




**HUMANITARIAN TECHNOLOGY:  
SCIENCE, SYSTEMS AND GLOBAL IMPACT**  
7 – 9 June 2016 | Boston, MA USA  
[www.humanitariantechnology.org](http://www.humanitariantechnology.org)



**HUMTECH  
2016**

**CONFERENCE PROGRAM**

# Networking @ HumTech

**3 WELCOME LETTER**

**4 GENERAL SESSION AGENDA (DAY 1)**

**6 CONTRIBUTED SESSIONS (DAY 1)**

**10 SPECIAL HAC WORKSHOP (DAY 2)**

**12 GENERAL SESSION AGENDA (DAY 2)**

**14 TECHNICAL POSTER SESSION**

**16 TECHNOLOGY EXHIBITS**

**22 GENERAL SESSION (DAY 3)**

**24 CONTRIBUTED SESSIONS (DAY 3)**

**30 SPEAKER BIOGRAPHIES**

**38 SPECIAL SESSIONS**

**52 TECHNICAL COMMITTEE**

**53 VENUE FLOOR PLAN**

**54 LOCAL AREA AND SUBWAY MAP**

**56 SPONSORS & SUPPORTERS**

**7 pm - 9 pm, Monday, June 6th**

Rooftop Welcome Reception  
Floor PL, Revere Hotel

**6 pm – 9pm, Tuesday, June 7th**

Evening Reception  
Emerald Lounge, Mezzanine, Revere Hotel

**3 pm – 6 pm, Wednesday, June 8th**

Poster and Exhibit Session  
Loft 2, Gallery, Floor 6, Revere Hotel





## Welcome to Boston!

It is with great excitement that we welcome you to the beautiful city of Boston for the HumTech2016 annual conference.

We are often struck at the breadth of new technology and ideas that are continuously arising to support the humanitarian community. With the magnitude of challenges increasing, it is difficult to find a time and space to come together and discuss the latest hardships we are facing and the current innovations to help solve them.

Humanitarian Technology: Science, Systems and Global Impact is an annual multidisciplinary conference with the objective of bringing together people from a variety of backgrounds and specialties to learn about important issues and current research, and exchange technical ideas to advance humanitarian action.

HumTech2016 is organized across six conference tracks:

- **Track A: Humanitarian Assistance and Disaster Relief** focuses on technology-based solutions that help protect and provide relief to communities facing man-made and natural disasters.
- **Track B: Health and Disease Management** focuses on topics of relevance to global health research.
- **Track C: Public Safety and Emergency Management** focuses on technical challenges facing emergency responders and innovative technologies that enable more effective response.
- **Track D: Emerging Technologies** focuses on advanced research and technology development that promises to create smart cities and resilient communities, and alleviate the difficulties faced by developing communities. Subject topics were sought to span sensors, networks and systems, optical and rf devices, ad-hoc networks, additive manufacturing, renewable energy, social media and big data analytics, unmanned platforms, autonomy and intelligent systems, and resilient systems.
- **Track E: International Development, Poverty Alleviation and Food Security** focuses on ways that technology can improve living standards across the globe. Technological enhancements in infrastructure and transportation, as well as sustainable food production and distribution, can play a significant role in improving the quality of life of the impoverished and hungry.
- **Track F: Open Track on Water, Energy, Agriculture, Policy, Security, Education, ...** focuses on topics across technology, social and economic policy, public-private partnerships, and social entrepreneurship.

Many generous educators and leaders contributed their time and talents to shaping this conference. We would like to thank the HumTech2016 organizing committee, a group of esteemed dedicated academics and professionals, for reviewing submissions and coordinating the event.

We're grateful as well to the session organizers for putting a lot of thought into developing high quality, thought provoking, and incredibly relevant sessions. We would like to thank all attendees, exhibitors, speakers, and sponsors for spending time with us as we continue to do this important work.

**Monday, 6 June 2016**

7:00 pm – 9:00 pm Rooftop Welcome Reception: Check-In and Cocktail Hour

**Rooftop@Revere****Tuesday, 7 June 2016**

8:00 am Registration Opens

8:30 am Opening Remarks

**Opening Plenary Session****Loft 1 - Gallery, 6th Floor**

8:35 am *"Disrupting Humanitarian Response"*  
 Gisli Olafsson  
 Emergency Response Director  
 NetHope

9:25 am – 10:25 am *"Use of Technology with Local Partners for Emergency Preparedness and Response"*  
 Oxfam Invited Panel

Panelists:	Carlos Mejia	Humanitarian Change Goal Manager
	Emily Farr	Global Advisor, Emergency Food Security & Vulnerable Livelihoods
	Pierluigi Sinibaldi	Disaster Risk Reduction and Resilience Advisor
	Daniela Giardina	Public Health Promoter

10:25 am *break*

10:45 am *"Digital Humanitarians"*  
 Patrick Meier  
 iRevolutions.org

**Morning Keynote Session: Humanitarian Response Innovations****Loft 1 - Gallery, 6th Floor**

11:25 am *"Cross-sector Partnerships in Disaster Risk Reduction and Response: Creating Shared Value"*  
 Colby Howard  
 Liaison, Mentoring and Training (LMT) Executive Officer  
 Rescue Global

11:45 am *"Enabling Bottom-Up Innovation Powered by People, Partnerships and Networks"*  
 David Ott  
 Chief Operating Officer  
 Global Humanitarian Lab (GHL)

12:30 pm *Working Lunch Session*

Loft 2 - Gallery, 6th Floor

**Beyond the Jargon: Data Security and Data Quality Simplified**

Learn how mobile data collection actually works, best practices in data security, and how to ensure that you are collecting quality data, even under challenging circumstances.

Moderators: Dr. Christopher Robert and Faizan Diwan of Dobility, the social enterprise behind SurveyCTO.

**Invited lecture**

Loft 1 - Gallery, 6th Floor

1:30 pm      *"Building a Better Eardrum"*  
Aaron Remenschneider  
Clinical Fellow in Otology and Neurotology, Investigator, Surgeon  
Massachusetts Eye and Ear Infirmary, Harvard Medical School

**Contributed Talks Session**

2:00 pm – 3:30 pm      Session B1. Health and Disease Management

Loft 2 - Gallery, 6th Floor

2:00 pm – 3:30 pm      Session D1. Emerging Technologies

Loft 1 - Gallery, 6th Floor

3:30 pm      *break*

**Contributed Talks Session**

4:00 pm – 5:30 pm      Session A1. Humanitarian Assistance  
and Disaster Relief

Loft 1 - Gallery, 6th Floor

4:00 pm – 5:30 pm      Session E1. International Development,  
Poverty Alleviation and Food Security

Loft 2 - Gallery, 6th Floor

**Evening Networking Reception**

Emerald Lounge, Mezzanine Level

Join us at the Revere Hotel's Emerald Lounge, from 6 pm - 9pm. Light dinner served.

