

ColdTrace – Remote Temperature Monitoring

Actions & Metrics

Using ICT to Improve Immunization

World Health Organization

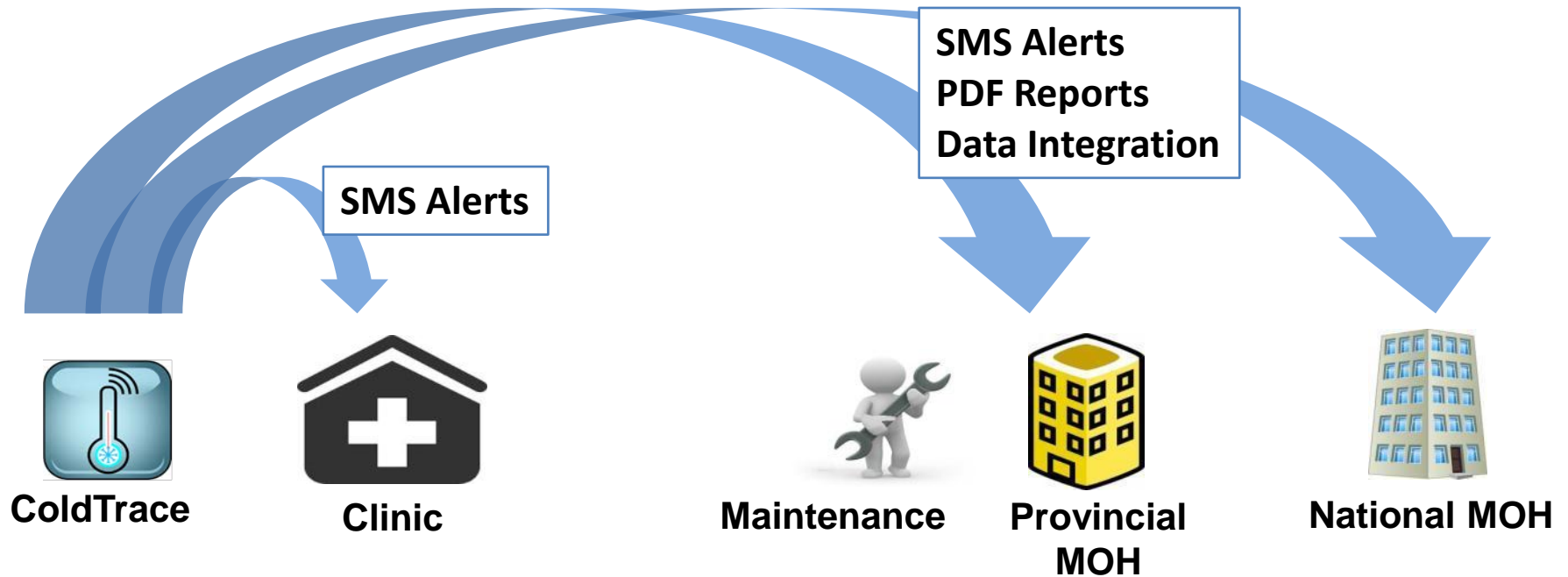
November 11th, 2014



164 Units deployed now – 8 countries
664 units deployed by Q1 2015



Fully automated data flow
(Learning from Project Optimize)



Foster culture of data usage ... behavior change...

ColdTrace Web Dashboard Example



Firefox Web Browser
Data Portal - Weekly Summary - Mozilla Firefox

https://coldtrace.org/coldtrace/viz/dashboard/?deployment=&s

NEXLEAF

Visualizations Admin martin

Home / Weekly Summary

Weekly Summary

Monthly Summary Weekly Summary Clinic Summary - Equipment Status Equipment Inventory Power Profile ColdTrace Status

Select Deployment: [] Select Date: 2014-11-10 Display Dashboard

	Past 7 Days							Past 30 Days					Alarms in past 3 Months					
	Tue 11/04	Wed 11/05	Thu 11/06	Fri 11/07	Sat 11/08	Sun 11/09	Mon 11/10	% in range	Freeze alarms	Heat alarms	Min °C	Max °C	Aug 2014	Sep 2014	Oct 2014			
Clinic 1								96%	0	0	2.6	8.3	3	1	1	0	0	
Clinic 2								92%	0	1	3.3	18.5	0	0	0	0	0	
Clinic 3								90%	1	2	0.7	14.4	0	1	3	3	1	3
Clinic 4								73%	41	6	-0.7	12.2	38	2	28	6	59	1

