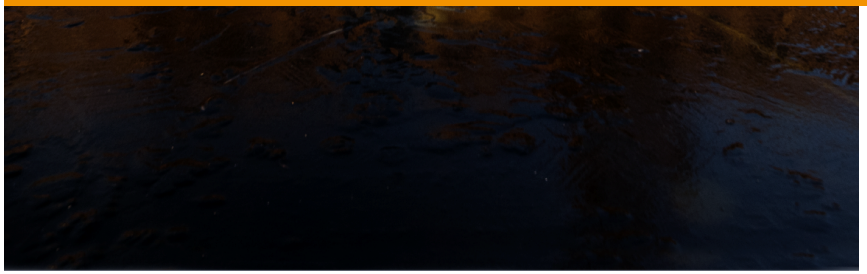
ICT Framework for Realizing Holistic CRVS Solutions

SMART SEARCH & MATCH

- Search and Match software solutions
- Focus on Identity and Employment markets
  - Border Management, Civil Identity, Justice & Public Safety
- In business since 1996
- Based in the Netherlands
- Deployments are organization-wide or nation-wide

WCC Overview and Offerings



SMART SEARCH & MATCH

Entrenched Market - Person Identification

	Country	Application	Gallery	Trxs
Border Management				
Netherlands Immigration	NL	Asylum Seekers	1M	1/sec
EU VIS	EU	Visa	60M	13/sec+
Mexico VIS	MX	Migrant Worker Visa	1M	10/sec
UNHCR	Global	Refugee Management	2M	varies
National ID/Credentialing				
Middle East Ministry of Finance	ME	Batch De-duplication	2M+	Batch
Ohio DMV	US	Driver's License	20M+	10/sec
Police				
Finnish Police (incl. Border)	FI	Law Enforcement	1M++	50/sec++
Banking				
ING Bank	NL	De-duplication	10M	batch
Healthcare				
Concentra Managed Healthcare	US	Healthcare Billing	35M	50/sec

Sizing is based on projected project sizing or production data

Sizing numbers are best estimates

WCC Offerings

- Services
  - Identity expertise **and** Data expertise
  - Integration support
  - Configuration and Data modeling
  - Optimization
- Technology Platform
  - Smart Search & Match Platform
  - Biometric, Biographic, and contextual data matching in one platform
  - Flexible Architecture/Java, .Net, web services interface

Industry Recognition

- **MITRE** Challenge – Winner Multi Cultural Name Matching challenge
- **Frost and Sullivan** – "Biometric Emerging Multimodal Platform of the Year"
- **Gartner** Magic Quadrant for Information Access Technology
- **IDC** recognition for innovative search and match technology

Linking Foundational Identities to Civil Registries and Identity Programs

Principles of CVRS System

Per United Nations

"Principle and Recommendations
for a Vital Statistics System Rev. 3"

Universal Coverage
Continuity
Confidentiality
Regular Dissemination of Information

Linking Foundational Identities – What is required

- Address functional Identity programs but **implement a Foundational Identity platform**.
  - reference paper Identification for Development: The Biometrics Revolution by Alan Gelb and Julia Clark, Center for Economic Development, Jan. 2013
- Identity platform should be underpinned by a **robust Identity Resolution engine**.
- As functional Identity programs are implemented, **collect civil registration and breeder document information**.
- In parallel, implement comprehensive CVRS system as policy and budgets allow.

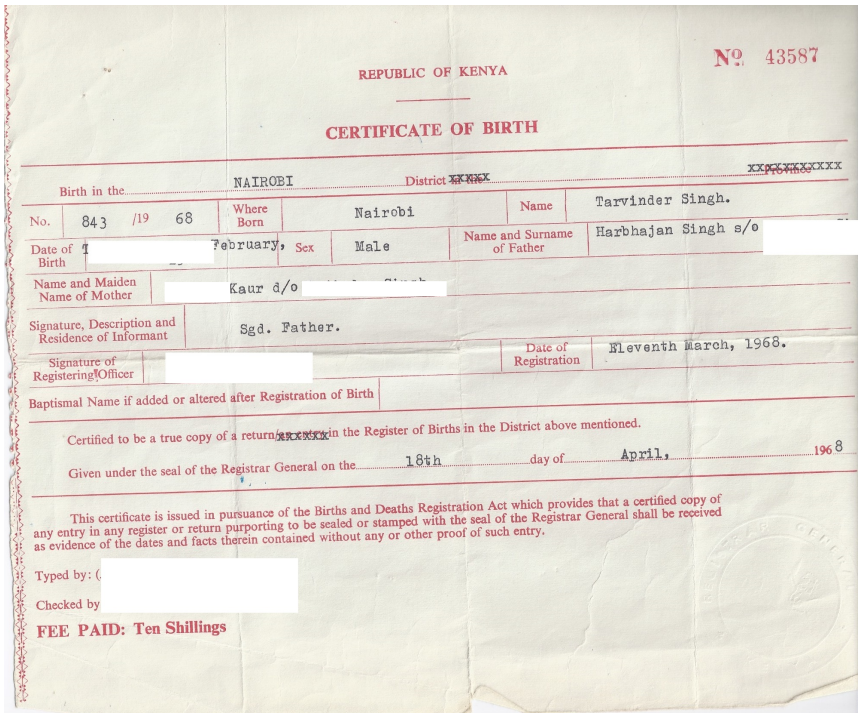
Core Capability: Robust Identity Resolution

Identity resolution is:

A **data management process** through which an **identity is searched and analyzed between disparate data sets** and databases to find a match and/or **resolve identities**.

Identity resolution enables an organization to **analyze a particular individual's identity based on its available data records and attributes**.

Data from Breeder Documents



REPUBLIC OF KENYA

No. 43587

CERTIFICATE OF BIRTH

Birth in the NAIROBI District ~~XXXXX~~ xxxxxxxxxx

No.	843 /19 68	Where Born	Nairobi	Name	Tarvinder Singh.
Date of Birth	T February,	Sex	Male	Name and Surname of Father	Harbhajan Singh s/o
Name and Maiden Name of Mother	Kaur d/o				
Signature, Description and Residence of Informant	Sgd. Father.				
Signature of Registering Officer				Date of Registration	Eleventh March, 1968.
Baptismal Name if added or altered after Registration of Birth					

Certified to be a true copy of a return ~~XXXXXX~~ in the Register of Births in the District above mentioned.

Given under the seal of the Registrar General on the 18th day of April, 1968

This certificate is issued in pursuance of the Births and Deaths Registration Act which provides that a certified copy of any entry in any register or return purporting to be sealed or stamped with the seal of the Registrar General shall be received as evidence of the dates and facts therein contained without any or other proof of such entry.

