Open source, open standards and interoperability – What it matters for clinicians?

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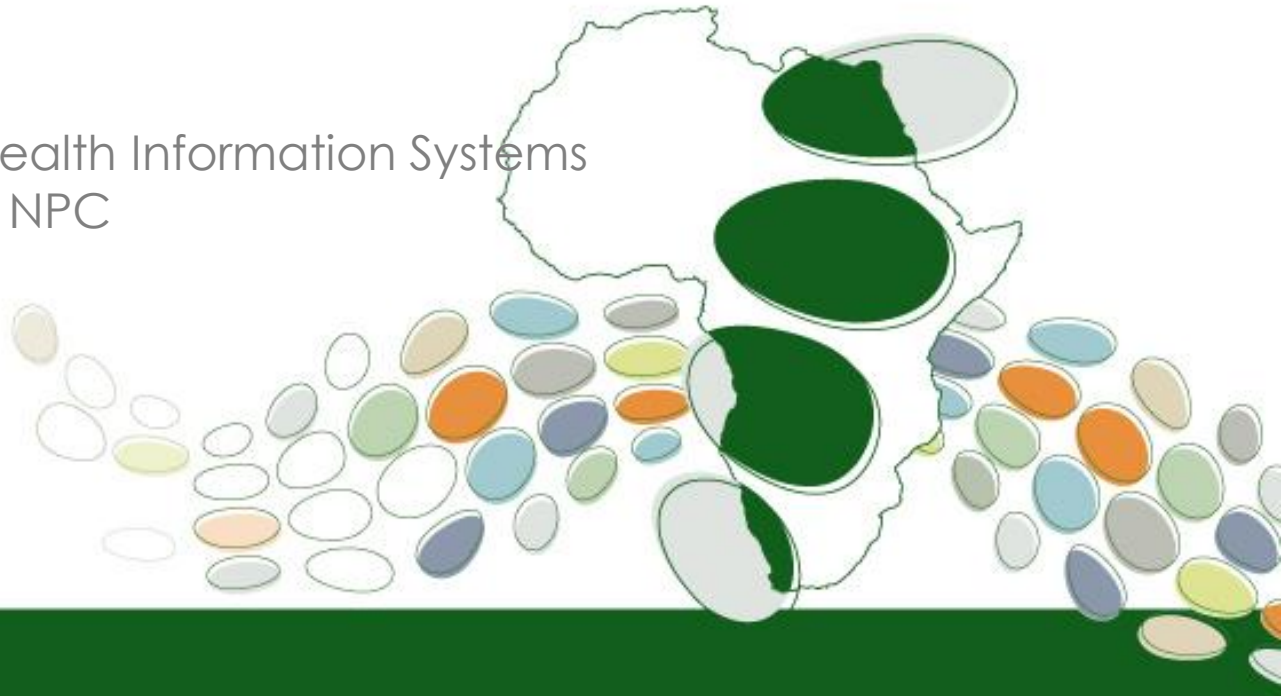

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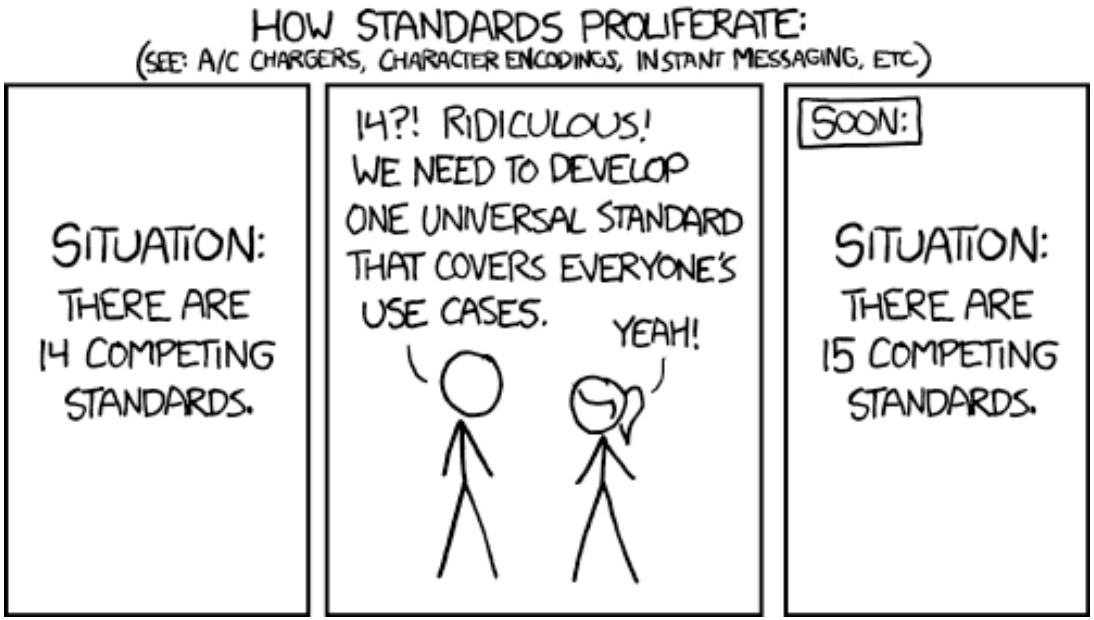
What does it all mean?

- Open Source? Open Architectures?
- Open Standards? Interoperability?



http://xkcd.com/927/

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Presentation Overview

- Overview of the National Health Normative Standards Framework for Interoperability in eHealth in South Africa (HNSF)

- Operationalization of the framework for the South Africa MomConnect Project for mobile maternal health in South Africa

- Application to HIV information management

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Development of the HNSF

- Commissioned by the National department of Health (NDoH)

- Developed by the Meraka Institute of the Council for Scientific and Industrial Research (CSIR) in collaboration with the Nelson Mandela Metropolitan University (NMMU)

National Health normative Standards Framework for Interoperability in eHealth in South Africa

GOVERNMENT NOTICE

DEPARTMENT OF HEALTH

No. 314 **23 April 2014**

NATIONAL HEALTH ACT, 2003 (ACT NO. 61 OF 2003)

NOTICE IN TERMS OF THE NATIONAL HEALTH ACT NO 61 OF 2003: NATIONAL HEALTH NORMATIVE STANDARDS FRAMEWORK FOR INTEROPERABILITY IN EHEALTH