Visualization credit: UNICEF

All Equipment

2014-11-04 - 2014-11-11 +0200 CAT

What Clinics Need Immediate Attention

ColdTrace Summary for ****

June 2014

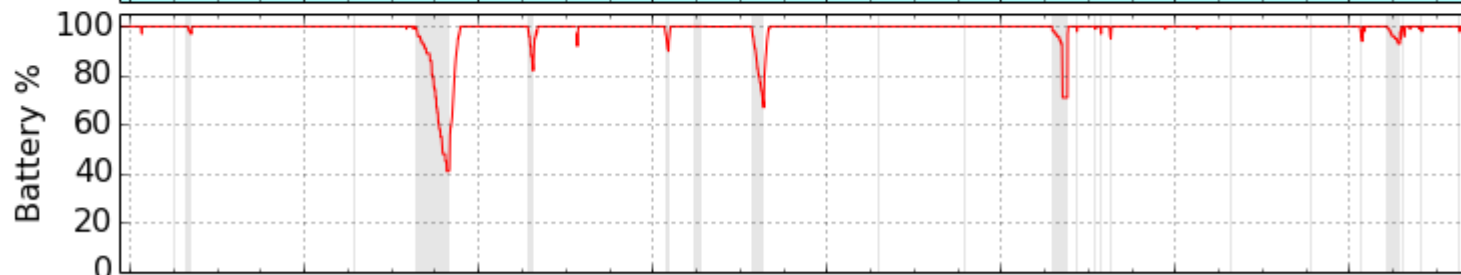
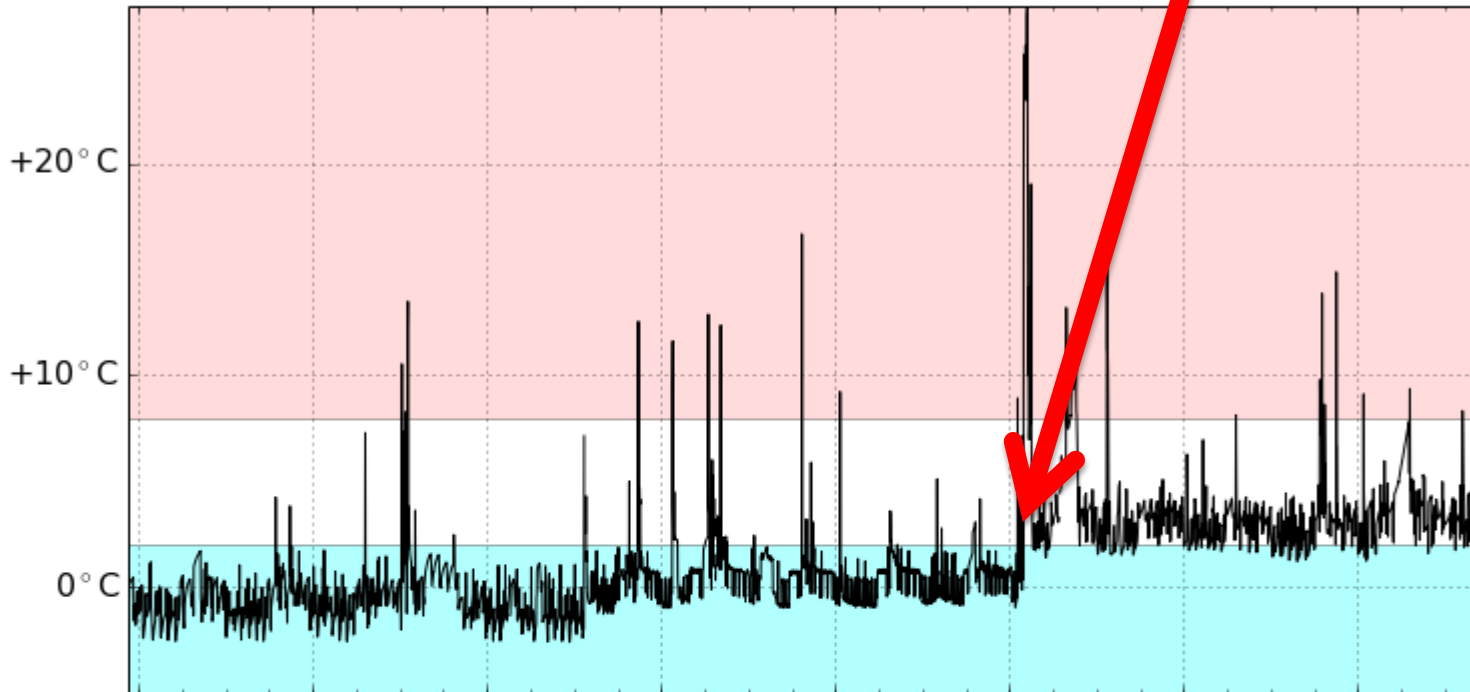
Table 1. Overall Summary