## Session B1. Health and Disease Management

**2:00 pm – 3:30 pm, Loft 2 - Gallery, 6th Floor**

mLabour: Design and Evaluation of a Mobile Partograph and Labor Ward Management Application	Jennifer Schweers, Maryam Khalid (Dimagi, Inc.), Heather Underwood (University of Colorado), Srishti Bishnoi (Dimagi, Inc.), Manju Chhugani (Jamia Hamdard University)
Integrated On-Chip Microfluidic Immunoassay for Rapid Biomarker Detection	Neha Garg, Dylan Boyle, Derek Vallejo, N. Flohn, I. Nanayakkara (University of California, Irvine), A. Teng, J. Pablo, X. Liang (Antigen Discovery, Inc.), D. Camerini (Antigen Discovery Inc., University of California, Irvine), A. Lee (University of California, Irvine)
A Mobile-Based Healthcare Utilization Assessment in Rural Ghana	Lara D. Vogel (Massachusetts General Hospital), Suhuyini Shani, Levi Goertz, Mark Boots, Louis Dorval (VOTO Mobile), Nancy Ewen Wang (Stanford University)
Change In Water Activity And Fungal Counts Of Maize-Pigeon Pea Flour During Storage Utilizing Various Packaging Materials	Subuola B. Fasoyiro (Obafemi Awolowo University, The Pennsylvania State University), Rebecca Hovingh, Hassan Gourama, Catherine N. Cutter (The Pennsylvania State University)
Buruli Ulcer: A Journey To Unveiling Its Mode of Transmission in Nigeria	Joy Anogwih (Auburn University), Chiamaka Odenigbo, Fouad Adetoro (University of Lagos, Nigeria)
Information and Communication Technology for Child Protection Case Management in Emergencies: An Overview of the Evidence Base	Nadi N. Kaonga (Health Enabled, Tufts Clinical and Translational Science Institute), Hima Batavia, William C. Philbrick (Health Enabled), Patricia N. Mechael (Health Enabled, Johns Hopkins University School of Advanced International Studies, Princeton University)
Using Simulation Technology and Analytics During The Ebola Crisis To Empower Frontline Health Workers, and Improve the Integrity of Public Health Systems	Nicholas Mellor (Masanga Mentor Ebola Initiative, MiiHealth Ltd), Jon Meadows (Masanga Mentor Ebola Initiative), Hetty Horton (The MENTOR Initiative), Thomas Gale, Arunangsu Chatterjee (Plymouth University)

## Session D1. Emerging Technologies

2:00 pm – 3:30 pm, Loft 1 - Gallery, 6th Floor

CrowdAR: A Live Video Annotation Tool for Rapid Mapping	Elliot Salisbury, Sebastian Stein, Sarvapali Ramchurn (University of Southampton)
Risk Analytics in Uncertain Times	Colin Gounden (Via Science)
Virtual Reality for Behavioral Health	Peggy Wu (SIFT, LLC), Jacquelyn Morie (All These Worlds, LLC), Pete Wall, Tammy Ott (SIFT, LLC), Kim Binsted (University of Hawaii at Manoa)
Automating Canonical Subjects and Place Names in Semantic MediaWiki for Humanitarian Assistance	Timothy Clark, Laura Cassani (Milcord)
How Social Media and Crisis Mapping Can Render Humanitarian Logistics More Efficient Through Improved Situational Awareness	Vincent Fevrier (University of Manchester)
D-Tool: A Tool to Enhance the Design of Essential Products for Developing Economies	Timothy Whitehead (De Montfort University)
Primer for Image Informatics in Precision Medicine	Jonathan Lefman (Intel Corp.), Young Hwan Chang (Oregon Health & Science University), Vahid Azimi, Rohan Borkar, Patrick Foley, Ganapati Srinivasa (Intel Corp.)

**Session A1. Humanitarian Assistance and Disaster Relief**

**4:00 pm – 5:30 pm, Loft 1 - Gallery, 6th Floor**

Designing for Networked Community Resilience	Tina Comes (University of Agder)
An International Military Perspective on Information Sharing During Disasters	Rodrigo Arancibia (U.S. Naval War College)
Exploring Open-Sourced Humanitarian Efforts: Refugee Reporting Through Population Density Tables	Helen Rosko (Oak Ridge National Laboratory)
Analyzing National Disaster Response Framework and Inter-Organizational Network of the 2015 Nepal/Gorkha Earthquake	Mizan Bustanul Fuady Bisri, Shohei Beniya (Kobe University)
A People & Purpose Approach to Humanitarian Data Information Security and Privacy	Jennifer Chan (Northwestern University, NetHope, Harvard Humanitarian Initiative), Lauren Bateman, Gisli Olafsson (NetHope)
On Selecting an Appropriate Customizable Electronic Self-Report Survey Research Technology	Stan Mierzwa, Samir Souidi, Craig Savel (Population Council)
Knowing Just in Time: Use Cases for Mobile Surveys in the Humanitarian World	Nancy Mock, Nathan Morrow (Tulane University), Jean-Martin Bauer, Jennifer Browning (World Food Programme)
Assessing Gaps and Challenges to Adopting Social Media Derived Disaster Analytics	Darren Appling, Ann Carpenter, Erica Briscoe, Ray Doyle, Leigh McCook (Georgia Tech Research Institute)



## Session E1. International Development, Poverty Alleviation and Food Security

4:00 pm – 5:30 pm, Loft 2 - Gallery, 6th Floor

Infrastructure Evolution Analysis via Remote Sensing in an Urban Refugee Camp – Evidence from Za’atari	Brian Tomaszewski, Sara Tibbetts (Rochester Institute of Technology), Yusuf Hamad (Mafraq, Jordan), Nijad Al-Najdawi (Al-Balqa Applied University, Jordan)
Assessing the Thermal Performance of Temporary Shelters	Ying Yu (Sichun University, The Hong Kong Polytechnic University), Enshen Long, Yuan Shen (Sichun University), Hongxing Yang (The Hong Kong Polytechnic University)
Appropriate Technology Developed Remotely for Disaster Response in Nepal	Aaron Brown, Michael Bauer (Metropolitan State University of Denver)
Web/Mobile Solutions to Empower the Under-served	Silvia Figueira (Santa Clara University)
From Disaster to Development: Finance Provides a Platform to Empower Technology for Resilience to Climate Change	Daniel Oerther (Missouri University of Science and Technology)
Business Cycle Shocks to Foreign Aid Flows	Nikolai Boboshko, Stan Veuger (American Enterprise Institute for Public Policy Research)
Harnessing Creativity for Design: Tests in an Introduction to Engineering Class	Heather Beem, Gwyndaf Jones (MIT D-Lab)
Stakeholder-Personas: An Educational Tool for Social Entrepreneurs; Stakeholder Journey Mapping: A Business Development Tool for Social Entrepreneurs	Kathryn Ortbal, Nicholas Frazzette, Khanjan Mehta (The Pennsylvania State University)

## IEEE Humanitarian Activities Committee Special Workshop at HumTech2016

Wednesday, 8 June 2016

8:30 am - 12:30 pm

Studio 3 - Gallery, 6th Floor

The IEEE is currently soliciting proposals for humanitarian projects that are aligned with its vision. The Humanitarian Activities Committee will review proposals during three periods in 2016 and will grant awards between US\$20,000 and US\$100,000. Such projects typically tend to have a strong community involvement and must benefit a local group with an underserved and unmet need. Such projects must have a technology component leveraging IEEE's core competencies.



Humanitarian Activities  
Committee

### What is IEEE HAC?

- ♦ Volunteer-staff team enabling local impactful humanitarian and development work
- ♦ Providing funds for activities centered on its 'feet-on-the-ground' mission
- ♦ Developing project and education best practices within its mission
- ♦ Facilitating partnerships and collaborations that amplify IEEE's impact



**Apply for an IEEE HAC project grant:**

Must be 'feet-on-the-ground' work  
Has to benefit a local, underserved group  
Award USD20k – 100k

Deadline for proposals  
August 15th

**Add humanitarian panels/tracks to your event:**

Examples of support:  
Finding speakers and arranging programs  
Funding for speaker travel and expenses

Deadlines for proposals  
July 15th  
September 15th

*(Background image) In India, a SIGHT group is working with the Tata Power Delhi Distribution utility to help impoverished residents reduce their electricity bills. The utility hired 300 women to teach the residents how switching from incandescent lamps to longer-lasting, more efficient LEDs can save them money. At least 65,000 LED lamps have been installed so far.*

This workshop will cover in detail key concepts for developing funding proposals for social development projects with a technology component, including specific attributes necessary for success at different phases of proposal development. Topics covered will include needs assessment, participant and beneficiary interviews, writing budgets, and post-project assessment. The role of technology, its current development stage and maturity, its impact on the overall solution, socio-economic, cultural and behavioral challenges, risks and impact and the need and framework to address them will also be covered. Additionally, the establishment of quantitative and qualitative outcomes and development of plans and tools for reporting will be discussed.

