



# Secured Health Information Network and Exchange (SHINE)

- Overview
- SMART and Partners
- The SHINE Service
  - Technologies Employed
  - Innovative Features
- Compelling Proposition
- Usability and User Testimonials
- Market Traction and User Take Up
- SHINE partnership roles
- Mobile Ultrasound
- Learnings

- SHINE is a hosted, internet-accessible Electronic Health Information and Referral System.
- SHINE is accessible using Java enabled mobile phones and computers connected to the internet.
- Readily deployable in any area with wireless broadband, 3G and GPRS connectivity.



- Breaks new ground:
  - Integrated mHealth solution for recording, reminding, referring and reporting for doctors, nurses, and midwives.
  - Strong maternal and child care features
  - Caters to a wide range of health conditions and work roles in the health ecosystem.
  - Combines mobile and internet technologies in one platform.
  - Software as a Service bundled with wireless broadband and mobile connectivity, utilizing widely available and affordable hardware.
- Users find it easy to use in their day to day work and in helping them comply with government mandated reports.
- Mainly serves public primary, secondary, and tertiary public health facilities that cater to the underserved rural and urban poor communities.
- In less than 6 months since its implementation, the user base has grown from one facility in 12 Sept 2011 to 34 primary care facilities and 18 hospitals as of February 2012

- We envision more ubiquitous and better healthcare services for all, specially the underserved members of the population.
- We will enable this by creating an ecosystem of healthcare stakeholders connected and coordinated through technology.

SHINE is built on a public-private partnership with:

- Department of Health
- Zuellig Family Foundation
- Local Government Units
- NGOs
  - TBLiNC
  - Molave Development Foundation Inc.
- Nursing Schools

