

Reach the Rest:

An Open Source Journey

Presented by Jeffrey A. Miller

@xagronaut | worldvax.org

Reach the Rest?

Notes:

What does it mean?

Before I answer that question, let me ask you something.

Have you ever made a discovery? Let's say, in your job, that just blew your mind? Something that made you so excited that you almost couldn't stand it?

Curiosity

You see this in a child's sense of curiosity. It first manifests itself with a kid discovering gravity and you watch as every object within reach is dropped from a high chair. First Cheerios, then the milk, then your iPhone.

Or how everything that can be held in the hand must be touched and tasted.

It's the discovery phase of childhood. Experts say that the vast majority of learning happens before a very young age.

Adulthood

As adults, our pace of learning slows, and sadly, our curiosity wanes as well.

But when we do learn something...something exciting, our mind explodes (ppppuuuuffff) with epiphanies...so much so that we "epiphanate" all over ourselves!

Whether it's a new programming technique, a personal life lesson, or something previously unknown that completes the picture--that missing link, that missing piece of the puzzle...

We can't help but get excited! It's amazing!

Imagination

I remember the first computer I ever programmed. My cousin gave me his old Tandy TRS-80 complete with a cassette deck for storing programs. If you dropped a data cassette in a boombox, it sounded like you were jamming out to a fax machine--"eeeeaaaaahhhheeeeeahhhheeeee screechhh".

Something amazing happened to me during that time. I discovered through teaching myself to program, that I could imagine something, communicate it to the machine in code, and it would do exactly what I asked. I felt so powerful. In control.

Yourself

Have you ever discovered something...about yourself...that you didn't believe was possible? Like how you could really accomplish things you never realized? When I was a freshman in the high school marching band, I received the Most Improved Marcher award--not because I was really good, but because I was *really* bad.

But it taught me something about discipline and sticking with things. That I could accomplish things that were hard.

I don't care what that senior trombone player jerk Matt says! [I'm not bitter... :)]

The World As It Is

Have you ever made a discovery that broke your heart? Something about the world we live in. Perhaps, you saw a stray animal lost in the neighborhood, or maybe you saw a homeless veteran begging for change. You empathize, you hurt a little. Or maybe a lot.

But it makes you grateful, sad, angry...all these things. And it draws you out of yourself. You stop thinking about yourself, at least for awhile, focused on what ***ought*** to be done. For others.

The way things **should** be.

As we grow older, we quickly realize that the world is not a perfect place. It is far from fair, far from just, and it leaves so much to be desired.

Sometimes we feel powerless. Not in control. What can be done?

Life is a

Journey

of

Discovery

Notes: So what does that have to do with you?

Life is a journey--sometimes sad, sometimes joyous, even exhilarating--the journey makes us who we are.

Today is about reaching into our own humanity and reaching out to our fellow travelers. Today is about discovery--the discovery of possibilities you never knew existed, the opportunity to ***Reach the Rest***.

Notes:

Let me introduce myself:

My name is Jeffrey Miller. I'm a tech professional with 20 years of experience creating digital solutions for companies and government.

I work for Information Control Company and have spent more than 12 years of my career across two terms there.

I'm also co-founder of an open source initiative directed at assisting caregivers around the world with the task of giving vaccines accurately so they reach the most patients possible.

The name of that initiative is WorldVax.org, of which you'll hear more later.

Reach the Rest

So what *does* it mean?

Reach the Rest

- Disaster Relief
- Medical Aid
- Environment
- Citizen Empowerment

Notes: For the purpose of this talk, "Reach the Rest" means several things, but specifically, we'll look at some open source projects that have a humanitarian impact and vision, such as...

- Disaster relief
- Medical aid
- Environmental impact

Exciting Times!

- Hardware (IoT, solar)
- Mobile Devices
- Software
- Telecommunications

Humanitarian Toolbox

htbox.org

HTBox Partners



Video Stand-ups

Be Prepared

Communications and Data Collection

Notes:

Open Data Gathering

- FrontlineSMS
- Humanitarian
Open Street Map
- Open Data Kit

FrontlineSMS

Notes:

- Prevalence of SMS in the rest of the world (FrontlineSMS)
- More cell phones than toilets
- Frontline Workers (FLW)

Humanitarian

Open Street Map

[www.hotosm.org](https://www.hotosm.org/)

Open Data Kit

opendatakit.org

Open Data Kit

Notes:

- University of Washington Computer Science Program

"Open Data Kit (ODK) is a free and open-source set of tools which help organizations author, field, and manage mobile data collection solutions."