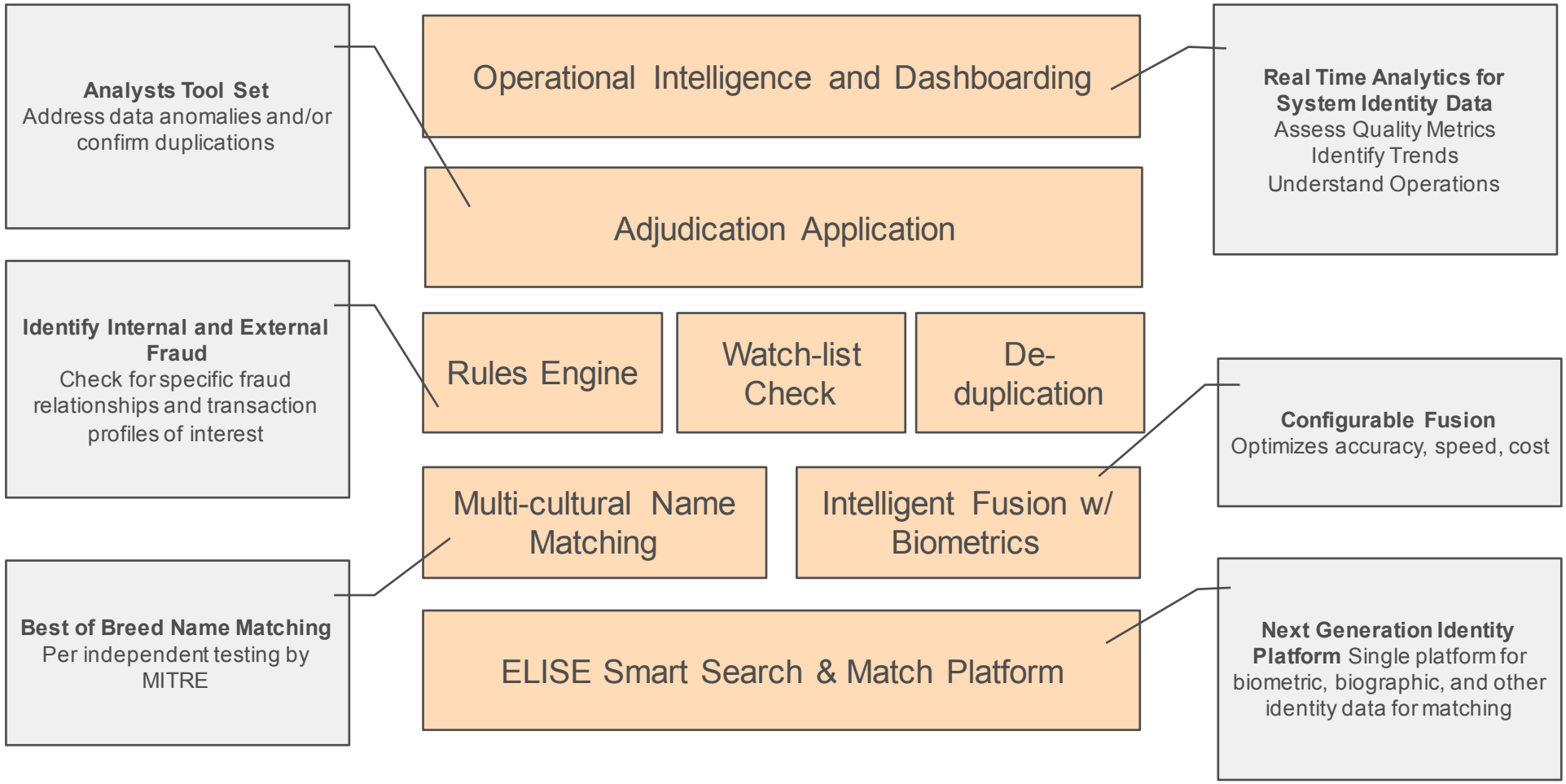
Typed by:

Checked by

FEE PAID: Ten Shillings

Data usable for Fraud/De-duplication analysis
Document Type
Document #
Name
Place of Birth
Family Tree
Date of Birth
Date of Registration
Place of Registration

Core Components of a 'Typical' Identity Platform



Need for Multi-cultural Name Matching

- Typographic faults
- Phonetic faults
- Search for name variations with and without punctuations
- Correction for source errors
- Name variations using external name databases or own data

Name Arabic	Name Latin	Other 1	Other 2	Other 3
دمحم	Mohamed	Magomed	Mamadou	Mahometus
دمحأ	Ahmed	Akhmad	Amadou	Ehmet
يلع	Ali	Alikhan	Alisher	Aliy
نيمابنب	Benyamin	Benny	Veniamin	Benas
فسويو	Yousef	Jousef	Jost	Seosamh

Best of Breed – Multi-cultural Name Matching per MITRE challenge

The MITRE Challenge Validation Set Results -MAP

Team	Validation MAP	Challenge MAP
Beethoven	94.3	89.0
Riffraff	91.9	89.1
A Rose	91.7	86.2
Mean Mr Teach	91.6	89.6
Impala	90.7	82.9
0.7	88.9	82.6
JustForFun	88.0	83.8
Sunil	84.2	64.8
Phylogenetic Trees	81.0	60.9
Homebrew Magic	80.1	66.2

WCC

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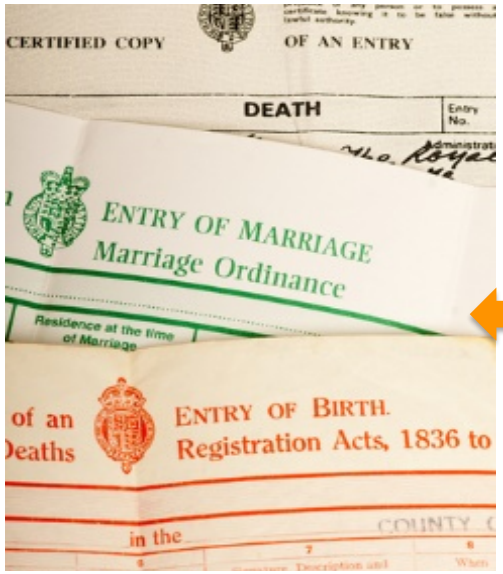
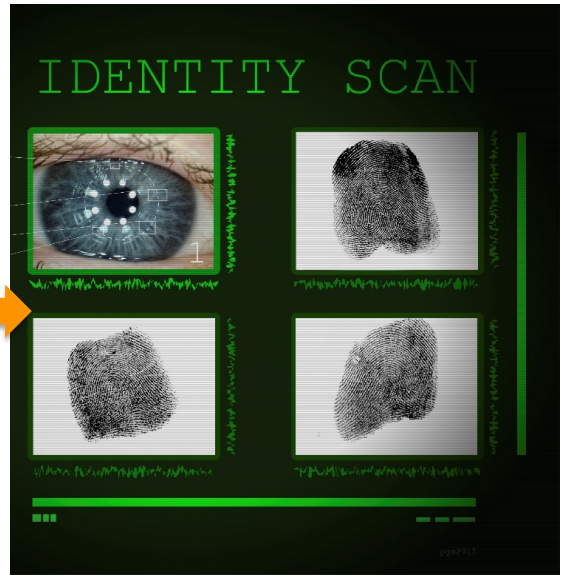
Handle All Identity Data - Fusion