### **Workshop Sessions**

#### **Introduction: Patterns for success and failure**

*Jackie Stenson will discuss the major pitfalls of unsuccessful projects and the most common traits of the most successful proposals.*

#### **Session 1: Pre-Proposal Framework: Developing the Project and the Proposal**

*Pre-proposal Development Requirements, Needs Assessment, Surveys and Interviews.*

#### **Session 2: The Proposal: Project Planning and Writing the Proposal**

*Articulating the Solution, Beneficiaries, and Outcome. Drafting a budget. Creating appropriate project phases and checkpoints.*

#### **Session 3: Tools for Assessment and Best Practices**

*How and when to assess. Determining best practices and planning for the next project.*

### **Workshop Moderators**

Jackie Stenson  
Laura Edelson  
Vineeth Vijayaraghavan  
Sampathkumar Veeraraghavan

**Wednesday, 8 June 2016**

8:00 am Registration Opens

**Morning Featured Sessions****Loft 1 - Gallery, 6th Floor**

8:30 am – 9:30 am “Civilian-Military Coordination During Humanitarian Disasters”

Tony Fox (Panel Session Chair & Moderator)  
 Professor  
 U.S. Naval War College

Panelists: Rodrigo Arancibia Commander, Chilean Navy  
 International Fellow, U.S. Naval War College

Vincenzo Bollettino Research Associate and Director, Resilient Communities Program  
 Harvard Humanitarian Initiative

Doug Wallace Center for Excellence in Disaster Management and  
 Humanitarian Assistance, U.S. Pacific Command

9:30 am – 10:30 am “World Humanitarian Summit Innovation Outcomes: Agenda for Action”

Phuong Pham  
 Assistant Professor  
 Harvard Medical School and Harvard T.H. Chan School of Public Health  
 Director of Evaluation and Implementation Science, Harvard Humanitarian Initiative

Panelists: Andrew Billo Humanitarian Affairs Officer  
 Policy Development and Studies Branch  
 Policy Analysis and Innovation Section  
 UN Office for the Coordination of Humanitarian Affairs (UN OCHA)

Giulio Coppi Institute of International Humanitarian Affairs, Fordham University

Kathleen Hamill Visiting Scholar, Harvard T.H. Chan School of Public Health

Sara Spalding Senior Director  
 New England Research & Development Center  
 Microsoft Corporation

10:45 am *break*

**Morning Session: Cross-sector Partnerships**

**Loft 1 - Gallery, 6th Floor**

- 11:00 am *"Top 5 Things to Consider When Starting a Collaboration: Government, NGO & Private Sector Partnerships in Preparedness & Response"*  
Leighton Jones  
Senior Manager, Emergency Preparedness Research, Evaluation & Practice Program  
Harvard T.H. Chan School of Public Health
- 11:20 am *"IBM's Humanitarian Grants: Europe's Migrant/Refugee Crisis, Chennai's Flooding, and Beyond"*  
Rebecca E. Curzon  
Senior Program Manager  
IBM Corporate Citizenship and Corporate Affairs
- 11:40 am *"Transformative Development: How to Solve Grand Challenges Using New Solvers"*  
Ku McMahan  
Team Lead, Securing Water for Food  
Center for Development Innovation  
U.S. Global Development Lab  
USAID
- 12:00 am *"Electronic Health Records in Refugee Camps: Elements of a Generalizable Solution"*  
Deborah Theobald  
Co-Founder and Executive Director  
Vecna Technologies and Vecna Cares
- 12:30 pm *Lunch*

**Invited Panel: HA/DR in Infrastructure-less Environments**

**Loft 1 - Gallery, 6th Floor**

- 1:30 pm – 2:20 pm Gurminder Singh (Panel Session Chair & Moderator)  
Professor of Computer Science  
Director of the Center for the Study of Mobile Devices and Communications  
Naval Postgraduate School
- Panelists: Major Alexander "Kronk" Beachy United States Marine Corps  
Christopher Kluckhuhn Founder & CEO, Avwatch

**continued on the next page**



## Afternoon Session: Education and Access For All

Loft 1 - Gallery, 6th Floor

- 2:20 pm *"Empowering Communities in Need by Creating Scalable Technology Solutions"*  
Sue-Ann Ma  
Product Manager  
Benetech
- 2:40 pm *"Supporting Scientific Education Across the Globe"*  
Roseline Chapel  
Schlumberger Foundation

## Poster, Exhibit and Networking Session

3:00 pm – 6:00 pm Technical Posters and Technology Demonstrations

Loft 2 - Gallery, 6th Floor

Technical Posters	
Tracking User-Movement in Opportunistic Networks to Support Distributed Query-Response During Disaster Management	Somprakash Bandyopadhyay (Indian Institute of Management)
Site Suitability Analysis for Humanitarian Assistance Resource Allocation	Matthew Bates, Michelle Hamilton, Rich Curran (US Army Corps of Engineers)
High Tech Humanitarians – Bringing Innovation Where It Happens	Giulio Coppi (Fordham University)
Using Vehicle-to-Vehicle and Vehicle-to-Infrastructure Communication to Enhance Fuel Efficiency in Large-Scale Transportation Networks via Localization of Shock Waves	Sivaranjani Seetharaman, Vijay Gupta (University of Notre Dame)
Improving Disaster Assistance with SMS Messaging	Corey Eide, Jim Ayre (American Red Cross)
Community Food Technology Laboratory to Empower Village Women and Conserving Biodiversity, a Pilot Project in Indonesia	Daisy Irawan, Hayu Dyah (Mantasa Foundation)
Developing Simple, Innovative, Low-Cost and Reality-Based Solutions for Education ... OR, Give a School a Computer and a Mobile, then Watch the Miracles Happen!	Ainee Jamy (Sunbeams)
"Education for All" in a Connected World: A Social Technology-driven Framework for E-Mobilizing Dormant Knowledge Capital through Sharism and Mass Collaboration	Somprakash Bandyopadhyay (Indian Institute of Management), Arina Bardhan, Priyadarshini Dey, Srimoyee Das (Social Informatics Research Group, IIM Calcutta), Soumyadip Ghosh, Priyanjit Biswas (Jadavpur University)

Technical Posters	
Modeling of Medical Technology Supply Chains via Partnership in Zanzibar, Tanzania	Devika Nadkarni, Hoda Yehia (Boston University)
3D Printing as a Disruptive Technology for Development	Timothy Whitehead (De Montfort University)
Silicone-Based Composites as Surgical Breast Models for Oncoplasty Training	Ozge Akbulut (Sabanci University)
Design and Fabrication of Synthetic Ultrasonography and Mammography Phantoms	Ozge Akbulut (Sabanci University)
Medical Oxygen Technology Planning in Low-resource Settings: A Modeling Approach	Beverly Bradley (University of Toronto)
Human-In-The-Loop Computer Simulations towards Improving Above-Knee Prosthetic Legs for the Developing World	Nidhi Seethapathi, Manoj Srinivasan (The Ohio State University)
Risk Communication: Zika Virus and Public Health	Nasim Talebi, Diane Walz, Srinivasan Rao, Raghav Rao (The University of Texas at San Antonio)
Developing a Paper-Based Diagnostic for Early Screening of Thyroid Imbalance in Women of Low-Resource Settings	Abha Patil, Katherine Sadovnikov, Marta Mota, Donovan Guttieres (Boston University)
Design Strategy of Thermoelectric Refrigerator for Last Mile Vaccine Delivery	Hohyun Lee (Santa Clara University)
Mafuriko: Nzoia Watershed Location Based Flood Game	Abby Onencan (Delft University of Technology, Moi University), Rens Kortmann (Delft University of Technology), Felix Kulei (Moi University), Bert Enserink (Delft University of Technology)
Transforming the Syrian Humanitarian Crisis via Innovation	Amira Buz Khallouf (Syrian Social Innovators)

**Poster, Exhibit and Networking Session**  
**Wednesday, June 8th 3pm – 6pm**

**Technology Exhibits**

**MadiDrop PBC**

*New technology to fight water contamination*

MadiDrop PBC is a public benefit company providing safe drinking water to communities throughout the world. Working with humanitarian, relief and mission-based organizations, we provide the MadiDrop, an all-natural ceramic tablet embedded with silver. The MadiDrop provides a simple approach to address the critical number of waterborne diseases that result from drinking contaminated water.