Location:	--
Total Number of Clinics:	**
Freezing Fridges [< -0.5°C]:	****, *****, *****, ****, ****
*Cold Fridges [-0.5 to 2°C]:	****, *****, *****, *****, ****, ****, ****, **, *****, ***, **
*Hot Fridges [8 - 10°C]:	****, *****, ****, ****, ****, **, *****, ****, *****, ****, ****, ****
Very Hot Fridges [> 10°C]:	****, *****, ****, ****, *****, ****, ****
ColdTrace devices facing major power outage:	**, ****, ****

Replace that fridge!

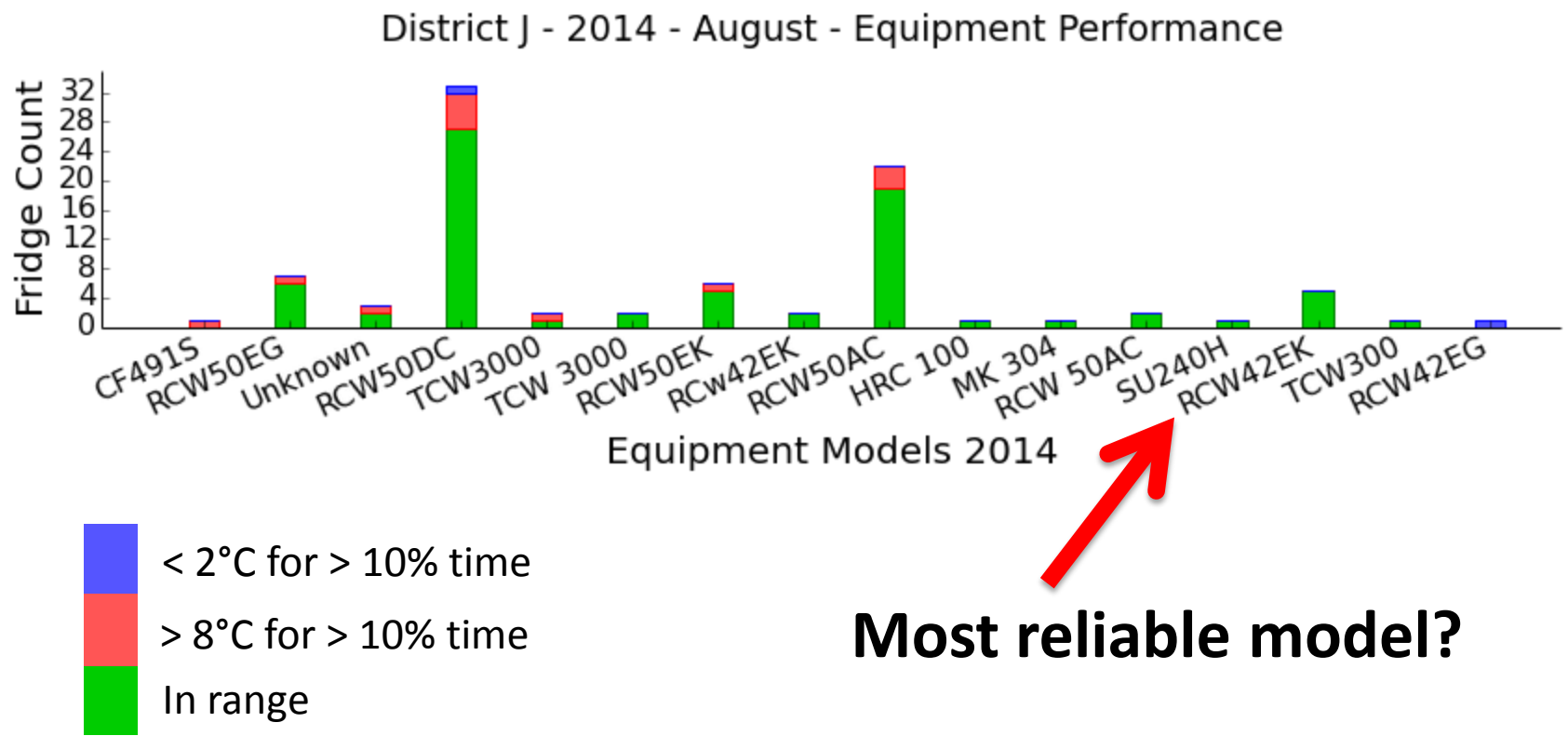
ILR Replaced!