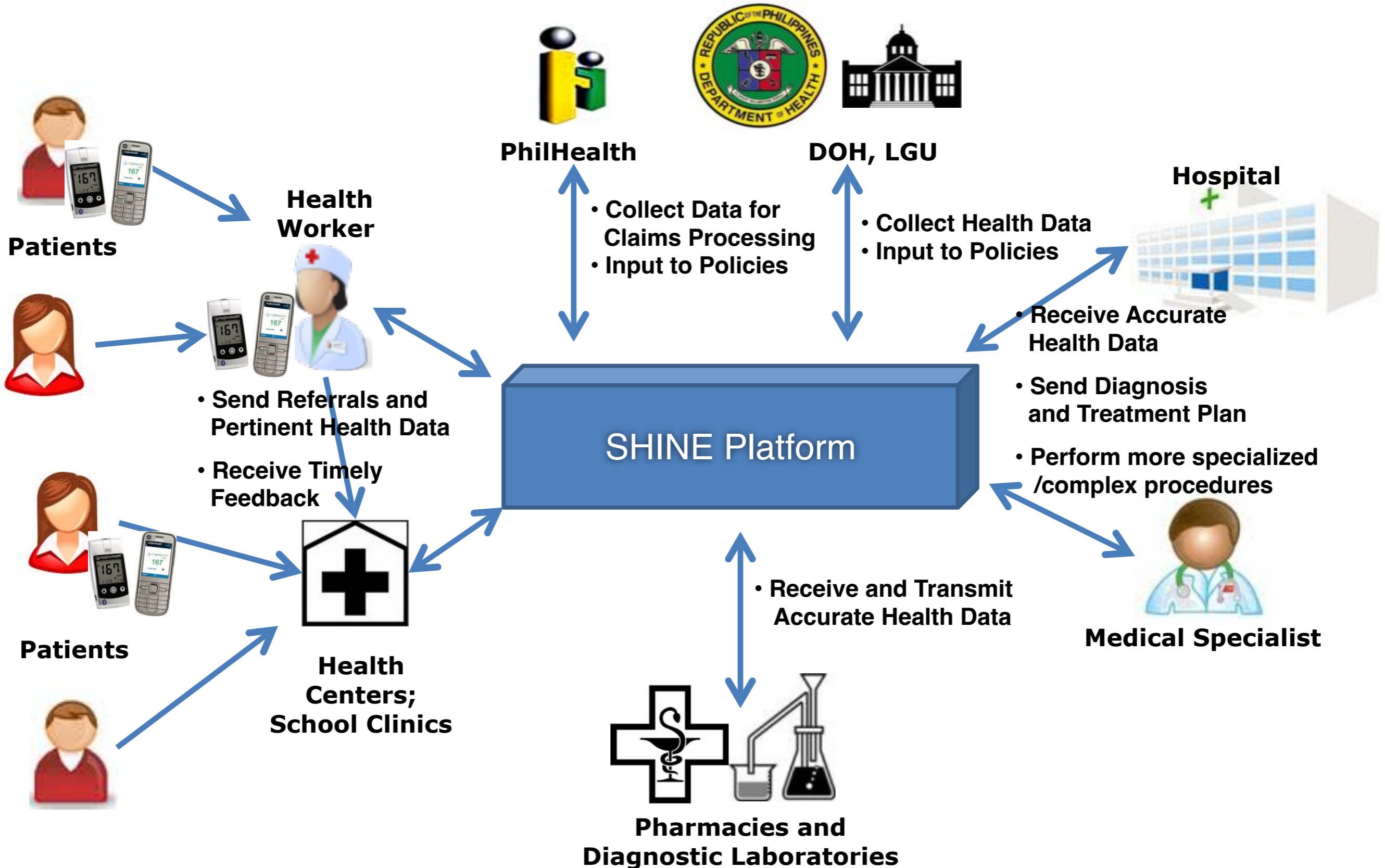


**Zuellig Family Foundation**





# The SHINE Service



## Wireless Broadband Connectivity

## 3G and GPRS Technology



SMART Bro Canopy & SMART Bro Plug – it for health facilities.



Java enabled phones for health workers in the field. SMS for reminders and notifications to patients and health workers.



One integrated system for doctor, nurses and midwives to handle:

- RECORDING
- REMINDING
- REFERRING
- REPORTING



Supporting a wide range of conditions and health services

## Perceived Problems

- Overwhelming number of health records
- Misplaced records
- Unrecognizable records
- Loss of records in times of disaster

## Value Proposition

- Register patients and would-be patients electronically
- Easily retrieve patient records online.
- Record patient consultations and services at the point of care
- Familiar forms and processes were referenced to minimize the learning curve
- Capture discrete data that can be utilized for a wide range of conditions.

# Creating a New Health Record



**SHINE**

**Health Record**

- Create Health Record
- Update Health Record

**Consultation**

- Create Consultation
- View Consultation

**Referral**

- Create Referral
- Inbound Referrals
- Draft Referrals
- Outbound Referrals
- Request More Info Pending
- Response More Info Pending
- Follow-Ups Pending

**Directory**

**Calendar**

July 2011

Su	Mo	Tu	We	Th	Fr	Sa
					1	2
3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30
31						

Signed in as **doctora** | [Dashboard](#) | [My Profile](#) | [Logout](#) | [Help](#)

## Create New Health Record

Record Status

Life Status

### Patient Information

Family Folder Number

Title

Last Name \*

First Name \*

Middle Name \*

Suffix

Gender \*

Date of Birth \*

# Recording Using The Mobile App

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## Create Patient Record

**Patient Information**

Family Folder Number

Last Name\*  
Rios

First Name\*  
Christine

Middle Name\*  
Manalo

Suffix ▼ Please select ↑

Gender\* ▼ Female

Date of Birth\* 02-jun-2011

Age: 17 weeks and 4 days

Back Next

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## Create Maternal Consultation

2 hours PTC, patients complaints of regular painful abdominal contractions. Headache, Nausea and vomiting, dizziness.

Physical Examination\*  
+2 Edema on both legs

**Impression/Diagnosis**

None

Diagnosis

**Medical Management  
And Orders**

None

Order

Menu Save

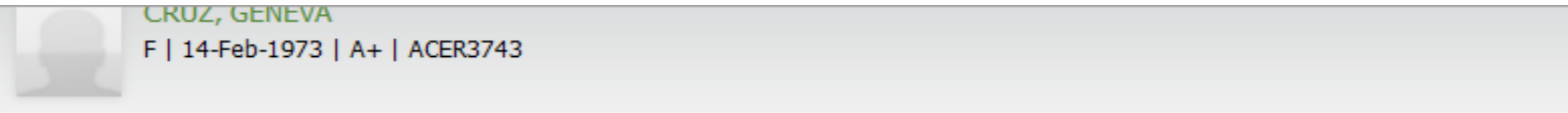
## Perceived Problems

- Patients do not come back for follow up.
- Non-compliance to medications

## Value Proposition

- Easily set appointments
- Send notifications and reminders to patients via
  - SMS
  - E-mail
- Improve patient compliance to follow ups and medication
- Disseminate health information to targeted individuals for disease prevention and wellness to change health behavior