**Mercy Ships**

*A floating hospital*

Mercy Ships is a global charity that has operated hospital ships in developing nations since 1978. We bring hope and healing to the forgotten poor by mobilizing people and resources worldwide, serving all peoples without regard for race, gender, or religion. The m/v Africa Mercy, the world's largest civilian hospital ship, provides state-of-the-art care to those in desperate need. To date, Mercy Ships has treated 2.42 million people - free of charge.



**SurveyCTO**

*A next-generation data collection platform*

With next-generation security and legendary reliability, SurveyCTO lets you conduct surveys on mobile devices in sensitive, resource-constrained settings, fully offline.





### **Population Council**

*Deliver solutions to improve lives around the world*

The Population Council confronts critical health and development issues—from stopping the spread of HIV to improving reproductive health and ensuring that young people lead full and productive lives. Through biomedical, social science, and public health research in 50 countries, we work with our partners to deliver solutions that lead to more effective policies, programs, and technologies that improve lives around the world. Established in 1952 and headquartered in New York, the Council is a nongovernmental, nonprofit organization governed by an international board of trustees.



### **KoBoToolbox**

*Data collection tools for challenging environments*

Quickly collecting reliable information in a humanitarian crisis is the critical link to saving the lives of the most vulnerable. Understanding the population's needs is often neglected for lack of quick means to gather and analyze this crucial information. KoBoToolbox, developed by the Harvard Humanitarian Initiative, is an open source suite of tools for data collection and analysis in humanitarian emergencies and other challenging environments that was built to address this gap.



### **Emergency Telecommunications Cluster**

*Ensuring vital communications services*

The Emergency Telecommunications Cluster (ETC) is a global network of organizations that work together to provide shared communications services in humanitarian emergencies. The ETC is one of the 11 clusters designated by the Inter-Agency Standing Committee (IASC). The ETC provides the emergency response community with the communications services they need to operate effectively and efficiently, and to save lives.

**Geographic Information Science and Technology (GIST) Group**  
**Oak Ridge National Laboratory (ORNL)**

*Basic and applied research to deliver transformative solutions to compelling problems in energy and security*



Oak Ridge National Laboratory is the largest US Department of Energy science and energy laboratory. ORNL's diverse capabilities span a broad range of scientific and engineering disciplines, enabling the Laboratory to explore fundamental science challenges and to carry out the research needed to accelerate the delivery of solutions to the marketplace. ORNL supports DOE's national missions of: scientific discovery, clean energy and security. The Geographic Information Science and Technology (GIST) Group at the Oak Ridge National Laboratory has been a pioneer in the development, implementation, and application of systems, science, and technology for geographic information since 1969 – well before the advent of commercial GIS.

**HumanSurge**

*The HumanSurge Initiative aims to improve Global Surge Capacity for the benefit of those affected by crisis and disasters*

HumanSurge seeks to improve the quality and timeliness of humanitarian response through enhanced surge capacity of humanitarian responders, professionals and organizations, to the ultimate benefit of affected populations. HumanSurge is driven by social impact, not by profit.







### **Conflict Dynamics International**

*Innovative strategies for conflict prevention and resolution*

Conflict Dynamics International is an independent, not-for-profit organization that works to prevent and resolve violent conflict and to alleviate human suffering resulting from conflicts and other crises around the world.

Join us to learn about our recent work to explore some of the opportunities and challenges of applying technologies to improve humanitarian access in situations of armed conflict. We will also be showcasing resources co-developed with the Government of Switzerland, the International Committee of the Red Cross (ICRC) and the United Nations Office for the Coordination of Humanitarian Affairs (UN OCHA), that guide humanitarian practitioners to develop options to better secure and sustain humanitarian access.



### **Factr**

*Monitor, share, and organize information in real-time, with the help of networks you trust*

Factr lets you instantly find, easily organize, securely share, and collaboratively evaluate information that matters to you. It's simple to set up, easy to use, and purpose-built for collaboration. You'll eliminate redundant research, harness dispersed expertise, foster swift discussion—and make more-informed decisions, faster.

### **International Development Innovation Network at MIT**

*Enabling grassroots innovators to create change*

The International Development Innovation Network at MIT D-Lab was created in 2012 to support grassroots innovators around the world to design, develop, and disseminate technologies that improve the lives of people living in poverty. Come learn about best practices for enabling innovation ecosystems and for supporting innovators to create change in their communities.



**International Development  
Innovation Network**

### **Comprehensive Initiative on Technology Evaluation at MIT**

*Pioneering methods for product evaluation in global development*

When a person lives on less than \$2 a day, there isn't room for a product like a solar lantern or a water filter to fail. Investing in a product that fails undermines future innovation by reducing confidence and depleting scarce resources. But with so many products on the market, how do you choose the right one? Come learn about the first-ever program developing methods for product evaluation in global development, and see how these methods are being applied in real-life evaluations today.



**Comprehensive Initiative on  
Technology Evaluation**

### **Vecna and Vecna Cares Charitable Trust**

*Vecna® was founded on the idea that people matter, and that businesses can be profitable, ethical, and socially responsible*

Vecna believes strongly in contributing to the community around us. We are dedicated to four community service missions: Global Health Initiative; Healthy Communities; Open Source; and Technology for the Future. Vecna Cares Charitable Trust provides technology and training to support and strengthen health systems in underserved areas for better health outcomes. We build systems that close the information gaps between patients, caregivers and decision makers.





### **Practical Education Network**

*Empowering teachers around the world*

Practical Education Network provides a teacher training program infused with MIT-style learning-by-doing to promote hands-on science regardless of material constraints. Junior high and senior high school science teachers in Ghana learn and design activities which complement the national curriculum and are created from locally available materials.



### **Global Humanitarian Lab (GHL)**

*incubate :: make :: accelerate*

The Global Humanitarian Lab is a multi-stakeholder innovation lab to develop appropriate humanitarian solutions for and with the affected populations. It is a partnership of leading humanitarian organisations, public- and private-sector entities, networks, as well as the global crowd. GHL acts both as an incubator to develop ideas into solutions and an accelerator to scale solutions for the humanitarian sector. To achieve this it uses contemporary and efficient approaches. GHL aims at empowering both the humanitarian actors as well as the affected communities to develop adapted solutions for their respective needs. It strives at developing their autonomy and independence.



### **CrossCare**

*A custom-built application to manage patient data and track their outcomes*

CrossCare brings high-tech to the medical mission field with a unique device-to-device network that functions with no external connectivity. Intuitive design gives medical teams only what they need to track to patients and outcomes with a clean look and feel. Spend time on your patients, not paperwork. Come and try it out for yourself!

**Thursday, 14 May 2015**

8:00 am Registration Opens

**Morning Keynotes****Loft 1 - Gallery, 6th Floor**

8:30 am *"The Elephant in the Room: Professionalizing Humanitarian Use of Information Technologies"*  
 Nathaniel Raymond  
 Director, Signal Program on Human Security and Technology  
 Harvard Humanitarian Initiative

9:00 am *"Rapid Deployment of Emergency Response Teams"*  
 Stephen Hunt  
 Chief Information Officer  
 Team Rubicon

9:20 am *"Humanitarian Design and Development: Lessons Learned"*  
 Pete Giencke  
 GIS Data Engineer & Product Manager  
 Google

9:40 am *"Seeing a Better World"*  
 Andre Kearns  
 Senior Director, US Government Product Management  
 DigitalGlobe

10:00 am *break***Special Panel Session:****Improved Packaging Technology in the Food Aid Supply Chain****Loft 1 - Gallery, 6th Floor**

10:30 am – 11:30 am Jarrod Goentzel (Panel Session Chair & Moderator)  
 Founder and Director  
 MIT Humanitarian Response Lab

Panelists:	Jim Bagwell	President, ProvisionGard
	Greg Olson	Program Operations Division Director USAID Office of Food For Peace
	Phil Villers	President, GrainPro