2014-08-01 00:00:00 - 2014-09-01 00:00:00

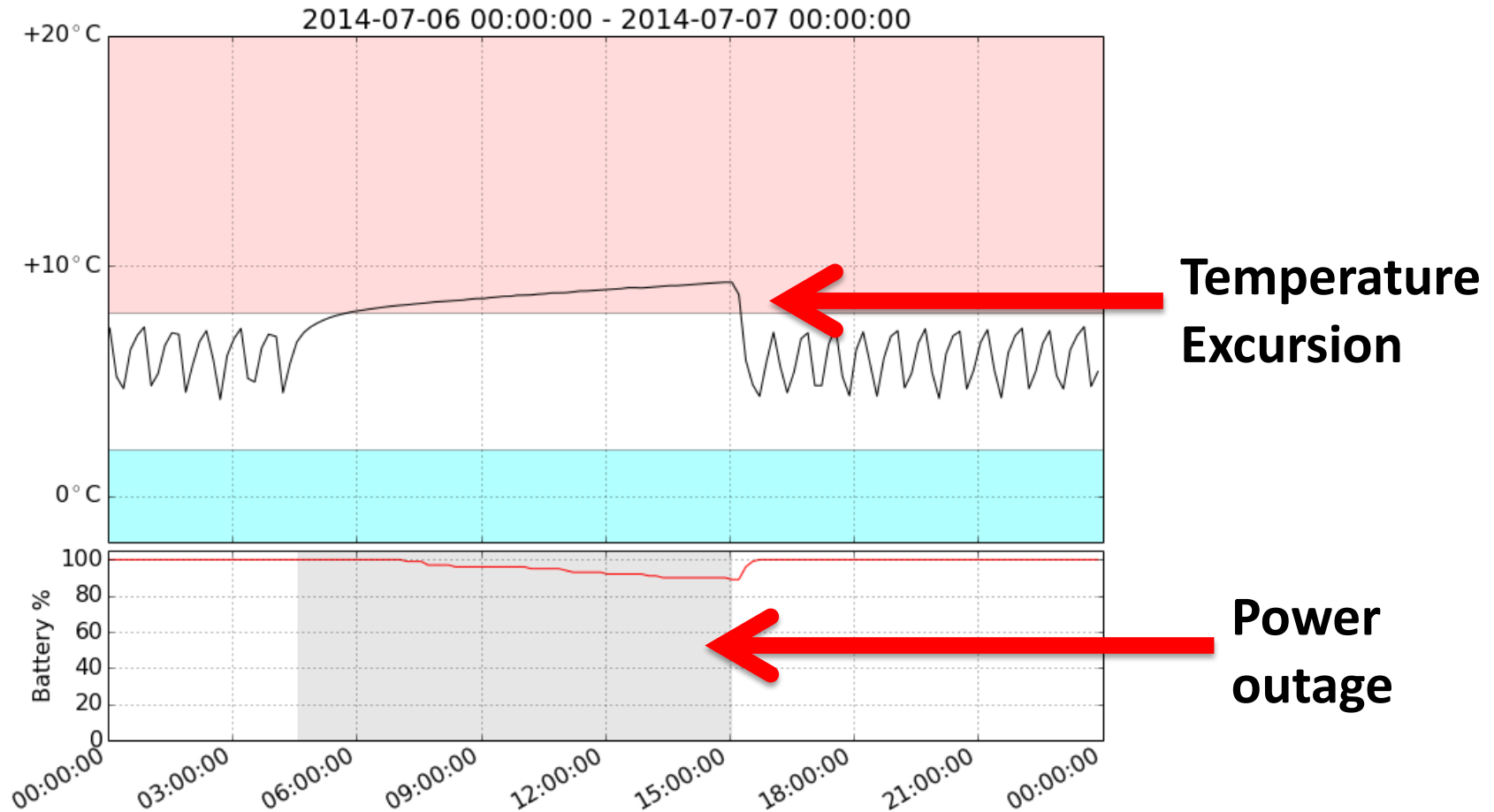


Aug 01 2014 Aug 05 2014 Aug 09 2014 Aug 13 2014 Aug 17 2014 Aug 21 2014 Aug 25 2014 Aug 29 2014

Which fridge works the best?

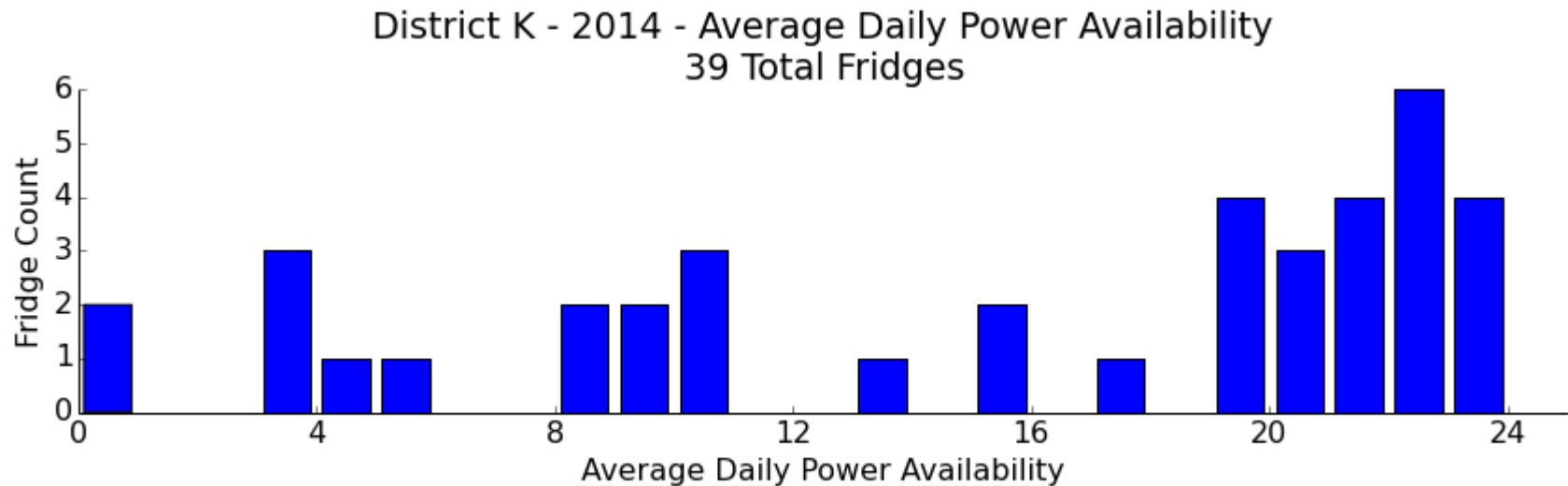


How well does the fridge work in the field and over time?