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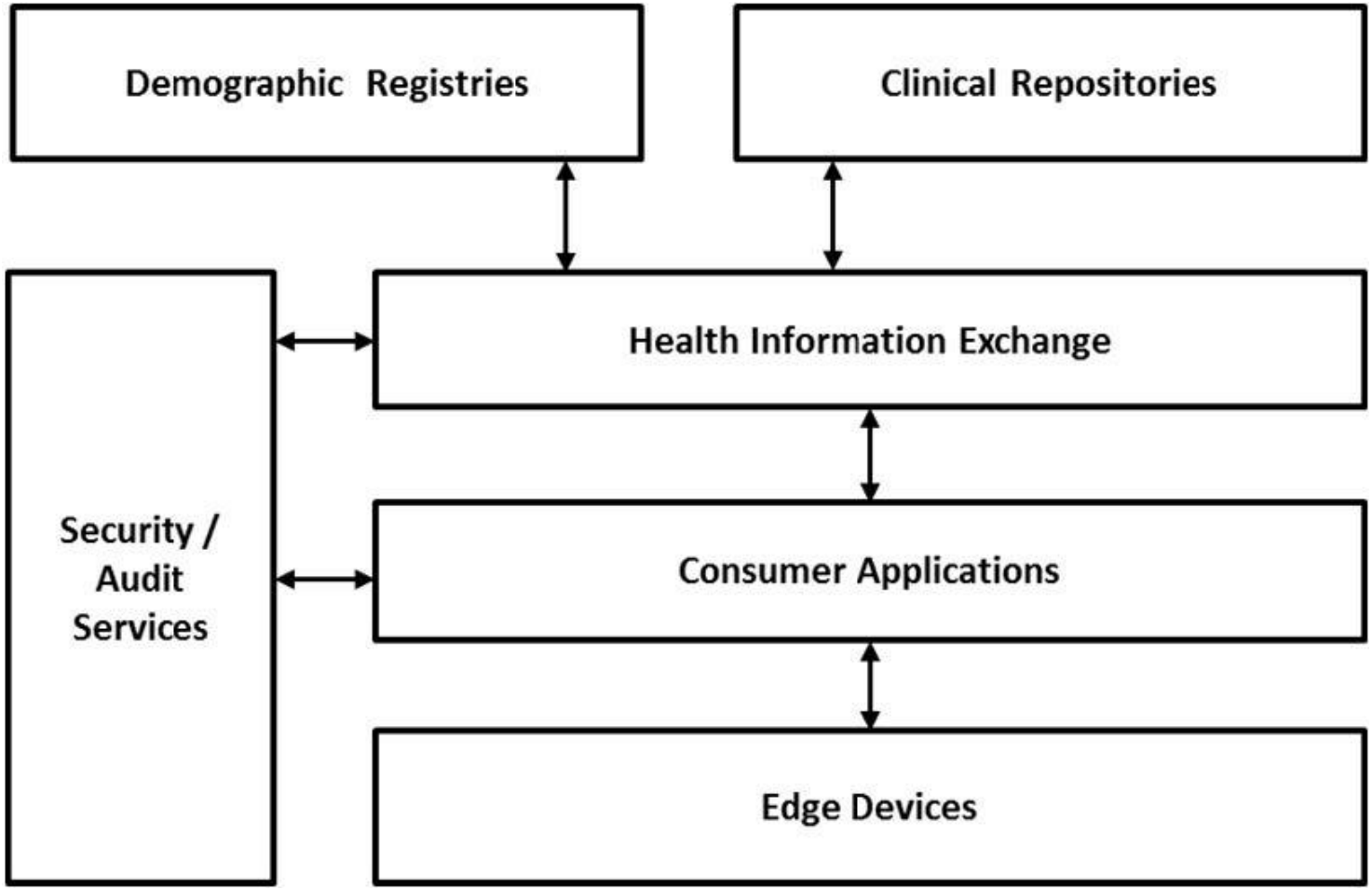
HNSF Some Highlights

- **Patient-centric** approach including a shared health record
- **Maturity levels** based on paper and electronic records
- **Based on international standards**, including base standards, profiles and interoperability specifications (IHE, ISO, HL7 etc)
- **Adopt, adapt and develop** (in that order) standards
- Interoperability architecture based on Health Information Exchange (**HIE**) with demographic and clinical registries
- Requires a **unique patient identifier** and identification system
- **Enterprise Architecture** required to extend HNSF for a particular implementation

National Health Normative Standards Framework (HNSF)
Generic eHealth Architectural Components



NDOH, CSIR. National Health Normative Standards Framework for Interoperability in eHealth in South Africa. Version 2.0, March 2014

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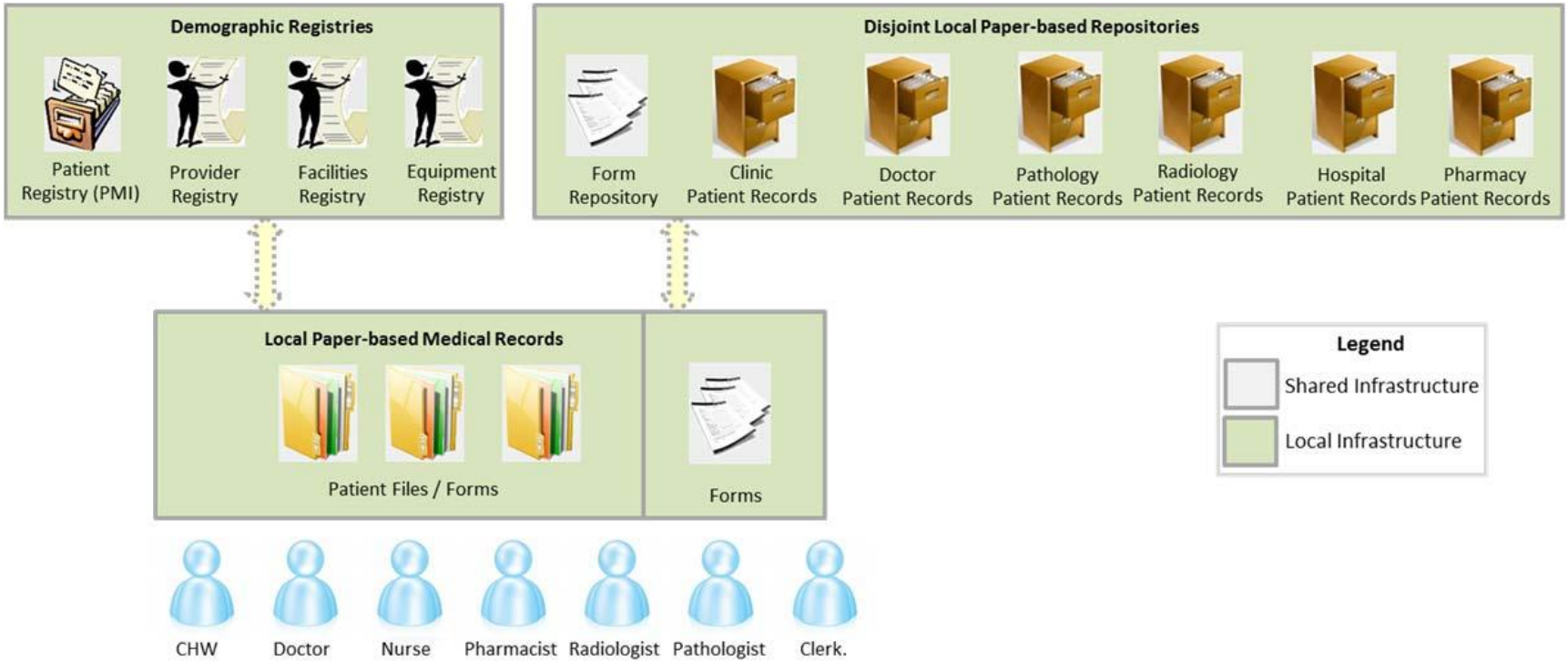
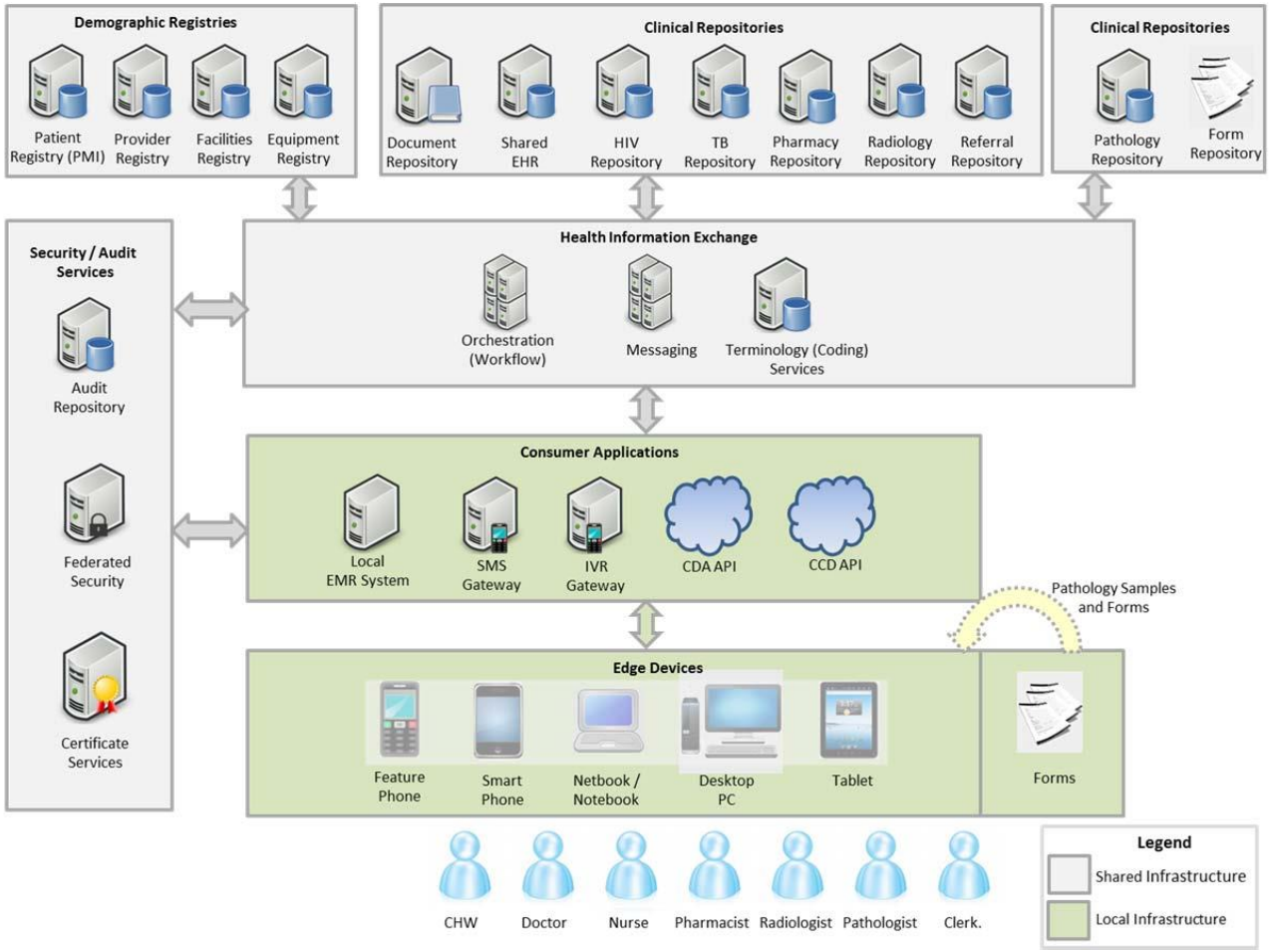
HNSF - Local paper-based medical record system