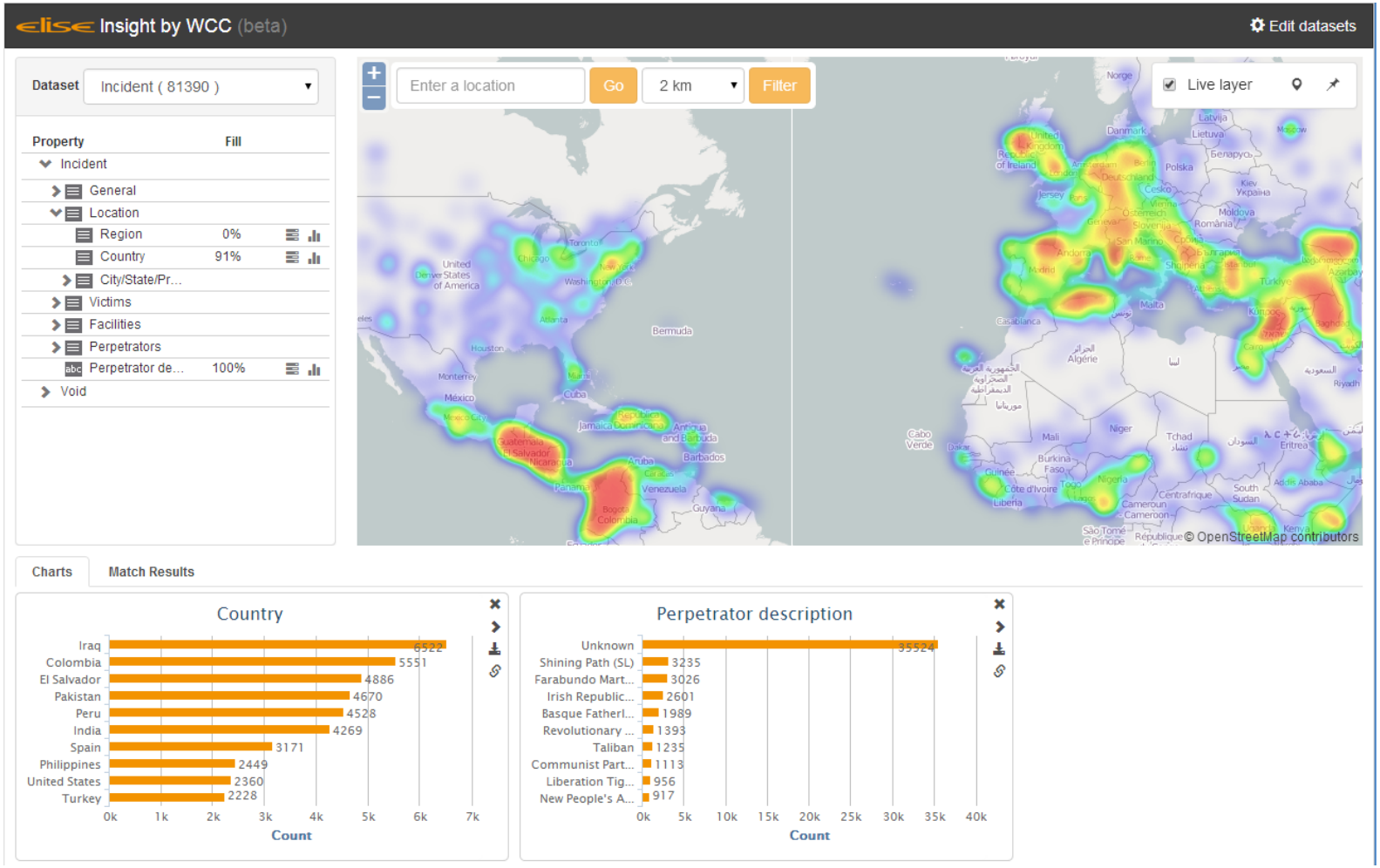
- Multi-cultural names
- Biometric information
- Biographic information
- Vital statistics
- Transactional data



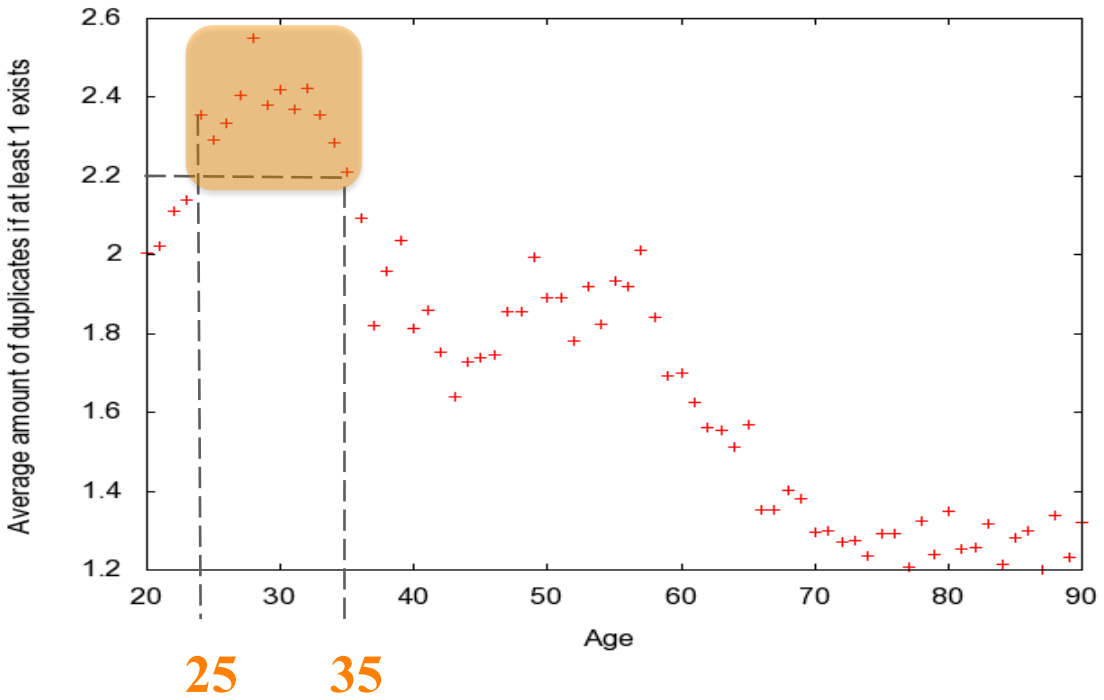


CVRS Information is largely Biographic but linked to
Biometric information for functional efficiencies.