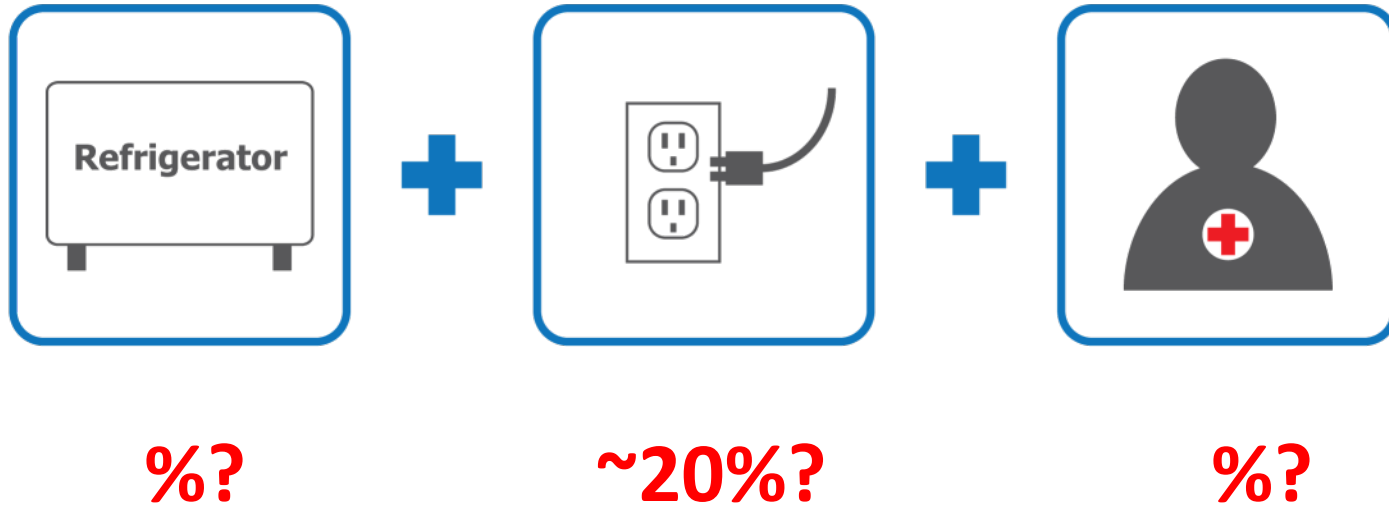
Estimated holdover to 10°C is greater than 9 hours

Which fridge will work given my power availability?