HNSF - Fully integrated national shared electronic health record system



NDOH, CSIR. National Health Normative Standards Framework for Interoperability in eHealth in South Africa. Version 2.0, March 2014

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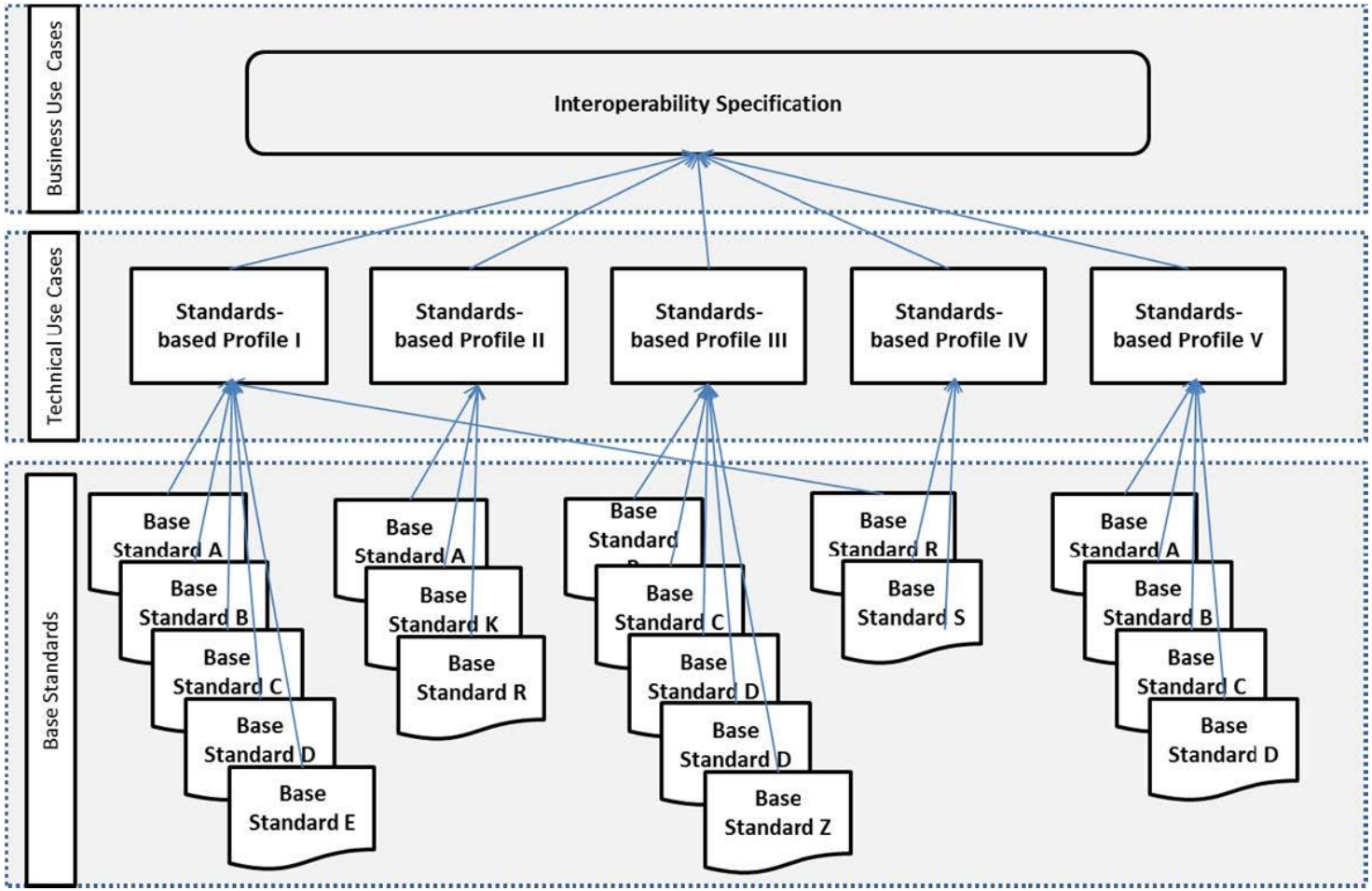
HNSF - Standards-based building blocks