**Special Panel Session:**

**Georeferenced Settlement Mapping and Population Estimates**

**Based on Remote Sensing and Microcensus Data in Northern Nigeria**

**Loft 1 - Gallery, 6th Floor**

11:30 am – 12:30 pm Jeanette Weaver (Panel Session Chair & Moderator)  
Research Scientist, Geographic Information and Science Technology Group  
Oak Ridge National Laboratory

Panelists:	João Pedro Azevedo	Lead Economist, World Bank
	Thomas Bird	Research Scientist, Flowminder
	Noelle Huskins	Program Officer, Bill and Melinda Gates Foundation
	Eric Weber	Research Scientist, Oak Ridge National Laboratory

12:30 pm *Lunch*

**Contributed Talks Session**

2:00 pm – 3:30 pm	Session A2. Humanitarian Assistance and Disaster Relief	<b>Loft 1 - Gallery, 6th Floor</b>
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2:00 pm – 3:30 pm	Session E2. International Development, Poverty Alleviation and Food Security	<b>Loft 2 - Gallery, 6th Floor</b>
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3:30 pm *break*

**Contributed Talks Session**

3:45 pm – 5:15 pm	Session C2. Public Safety and Emergency Management	<b>Loft 1 - Gallery, 6th Floor</b>
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3:45 pm – 5:15 pm	Session F2. Open Track: Water, Energy, Agriculture, Policy, Security, Education, ...	<b>Loft 2 - Gallery, 6th Floor</b>
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5:15 pm	Closing Remarks
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## Session A2. Humanitarian Assistance and Disaster Relief

**2:00 pm – 3:30 pm, Loft 1 - Gallery, 6th Floor**

Geography of Solidarity: Spatial and Temporal Patterns	Noora Al Emadi, Heather Leson, Ji Lucas, Patrick Meier, Javier Borge-Holthoefer (Qatar Computing Research Institute)
Supply Chain Optimization: Enhancing End-To-End Visibility	Beverley Sithole, Sergio Guedes Silva, Mirjana Kavelj (UN World Food Programme)
MVAM: A New Contribution to the Information Ecology of Humanitarian Work	Nancy Mock (Tulane University), Gaurav Singhal, William Olander (World Food Programme), Nathan Morrow (Tulane University), Jean-Martin Bauer, Marie Edlund (World Food Programme)
Private Sector Networks for Humanitarian Emergencies	Mariko Hall (Emergency Telecommunications Cluster)
Implementation of a Rapidly Deployable, Mobile Communications System Prototype for Disadvantaged Environments	Timothy Hackett, Sven Bilén (The Pennsylvania State University)
Disruption of Things: A Model to Facilitate Adoption of IoT-based Innovations by the Urban Poor	Abhimanyu Roy (Institute of Management Technology (India), Community Tracks), Ali Zalzal (Community Tracks, Institute of Management Technology (UAE)), Alok Kumar (Institute of Management Technology (India))
Mobile Phones: Established Technologies for Innovative Humanitarian Logistics Concepts	Ismail Abushaikh (German Jordanian University), Dorit Schumann-Bölsche (University of Applied Sciences Fulda)
Post Disaster Situation Awareness and Decision Support through Interactive Crowdsourcing	Moumita Basu, Somprakash Bandyopadhyay (Indian Institute of Management), Saptarshi Ghosh (Indian Institute of Engineering Science and Technology)

**Session E2. International Development, Poverty Alleviation and Food Security****2:00 pm – 3:30 pm, Loft 2 - Gallery, 6th Floor**

Identity in Crisis	Catherine Highet (FHI 360)
Coupling Nile Basin 2050 Scenarios with the IPCC 2100 Projections for Climate-induced Risk Reduction	Abby Onencan (Delft University of Technology, Moi University), Bert Enserink, Bartel Van de Walle (Delft University of Technology), James Chelang'a (Moi University)
Modes of Greenhouse Water Savings	Nolan O'Connor, Khanjan Mehta (The Pennsylvania State University)
From Fog Nets to Neural Nets: Using Crowdsourced Data Science Challenges to Predict Fresh Water Output from Fog Nets In Southwest Morocco	Greg Lipstein, Peter Bull, Isaac Slavitt (DrivenData)
WeShareIt Game: Strategic Foresight for Climate-change Induced Disaster Risk Reduction	Abby Onencan (Delft University of Technology, Moi University), Bartel Van de Walle, Bert Enserink (Delft University of Technology), James Chelang'a, Felix Kulei (Moi University)
Organic Carbon Stock and Their Dynamics in Rehabilitation Ecosystem Areas of Post Open Coal Mining at Tropical Region	Cahyono Agus (UGM Yogyakarta Indonesia), Pamungkas Putra (Ministry of Environment and Forestry, Indonesia), Eny Faridah (UGM Yogyakarta Indonesia), Dewi Wulandari (SEAMEO BIOTROP Bogor Indonesia), Richard Napitupulu (UGM Yogyakarta Indonesia)
Development of Experimental Design for the Evaluation of Food Aid Packaging	Prithiviraj Sundararaman, Mark Brennan, Jarrod Goentzel, Daniel Frey (Massachusetts Institute of Technology)
Development of Masterplan and Initial Program For Food Security In Papua Region, Indonesia	Cahyono Agus, Ambar Pertiwinigrum (UGM Yogyakarta Indonesia), Supriadi Supriadi (Ministry of Village, Development of Disadvantaged Areas & Trans, Indonesia), Arief Fahmi, Richard Napitupulu, Supriyanta Supriyanta, Ali Agus (UGM Yogyakarta Indonesia)

## Session C2. Public Safety and Emergency Management

3:45 pm – 5:15 pm, Loft 1 - Gallery, 6th Floor

Humanitarian Access and Technology: Opportunities and Applications	Simar Singh, Joe Belliveau (Conflict Dynamics International)
Geocentric Environment for Analysis and Reasoning (GEAR): A Decision Support Tool for Humanitarian Assistance and Emergency Management	Michelle Hamilton, Matthew Bates, John Nedza (US Army Corps of Engineers)
Communication is Essential for Global Impact	Jan Servaes (City University of Hong Kong), Patchanee Malikhao (Fecund Communication, Hong Kong)
Prediction of Approved Asylum Seekers in European Countries	Rong Zhang, Mingyue Fan (University of Pittsburgh)
A Formal Framework for Crisis Management Describing Information Flows and Functional Structure	Frederick Benaben (Toulouse University Mines Albi)
Flood Disaster Relief Services: A Research Agenda for Recovery	Niratcha Grace Tungtisanont, Aleda Roth, Yann Ferrand (Clemson University)
Emotional Response and Recovery Following A Terrorist Attack	Xidao Wen, Yu-Ru Lin (University of Pittsburgh)

**Session F2. Open Track: Water, Energy, Agriculture, Policy, Security, Education, ...**

**3:45 pm – 5:15 pm, Loft 2 - Gallery, 6th Floor**

Towards Net-Zero: Autonomous Anaerobic Membrane Bioreactor (Anmbr) for Safe Sanitation in Challenging Environments	Robert Bair, Onur Ozcan, Jorge Calabria, William Sutton, Peter Zydek, Judian Duran, Caryssa Joustra, Daniel Yeh (University of South Florida)
Development of Guidelines for the Construction of Wind Turbines Using Scrap Material	Rodrigo M. Rodrigues, Jonathan D. Piper, Siddharth S. Bhattacharya, Siti A. Wilson, Cristian H. Birzer (The University of Adelaide)
Towards a Real-time Measurement Platform for Microgrids in Isolated Communities	Geir Kulia, Marta Molinas, Lars Lundheim, Bjørn B. Larsen (Norwegian University of Science and Technology)
Design and Simulation of Fatigue Analysis for a Vehicle Suspension System (VSS) and its Effect on Global Warming	Bankole I. Oladapo (Afe Babalola University), Christianah O. Ijagbemi, Harold M. Campbell (Tshwane University of Technology), Christopher O. Ijagbemi (Federal Polytechnic)
Graph Extraction and Demand Profiling Applications for Transportation Network Research	Venkateswaran Shekar, Lance Fiondella (University of Massachusetts, Dartmouth)
Treatment of Foreign National Prisoners in the Ethiopian Federal Prison	Alemayehu Koricho (Government, Ethiopia)
Multi-Stakeholder Participation in Disaster Recovery: A Case Study	Yamini Meduri (Vignana Jyothi Institute of Management)



# DEVELOPMENT ENGINEERING

THE JOURNAL OF  
ENGINEERING IN ECONOMIC DEVELOPMENT

## AIMS & SCOPE

*Development Engineering* (Dev Eng) is an open access, interdisciplinary journal applying engineering and economic research to the problems of poverty.

