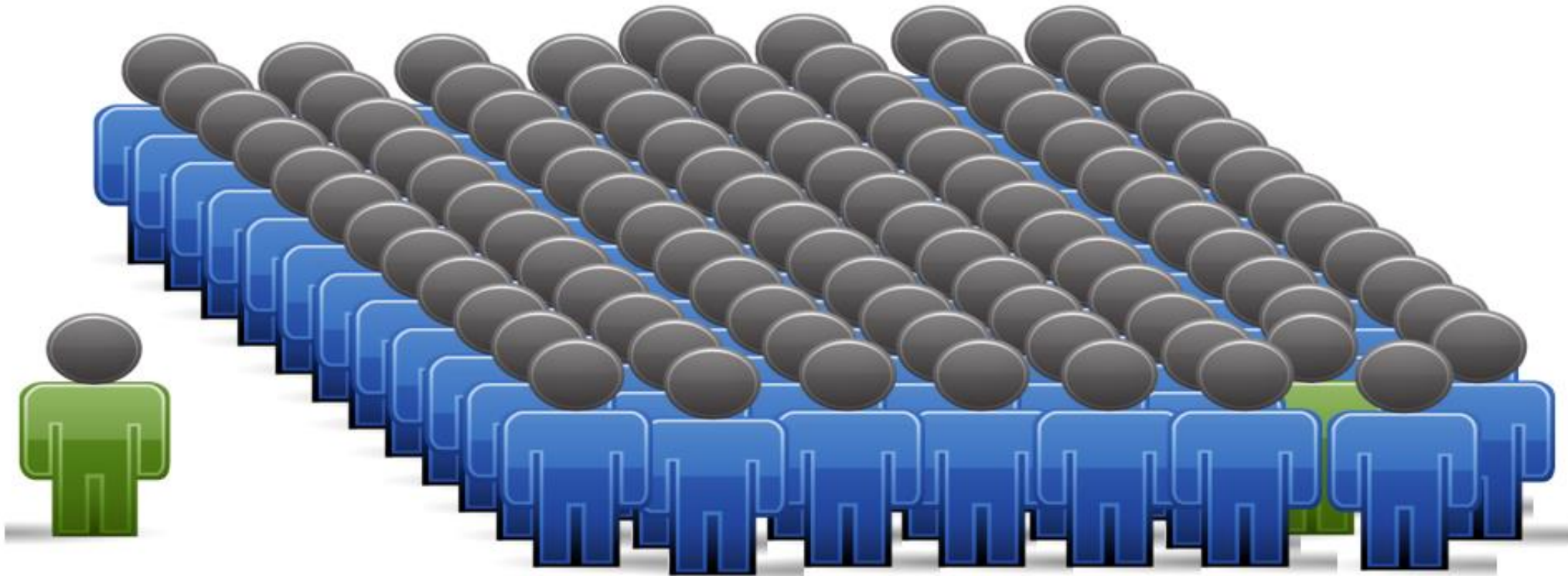




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The Purpose – Identify (1:N)

I know who you are!



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SOMETIMES...

...you'd like to make sure no one "borrows" your identity.



...you need to *know that you know that you know* who someone is.



...you'd just like things to move faster.



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WHEN TO USE BIOMETRICS

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Whenever....

...you need
acCOUNTability



- Avoiding duplication of persons/services
- Ensuring everyone is present
- Paying the right person

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Whenever...



