



Physicians for Human Rights

Using a Mobile App to Document Sexual
Violence in Conflict Zones:

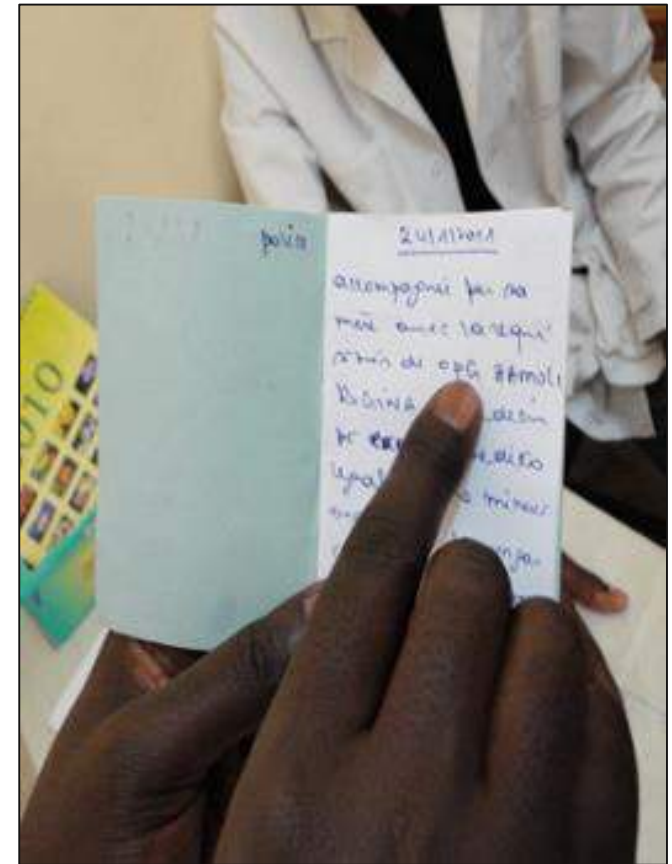
From the Exam Room to the Courtroom and
the Bumpy Road in Between

**Ranit Mishori, MD, MHS, FAAFP. Professor of Family
Medicine, Georgetown University; Medical Consultant,
Physicians for Human Rights**

Evidence Challenge



- Forensic medical exams are rarely conducted
- Medical charts fail to document findings
- No secure storage facilities
- Lack of clarification of roles
- Absence of a shared language
- Poor coordination across legal, medical, and law enforcement sectors







MediCapt

CERTIFICAT MÉDICAL D'AGRESSION SEXUELLE
RÉPUBLIQUE DÉMOCRATIQUE DU CONGO

*L'octroi de ce certificat est gratuit pour les victimes d'agressions sexuelles et de harcèlement sexuel. (Loi n°251/1438 du 10/08/2011)
 Inspection*

Document Confidentiel

Loi n°06/019 du 20 juillet 2006 modifiant et complétant le Décret du 06 août 1959 portant Code de Procédure Pénale. Code de Procédure pénale, l'Officier du Ministère Public ou le Juge requiert d'office un médecin et un psychologue afin d'apprécier les conséquences physiques et psychologiques de l'acte et d'évaluer l'importance du préjudice subi par celle-ci et son aggravation ultérieure.

Date d'aujourd'hui / / à _____ heures | Lieu de l'examen _____

A. INFORMATION SUR LE / LA PATIENT(E)

1. Nom		2. Post-nom	
4. Adresse			
6. Âge		7. Date de naissance	
<input type="checkbox"/> Non connu		<input type="checkbox"/> Non connue	
9. Etat civil			
<input type="checkbox"/> Célibataire		<input type="checkbox"/> Marié(e)	<input type="checkbox"/> Veuf /
<i>Noter: Si le patient est de sexe masculin, sauter jusqu'à la question numéro 14.</i>			
10. Date des dernières règles		<input type="checkbox"/> Non réglée <input type="checkbox"/> Post-natal	
/ /			
11. Nombre de grossesses		12. Nombre de naissances vivantes	
14. Le / la patient(e) a eu un rapport sexuel consenti au cours des 7 jours qui ont précédé l'acte			
<input type="checkbox"/> Oui		<input type="checkbox"/> Non	



MediCapt Goals & Objectives



Helps clinicians gather comprehensive forensic medical evidence



Improves the quantity and quality of forensic medical evidence for police and justice sector



Increases likelihood of successful prosecutions and reduces impunity for sexual violence crimes as a result of improved forensic evidence.