Published studies must present novel research motivated by a specific global development problem. The journal serves as a bridge between engineers, economists, and other scientists involved in research on human, social, and economic development.

### SPECIFIC TOPICS INCLUDE:

- Engineering research in response to unique constraints imposed by poverty.
- Assessment of pro-poor technology solutions, including field performance, consumer adoption, and end-user impacts.
- Novel technologies or tools for measuring behavioral, economic, and social outcomes in low-resource settings.
- Lessons from the field, especially null results from field trials and technical failure analyses.
- Rigorous analysis of existing development “solutions” through an engineering or economic lens.

### EDITORS IN CHIEF:

<b>Ashok Gadgil</b>	<b>Paul Gertler</b>
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# DEVELOPMENT ENGINEERING

## CO-MENTORSHIP PROGRAM



### VISION

A key objective of DevEng is to help close the publication gap by promoting relevant, high quality research conducted by authors from developing countries. To this end, we are developing a novel co-mentorship program that pairs authors from low- and middle-income countries with peers in more established research groups.

### DETAILS

Once manuscripts are submitted and reviewed, the journal's editors will identify those that are methodologically sound but lack the clarity and presentation necessary for publication. Co-mentors will learn from one another and collaborate on revisions, after which point the lead author may resubmit their manuscript to DevEng for final consideration.

### IMPACT

By supporting higher publication rates, the program aims to showcase the contributions of developing country scholars, providing more visibility and recognition for their work. Long term, we hope to facilitate collaboration between researchers in wealthy and less developed nations, ultimately strengthening the body of knowledge on engineering solutions for the problems of poverty.

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Please contact  
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**Roseline Chapel**  
**President and Treasurer**  
**Schlumberger Foundation**

Roseline is Manager Schlumberger Mergers & Acquisition – North America, based in Houston, Texas, USA. Prior to her current assignment, she was VP Finance at M-I SWACO in Houston, and deeply involved in its integration into Schlumberger following the acquisition of the Smith International group in 2010. She serves as President and Treasurer of the Schlumberger Foundation. The Schlumberger Foundation is a non-profit organization overseen by a Board of Directors and managed and administered by Schlumberger employees. Since its inception the Foundation has focused on funding a variety of programs in scientific education all over the world.



Roseline joined Schlumberger in 1988 in the Internal Audit team in Paris, France. She has since held a variety of leadership positions in Tax, Finance and Management. She was based in Paris, France, for the first half of her career, with responsibilities as Tax Manager Schlumberger Technologies Europe, VP Finance Well Services Europe and Africa, VP Finance Wireline & Testing, and General Manager CGST-SAVE. In 2001 she moved to Houston as VP Finance for Oilfield Services North and South America, a position she held until 2004. From 2004 to 2006, she was VP Finance Oilfield Services based in Paris, France. From 2006 to 2010, she was Schlumberger Limited Director of Internal Audit in Houston; in this position, she was also in charge of career development of the Schlumberger Finance personnel. She was also a member of the Schlumberger Gender Balance Steering Committee, a group formed to identify and understand the specific issues affecting career development of women in Schlumberger, and to advise management in designing and implementing policies and practices to overcome the obstacles faced by women in Schlumberger in their pursuit of long and challenging careers.

Roseline holds a Master in Management from Ecole Superieure de Commerce et d'Administration des Entreprises in Marseilles, France, of which she is a mentor helping young graduates make career and life decisions. She is on the board of the French-American Chamber of Commerce which supports French entrepreneurs and businesses develop their economic activity in the Houston area, where she also heads its membership committee. She joined the board of the Schlumberger Foundation in 2015 to continue its development as a unique vehicle deeply anchored in Schlumberger values of Science, Innovation and People, and ensure it continues to change the world through its original positioning that women and science constitute an invincible combination able to tackle development in economically and socially challenged regions.

**Rebecca E. Curzon**  
**Senior Program Manager**  
**IBM Corporate Citizenship and Corporate Affairs**

Rebecca E. Curzon is Senior Program Manager with IBM Corporate Citizenship and Corporate Affairs, with leadership roles in business integration, philanthropy, and volunteer enablement. Ms. Curzon manages IBM's global strategy in humanitarian disaster response, applying IBM technology, solutions, expertise and innovation to critical needs in the aftermath of disaster; and developing strategic partnerships around mitigation of the effects of disaster using technology for smarter and more resilient cities. She represents IBM on the US



Chamber of Commerce Foundation's Disaster Assistance and Recovery Working Group. She is on the board of directors of the American Red Cross of Massachusetts.

Ms. Curzon also leads IBM's global citizenship Grant-making Center of Excellence, providing IBM's worldwide citizenship team with training, tools, resources, and best practices for awarding strategic grants from IBM's growing portfolio of Impact Grant offerings, all in support of local nonprofit and education partners as they address societal issues and achieve results.

Ms. Curzon has been part of global teams to integrate IBM's strategies in corporate citizenship into the business and to leverage business offerings for community benefit. In 2003 she helped launch the On Demand Community, IBM's flagship global initiative and website to support IBMers as they volunteer in their communities. For nine years she led creation of all content for the site, including dozens of activity kits for use in volunteering in schools and nonprofits, which were made available to the public ([ibm.com/volunteer](http://ibm.com/volunteer)) in honor of IBM's Centennial Celebration of Service in 2011. These free kits focus on topics ranging from STEM and "Watson" (the gameshow-winning computer) to mentoring and nonprofit capacity building. Ms. Curzon came to IBM from Lotus Development Corporation where she managed volunteerism and philanthropic programs focusing on nonprofit use of Lotus software. Previously she was with the Smithsonian Institution. She is a certified Project Management Professional through the Project Management Institute. She has volunteered actively for decades at schools, nonprofits, and in her faith community.

**Pete Giencke**  
**GIS Data Engineer & Product Manager**  
**Google**

At Google, Pete has contributed to various big data efforts in both an engineering and product manager capacity, including those on the Crisis Response, Google Earth, and Google Ocean teams. On the Crisis Response team, Pete has launched a number of open source response products, such as Crisis Map, Crisis Info Hub, and Translation Cards. In addition to building products, Pete serves as an "Incident Commander", leading the company's efforts to source and promote key local response-related information for those affected by major crises.



**Colby Howard**  
**Liaison, Mentoring and Training (LMT) Executive Officer**  
**Rescue Global**

In his role at Rescue Global as the Liaison, Mentoring and Training (LMT) Executive Officer, Colby directly embeds with host-country governments, agencies, NGOs and partners to advise their disaster management activities, to include employment of foreign technologies and innovative practices to improve planning and information flows during a response. Colby is the co-lead of an ongoing big data project with partners at Oxford University and BMT Defence, working to combine recent developments in machine learning and data provenance to exploit the swell of data generated following a disaster by using 'crowd' volunteers to enhance decision-making in the field. He has deployed to events in the Middle East, South America, Southeast Asia, and the south Pacific, and recognizes the potential for immerging technologies in humanitarian response,



albeit through empowering local actors for true capacity and capability growth. Colby comes from a special operations background in the US military and has worked in both academia and the commercial sector, and holds an MA and BS from Georgetown University.

**Stephen Hunt**  
**Chief Information Officer**  
**Team Rubicon**

Steve Hunt is responsible for the vision and implementation of Team Rubicon's evolving technical capabilities. In recent years, he was lured from the laboratory back to a life closer to the ground where he could apply both his engineering and field skills to help people in need. Steve spent many years in roles that included scientist, engineer, infantryman, manager and construction worker. He has degrees in Physics (B.S.), Astronomy (M.A.) and a PhD in Electrical Engineering. He was a paratrooper with the 82nd Airborne and a reservist and spent 25 years at MIT Lincoln Laboratory working in support of US national interests. He has extensive experience in systems engineering/analysis, program management, operations and technical R&D.