# Setting an SMS Reminder

<a href="#">Create Health Record</a>																																											
<a href="#">Update Health Record</a>																																											
<b>Consultation</b>	<b>Notify Patient</b>																																										
<a href="#">Create Consultation</a>	<p>Mobile Number * <input type="text" value="09208775432"/> <small>Ex. 09191234567</small></p>																																										
<a href="#">View Consultation</a>	<p>Email Address * <input type="text"/></p>																																										
<b>Referral</b>	<b>Reminder Type</b>																																										
<a href="#">Create Referral</a>	<p>Type * <input type="text" value="Maternal"/></p>																																										
<a href="#">Inbound Referrals</a>																																											
<a href="#">Draft Referrals</a>	<p>Sub-type * <input type="text" value="Pre-natal"/></p>																																										
<a href="#">Outbound Referrals</a>																																											
<a href="#">Request More Info Pending</a>																																											
<a href="#">Response More Info Pending</a>																																											
<a href="#">Follow-Up Pending</a>																																											
<b>Directory</b>	<b>Reminder Details</b>																																										
<input type="text"/>	<p>Reminder Message * <input type="text" value="Hi Geneva Javier Cruz, Reminding you of your appointment with Dr. Gina Ong on Dec. 3, 2011."/></p>																																										
<input type="text" value="Name"/>																																											
<b>Calendar</b>	<p>LMP * <input type="text" value="04-May-2011"/> <small>Ex. 01-Jan-2011</small></p>																																										
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## Perceived Problems


- Delayed and error-prone referral information
- Lack of feedback to referring doctor
- Inconvenience and costly for patients when referrals are not well coordinated

## Value Proposition

- Ensure that the patient is accommodated by the receiving facility
- Send patient's complete medical history ensuring continuity of care
- Receive feedback from receiving facility for the referral to learn how the patient was treated, thereby enhancing the primary care physician skills to tend to similar cases

# Creating a Referral in The Web




Signed in as **doctora** [Dashboard](#) | [My Profile](#) | [Logout](#) | [Help](#)

**Health Record**

[Create Health Record](#)  
[Update Health Record](#)

**Consultation**

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**Referral**

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**Directory**


Name

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◀ July 2011 ▶

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31						

## Create Referral - GENERAL Case



**MUNOZ, EDNA**  
 F | 07-Jul-1986 | | ACEH3934

Select Healthcare Provider

Import Consultation

**Send Referral To**

ID	Name

**Imported Consultations**

ID	Type	Date

**Referral Information**

Urgency

Select Case

Referral Reasons \*

- Diagnosis/Treatment
- For Work-Up
- Medico-Legal

# Creating a Referral Using The Mobile App



T [signal] [battery]

**Create Referral: MATERNAL**

Munoz, Edna

F | 14-Apr-1985 | ACEH3747

**Import Consultation**

**Urgency** ⚡ Please select

**Reason\***

- Diagnosis/Treatment
- For Work-Up
- Medico-Legal
- No Doctor Available
- Patient Transfer
- Per Patient Request
- Others

**Method of Transport**

Menu Next

## Perceived Problems

- Several DOH programs requiring reports
- Time consuming and delayed paper reports
- Error prone paper reports

## Value Proposition

- Auto-generate reports based on data inputted at point-of-care
- Reports
  - FHSIS
  - NTP
  - PIDSR
  - Philhealth OPB Forms
- Potential to customize reports for the needs of other agencies

# Generated Reports



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FHSIS v. 2011  
TCL - PN

## TARGET CLIENT LIST FOR PRENATAL CARE

#	TETANUS STATUS	DATE TETANUS TOXOID VACCINE GIVEN					MICRONUTRIENT SUPPLEMENTATION						RISK CODE*/ DATE DETECTED	PREGNANCY		LIVEBIRTHS			REMARKS	
		TT1	TT2	TT3	TT4	TT5	DATE GIVEN VIT.A	DATE & NO. IRON W/ FOLIC ACID						DATE & TIME TERMINATED	OUTCOME **	BIRTH WEIGHT (grams)	PLACE OF DELIVERY	ATTENDED BY ***		
1	TT1 and TT2	11/09/11	11/10/11				11/10/11	10-Nov-2011	N/A	N/A	N/A	N/A	N/A	E	11/10/11	LB	2500.0	Health Facility	A	sample
							300	0	0	0	0	0	11/10/11	1:00 AM						