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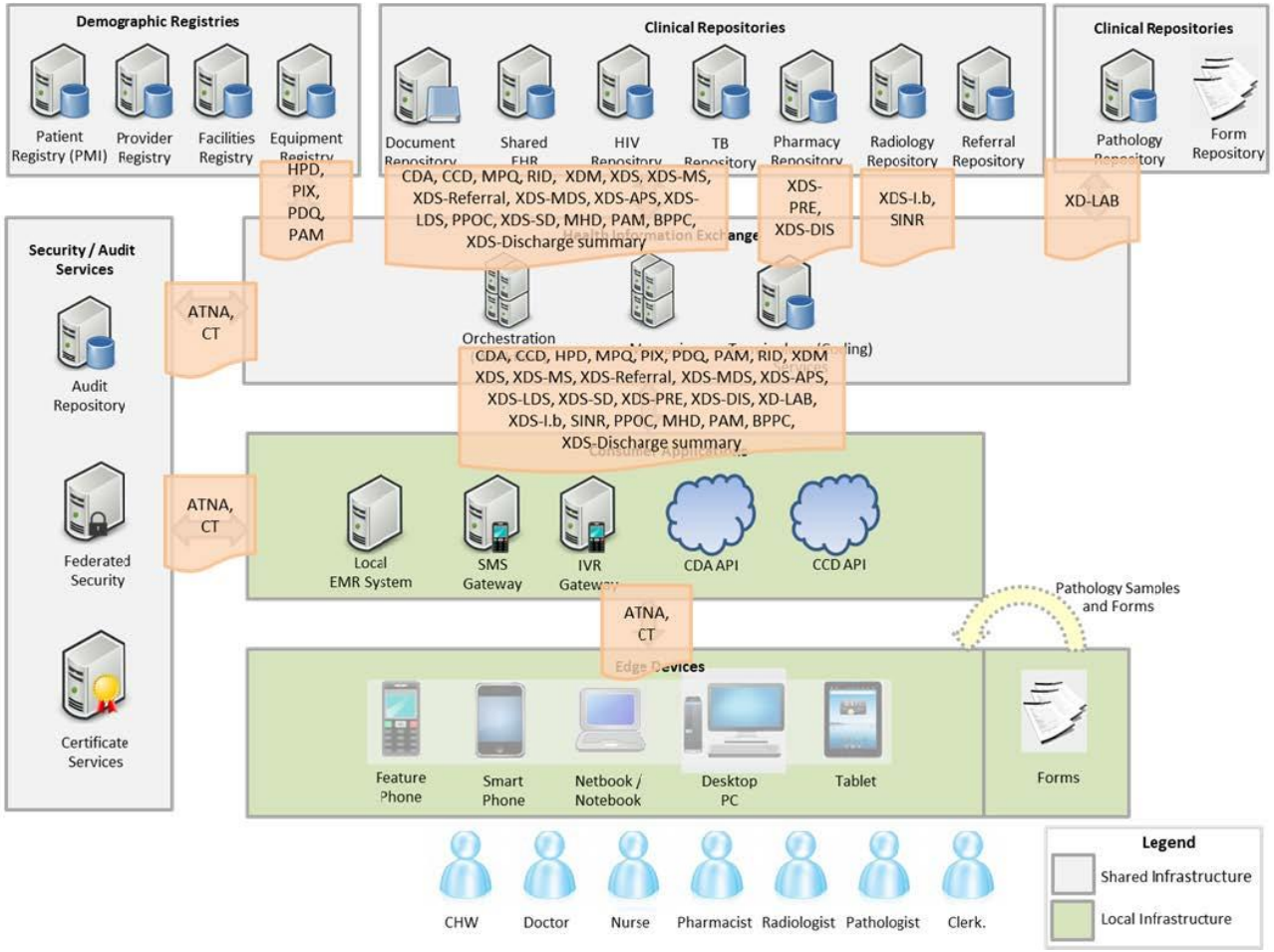
HNSF - IHE profiles mapped to a fully integrated national shared electronic health record system



NDOH, CSIR. National Health Normative Standards Framework for Interoperability in eHealth in South Africa. Version 2.0, March 2014

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MOMCONNECT PROJECT

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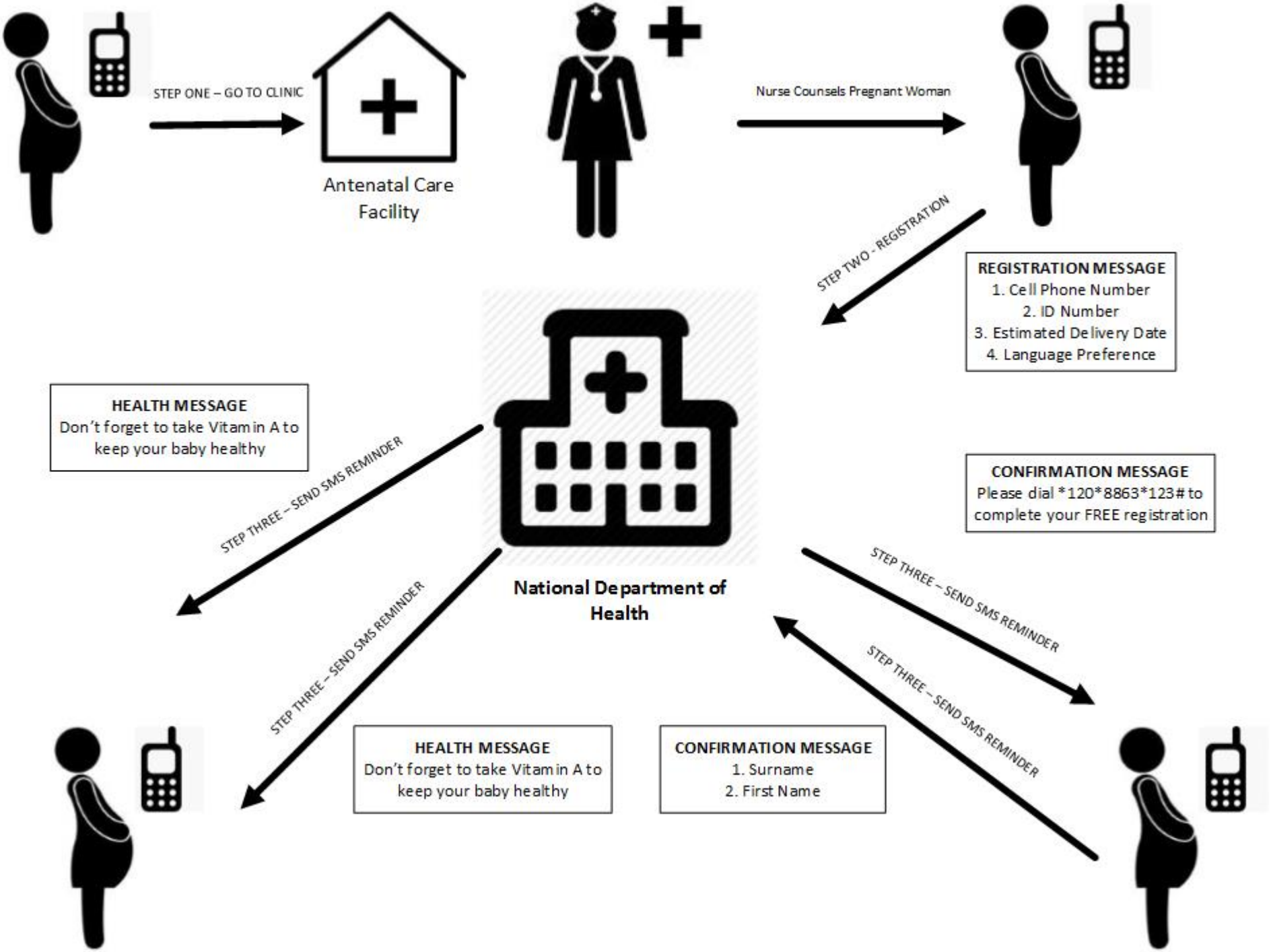
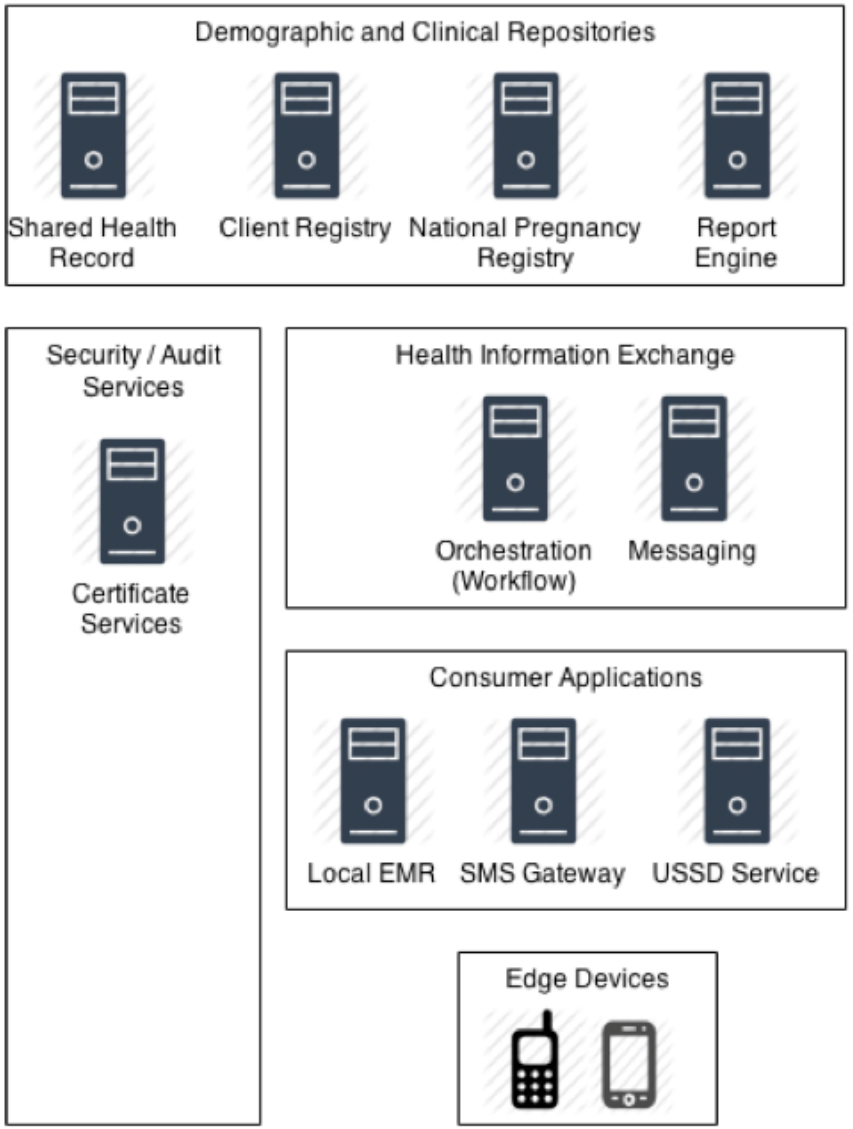