"In addition to socio-economic and health surveys with GPS locations and images, ODK is being used to create decision support for clinicians and for building multimedia-rich nature mapping tools."

It includes an Excel-based form builder,

"Landline" project

Idln.co

Medical Aid

- mHealth
- CommCare
- Dimagi
- MOTECH

Notes:

mHealth

The term "mHealth" captures the growing trend of using mobile devices in healthcare scenarios to improve patient care.

Several platforms are available for building applications for medical aid, namely CommCare by Dimagi, and MOTECH, which integrates with CommCare.

MOTECH and CommCare are employed by organizations such as World Vision to perform timed and targeted counselling (or "ttc") to improve the health of newborns by educating their mothers about proper childcare.

Medical Records

- OpenMRS
- CommCare
- VecnaCares

CommCare

commcarehq.org

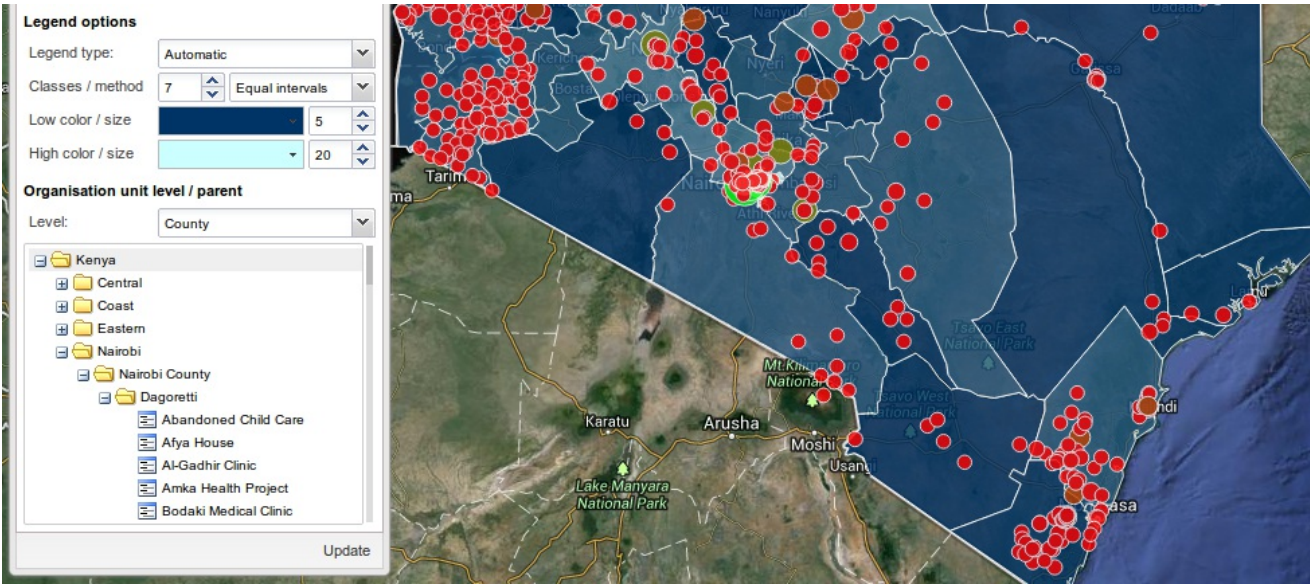


DHIS2

www.dhis2.org

DHIS2

GIS Analytics



Hardware Innovations

Notes:

It's an exciting time in the realm of hardware design. New products capable of meeting the needs of demanding environments are being created. We'll look at some now.

We Care Solar

wecaresolar.org

VecnaCares

www.vecnacares.org



Notes:

VecnaCares was formed as a non-profit organization by Vecna, a manufacturer of virtual presence devices and patient solutions.