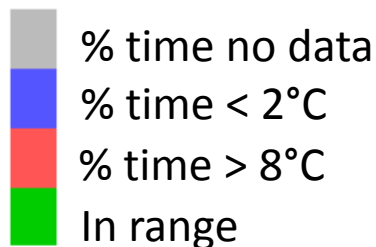
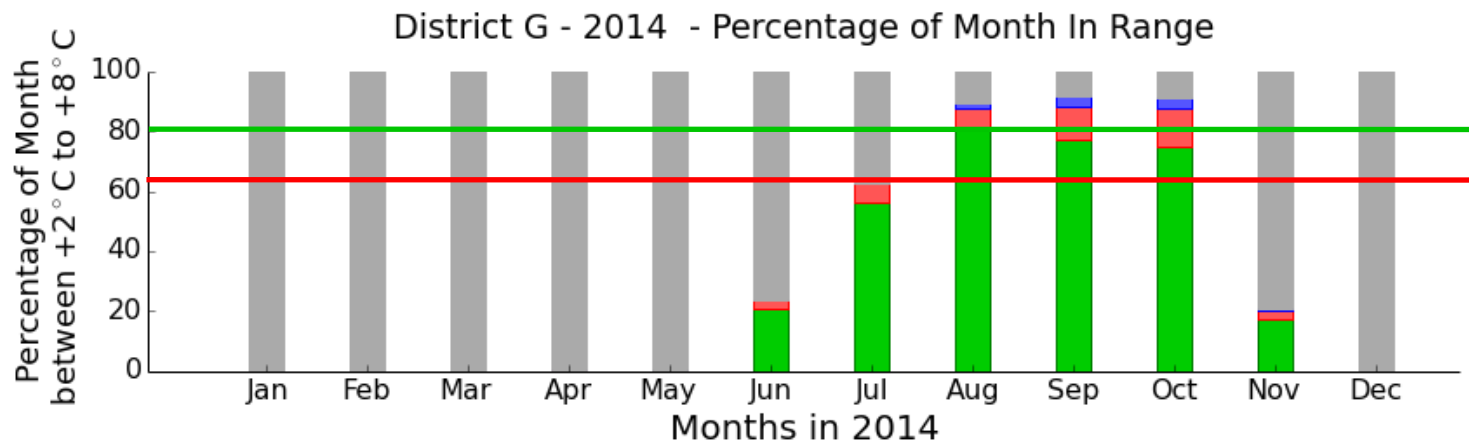
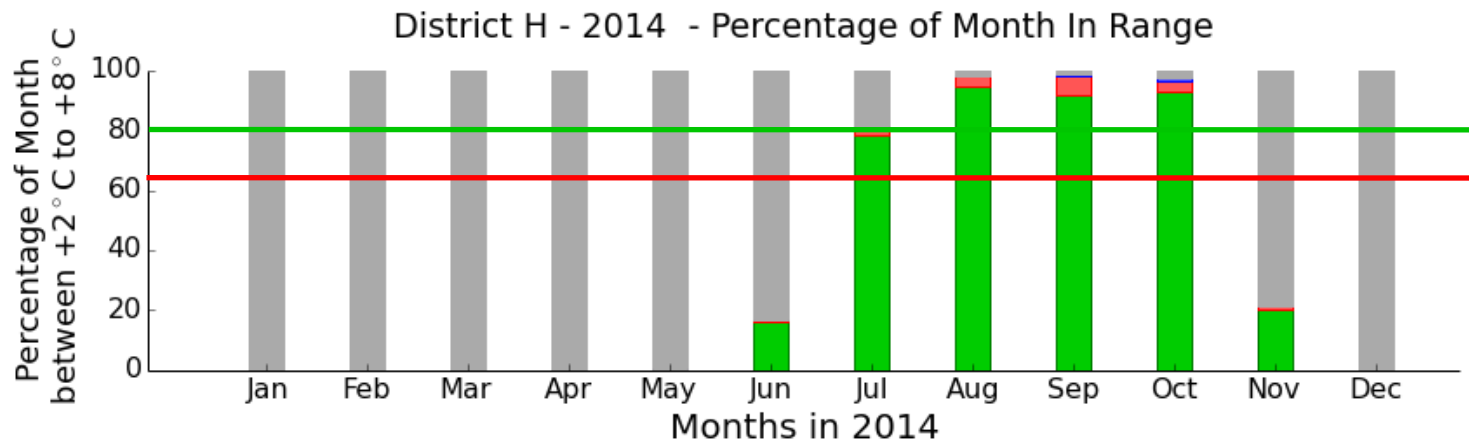
95% of fridges have more than 3 hours of power a day

Why do fridges fail?



Data for better maintenance/spare parts/training

Which sites need attention to improve efficacy?



District G needs improvement

Randomized Control Trial

Group 1
29 clinics



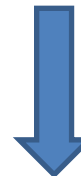
SMS Alarms

Group 2
28 clinics



FridgeTag +
Training

Group 3
26 clinics



FridgeTag with
no training-
Status Quo

Data Integration



**OpenRTM & CCEI
Coldchain Module**

**YOUR LOGO
HERE**






Fridge Status – selecting brings up temperature details

Home Orders Inventory Reports Configuration Setup

Stock Views Abnormal Stock Transactions

Entity: Material: Vaccine ILR 

Vaccine ILR

+expand

SI.No.	Entity	Current stock	Min.	Max.	Last updated
1	CHC	1	0	0	20/6/14 10:47 AM
2	GH I	1	0	0	20/6/14 10:49 AM