Deliver Usable Information – Dashboards and Operational Analytics



Analytics: Example - Identify High Risk Groups/Dynamics



Identify High Risk Groups/Dynamics

Example shows high amount of duplicates with age 25 – 35 age group.

Identify Fraud

EXTERNAL FRAUD

Citizen Fraud

- Fraudulent Breeder Document
- Fraudulent access to service
- Multiple access to same service

INTERNAL FRAUD

Operational

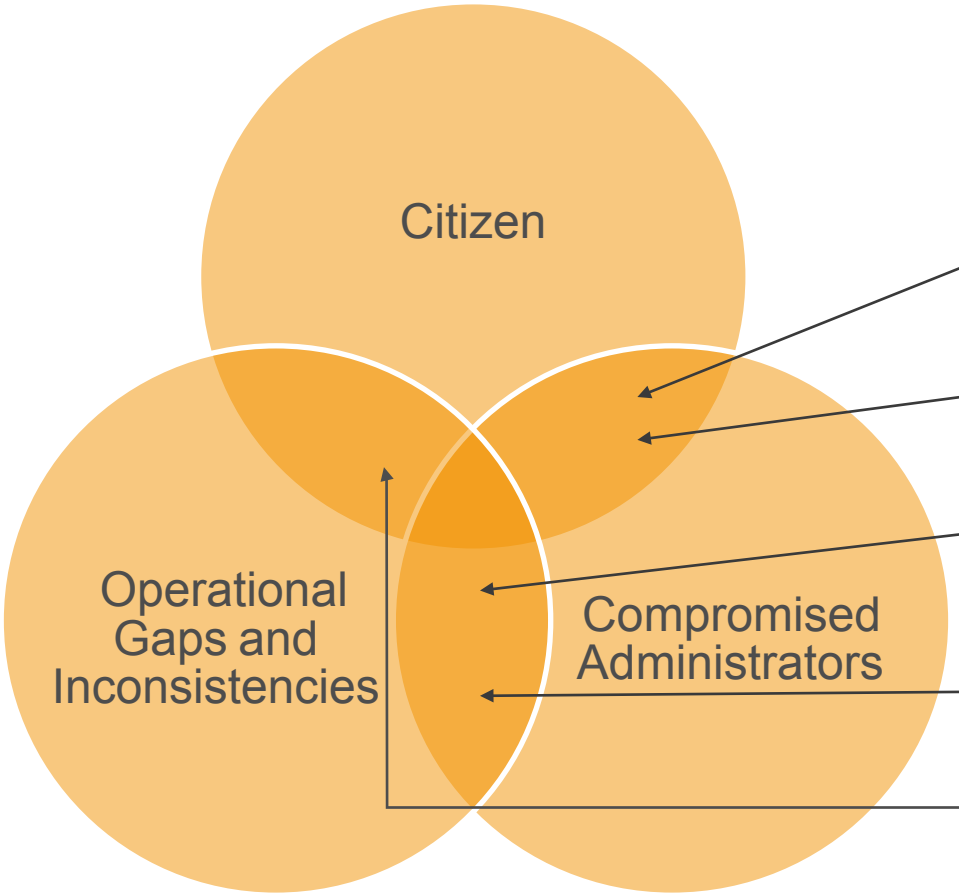
- Process enables 'fake/ghost' enrollments
- Benefits diverted
- Shrinkage

Administrative

- Administrators comprised to enable fraud enrollments
- Administrators comprised and enable illicit distribution of services

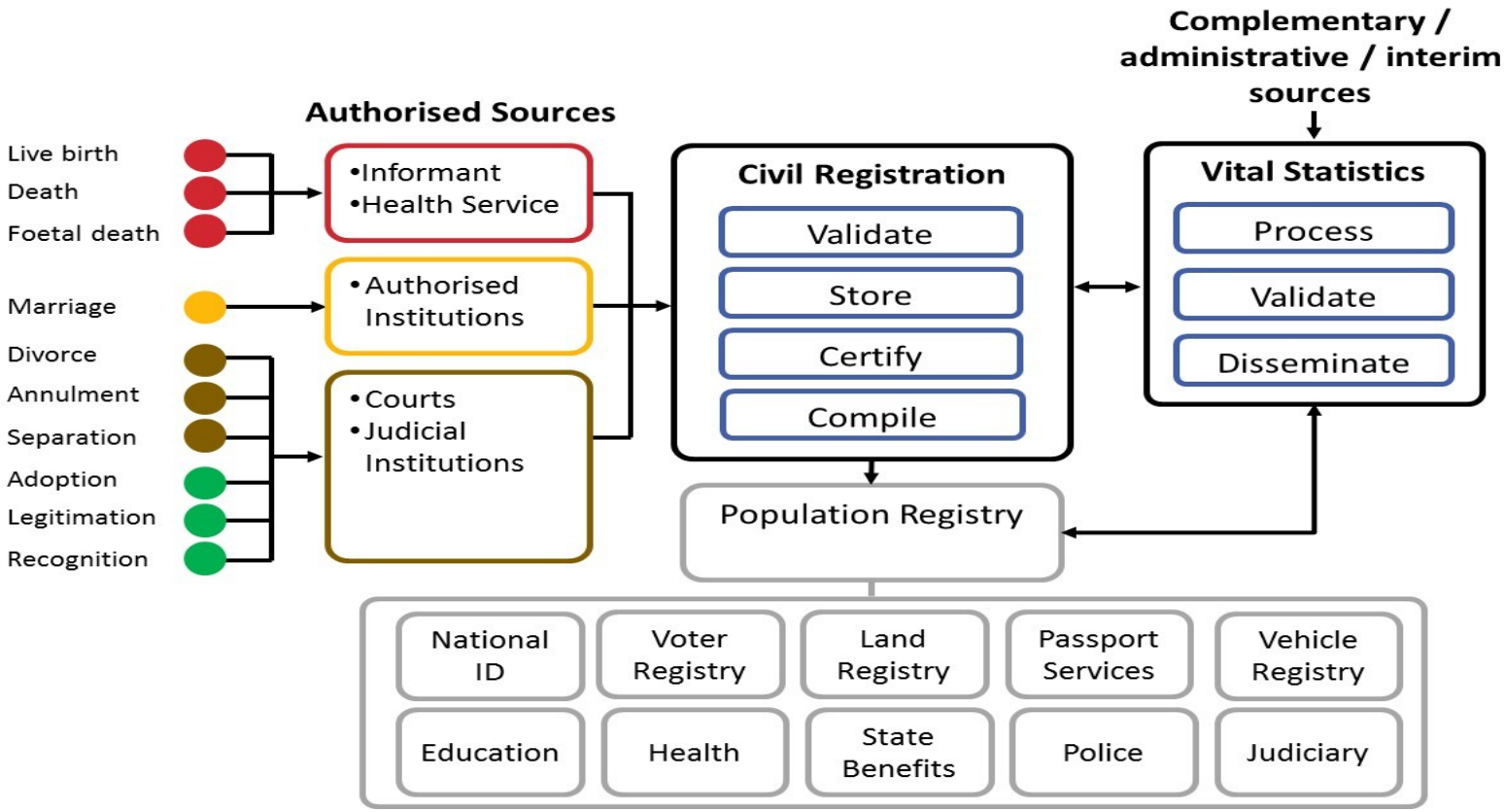
Establish Relationships and Gather Data

Data
Breeder Document
Enrollment Data (Operator, Time, Location)
Transaction Data
Fraud History
Fraud Patterns