VecnaCares CliniPAK Server

- "One-touch" operation
- Wifi local network
- Multi-mode power sources

Notes:

Power sources include

- 110 and 240 AC power
- 12V car batteries
- Single or arrayed solar panels

"No more computers, routers, inverters and switches. CliniPAK is a one-touch server, wireless local network, and power management dream come true."

"Its cutting edge design makes it possible for users to leverage accessible local resources, such as 110 and 240 AC power, 12V car batteries and single or arrayed solar panels, therefore mitigating the infrastructure barrier."

"CliniPAK fully supports integration with OpenMRS, ODK Collect and CommCare allowing our users to leverage their existing investments. We also allow for quick and easy integration with DHIS2 and HMIS."

Reach The Rest...

What does that mean?

to me?

Personal Discoveries

- Preacher or Programmer?
- Professional Pursuits
- A Purpose & A Plan

Notes:

As I mentioned before, I began programming at a young age.

But long before that, I was born into the life of a preacher's kid. My parents instilled a strong faith in God in us, and I chose to continue in it when I was old enough to decide for myself.

You might imagine that people expect you to be like your father when your father's a preacher, and that's certainly true.

In fact, for awhile, I thought I might be.

But then programming happened.

I had to choose between a life of spiritual service and the pursuit of professional passion.

My decision was swayed by the award of a scholarship to a technical college, so instead of Bible college, it was Computer Information Systems.

Discovery of a purpose

I wondered about that decision for a long time, thinking maybe I wimped out on an imaginary spiritual measuring scale.

That was until I discovered that everyday skills can be used for a higher purpose without being ordained to do so.

Three Greek words uncovered in Scripture formed the picture for ways to use the skills that I knew--programming--to make the most of every opportunity, to lead others, and to spread that message abroad.

I was excited about living out my faith: through programming!

After about 10 years experience, I left my job at the time to pursue a new position.

In 2008, I began work on an immunization registry for the State of Ohio, including a fancy algorithm for evaluating and forecasting your vaccine treatment.

I worked on this system for 3 years, and one day while I was waiting for my contract to be renewed for another year, I discovered something that literally *blew my mind*.

I was purging files during the downtime, and was about to pitch out an article I'd clipped from a magazine in 2004.

It was about the very problem I was working on. Vaccine forecasting.

It wasn't a "Hello, world." example. It was exactly what I was doing.

If I'd only known that this was there, I might have worked differently on problem of the last 3 years! What are the odds?

Discovery of a plan

I quickly researched the author's background and discovered that he'd prepare programs to forecast vaccinations commercially and the Indian Academy of Pediatrics. What????

Wait, there's like 200 countries on the planet! Don't they all need this?

Suddenly, something I'd been working on for several years took on an entirely new dimension!

Personal Discoveries

- Pain & Perspective
- A Proposal & A Partner

Notes:

Discovery of Pain & Perspective

My excitement for this possibility flashed bright for a few short months, but suddenly Karla, my wife of 14 1/2 years, suffered complications of cystic fibrosis and died.

My outlook on high and lofty projects wilted. What's the point?

A few months later, I returned to ICC as a tech lead and was surprised to see a familiar face I had encountered several times before--Dennis Dunn--and I was informed that he would be on my team for our new project! Dennis and I grew acquainted, and I soon opened up to him about the loss of my wife.

He offered reassurance, companionship, and downright nerdy good times.

Discovery of A Proposal and a Partner

Introducing

WorldVax.org

The Fifth Child

1 in 5
lacks access
to vaccine initiatives

Notes:

1 in 5 children does not have access to vaccine initiatives. And that is "because the fifth child is not standing next to the other four." Chris Elias, Bill and Melinda Gates Foundation. We need to reach the rest.

The Fifth Child

...is not standing next to the other four.

Chris Elias

Notes:

According to the World Health Organization (cite?)

1.5 million children die each year from diseases that can be prevented through the application of vaccines.

The Idea

Take intelligent vaccine guidance to caregivers around the world.