STEP ONE – GO TO CLINIC
Antenatal Care Facility
Nurse Counsels Pregnant Woman
STEP TWO - REGISTRATION
REGISTRATION MESSAGE
1. Cell Phone Number
2. ID Number
3. Estimated Delivery Date
4. Language Preference
HEALTH MESSAGE
Don't forget to take Vitamin A to keep your baby healthy
STEP THREE – SEND SMS REMINDER
National Department of Health
CONFIRMATION MESSAGE
Please dial *120*8863*123# to complete your FREE registration
STEP THREE – SEND SMS REMINDER
STEP THREE – SEND SMS REMINDER
HEALTH MESSAGE
Don't forget to take Vitamin A to keep your baby healthy
CONFIRMATION MESSAGE
1. Surname
2. First Name
STEP THREE – SEND SMS REMINDER

Data Elements

#	Field	Type	Description
	Client		
1	Client Language Preference	Char [3]	3 letter ISO 639-2 language code OR AF,EN,ND,NS,SO,SW,TW,TO,VE,XH,ZU
2	Client Cell Number	Num [11]	MSISDN format Numeric (eg 27999999999)
3	Client ID number	Char[20]	SA National ID Number or others (see next table)
4	Facility Code	Char[5]	SA Facilities List (DHIS)
5	Pregnancy Date	Char [8]	ISO8601 format (yyyyMMdd); If only the month is known or the date is estimated, then the value should be truncated to a year or year/month value (yyyy[MM])
6	Surname	Char [25]	Free Text
7	First name	Char [25]	Free Text
	Provider		
8	MSISDN #	Num [11]	MSISDN format Numeric (11)
9	Encounter Date/Time		ISO8601 format (yyyyMMddHHmm[ss][+|-ZZzz])
10	MHA Code	Char [3]	To be defined

Architectural Design

- Architecture based on the HNSF integrated national shared electronic health record system
- Five layers:
  1. Edge Devices, eg mobile phone
  2. Consumer Applications, eg mHealth services
  3. Health Information Exchange, eg OpenHIE
  4. Demographic and Clinical Repositories, eg the National Pregnancy Registry
  5. Security / Audit Services, eg certificate service



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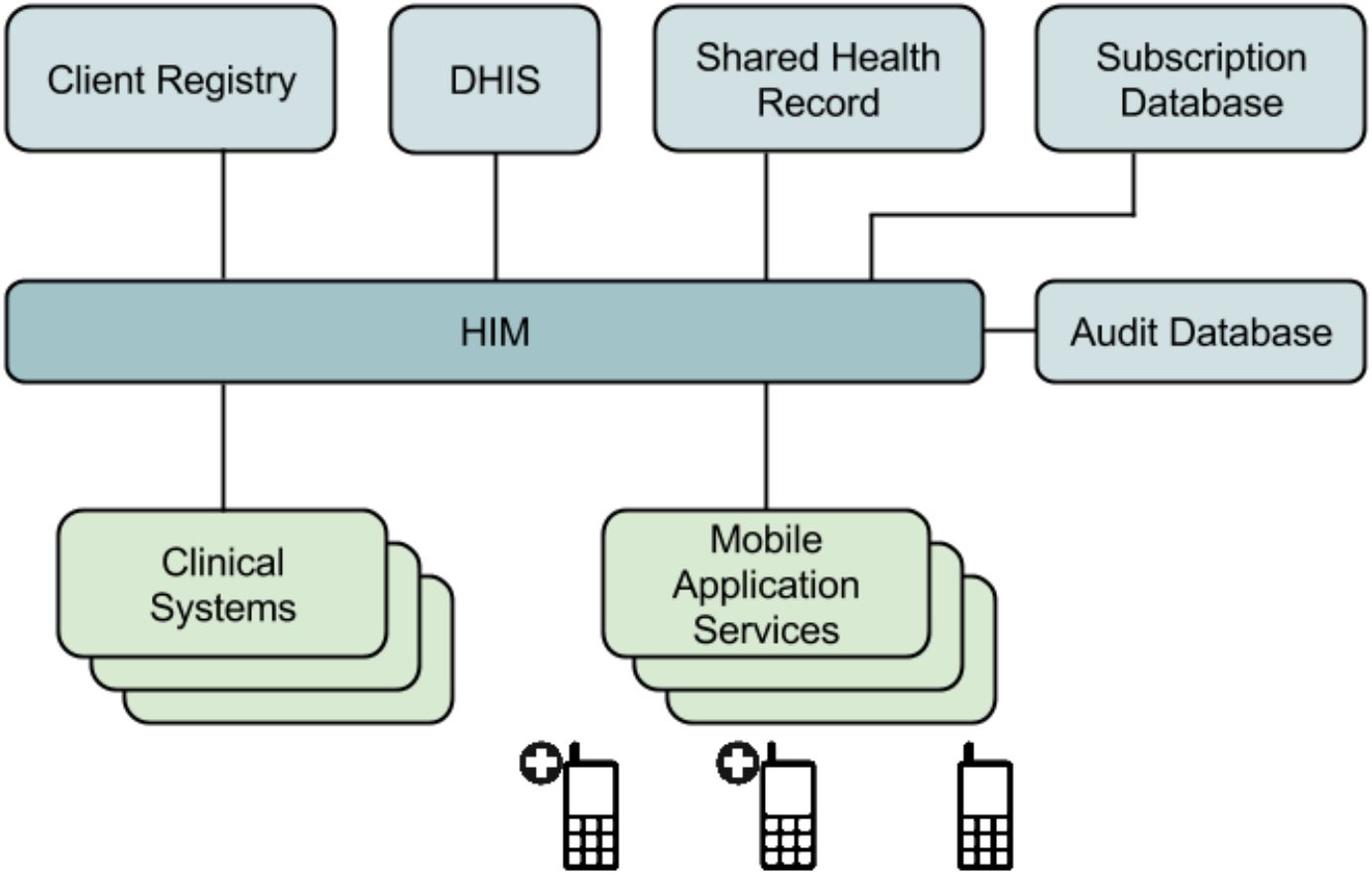
National Pregnancy Registry