Aggregates data across populations to assess patterns of violations for early warning, rapid response, research, and advocacy

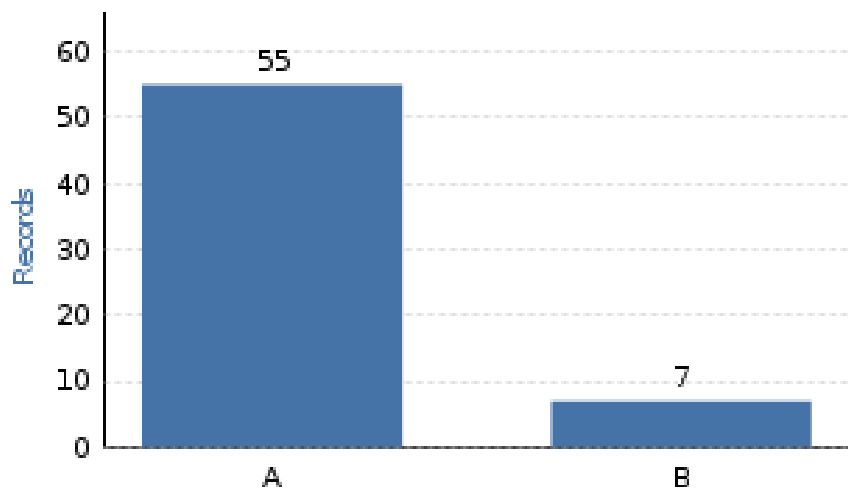


REDUCES SEXUAL VIOLENCE

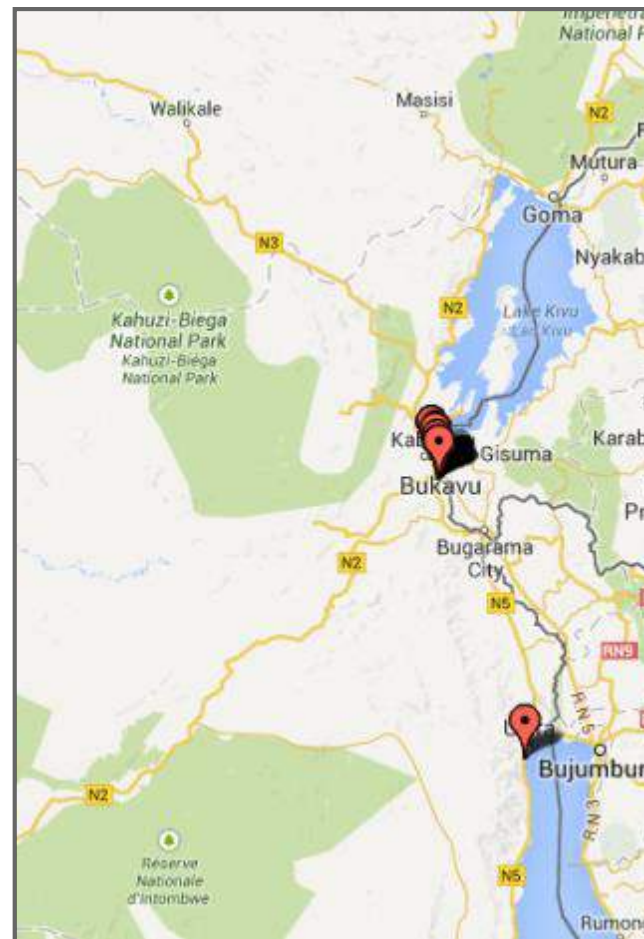
Mapping Mass Crimes

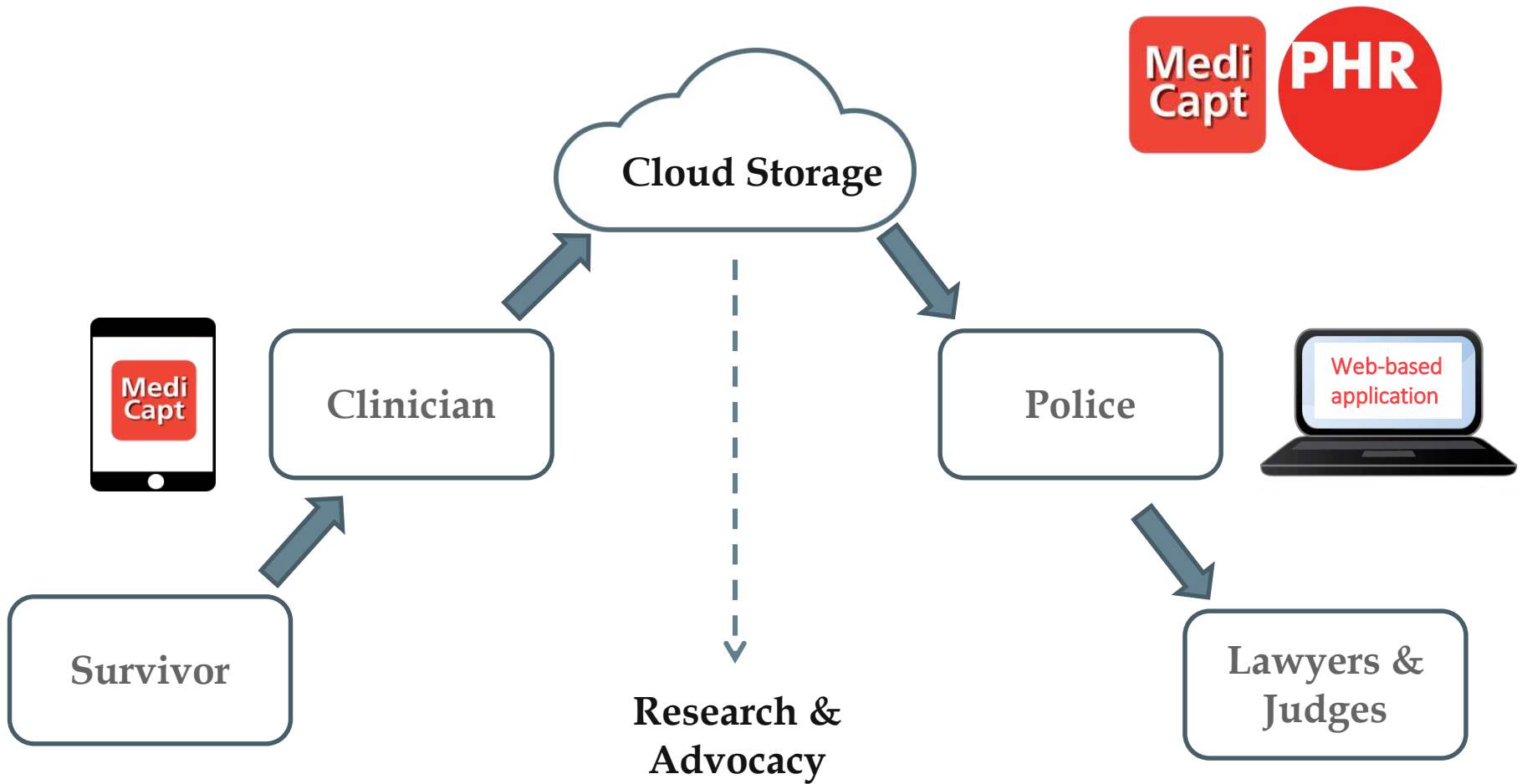


INFORMATION SUR LE/LA PATIENT(E)