Project Goals

- Mobile application
- Data capture
- Clinical Decision Support
- Follow-up scheduling

Notes:

Dose Timing

- Old enough (age)
- Long enough (interval)

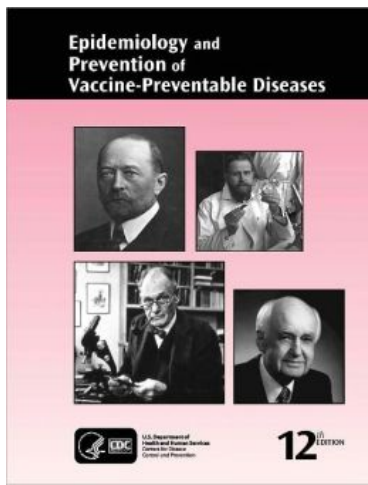
CDSi

Throughout the country, in every state, and some large cities, immunization registries have been developed to measure the overall rate of coverage, and serve individual patients in their personal immunization needs.

These systems report local progress annually to the federal government, and the special efforts are made to ensure timely administration of immunizations, especially for children.

Some systems are off-the-shelf systems, but still more are home-grown and have custom logic to plan patient treatment.

Pink book



Notes:

- Immunization schedules and guidelines
 - About an inch-thick!
 - Guidelines change over time
 - Updated every few years
-

Training challenges

- Multiple vaccine types
- Contraindications
- High-risk scenarios
- Footnotes

Cost of a Miss

Dose wasted

Cold-chain lost

Print doesn't scale

- Printed material
- Updates required
- Translation
- Training required

Vision...

Mobile devices

Portable servers

Data synchronization

Data analytics

Tech...

Cordova/Ionic

pouchdb

JavaScript & TypeScript

node.js

Outreach

AIRA (Denver)

Jeffrey Miller

AIRA (Denver)

Dennis Dunn

Great Influences

- [OSS Zero-to-Sixty](http://osszerotosixty.com/) (Nik Molnar)
- [Humanitarian Toolbox](http://htbox.org/)
- [Geeks Without Bounds](http://gwob.org/)
- Paul Mason

Notes:

Through networking at conferences like CodeMash and Stir Trek, we've been able to connect with experienced people doing things with open source and humanitarian projects. We've held open spaces to exchange ideas with other people sharing our interests.

- Nik Molnar (Glimpse project)
- Bill Wagner (HTBox)
- Tony Surma (HTBox)
- Russ McMahon (U.C.)

Support and Assistance

- ICC Leadership
- Contributors
- Mentors & Fans

Notes:

ICC really supported us in our efforts, both early on and in an ongoing way, providing staff hours from time-to-time as help became available. Often, we'd have a contributor for just a short while, and then they'd be placed.

Breakthroughs

*** Notes:

- Mentoring
 - Sustainability
-

Taarifa

Water line protection

taarifa.org

Notes:

"The Taarifa Platform is an open source web API, designed to close citizen feedback loops. We are currently working on an Innovation Project in Tanzania, with various partners."

[Taarifa YouTube channel](#)

GUTS Hack-a-thon



Home / Profile

Immunizations

It Works!

Medical Missions Conference

Notes:

I attended a Global Missions Health Conference in November 2016, and I met a lot of neat folks doing care in desparate parts of the world.

Egbe Hospital in Nigeria had representatives, and we explored working with them to augment their EHR with a vaccine application that could read their main database. They weren't at a point where this made sense, so it didn't go any further at this time.

I also spoke with a custom upfitter of rough terrain vehicles that was promoting a motorcycle complete with a solar-chargeable refrigeration compartment for transporting medicine to remote areas. It only costs about \$5K to get one!

Future potential

- Decision Engine
 - Synchronization
 - Integration
-

VaxTrac

vaxtrac.com

Notes:

- Fingerprint scanning for patient identification
 - Mobile system based on Android and CommCare
 - Adds QR code support to patient records
-

VaxTrac

- Toolkit [vaxtrac.com/toolkit](<http://vaxtrac.com/toolkit>)
 - [Technology FAQ](<http://vaxtrac.com/what-is-vaxtrac/technology-faq/>)
-

WorldVax.org Resources

- Website
- GitHub
- Twitter & More!