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FHSIS v. 2011  
TCL - PP

## TARGET CLIENT LIST FOR POSTPARTUM CARE

#	DATE OF REGISTRATION	FAMILY SERIAL NO.	NAME	ADDRESS	DATE & TIME POST-PARTUM VISITS		DATE & TIME INITIATED BREASTFEEDING	MICRONUTRIENT SUPPLEMENTATION			REMARKS	
					* W/IN 24 HRS AFTER DELIVERY	WITHIN ONE WEEK AFTER DELIVERY		IRON GIVEN		DATE VIT. A GIVEN		
								DATE/NO. TABLETS				
1	11/10/11		Lazaro, Vanessa F	Poblacion Buruanga Aklan	10-Nov-2011 / 01:00 PM	17-Nov-2011 / 01:00 AM	11/10/11 5:00 PM	10-Nov-2011	N/A	N/A	11/10/11	sample
					10-Nov-2011 / 01:00 AM			200	0	0		

# Generated Reports



FHSIS v. 2011  
MCT - CC

## MONTHLY CONSOLIDATION TABLE FOR CHILD CARE

CHILD CARE (Part 1 of 3)

Month: November

Year: 2011

INDICATORS	Name of BHS																											
	sample bhs2		sample bhs1																									
	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F	M	F
1. Infant Given	0	0	1	0																								
- BCG	0	0	1	0																								
- DPT1	0	0	1	0																								
- DPT2	0	0	1	0																								
- DPT3	0	0	1	0																								
- OPV1	0	0	1	0																								
- OPV2	0	0	1	0																								
- OPV3	0	0	1	0																								
- Hepa B1 w/in 24 hrs.	0	0	0	0																								
- Hepa B1 more than 24 hrs.	0	0	1	0																								
- Hepa B2	0	0	1	0																								
- Hepa B3	0	0	1	0																								
- Anti-Measles	0	0	1	0																								
2. Fully Immunized Child	0	0	1	0																								
3. Completely Immunized Child	0	0	0	0																								
Total Livebirth	0	0	1	0																								



- Reduced burden of creating, retrieving, and updating paper records.
- Minimized errors encountered due to incomprehensible or incomplete health records.
- Improved compliance of patients through SMS reminders
- Effective referrals among facilities.
- Automated generation of reports from day to day recording.
- More time freed up for actual patient care.

- Minimal ICT literacy required to learn how to use the web and mobile application.
- Use of mobile devices with java application that is easy to use and able to capture essential health data.
- Responsive and iterative development process with end-users deliver a system that matches their needs, considering their current work and information management context.
- Minimal IT investment for infrastructure and resources since it's cloud-based.
- System built to manage enterprise risk for continuity.

# SHINE Take Up as of 16 April 2012

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( only 6 months since implementation)

**18,000+** Registered Patient Health Records

**400+** Registered Health Care Providers

**34** Health Centers and Rural Health Units

**19** Tertiary and District Hospitals

## CURRENT STATUS

- Western Visayas - **Iloilo City and Province**
- **9,500+** Registered Cases
- **10** Health Centers
- **13** Rural Health Units
- **4** District Hospitals
- **2** Tertiary Hospitals
  - Western Visayas Medical Center
  - West Visayas State University Medical Center



## Smart

1. SHINE system that supports recording, reminding, referring, and reporting
2. Training of Trainers
3. Enhancements to SHINE based on identified needs
4. A period of free connectivity in initial implementation area in a province (e.g. capital city or 1 selected Inter Local Health Zone)

## NGO partner

1. Social Marketing (e.g stakeholder and coordinator meetings)
2. Training of SHINE end-users
3. Monitoring and evaluation
4. Handholding of LGUs for agreed period, until LGU takes ownership