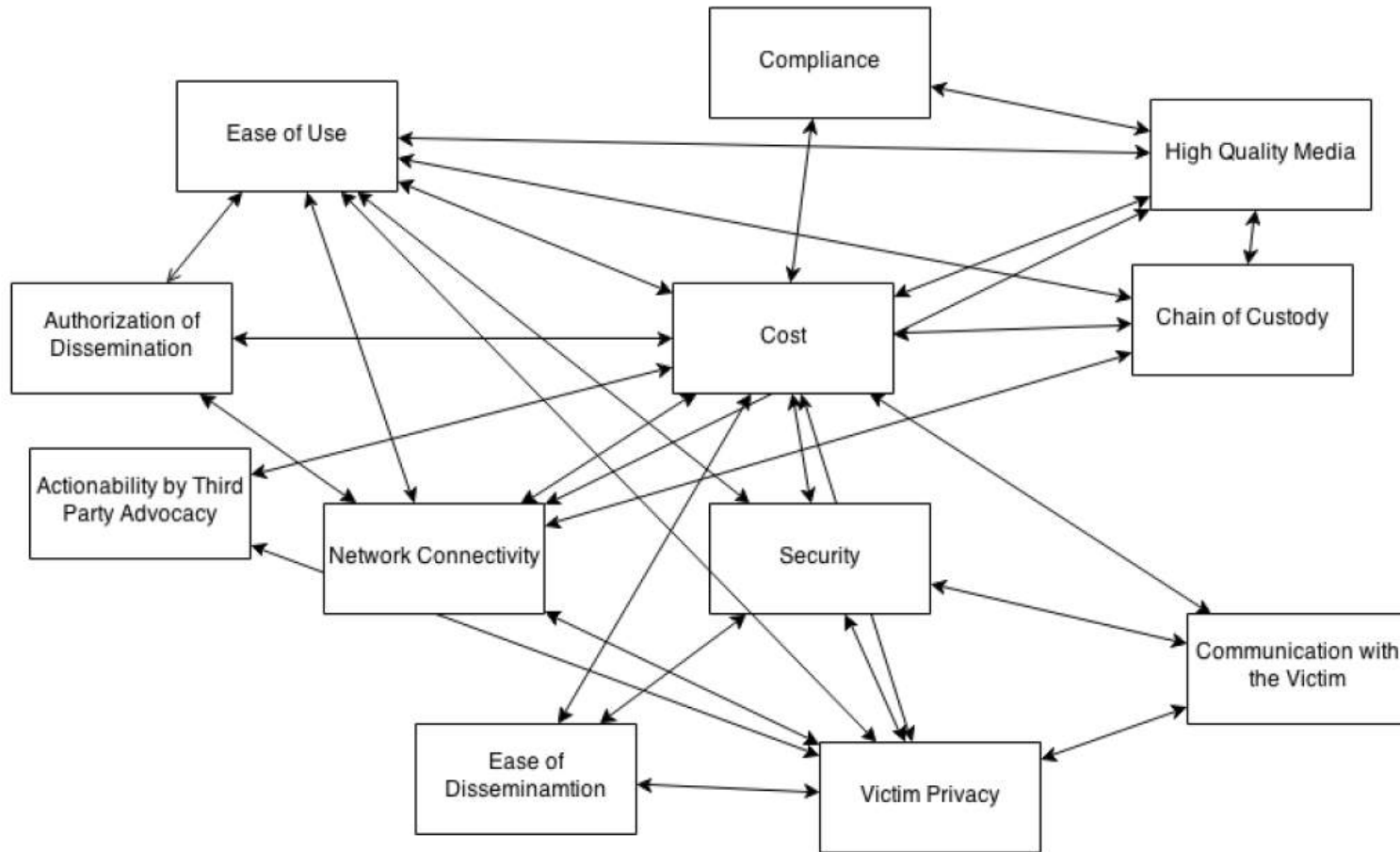


Label	Name	Code	Value	%
A	Féminin	F	55	88.7
B	Masculin	<u>M</u>	<u>7</u>	<u>11.3</u>
	Total		62	100.0





Reality Check....



MediCapt Milestones



-
- **2013** - Awarded 1st place in Safe Documentation category in USAID-Humanity United Tech Challenge
 - **2014** - Field-tested MediCapt 1.0 (with Magpi)
Conducted a landscape analysis to assess existing technologies
Engaged technology developer, Main Street Computing to develop MediCapt *de novo*
 - **2015** - Created modular infrastructure for a multi-use, multi-purpose technology



-
- **2015** - Field-tested MediCapt 2.0 in DRC
 - **2016** - Field-tested MediCapt 3.0 in DRC
Conducted independent security audits
Finalized M&E IRB
 - **2017** - Finalizing stylized printing
Developing protocols and standard operating procedures for maintenance and security
Conducting landscape analysis for interoperability in Kenya; adapting app for Kenya

Tech Kickoff Requirements

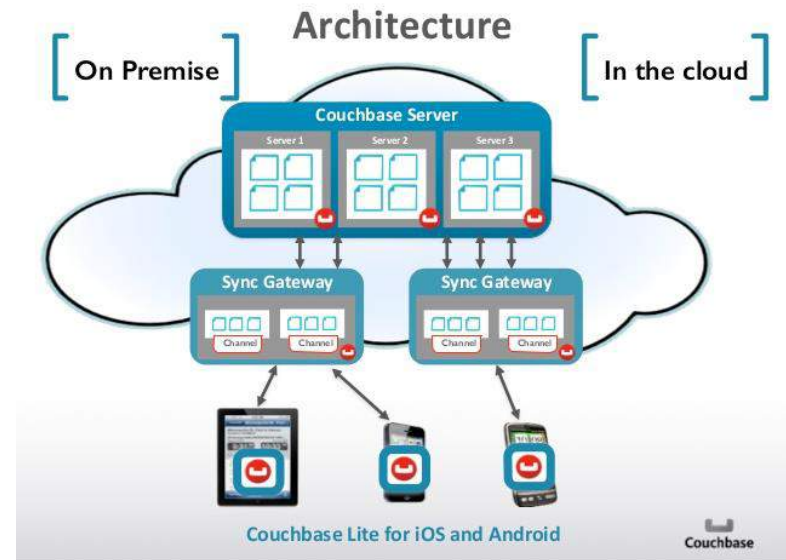


-
- No / Low Bandwidth
 - Sensitive Medical Data
 - Ease of Use
 - Chain of Custody
 - High Security

How do you enable a medical uptake mobile app without mobile data?

Solution:

Offline sync technology
(Couchbase)



Forms



Early on foresight with PHR consultation to build a multi-nation / region app, whose first application is DRC

Solution:
Configurable Forms