...identity intersects with security

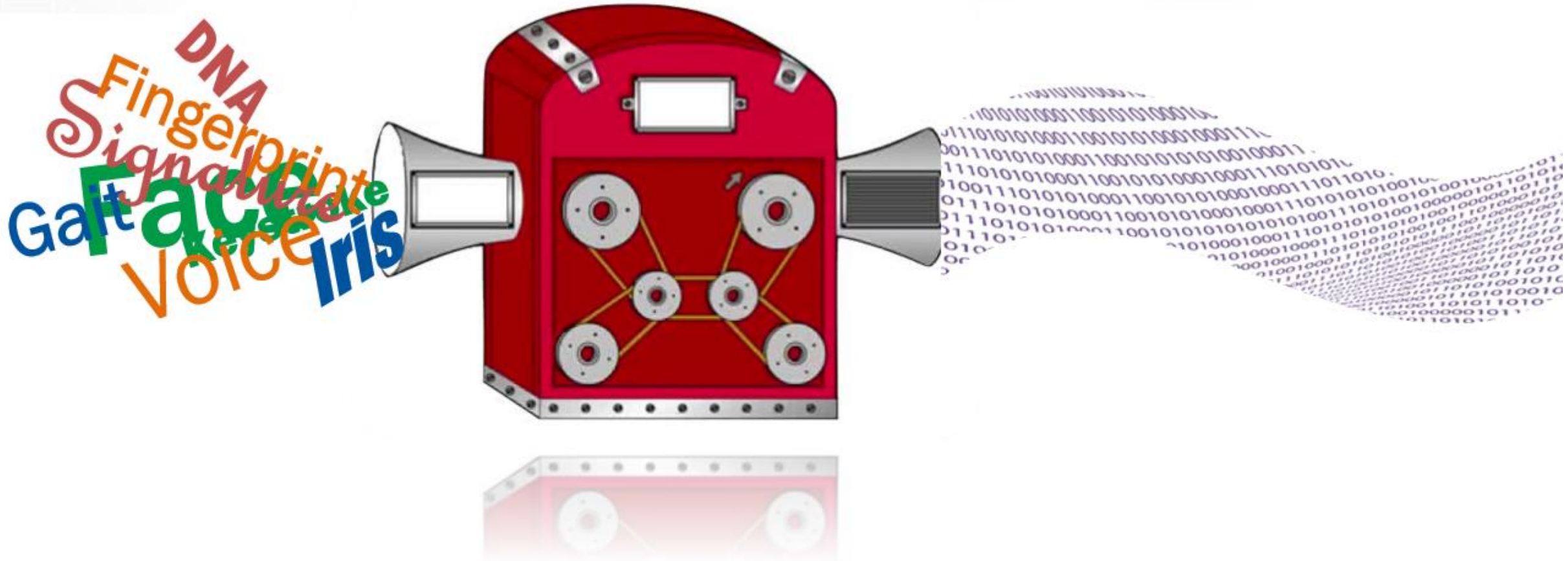
- Human safety
- Employee and volunteer management
- Knowing your customers (e.g., eligible recipients only)
- Data: business and personal information

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How Biometrics work?



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BIOMETRICS: The Mechanics

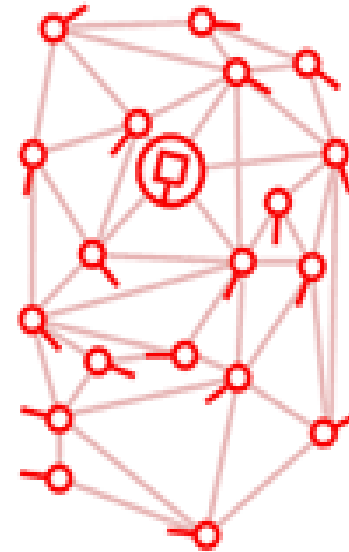
Biometric



Minutia Points



Minutia Map



Data Stream

```
0101010001101000011010  
0101110011001000000110  
1001011100110010000001  
1011100110111101110100  
0010000001100001011000  
1101110100011101010110  
0001011011000110110001  
1110010010000001100110  
0110100101101110011001  
1101100101011100100111  
0000011100100110100101  
1011100111010000100000  
0110010001100001011101  
0001100001001011000010
```