**Leighton Jones**  
**Senior Manager**  
**Emergency Preparedness Research, Evaluation & Practice Program**  
**Harvard T.H. Chan School of Public Health**

Leighton Jones currently works at the Harvard T.H. Chan School of Public Health as the Senior Manager for the Emergency Preparedness Research, Evaluation & Practice (EPREP) Program. Leighton previously worked as the Chief Disaster & Program Officer for the American Red Cross of Massachusetts and in various leaderships positions for The American Red Cross and The Salvation Army in New York. He has deployed in response to numerous disasters across the United States including hurricanes, tornadoes, floods, fires and aviation disasters. Leighton led the Red Cross response to the 2013 Boston Marathon Bombings and served at Ground Zero in Manhattan following the September 11th attacks. He specializes in government and NGO partnerships, volunteer administration, disaster human services and emergency response management. Leighton has a passion for collaboration having been the founding chair of the Rochester Regional VOAD network (Voluntary Organizations Active in Disaster) and serving as the chair of the New York VOAD network for many years. He is a graduate of the University of Plymouth in England.



**Andre Kearns**  
**Senior Director, US Government Product Management**  
**DigitalGlobe**

Andre Kearns is currently Senior Director, Products for DigitalGlobe and leads the effort to develop new solutions that combine the company's imagery, platform, and analytic service capabilities in support of US Government and Commercial customers. He represents Digitalglobe on the Council on Space for the World Economic Forum where he is currently collaborating on a project to develop an open source platform to aid global disaster response. Andre also has a vision

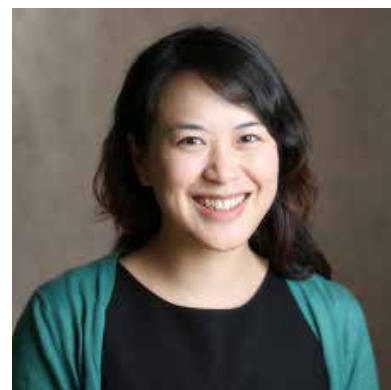


to enrich STEM curriculum in classrooms and after-school programs across the country by introducing the concept of crowdsourced mapping to students. An accomplished executive, Andre has focused his career in technology, primarily serving in marketing and strategy roles.

Andre holds an MBA from Harvard Business School and a BA in Business Administration from Morehouse College. He lives in Washington, DC with his wife and two children and works out of the DigitalGlobe Herndon office.

**Sue-Ann Ma**  
**Product Manager**  
**Benetech**

Sue-Ann Ma is a Product Manager at Benetech. Benetech develops innovative and effective technology applications for unmet social needs. Sue-Ann has been involved in a variety of collaborative projects geared towards setting standards and providing tools to make digital content and images accessible, particularly in the area of STEM (science, technology, engineering, mathematics). This includes authoring tools for images and mathematical equations, specifications for accessibility metadata, and training resources for creating image descriptions. Prior to joining Benetech, she spent several years as a Project Manager implementing sourcing systems for corporate retail in Asia and as a Product Manager for a US-based foreign language publishing house. Sue-Ann attained her bachelor's degree from the University of California, Berkeley and her master's degree from Harvard University.



**Ku McMahan**  
**Team Lead, Securing Water for Food**  
**Center for Development Innovation**  
**U.S. Global Development Lab**  
**USAID**

With a background in Water, Sanitation, and Hygiene and water technology development, Dr. McMahan currently serves as Team Lead for Securing Water for Food: A Grand Challenge for Development (SWFF) in the US Global Development Lab at USAID. SWFF is a \$32M partnership between USAID, the Swedish International Development Cooperation Agency (Sida), and the Foreign Ministry of the the Kingdom of the Netherlands. Dr. McMahan received his PhD in Environmental Sciences and a MPH in Environmental Health from the University of North Carolina at Chapel Hill under a NSF and EPA STAR fellowship. He received an A.B in Environmental Sciences and Policy as a B.N. Duke scholar from Duke University.





**Patrick Philippe Meier**  
**iRevolutions.org**

Patrick Meier is an internationally recognized expert and consultant on Humanitarian Technology and Innovation. His new book, “Digital Humanitarians” has been endorsed by Harvard, MIT, Stanford, Oxford, UN, Red Cross, World Bank, USAID and others. Over the past 12 years, Patrick has worked in the



Sudan, Somalia, Kenya, Uganda, Liberia, India, Philippines, Kyrgyzstan, Nepal, Timor-Leste, Turkey, Morocco, Western Sahara, Haiti, Vanuatu and Northern Ireland on a wide range of humanitarian projects with multiple international organizations including the United Nations and the World Bank. In 2010, he was publicly praised by Clinton for his pioneering digital humanitarian efforts, which he continues to this day. Patrick’s work has been featured in the New York Times, Washington Post, Wall Street Journal, CNN, BBC News, UK Guardian, The Economist, Forbes & Times Magazines, New Yorker, NPR, Wired, Mashable, TechCrunch, Fast Company, Nature, New Scientist, Scientific American and elsewhere. His influential and widely-read blog iRevolutions has received over 1.8 million hits. He tweets at @patrickmeier.

Previously, Patrick served as Director of Social Innovation at QCRI where he founded the Institute’s Social Innovation Program to spearhead the development of Next Generation Humanitarian Technologies powered by crowdsourcing and artificial intelligence. During major disasters, he and his team co-deployed these Big Data solutions with international humanitarian organizations to make sense of social media, pictures, videos, aerial imagery and text messages generated during crises. Prior to QCRI, Patrick co-founded and co-directed the Harvard Humanitarian Initiative’s (HHI) Program on Crisis Mapping and Early Warning at Harvard University and served as Director of Crisis Mapping at Ushahidi, an African NGO ranked by MIT as one of the 50 most innovative and disruptive companies in the world.

**Gisli Olafsson**  
**Emergency Response Director**  
**NetHope**

Gisli Olafsson is one of the leading experts in the world on the use of technology in disaster response. Gisli is a sought after speaker, trainer and advisor on the role technology can play in enhancing the response to large scale natural and man-made disasters. Gisli Olafsson joined NetHope in November 2010 as the Emergency Response Director. He is responsible for coordinating information and communication technology (ICT) related emergency preparedness and emergency response activities of NetHope’s 43 member organizations. They include organizations such as International Federation of the Red Cross/Red Crescent, Save the Children, WorldVision, Oxfam, Relief International, CARE, Catholic Relief Services, International Rescue Committee and 34 other world leading non-profit organizations.



Prior to joining NetHope, Gisli has over 20 years of experience in the field of disaster management and is an active member of the United Nations Disaster Assessment and Coordination (UNDAC) team, a team of experienced disaster managers which are on stand-by to deploy anywhere in the world on a six hour notice

to coordinate the first response of the international community to disasters on behalf of the UN Office for Coordination of Humanitarian Affairs (OCHA). Gisli also has over 30 years of experience in the IT industry, most recently working at Microsoft as a trusted advisor to international organizations and governments in disaster prone countries on the effective use of ICT to enhance response to natural disasters. Gisli has participated in disaster field missions in connections with floods in Ghana (2007), Cyclone Nargis in Myanmar (2008), Hurricane Ike in Texas (2008), Sichuan Earthquake (2008), Pandemic Outbreak (2009), West Sumatra Earthquake (2009), Haiti Earthquake (2010), Japan Earthquake/Tsunami (2011), Horn of Africa Famine (2011), and Typhoons Bopha (2012) and Haiyan (2013) in the Philippines, West Africa Ebola Response (2014-2015), and Nepal Earthquake (2015). Following the devastating earthquake in Haiti 2010, Gisli led the first international rescue team that arrived in the country. The combination of Gisli's extensive field experience in disaster management and technology background provides Gisli a deep understanding how technology can be applied to solve the most challenging collaboration issues within disaster response. This has led him to be appointed to various advisory boards and committees, such as the US State Department's sub-committee on the use of technology in international disasters. Gisli holds Bachelor of Science degrees in Computer Science and Chemistry from Copenhagen University (Denmark 1993).