This screenshot shows the 'Edit' interface for a form named 'MediCapt_January_2015_phone_english'. The interface includes several configuration sections: 'Form Name' with a text input field; 'Attach Informed Consent Forms' with a button to 'Add New Informed Consent', a dropdown for 'Select an Informed Consent' (showing 'None'), and a dropdown for 'Informed Consent (s)' (showing 'QA-2016'); 'Form Display Name' with a text input field (showing 'Phone Update Form') and a note about its use on the Android app; 'Screen position' with a dropdown for 'Patient Information'; 'Fields position' with a dropdown for 'Patient Address'; and 'Screen 1' configuration with a 'Name' dropdown (showing 'Patient Information'), a 'Position' input field (showing '2'), and a 'Fields' section with a dropdown (showing 'Address'), a count of '4', and a 'Remove Field' button.This screenshot shows a mobile app interface for 'Step 7 of 25'. The screen title is 'Summary of Events Reported by the Patient (1 of 3)'. It features three vertically stacked questions, each with a circular arrow icon to its right: 'Penetration of genitalia with penis?', 'Penetration of genitalia with finger(s)?', and 'Penetration of genitalia with foreign body?'. At the bottom of the screen, there is a 'Cancel' button with a close icon.

Encryption



How do you ensure privacy and security if the device is physically obtained by an adversary?



Solution:

Roll your own encryption



How do you store sensitive medical photos for prosecuting sexual assault?