[WorldVax.org](<http://worldvax.org>)

[github.com/WorldVax](<https://github.com/WorldVax/>)

Twitter:

[@worldvax](https://twitter.com/worldvax/)

*** <h2 class="white-contrast blue-box fragment regular-case" data-autoslide="0" style="margin-top: 22%;">@thetalkingdevs

Note:

Calvin Allen and Chris Bohatka hosted us on their podcast, The Talking Devs. They're looking for new guests, so feel free to reach out.

Limited Edition!

Got the T-Shirt

[The Message](http://worldvax.org/the-message)

Notes:

If you've never seen it, Dennis Dunn delivered a rousing summary of our message in Denver to the AIRA conference. He drew upon the great wisdom of Nancy Duarte's book entitled Resonate. It describes a "special world" where things can be better.

What Does a Hero Look Like?

Notes:

Well, if you're interested in vaccine education, and you ask someone from the Children's Hospital of Philadelphia, you look like these folks... ---

Meet the Heroes

vaxpackhero.com

Battle the Germs!

--- <h2 class="white-contrast red-box-solid regular-case" style="margin-top: 20%;" data-background-size="contain" data-background-position="center" data-background-color="gray" >Beat the Germs! --- <h2 class="white-contrast blue-box regular-case" style="margin-bottom: 30%;" data-background-size="contain" data-background-position="center" >Get the Cards!

vaxpackhero.com

What Does a Hero Look Like?

Keep an Open Mind

Be ready for anything!

(A "Burning Bush")

Notes:

In a Bible story I learned in my youth, Moses makes a discovery that altered the course of his life.

Exodus chapter 3 shows us that Moses was minding his business, doing his job as a shepherd.

God got Moses' attention by appearing as a burning bush that was not consumed. * God found Moses where he was (Exodus 3) * God got Moses' attention * God gave Moses an objective * God reassured Moses * God equipped Moses using what he already possessed

The Objective:

"Go."

Notes:

God gave Moses an objective, a mission to perform.

The Objection:

"But..."

Notes:

Moses gave God an objection - "Who am I...?"

"I can't..." "I'm not..."

"Go."

Notes:

God gave Moses an objective

What's that in your hand?

God demonstrated that a simple rod that Moses had used to wrangle sheep would be an instrument capable of much more than he realized. Ordinary became not-so-ordinary.

David and Goliath

- Draw on Past Experience
- Use what you have
- Decline ill-fitting options
- Fight with Confidence

Notes:

Draw on Past Experience

David drew on past experience

Use what you have

David used what he had

Decline ill-fitting options

David declined ill-fitting options. He chose not to wear the armor that was offered to him.

Fight with Confidence

David fought with confidence

Accomplish Your Goal

David accomplished his goal

What Does a Hero Look Like?

Qualities of a Hero

- Available
 - Willing
 - Answers the Call
 - Courageous ("Gulp")
-

Everyday heroes

- Parents and Teachers
 - Coaches, Leaders, and Mentors
 - People Who Take Risks
-

Taking Action!

- Getting Started
- Staying Engaged
- Becoming Sustainable

Discovery

Notes:

Getting started is easy. It takes less time to Google humanitarian projects than it does to switch your car insurance to GEICO.

Get your feet wet!

Take a shot!

- Take a shot
- Take others with you
- See a need
- Take the lead

Fill a Need

Notes:

Fill a gap in the community Many projects have issues labeled "Jump-In" on GitHub Do the stuff nobody likes to do OpenMRS

- Develop
- Test
- Document
- Translate
- Support

Momentum

Notes:

Reach out to others of like mind to build strength in numbers. Build or join a community of like minded individuals.

Beaver

I made this!

Traction

& Sustainability

Notes:

Traction

Always test your ideas to see if it's something people want and need. Sometimes people don't realize that they need something until they see and understand it, but don't move too far forward if the need isn't validated by your target audience.

Sustainability

Find ways to support your ongoing investment of time and resources. Don't think that you'll have long-term significant impact by merely volunteering what's left of your weekends after everything else.

Geeks Without Bounds and other organizations like it exist to guide promising projects into a state of sustainable real-world impact.

And sharing the work with others makes a huge difference.