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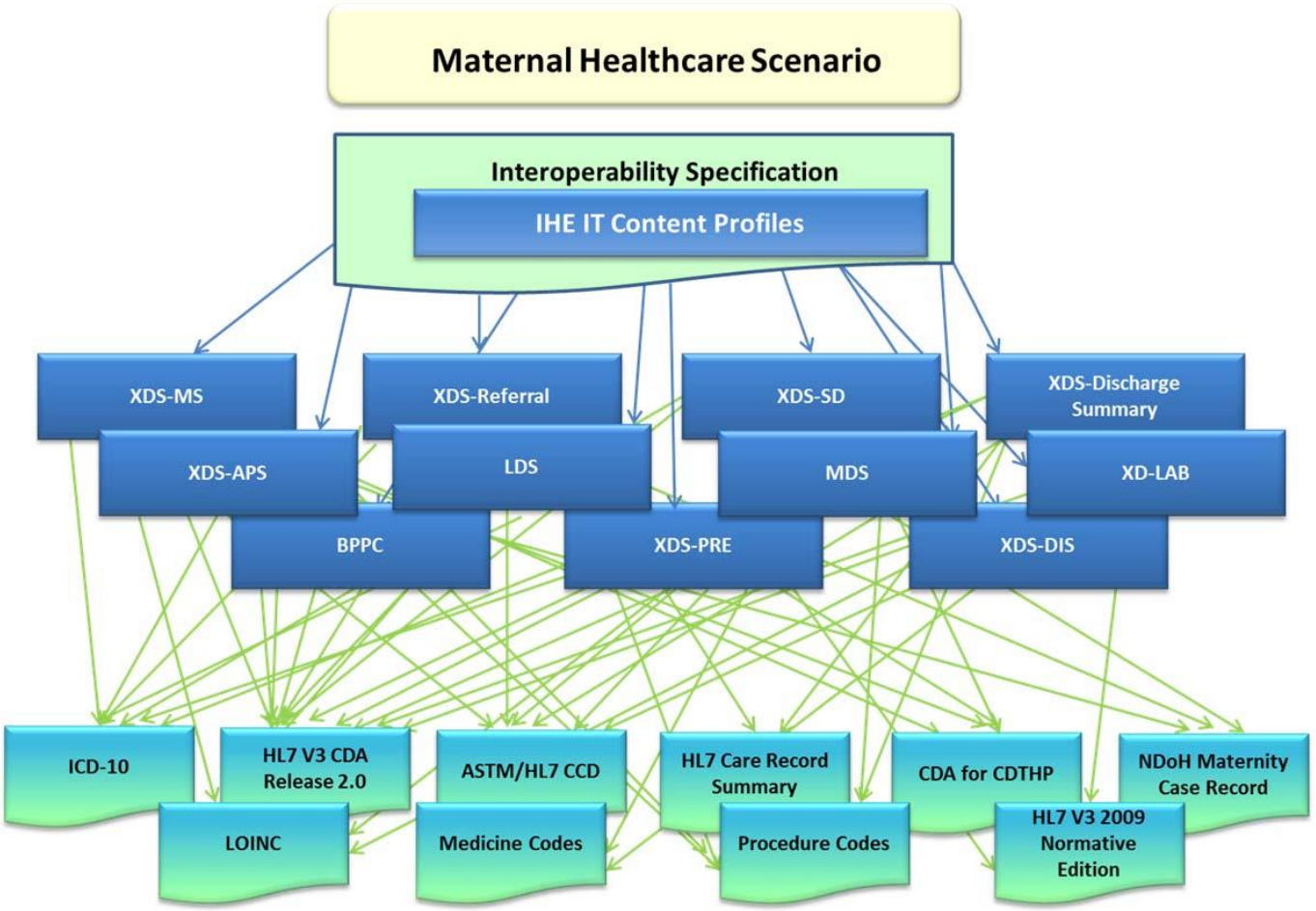
HNSF – Maternal Healthcare Scenario



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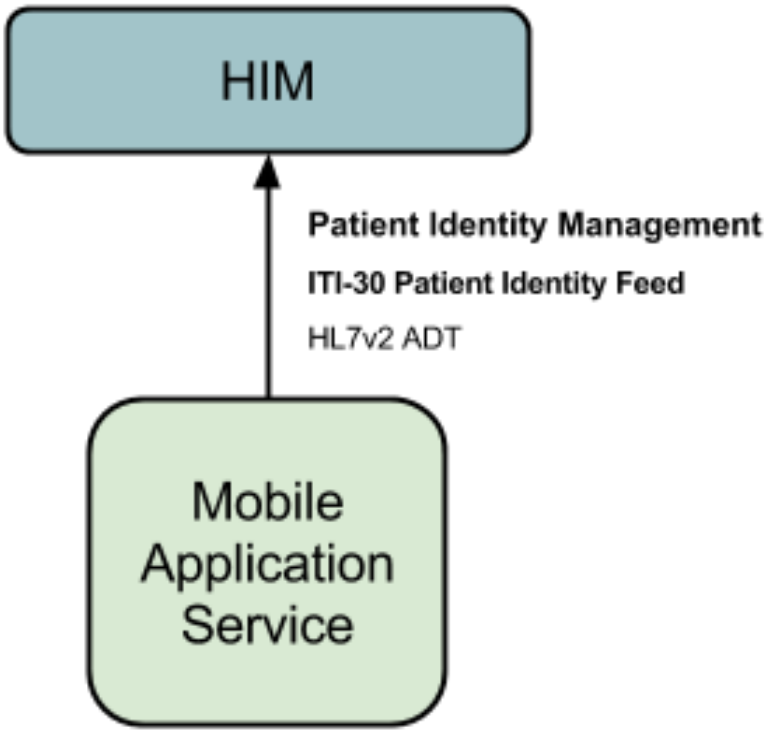
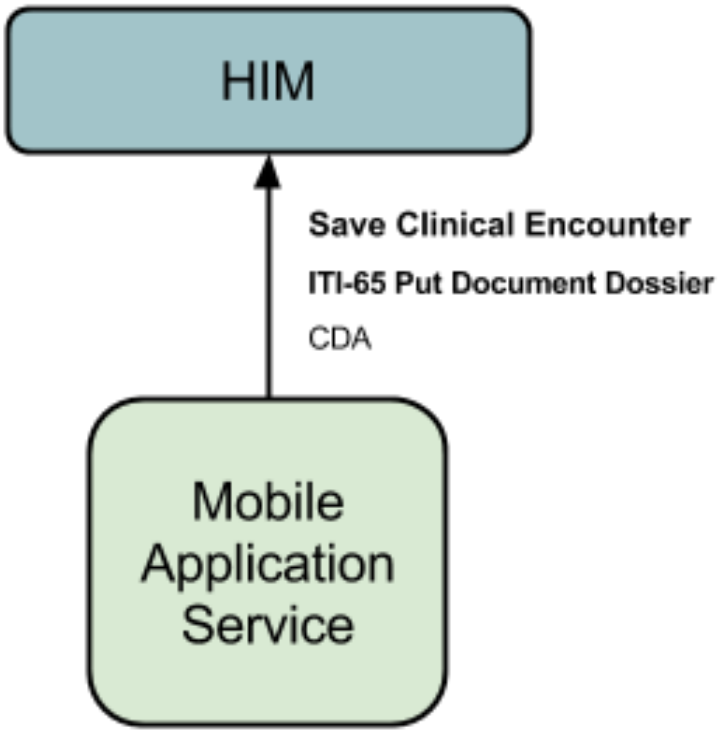
Transactions