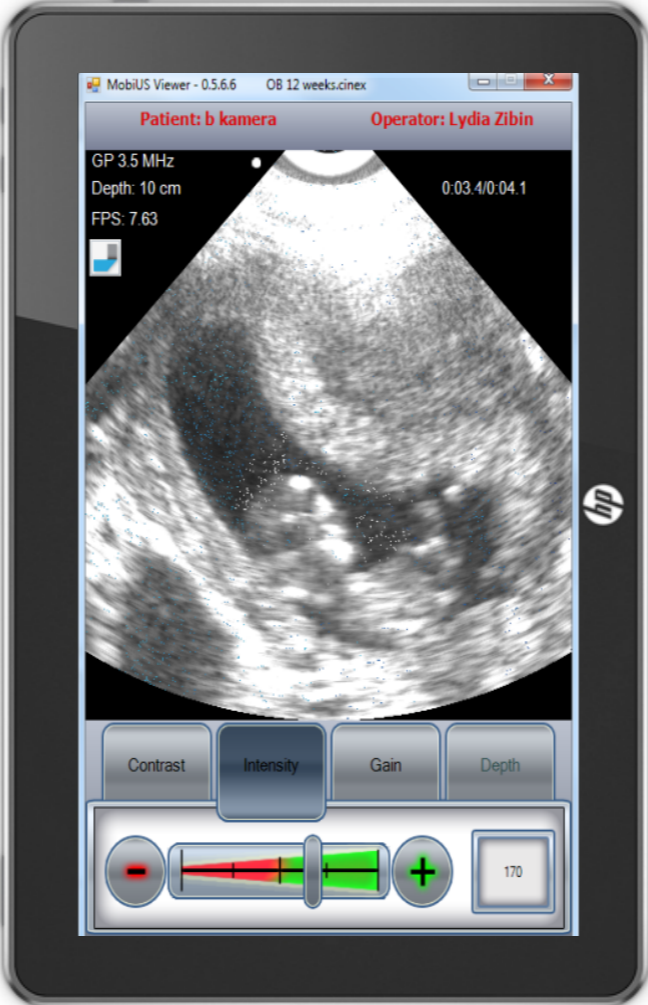


## LGU partner

1. Computers and some mobile phones
2. Connectivity beyond the grant period
3. Select SHINE end-users and mobilize them
4. Funds to sustain the project
5. Eventual “ownership” of project

# Wirelessly Connected Mobile Ultrasound with Communication Capabilities

## Abdominal Probe



HP Slate 500



## Transvaginal Probe



# Transaction Flow



- US FDA approved on Jan 2011
- Launched in the US Market Oct 2011
- 2 fellows from the Philippine Society of Ultrasound in Obstetrics and Gynecology (PSUOG) and 2 members of the Philippine Society of Ultrasound in Clinical Medicine Inc. (PSUCMI) agreed that the system can be use for targeted Obstetric Ultrasound procedures:
  - Presence/absence of embryo
  - Location of pregnancy
  - Fetal viability
  - Fetal presentation
  - Placental location
  - Fetal Biometry

- **Primary Care:** Abdomen, Aorta, Kidneys, Gallbladder, Thyroid, Soft Tissue, Vascular, Small organs, Implants, Foreign Bodies, Bladder
- **Emergency Dept:** FAST exam to detect impact of trauma, Vascular, Small organs, Chest, OB/Gyn, Cardiac
- **Vascular:** DVT evaluation, vascular access and line placement, Carotid

- Ultrasound imaging is an effective tool for identifying maternal mortality risk factors.
- Nearly absent in many primary healthcare facilities
- Identify women with high risk pregnancies
- Increase diagnostic capabilities during antenatal visits
- Enable referrals to appropriate medical facilities for delivery
- Utilize existing local healthcare resources to create a sustainable solution

- Durban
  - Partnership of National Center for Fetal Medicine and ISUOG
  - Midwives were able to:
    - Correctly assess of AOG
    - Detect multiple pregnancies
    - Increase the bonding between the fetus and the parents which makes it easier to co-operate with the parents for the rest of the pregnancy
- Zambia
  - Partnership of Maternal Infant Health Initiative and Massachusetts General Hospital
  - Midwives were able to:
    - Identify number of gestations
    - Locate fetal heart rate
    - Identify fetal presentation



1. Technological Innovation is just half the story. Most of the work involves relationships, building confidence and changing existing mindsets.
2. Regular stakeholder discussions are crucial in bringing forth solutions.
3. Local buy-in and ultimate ownership is important for sustainability.
4. We're building the coalition of the willing – inclusivity instead of exclusivity – in completing the ecosystem.



# Thank You

For more details, visit:  
[www1.shine.ph](http://www1.shine.ph)