Solution:

Off photo roll, in-database, encrypted photos

How do you securely print from Android:

- without Internet,
- without power, and
- without sharing sensitive medical data?



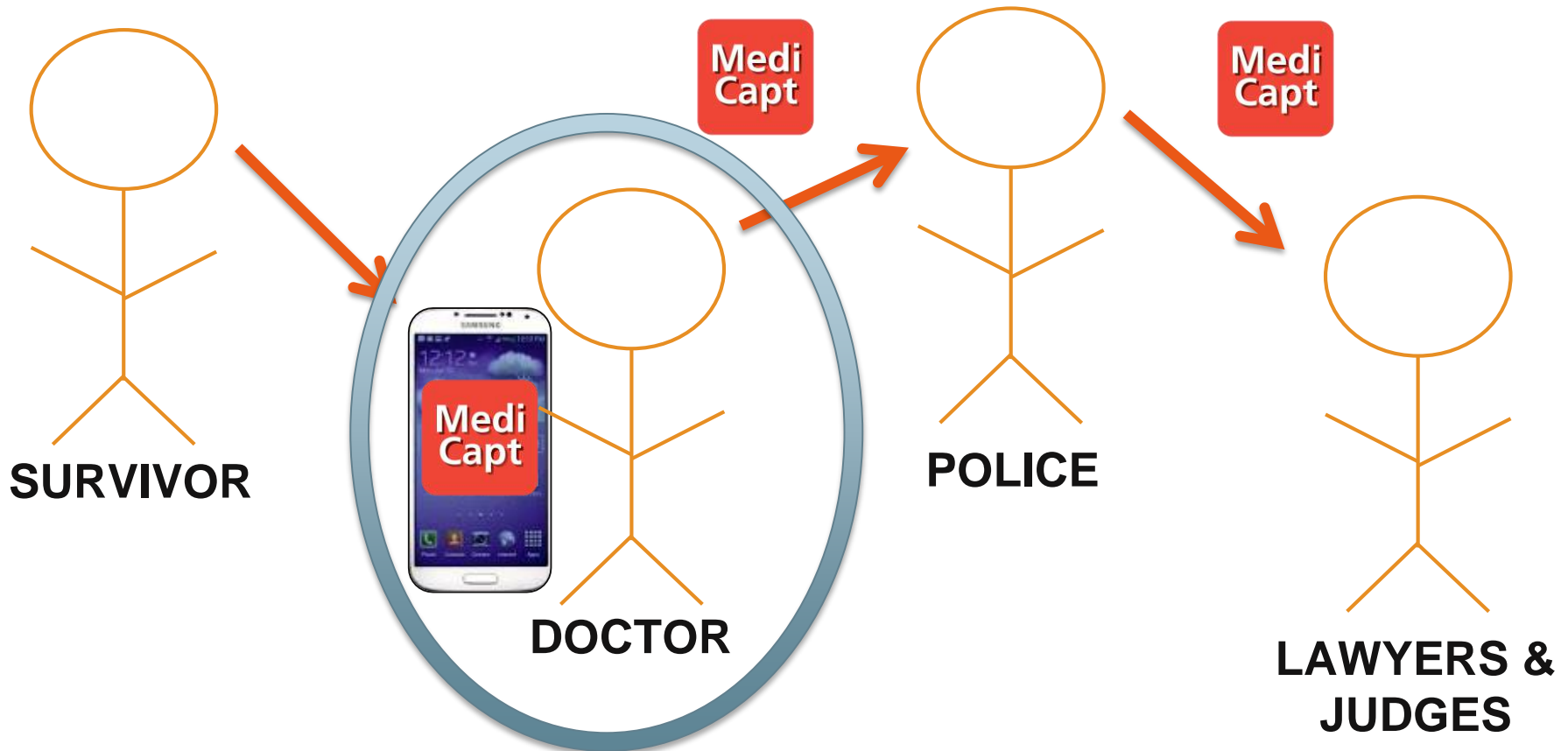


How to securely transfer medical uptake to 3rd party stewards, such as police and courts?

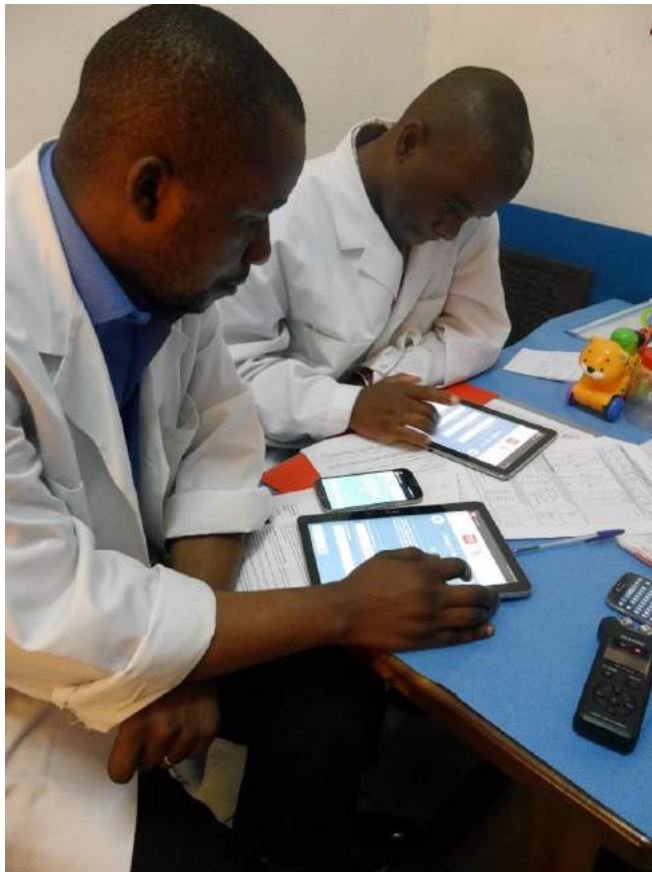
Solution:

Build a web portal with secure, audit logged chain of custody

Foundational Idea



Design with the User in mind – “Co-Design”



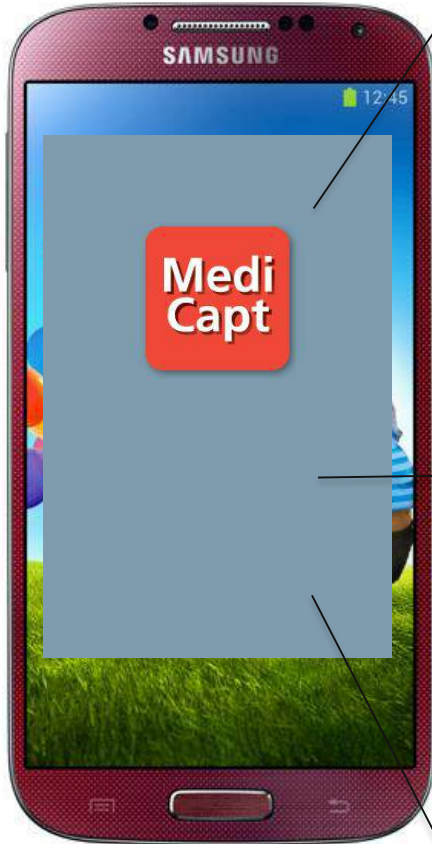
Design with the User in mind – “Co-Design”



- ✓ Develop context-appropriate solutions informed by **user needs**
- ✓ Include **all user group** in planning, development, implementation and assessment
- ✓ Develop projects in **incremental** and **iterative** manner
- ✓ Design solutions that learn from and enhance existing **workflows**, and plan for organizational adaptation
- ✓ Ensure solutions are sensitive to, and useful for, the most marginalized populations and those affected by conflict and disaster



Focus Group: Dream App



MUST
HAVES

- Digitized standard medical information
- Photo capture capability
- Secure data encryption, storage and transmission
- Preservation of chain of custody
- Access to patient data/record; ability to modify record
- Duplication/printing capabilities
- Diagram of body that can be drawn upon using a touch screen