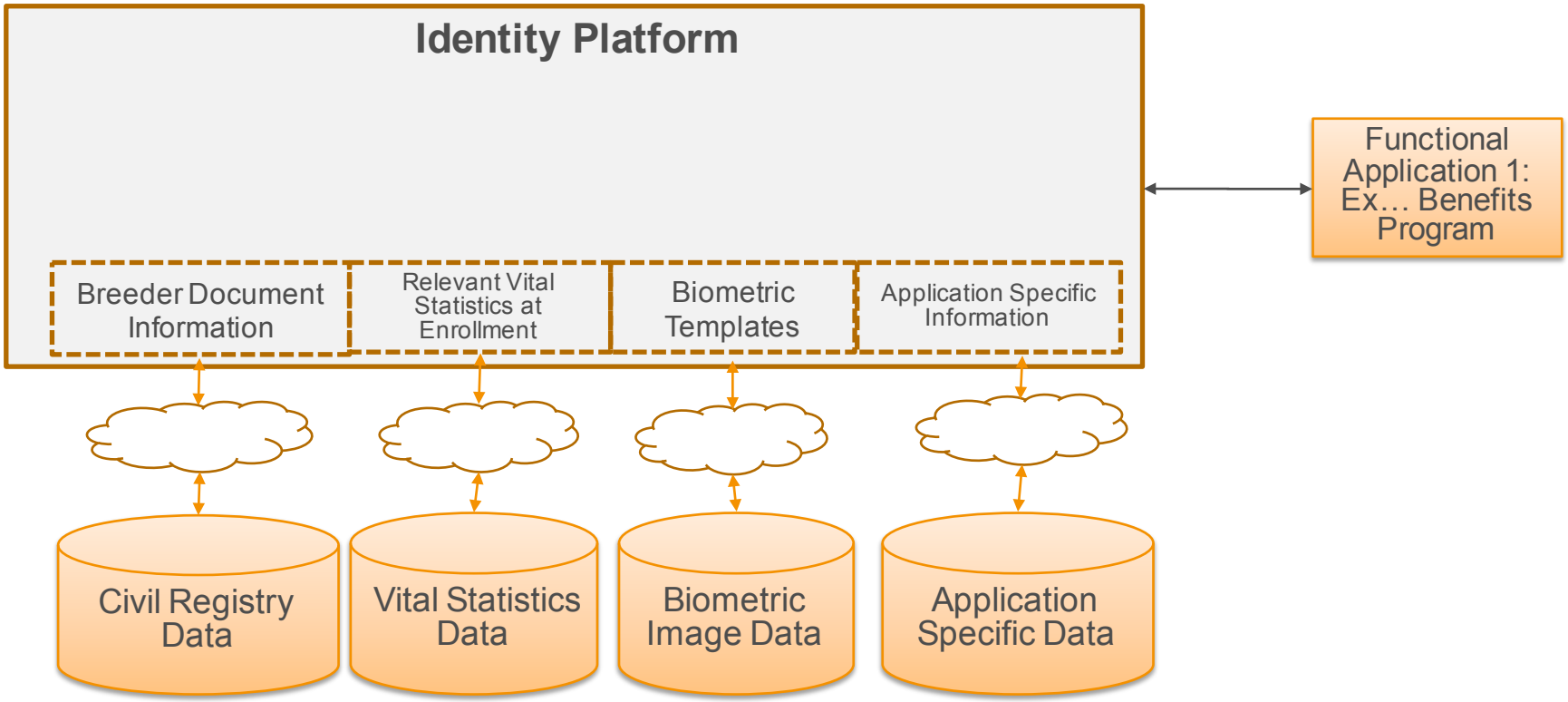
Relationships
Duplicate Enrollments
Multiple Services
Illicit distribution of services
Ghost Enrollments
Diversion of Services