Villains

- Apathy
- Comfort
- Doubt & Fear

Notes:

"An apathetic man is a pathetic man."

Apathy can kill a noble goal before it ever starts. When we don't care enough to act, little else matters.

Comfort

It's very easy to see the difficulty ahead and think that it would be easier to pass the time another way.

You're right, it would be easier. But what would you have to show for it.

Doubt & Fear

Sneaky Ones...

- Ego
- Ingratitude
- Fatigue & Discouragement

Notes: When we first put the idea for FC-Connect into place, the response we received was very positive. That's creative! That's wonderful.

Throughout the course of our work, I became accustomed to the positive reaction I'd receive when I explained such a lofty and noble cause it represented.

However, this can cause a person to forget the need to depend on others, and it distracts from the right motivation for doing a project. Sure, there are other benefits to be gained, like knowledge and respect, but if they are your primary driver, you'll falter for sure.

Ingratitude

ICC, its leadership, and its consultants have cheered us on and given us ongoing material support in many ways.

Even though sometimes the nature of the consulting business means that it's not always possible to find the right people or keep them for very long, ICC has made it possible to share the vision and labor of WorldVax with more people than we imagined.

For that we are extremely grateful.

Fatigue

It's been 4 1/2 years since the our initial contest entry, and it would be easy to look at our current position and wonder if it's worth continuing. If we haven't succeeded by now, what's the point?

There is some wisdom in abandoning fruitless objectives early instead of drifting into sunk cost bias, throwing good time and money after bad, but be sure that it's not because you are weary from worn yourself thin.

Discouragement

Big Ones

Uncertainty

Notes:

In everything you do, there will be times when the destination, or how to get there, will become unclear. Kary Oberbrunner frequently says, "Clarity attracts; confusion repels."

Clarity is a precious thing, and you'll never be satisfied without it once you have experienced it.

Galvanized!

[@xagronaut](<https://twitter.com/xagronaut>)

Notes:

If you visit my Twitter profile these days, you'll probably notice something a little different than before.

My bio has changed. And that's because my focus has changed.

Notes:

I'm preparing for a new season of life. And though some things are unclear: when I'll have time again to devote to WorldVax, or how I'll being a parent is going to alter my plans and my perspective and my priorities--one thing is clear.

I'm waiting courageously. I'm preparing. I'm as ready as I'm going to be.

We're Adopting!

Children's Book!

Up for a challenge?

Groundhog Day

Notes:

In the 1993 movie "Groundhog Day", Bill Murray plays a weatherman trapped in a personal time warp, repeating the same day over and over. He just can't seem to break free of the same old rut.

Maybe you're stuck in your own time warp, doing the same thing every day without realizing it, or maybe you know it, and you want something different.

I call this feeling "Day-job-vu." ***

Day-job-vu

Notes:

Most people use New Year's Day, January 1st, as a marker for setting new goals.

I think of it differently. To me February 2nd, or Groundhog Day, is more important. I don't want Groundhog Day to turn into Groundhog Month or even Groundhog Year.

Make a Move

« Stagnant

« Boredom

« Routine

»

Significant »

Breakthrough »

Revolutionary »

What if

I fail?

| Fear kills more dreams than failure.

Andy Mineo, "Brave" Notes:

Doubt

You may find that you begin to question whether your idea was sound, if you are on the right track, and if it's worth your time.

These are not bad questions, but doubt has a sneaky way of undermining your confidence if you let it.

Reach The Rest...

What does it mean...

to You?

Notes:

What does "Reach the Rest" mean for you?

It could be reaching the goals you purposed in your heart to do long ago.

It could be living intentionally to impact those within your realm of influence.

There may be a cause that you've felt drawn to, but you haven't acted, at least not in awhile.

If that's the case, you can ask yourself three important questions.

Do you still think about it? Does it still need fixed? Can you still do something about it?

When was the last time you discovered something that blew your mind?

When was the last time you discovered something about yourself and what you could achieve?

And, when was the last time you poked your head out and discovered something about the world that needed changed?

You might be surprised to find that what you discover.

It might just be what *you* need to Reach the Rest.

Thank You

Jeffrey A. Miller

[@xagronaut](#) | [jmill.net](#)

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