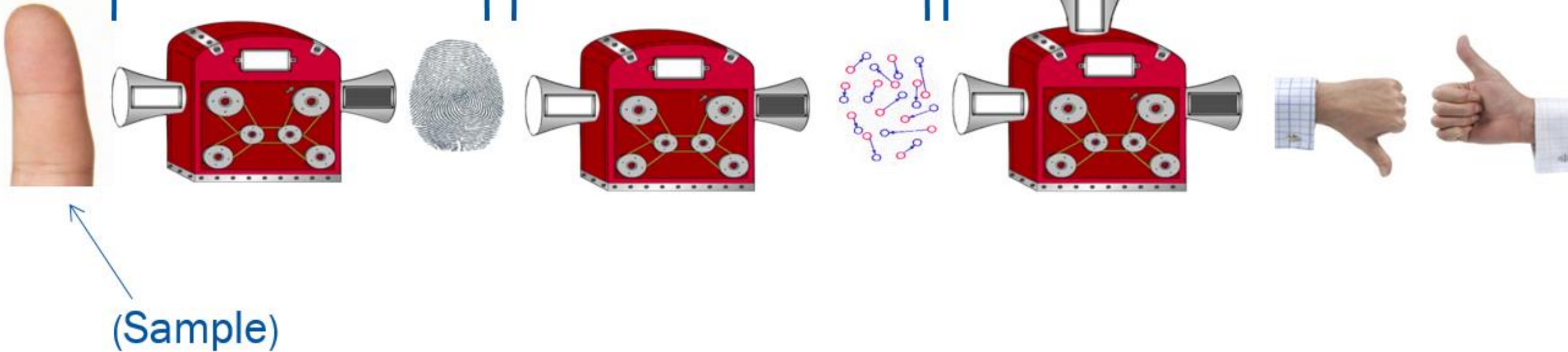

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BIOMETRICS: The Mechanics

Capture

Extract

Match



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Data Privacy & Biometrics

- Raw images (like fingerprints) are not stored – only templates
- The template database is always highly encrypted
- The algorithms templates are proprietary (secret)
- The templates and real images are not in the same database
- The databases are not directly reachable via public internet
- Cloud hosting of the databases reduces physical threats
- The full weight of Microsoft's reputation is on the line



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The Security of Our Biometrics: Encryption

Breaking a symmetric 256-bit key by brute force requires 2^{128} times more computational power than a 128-bit key. Fifty supercomputers that could check a billion billion (10^{18}) AES keys per second (if such a device could ever be made) would, in theory, require about 3×10^{51} years to exhaust the 256-bit key space.

https://en.wikipedia.org/wiki/Brute-force_attack



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**MAKING IDENTIFY
MANAGEMENT
MORE...S.A.F.E.**

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S. A. F. E

SECURE

- Eliminates threats associated with false identification;
- Unauthorized persons/bad actors cannot access the data/facilities/benefits



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S. A. F. E

ACCURATE

- Eliminates duplicate records
- Enables compliance
- Removes GHOST beneficiaries



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S. A. F. E

FAST

- Eliminates paperwork
- Reduces manual entry of information, reduce errors
- Speeds up life declaration process





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S. A. F. E

ECONOMICAL

- Saving time = Saving Money
- Reduces Fraud (e.g., pension payment)



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Pension Fraud: BIOMETRICS

Table 1. *Selected countries by social expenditure, and fraud and error in percentage*

Countries	Social expenditure (Million ^a)	Social expenditure as % of GDP	Social expenditure as % of total government expenditures	Fraud and error ^b (%)	Fraud ^b (%)
Canada	GBP 210	17	42	3–5.0	n/a
Ireland	GBP 31	20	51	0.5–2.1	0.5–1.2
Netherlands	GBP 126	23	49	n/a	10-20
New Zealand	GBP 25	19	54	2.7	n/a
Sweden	GBP 105	27	52	6–7	3.0
United Kingdom	GBP 360	22	49	2.1	0.7
United States	GBP 2 ^c	19	48	0.5–5.0	n/a

Notes:

^a Social expenditure amounts are indicative and based on the exchange rates of April 2013.

^b Based on estimates of particular types of benefits, which vary from country to country.

^c In billions of pounds sterling (GBP).

Sources: Authors' compilation based on OECD (2013), Van Stolk and Elmerstig (2013), and NAO (2006).