Foundational CVRS Platform

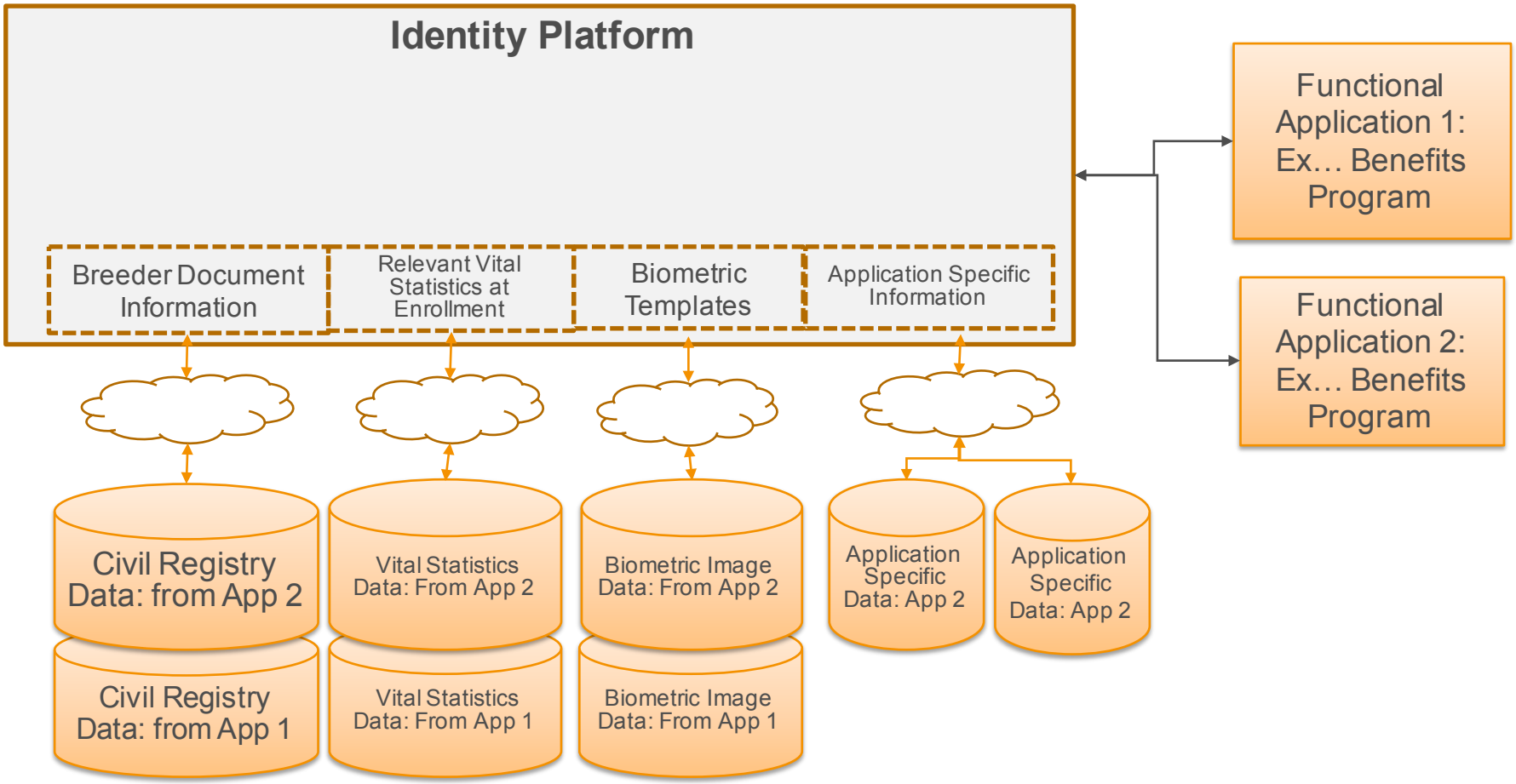


From CVRS Digitization Guidebook
African Programme for Accellerated Improvement of Civil Registration and Vital Statistics

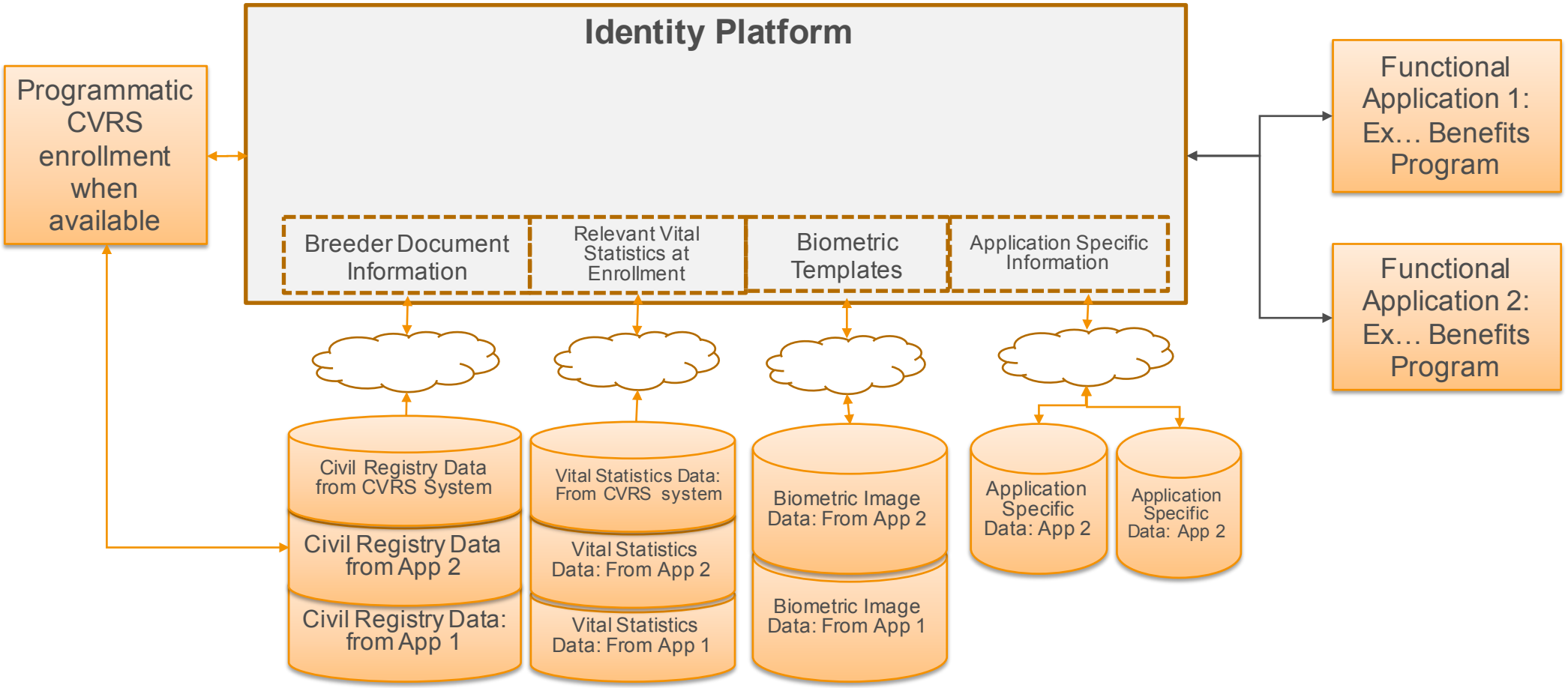
Start with Functional Need – Using Foundational Architecture



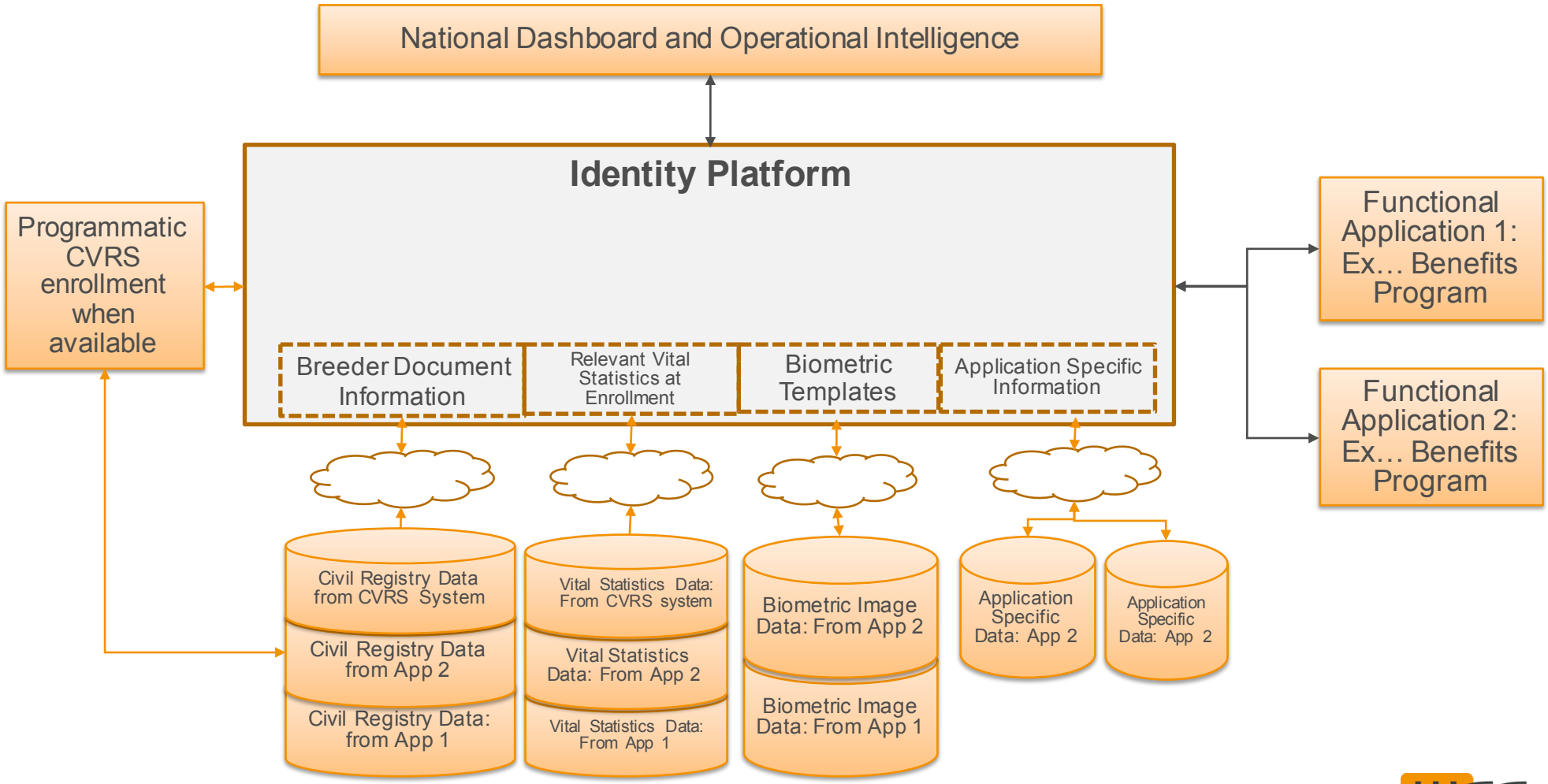
Expand CVRS data as additional Functional Needs Addressed