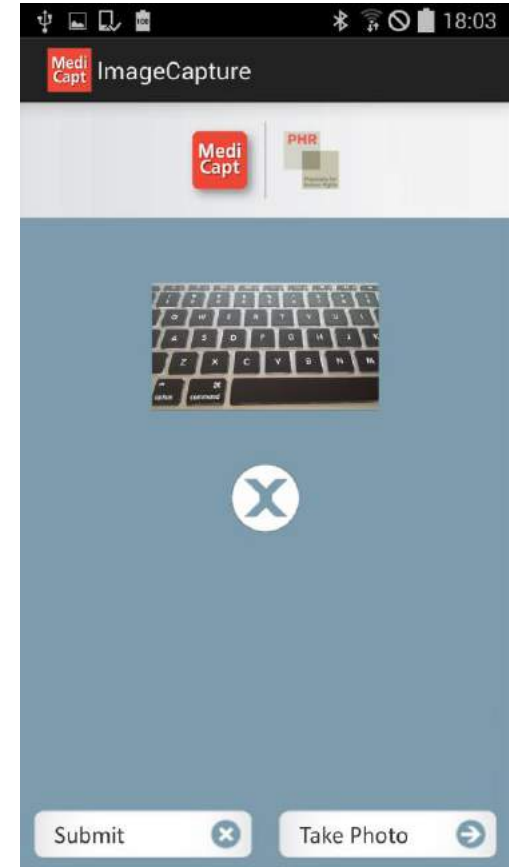
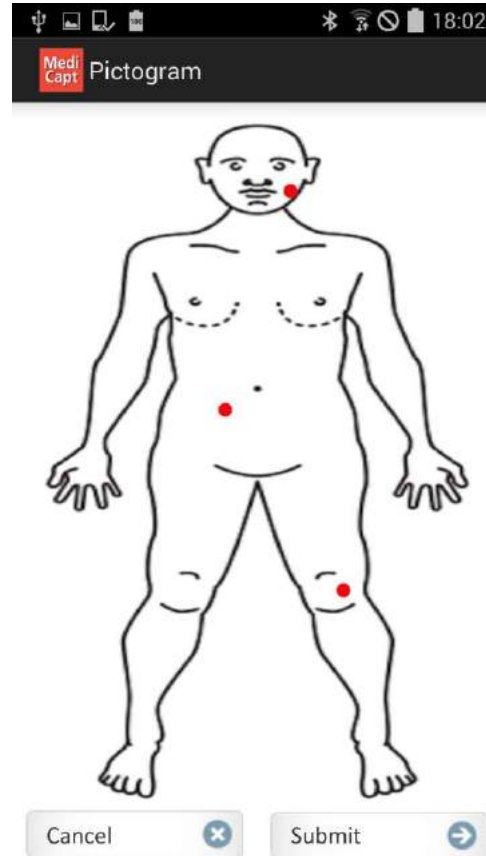
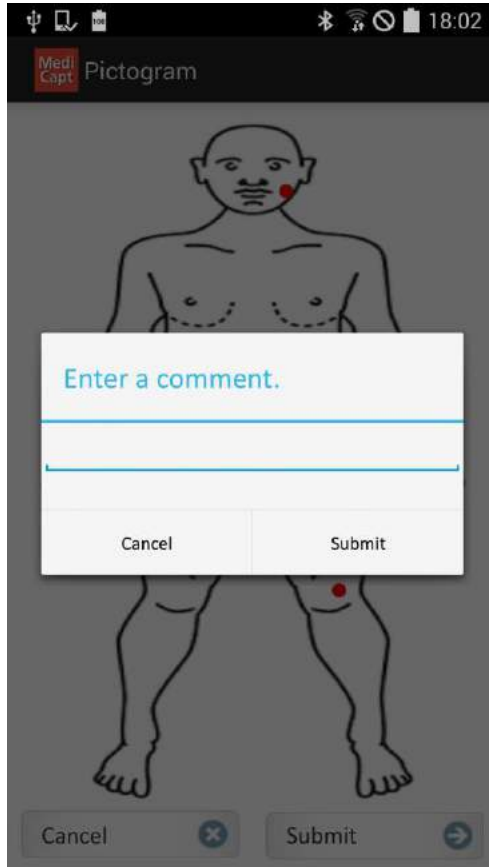
SHOULD
HAVES

- Ability to annotate photographs
- Option to insert electronic signature
- Search function for records
- “Smart app” where one answer logically informs another

COULD
HAVES

- Embedded consent form that patient could either sign or provide thumbprint during exam
- Scanner feature on the app
- Voice recognition that converts clinician narrative into text

Build MediCapt 2.0





-
- Assessing end-user satisfaction with the app
 - Input on:
 - Content
 - User interface
 - Perceptions about usability
 - Access and Connectivity

Clinician Tech Savviness



- Assessed familiarity with smart phones
- Training/instruction on phone/tablet use
- Session on use of mobile technology in exam room
- Simulation of use with “patient”
- Discussion of consent process re digital technology



Go With the Flow!



-
- Assessment of how technology may fit with clinical work flow
 - Assessment for barriers or facilitators to the adoption of the app in the clinical setting
 - Individual-level and institutional work flow
 - Structural; technological; behavioral issues