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Pension Fraud: BIOMETRICS

- Korea National Pension Service paid USD \$4.2M to dead pensioners in over 10,973 cases since 2007
- http://m.koreatimes.co.kr/phone/news/view.jsp?req_newsidx=99396
- Greece paid USD 7.8-10 **Billion** to dead pensioners over 10 years!
- Nigeria saved USD 20M/year in ghost beneficiary payment
 - <https://www.planetbiometrics.com/article-details/i/1979/desc/holding-ghosts-accountable-biometrics-bring-greater-transparency-to-african-public-sector/>



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In Summary

**BIOMETRICS
MAKES
BUSINESS...**

Secure

Accurate

Fast

Economical

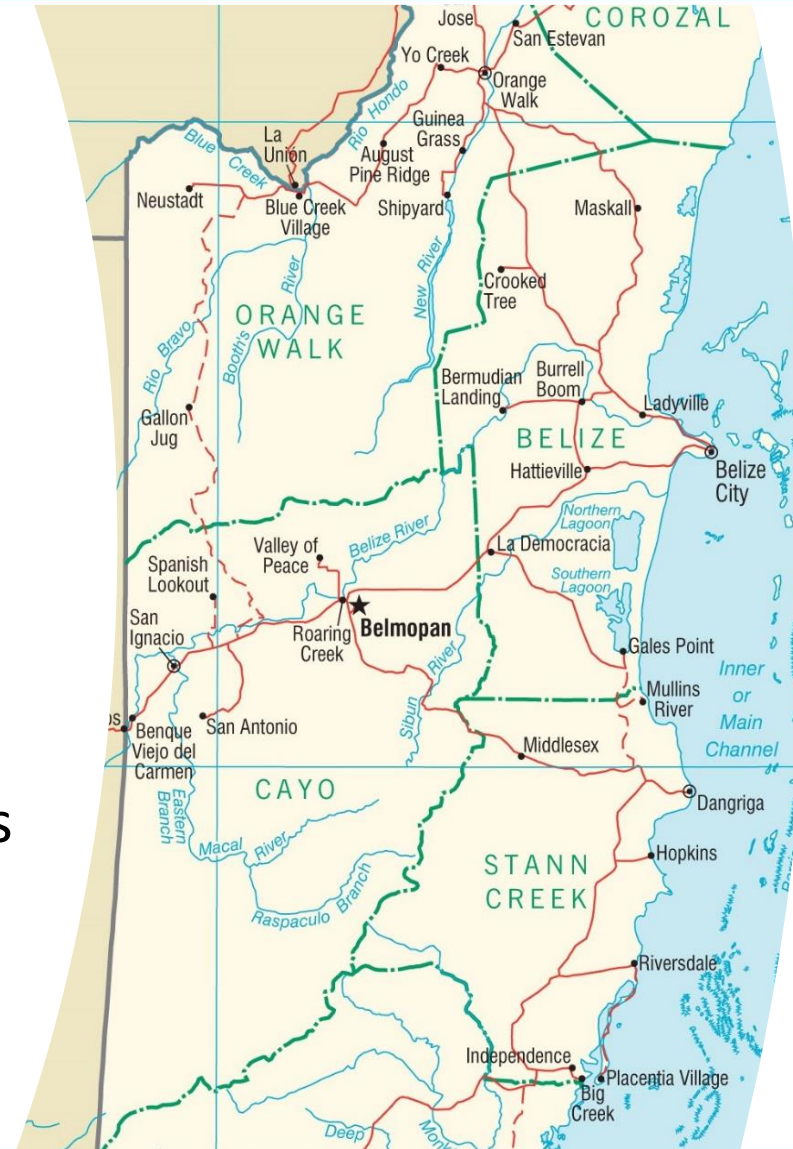
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Why Introduce Biometrics?

- Biometrics are becoming standard in gov't services delivery
- Automatic elimination of “ghost” beneficiaries
- Increased security for legitimate beneficiaries
- Improved financial sustainability of Fund
- Increased operational efficiencies for SSB staff
- Decreased wait times = happier beneficiaries
- Improves customer service – example: Home visits for invalids and elderly
- Biometrics creates an incentive to foster good behavior (deters fraud)



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"I think identity management is our first hurdle."

brianmooredraws.com

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Thank You!



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