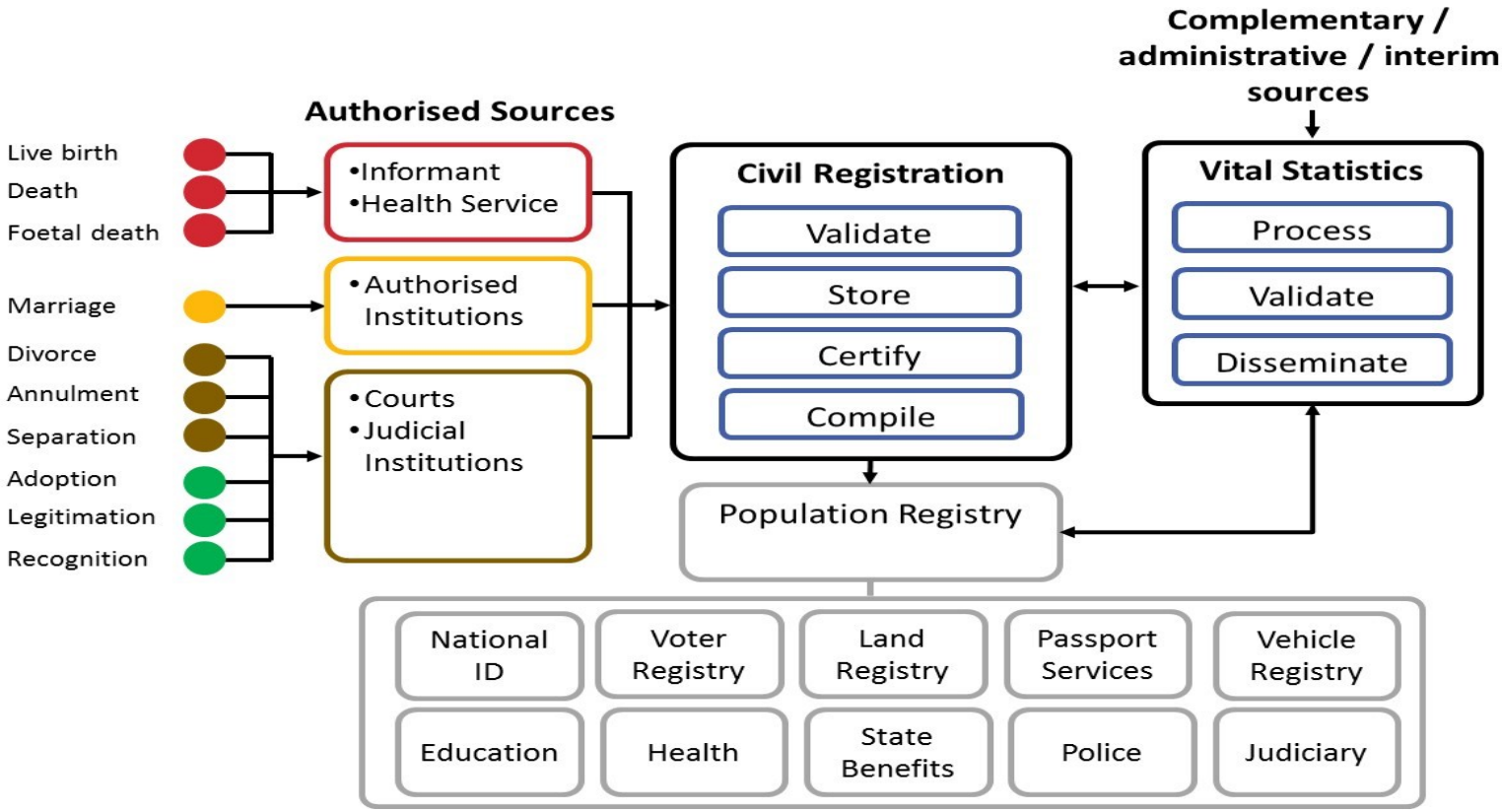
Integrate CVRS Programmatically when Available



