frugal innovation
creative solutions for emerging markets

Andrew Cross
Technology for Emerging Markets
Microsoft Research
devices are scarce

paper is plentiful
Engaging students with Clickers

*image from http://www1.iclicker.com*
Engaging students with qCards

http://research.microsoft.com/qcards
Improving medication adherence with electronic pillboxes

*image from http://www.vitality.net
Improving medication adherence with paper envelopes (99DOTS)

http://99dots.org
Non-Adherence to Medication

A $300 billion problem

- WHO: In developed countries, 50% having chronic disease take medication as directed
- In US, non-adherence causes 10% of hospital admissions
- Globally, non-adherence claims millions of lives and poses threat of untreatable diseases

Extensively Drug-Resistant Tuberculosis

Countries Notifying At Least One Case by the End of 2013

*image from http://www.who.int
Directly Observed Therapy (DOTS)

*image from Operation ASHA
Our Solution
99DOTS: Augmented packaging
99DOTS: Patient dispense medication
99DOTS: Reveals hidden number
99DOTS: Sends free call to number
Please take pills

Nikhil did not take medicine today. Please follow up.
Empowering patients and healthcare

Adherence

May 2014

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<th>Patient</th>
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Deployments in India

St. John’s National Academy of Health Sciences
BANGALORE, INDIA

Operation ASHA
Last-mile delivery to the BoP

Karma Healthcare
Bangalore

BILL & MELINDA GATES foundation

LUPIN PHARMACEUTICALS, INC.

INNOVATORS IN HEALTH
Enabling data-driven healthcare delivery

USAID
FROM THE AMERICAN PEOPLE

WORLD HEALTH PARTNERS
MAKING MARKETS WORK FOR THE POOR

TBC India
Directorate General of Health Services
Ministry of Health and Family Welfare

Belgaum
Bangalore
Moradabad
Udaipur
Bihar
Research

Adherence across 6 months for 58 patients

* image from https://www.asc.upenn.edu
frugal innovation

optimizing for cost and environment

participatory design

using existing infrastructure