3	PHC	1	0	0	20/6/14 10:46 AM
4	PHC	1	0	0	20/6/14 10:48 AM
5	PHC	1	1.79	0	20/6/14 10:48 AM

■ zero stock ■ < min. ■ > max.

Fridge Status

Electronic Vaccine Logistics System

Home Reports Distributions Administration

Warehouse load amount ● = Normal operation ● = Irregular operation

Delivery Zone : Norte Maputo Program : Vacinas Month : Junho-2014

Norte Maputo Total

Districto	Cold Chain Equipment Status	Population	BCG	Diluente BCG	Diluente Sarampo	HPV	PCV10	Pentavalent		Polio		Sarampo	VAT	Seringa 5ml	Seringa 0.5
			BCG	Diluente BCG	Diluente Sarampo	HPV	PCV10	Pentavalent (1 dose)	Pentavalent (10 dose)	Polio (10 dose)	Polio (20 dose)	Sarampo	VAT		
Magude	●	61068	41	41	36	213	412	822	85	113	58	36	74	--	4
Manhica	●	245828	95	95	136	851	1654	3301	336	445	226	136	286	--	18
Marracuene	●	133031	52	52	74	462	897	1787	182	243	123	74	156	--	9
Zone Total		439927	188	188	246	1526	2963	5910	603	801	407	246	516	--	32