Design with the user



Build for sustainability



Reuse and improve



Understand the existing ecosystem



Be data driven



Address privacy & security



Design for scale



Use open standards



Be collaborative

PRINCIPLES FOR DIGITAL DEVELOPMENT

Assessment Framework – MAPS TOOL



Figure 2. Axes of scale

Assessment Framework - MAPS TOOL

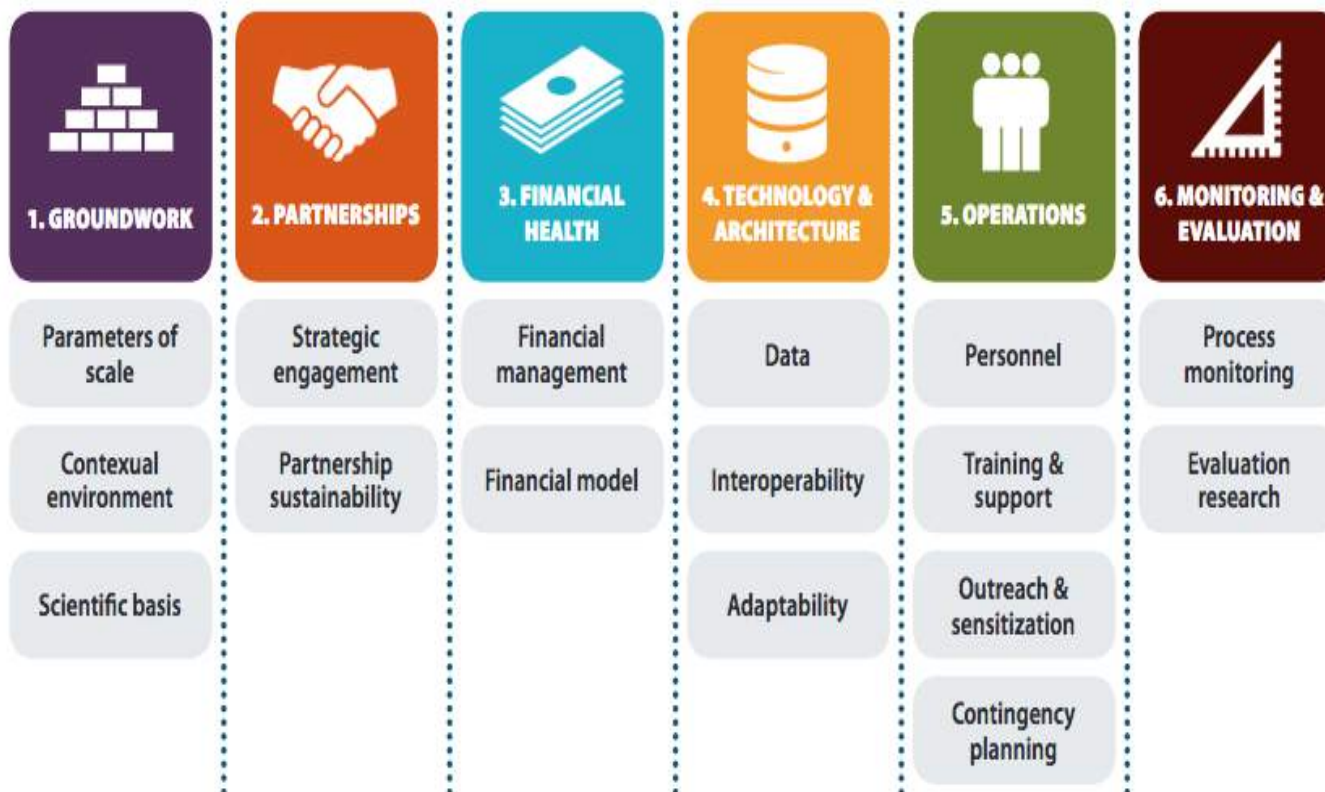


Figure 3. Axes and domains



Implementation (4-6 months)

- **DRC** – Conduct competency assessment; pilot app with live patients
- **Kenya** – Assess existing health information systems
- **Tech development** - Build out web-based app
- **M&E** - Ongoing and continuous; iterative design

Scale up (6-12 months)

- **Kenya** – Develop interoperability and pilot with medical and justice sectors
- **U.S.** – Test “proof of concept” in less “messy” context (PHR asylum network)

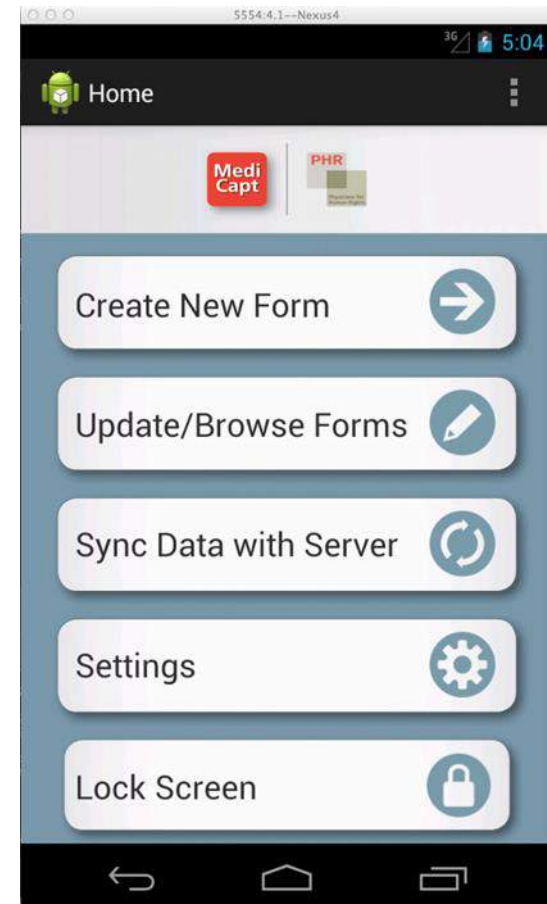
Research and Advocacy (12-18 months)

- **Crime Mapping**-- Build out tech capacity to aggregate de-identified data to map violations across populations

Team of Experts



- **Kevin Chugh, Ph.D.**
CEO, Founder, Main Street Computing
- **Ranit Mishori, MD, MHS, FAAFP**
Professor of Family Medicine
Georgetown University School of
Medicine
- **Dishad Othman**
Information Technology Specialist in
Information Security
- **Alex Schultz**
User Interface Designer, Beveridge
Seay, Inc.
- **Mike Anastario, Ph.D.**
Independent M&E Researcher
- **Freshfields Bruckhaus Deringer US
LLP**





Thank You

Karen Naimer,
Director, Program on Sexual Violence in
Conflict Zones

knaimer@phrusa.org

Ranit Mishori, Medical Consultant

mishorir@georgetown.edu