Patient Administration



Save Clinical encounter



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Security

- Location security
- Data transmission security
- Data storage security

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HOW IS THIS APPLIED TO HIV

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Using the HIE for HIV care

- Jembi is proposed an extension to our existing and proposed architecture in Rwanda and Botswana to support HIV (and TB in some areas):
  - Integrating lab data
  - Integrating pharmacy and dispensing
  - Integrating resistance data
  - Integrating referrals

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How does interoperability and standards support HIV care

- Uniquely identifying patients (EMPI)
- Providing continuity of care (SHR)
  - Sharing data uniformly between systems
- Leveraging advanced tooling at a central level
  - Drug resistance prediction
  - Central lab and pharmacy data
- Harmonizing multiple workflows and solutions into care:
  - Alerting, referrals, CHW support etc.
- Integrating Mobile, EMRs and existing software tools into a harmonized solution

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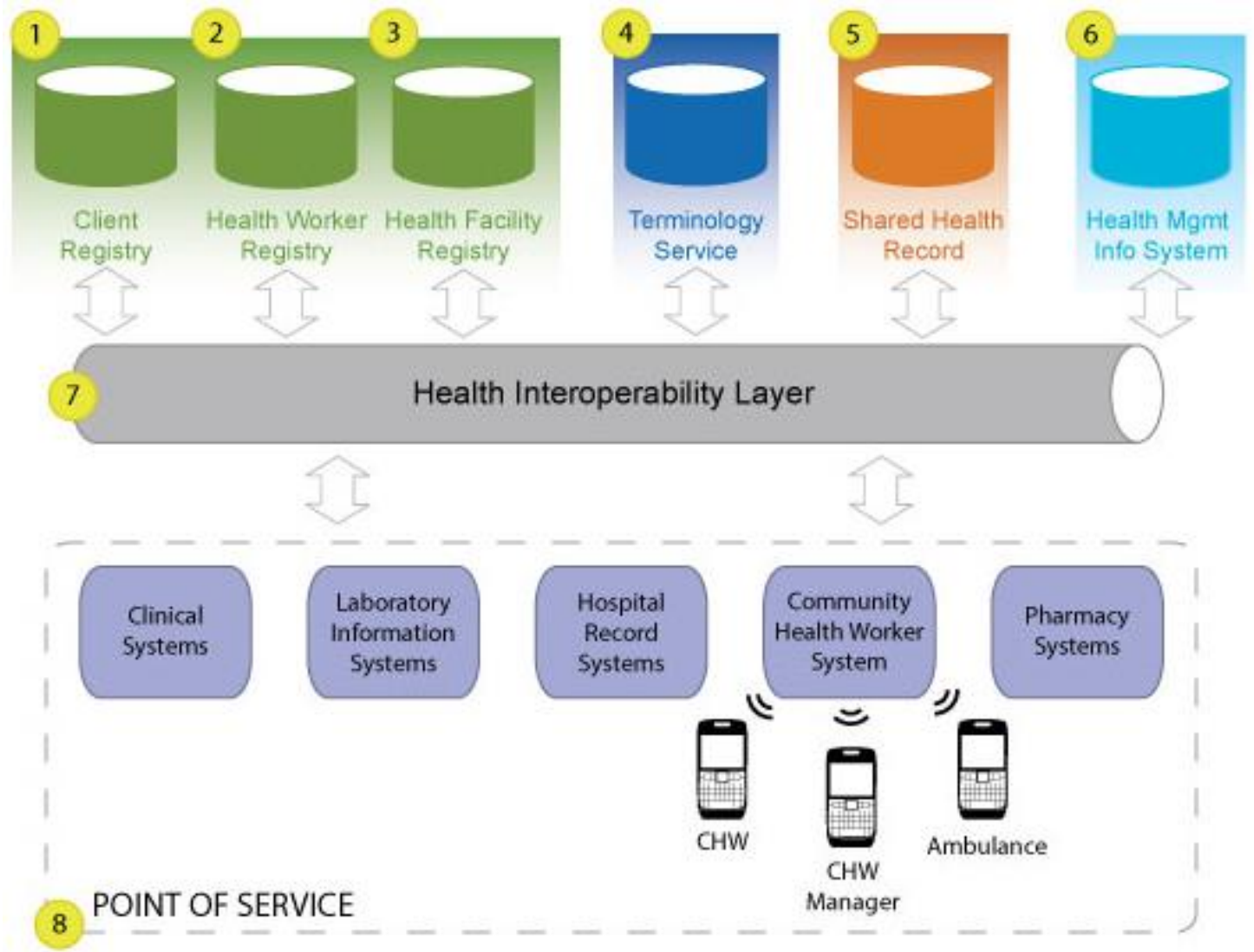

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PREVIOUS AND OTHER EXAMPLES

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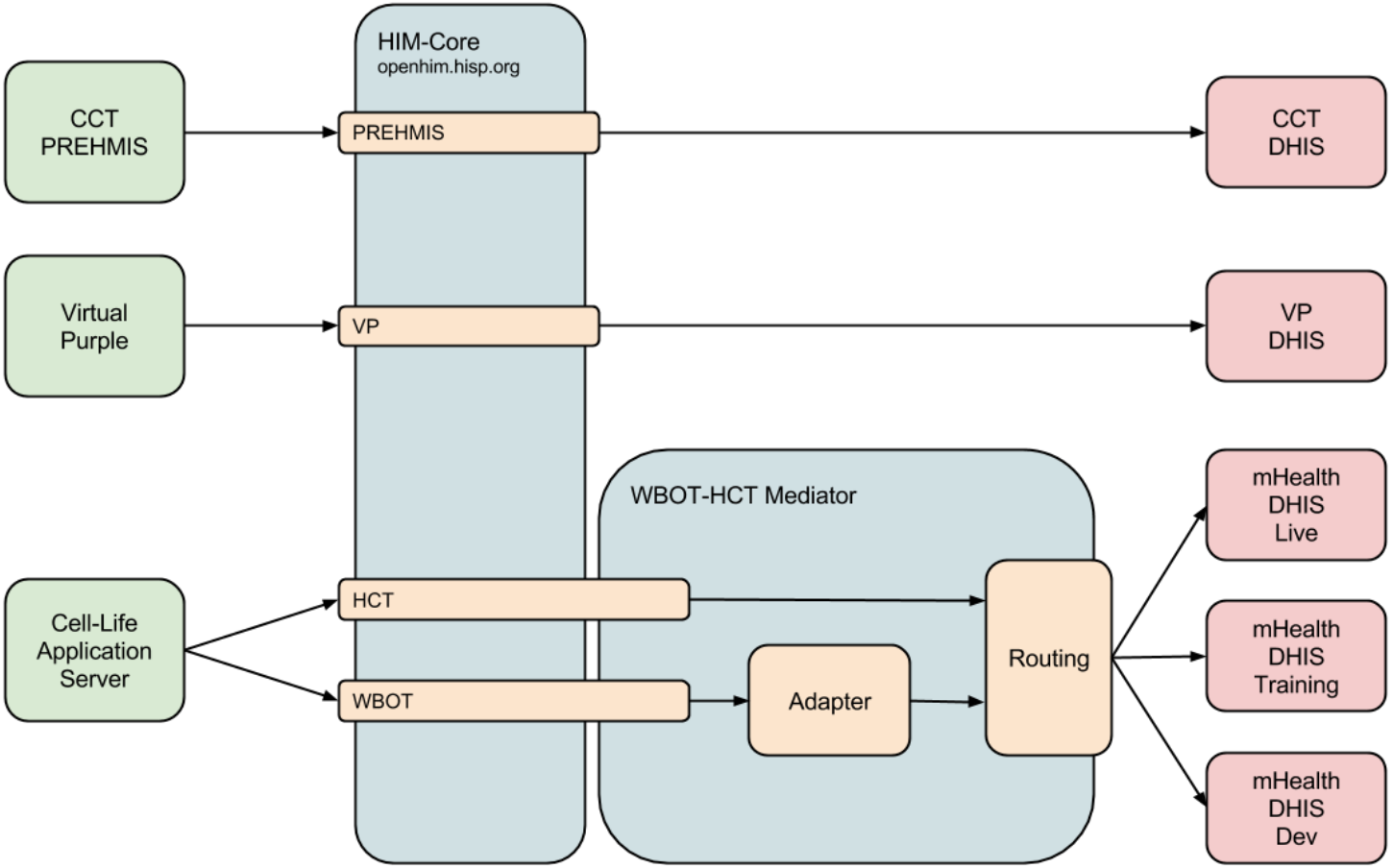
Existing Interoperability architecture