Magude

Icons are active links that allow the Field Coordinator to view recent alarms, events, and messages from each facility

Facility	Cold Chain Equipment Status	Population	BCG	Diluente BCG	Diluente Sarampo	HPV	PCV10	Pentavalent		Polio		Sarampo	VAT	Seringa 5ml	Seringa 0.5
			BCG	Diluente BCG	Diluente Sarampo	HPV	PCV10	Pentavalent (1 dose)	Pentavalent (10 dose)	Polio (10 dose)	Polio (20 dose)	Sarampo	VAT		
Chicutso, Magude M027	●	2809	5	5	2	10	19	38	4	6	3	2	4	--	
Magude, Magude M064	●	33832	11	11	18	117	227	454	46	61	31	18	39	--	
Mahel, Magude M027	●	2382	5	5	2	9	16	32	4	5	3	2	3	--	
Mapulanguene, Magude M034	●	2015	5	5	2	7	14	28	3	4	2	2	3	--	
Moine, Magude M068	●	6595	5	5	4	23	45	89	9	12	6	4	8	--	
Motaze, Magude M045	●	8977	5	5	5	31	61	121	13	17	9	5	11	--	
Panjane, Magude M071	●	4458	5	5	3	16	30	60	6	8	4	3	6	--	
Magude Total		61068	41	41	36	213	412	822	85	113	58	36	74	--	

Manhica

Facility	Cold Chain Equipment Status	Population	BCG	Diluente BCG	Diluente Sarampo	HPV	PCV10	Pentavalent		Polio		Sarampo	VAT	Seringa 5ml	Seringa 0.5
			BCG	Diluente BCG	Diluente Sarampo	HPV	PCV10	Pentavalent (1 dose)	Pentavalent (10 dose)	Polio (10 dose)	Polio (20 dose)	Sarampo	VAT		
3 De Fevereiro, Manhica M001	●	19912	7	7	11	69	134	267	27	36	--	--	--	--	
Calanga, Manhica M077	●	17454	6	6	10	60	117	234	24	32	--	--	--	--	
Chibucutso, Manhica M011	●	4918	5	5	3	17	33	66	7	9	--	--	--	--	
C.S Manhica, Manhica M033	●	64161	21	21	34	221	431	861	87	115	--	--	--	--	
HR Xinavane, Manhica M017	●	41791	14	14	23	144	281	561	57	75	--	--	--	--	



How do you scale?

1. Temperature monitoring end-to-end to fix temperature excursions
2. Integrating into existing work flows and LMIS/HIS
3. Maintenance histories
4. Equipment inventory management

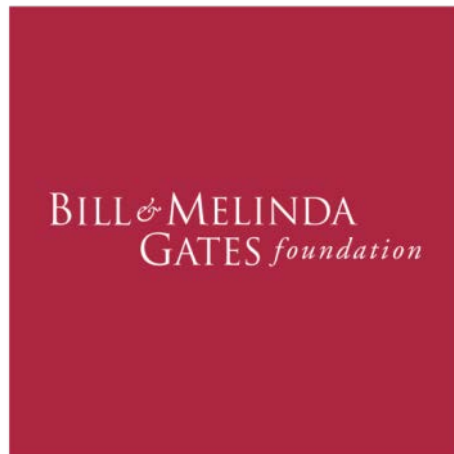
RTM Challenges

- Data protection
- Data backup
- Reliable ICT infrastructure required
- Cost implications, recurrent costs
- HR implications

Partners & Participants



**Vodafone
Foundation**



Logistimo



MEDIC MOBILE



**Kenya Ministry
of Health**



**YOUR LOGO
HERE**



**Mozambique
Ministry of Health**

VILLAGE REACH®
Starting at the Last Mile



NEXLEAF
ANALYTICS

martin@nexleaf.org

martin@nexleaf.org

| www.nexleaf.org

| twitter: @nexleaf

Technology Validation