Drive Information in Real Time

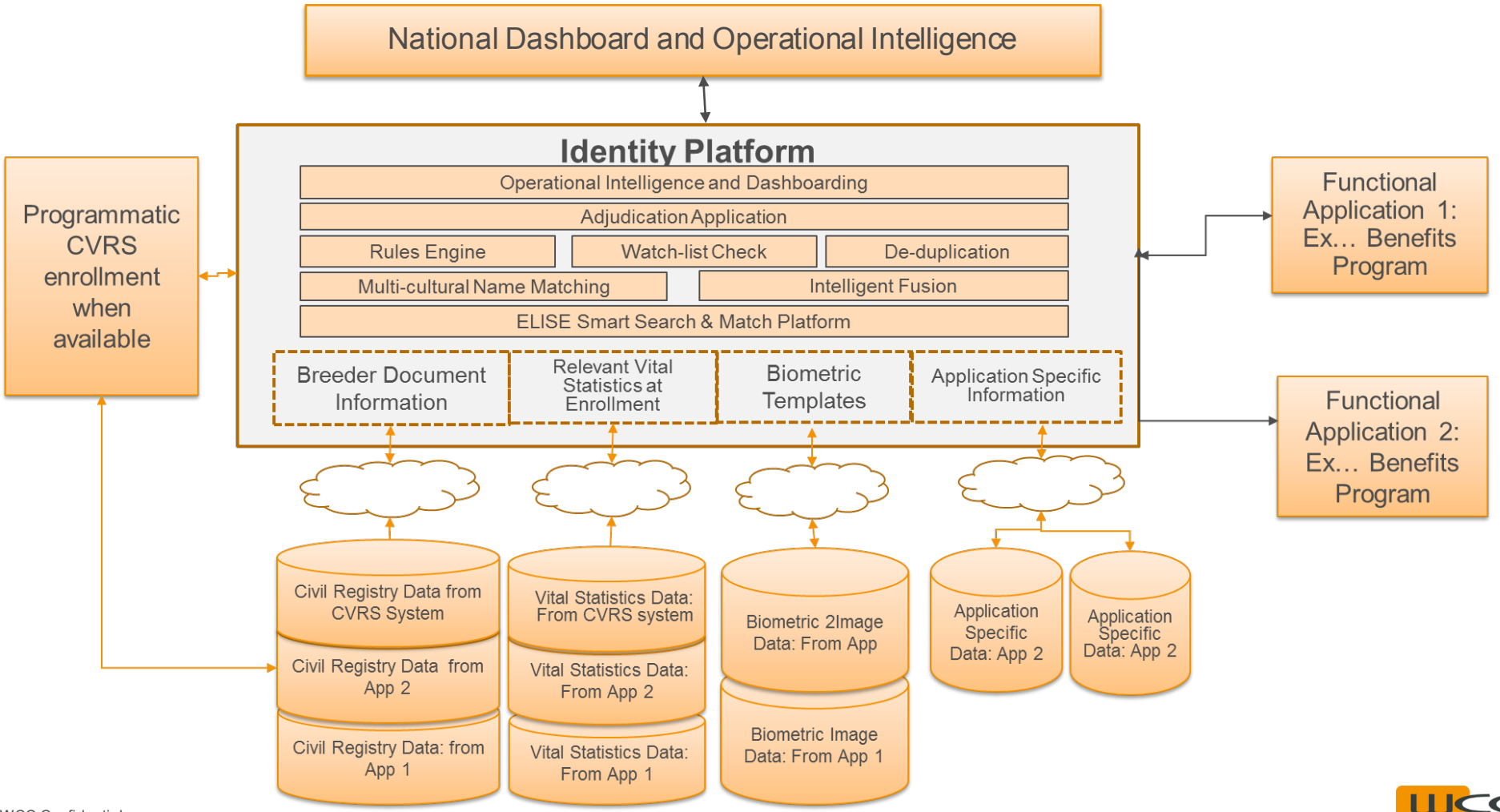


Foundational CVRS Platform

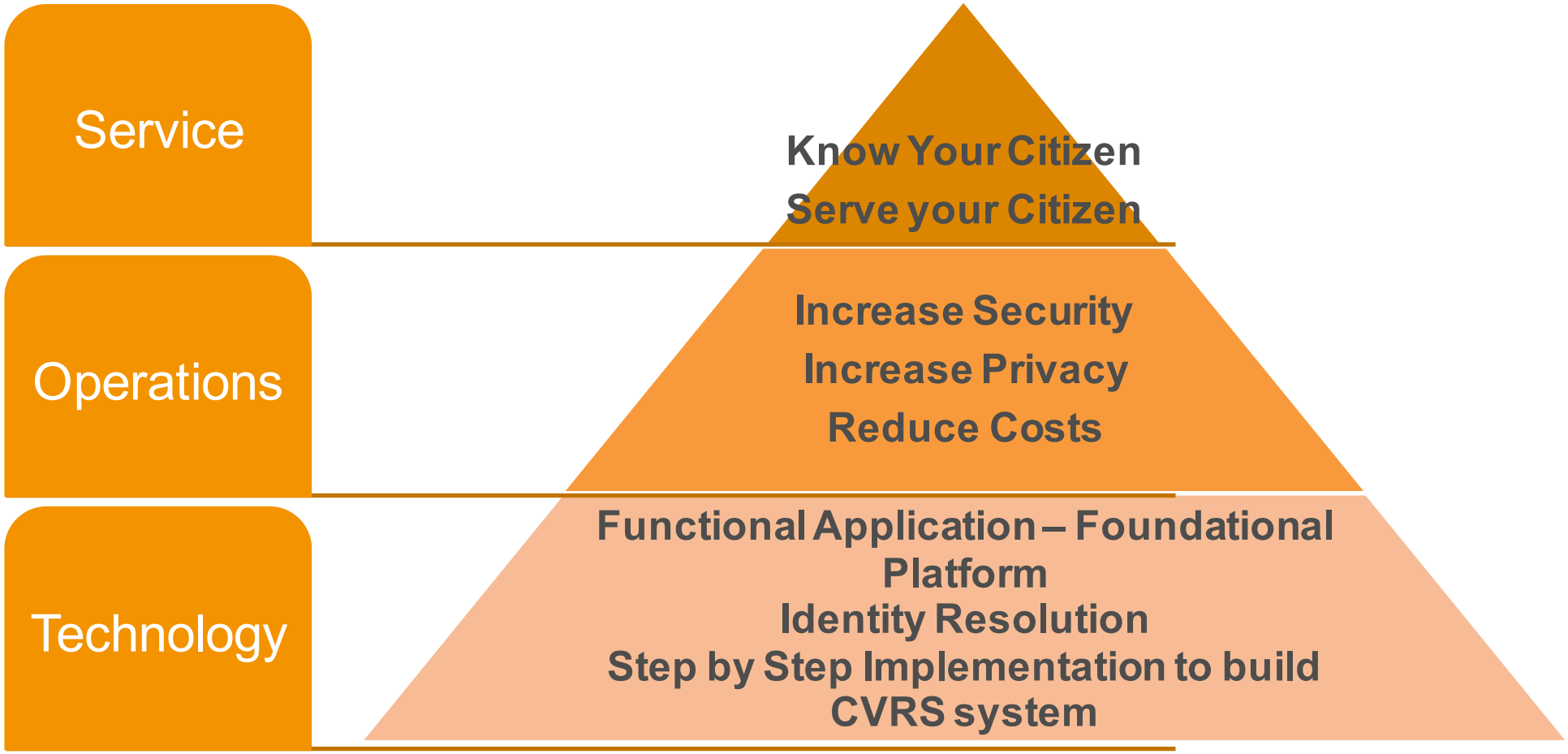


From CVRS Digitization Guidebook
African Programme for Accellerated Improvement of Civil Registration and Vital Statistics

CVRS Vision translated to Technology Platform



Summary – Linking Foundational Identities



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Questions?

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