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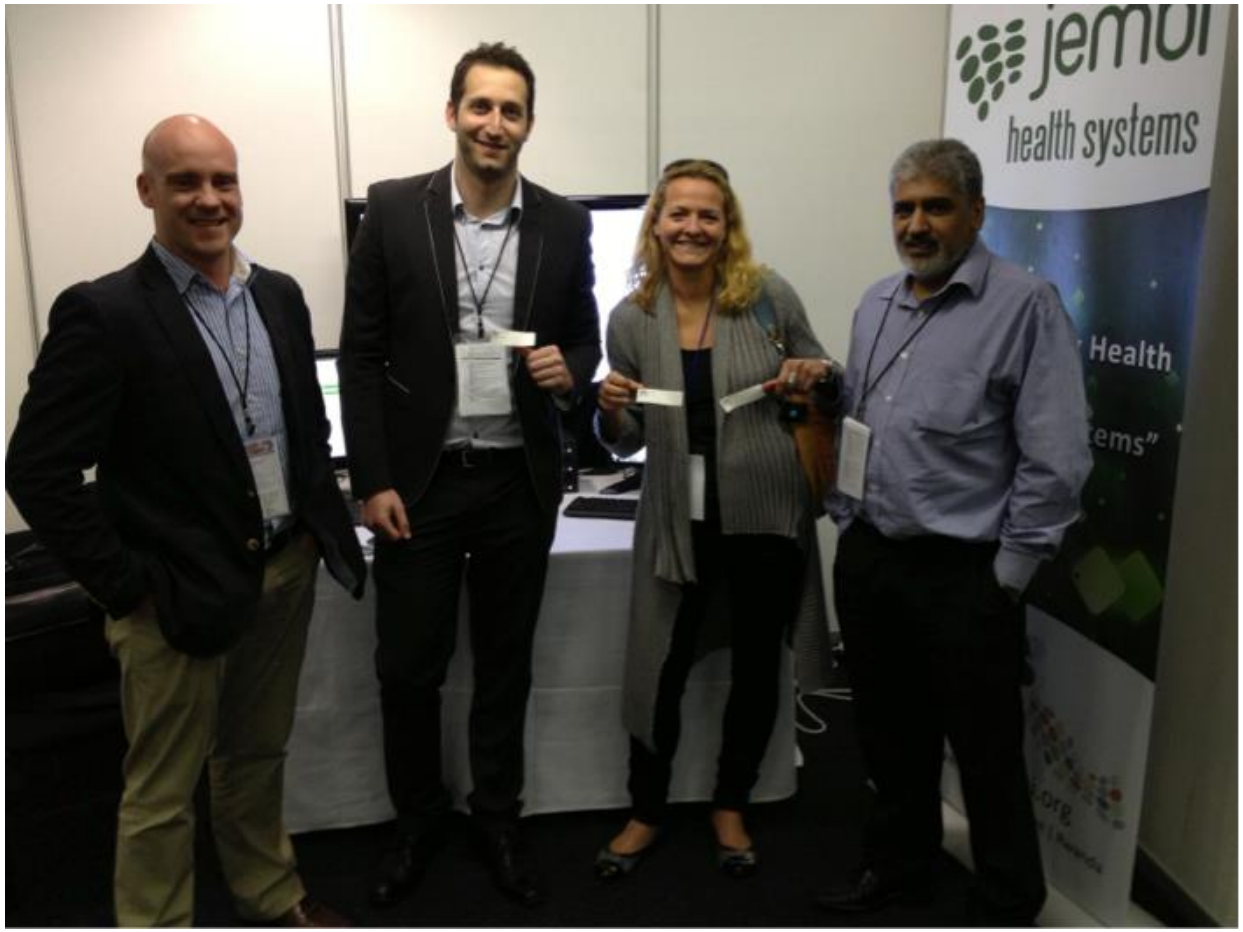
Mobile Connectathon at ICT4H, September 2013



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ICT4HEALTH CONFERENCE 2014

INCLUDING

GLOBAL TELEHEALTH 2014

SOUTHERN SUN ELANGENI & MAHARANI HOTEL, DURBAN, SOUTH AFRICA

10 & 11 NOVEMBER 2014

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- United States Centres for Disease Control and Prevention

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Thank you

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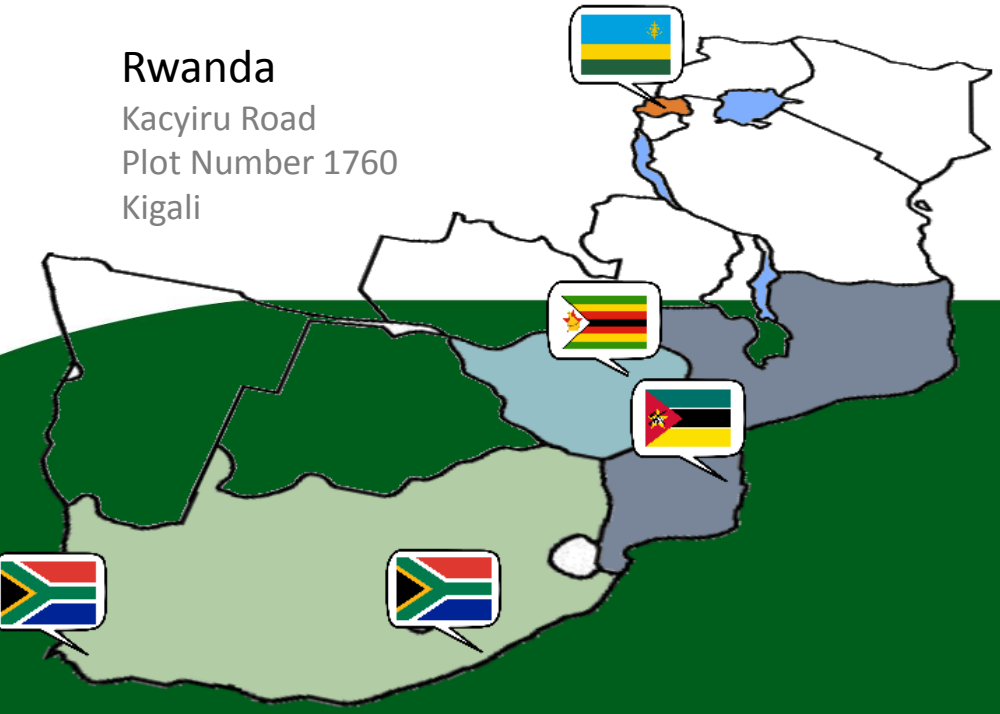

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