**David Ott**  
**Chief Operating Officer**  
**Global Humanitarian Lab**

David Ott is the Chief Operating Officer of the recently launched Global Humanitarian Lab. As a passionate maker of physical and digital things he has worked in Academia doing research on virtual reality and computer supported collaborative work, and managed the information and knowledge management solutions along with the supporting team for the World Health Organisation. Up until recently David has been working for the International Committee of the Red Cross for which he's spent the past two years exploring the potential of digital fabrication technologies, the maker culture and crowdsourcing for humanitarian action.



**Nathaniel Raymond**  
**Director, Signal Program on Human Security and Technology**  
**Harvard Humanitarian Initiative**

Nathaniel Raymond is the Director of the Signal Program on Human Security and Technology at the Harvard Humanitarian Initiative of the Harvard Chan School of Public Health. He has over fifteen years of experience as a humanitarian aid worker and human rights investigator. Raymond was formerly director of operations for the George Clooney-founded Satellite Sentinel Project (SSP) at HHI. Raymond served in multiple roles with Oxfam America and Oxfam International, including in Afghanistan, Sri Lanka, Ethiopia, and elsewhere. He has published multiple popular and peer-reviewed articles on human rights, humanitarian issues, and technology in publications including the Georgetown Journal of International Affairs, the Lancet, the Annals of Internal Medicine, and many others. Raymond served in 2015 as a consultant on early warning to the UN Mission in South Sudan. He was a 2013 PopTech Social Innovation Fellow and is a co-editor of the technology issue of Genocide Studies and Prevention. Raymond and his Signal Program colleagues are co-winners of the 2013 USAID/Humanity United Tech Challenge for Mass Atrocity Prevention and the 2012 U.S. Geospatial Intelligence Foundation Industry Intelligence Achievement Award.





**Aaron Remenschneider**  
**Clinical Fellow in Otolaryngology and Neurotology, Investigator, Surgeon**  
**Massachusetts Eye and Ear Infirmary, Harvard Medical School**

Aaron Remenschneider, MD MPH graduated from Indiana University with a degree in Biology, and subsequently matriculated to the Yale University School of Medicine where he received his MD. While in medical school, Aaron served as a Zuckerman Fellow through Harvard's Center for Public Leadership and received a Masters degree from Harvard's T.H. Chan School of Public Health. He then went on to complete his residency and fellowship training in Otolaryngology and Otolaryngology/Neurotology at the Massachusetts Eye and Ear Infirmary. He is currently a clinical otologist (ear specialist) and Investigator within the Eaton Peabody Laboratories of the Massachusetts Eye and Ear Infirmary / Harvard Medical School. He was the lead investigator for the multi-institutional, city-wide Otologic Outcomes Study following the Boston Marathon Bombings, and has a research interest in tympanic membrane (eardrum) structure and function. His recent work has been in the area of additive manufacturing (3D printing) and its application to help solve longstanding problems in otologic disease. As a clinician, he runs a multidisciplinary laboratory that includes biomedical and acoustic engineers who collectively design, fabricate and test otologic prostheses that have direct clinical potential.



**Deborah Theobald**  
**Co-Founder and Executive Director**  
**Vecna Technologies and Vecna Cares**

Deborah has spent 15 years developing and deploying automation solutions to the health care sector both domestically and internationally. As the Co-Founder of Vecna, a leader in health care information technology and robotics, Deborah has positively impacted millions of peoples' lives through innovative new technologies that improve access to and quality of care. Deborah has brought to market QC PathFinder for electronic outbreak surveillance of hospital acquired infections and Patient Self Service Kiosk, Portal and Mobile solutions. Vecna's Department of Defense funded BEAR (Battlefield Extraction and Recovery) and the QC Bot Hospital Logistics Robots.



In 2009, Deborah established the Vecna Cares Charitable Trust to extend Vecna resources in IP, engineering capacity and programmatic expertise to developing countries and under-served areas. Vecna Cares supports ongoing initiatives in East Africa, Nigeria and Haiti as well as Massachusetts urban communities. Deborah is actively engaged in forging new community partnerships around the world with the goal of improving quality and access to health care through the establishment of local, point-of-care patient data tools to regional information technology infrastructures.

Deborah obtained her SB in Aerospace Engineering from MIT and her Masters from University of Maryland's Space Systems. She is a certified SCUBA Diver Instructor and the proud mother of 5 very active children.

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## Special Panels

### Use of Technology with Local Partners for Emergency Preparedness and Response

Oxfam believes that local actors should have more power, resources and responsibility during humanitarian crises, as they know the context best, often have better access and are more accountable to local communities, and are there first and remain after international responders leave. Oxfam speakers will outline this humanitarian approach, and then will follow theory with action. Members of the humanitarian team will give concrete examples of their work with local partners building their capacity to use technology, including monitoring and evaluation tools, to better prepare for and respond to different types of emergencies: slow onset, sudden crises, and public health emergencies.

**Emily Farr**  
**Global Advisor**  
**Emergency Food Security & Vulnerable Livelihoods**  
**Oxfam**

Emily Farr is an advisor in Emergency Food Security and Vulnerable Livelihoods (EFSVL) within Oxfam International's Global Humanitarian Team. She has worked for over 10 years to influence global policy and practice around food security and livelihoods and with country programs across Africa, Latin America, and Asia to prepare for and respond to emergencies. Emily's areas of focus include program quality, ICT, monitoring, evaluation, and learning, capacity building, and gender. Before her current role she worked for many years for Oxfam America, most recently as Senior Advisor for EFSVL, and before moving into the humanitarian field she spent several years working with local organizations committed to food security and decent housing in the United States. Emily has an M.S. in Food Policy and Applied Nutrition from Tufts University and a B.S. in Geography from Penn State.



**Daniela Giardina**  
**Public Health Promoter**  
**Oxfam**

Daniela Giardina has a role of Public Health Promotion officer within the Global Humanitarian Team of Oxfam International based in Boston. She has over ten years of experience working in the water, environment and sanitation sector with non-governmental organizations in East and West Africa, the Caribbean, Latino-America and Central Asia in humanitarian relief and in development projects. This work has included technical assessments, project design and proposals writing, project management and coordination, monitoring and evaluation, and capacity building among other tasks. In the last year she has been involved in the Ebola prevention and preparedness program in West Africa. She is holder of a PhD in Sanitary Engineering and Master Degree in Engineering for the Environment and the Territory.



**Carlos Mejia**  
**Humanitarian Change Goal Manager**  
**Oxfam**

Carlos is a strategic and tactical international humanitarian expert with over 22 years leading programs and teams to affect strategic aid worldwide. He is currently working with Oxfam to support the effective leadership of the humanitarian local actors in Sudan, Senegal, The Gambia, Guinea Bissau, Peru and Central America as core strategy for Oxfam to transform the humanitarian system. His past experience includes work at Save the Children, where he served as Deputy Program and Operations Manager. From 2004 -2006, Carlos was the Helen Hamlyn Senior Fellow at the Institute of International Humanitarian Affairs at Fordham University in NY. He also worked for the Jesuit Refugee Service and American Friends Service Committee. Carlos has spent time in numerous conflict and disaster areas including South Sudan, Colombia, Ethiopia, China, Kosovo, and Yemen. Carlos received BA's in Theology and Philosophy and an MA in Theology from Javeriana University in Bogota, Colombia. He also has several publications to his credit including *Amor y Gracia; A Theological Approach to the Humanitarian Crisis of Displaced Communities in Colombia* and *Mapmakers of Life*, a basic manual for humanitarian workers.



**Pierluigi Sinibaldi**  
**Disaster Risk Reduction and Resilience Advisor**  
**Oxfam**

Pierluigi has been working in the humanitarian sector for more than 10 years, participating in natural and conflict emergency responses in Uganda, South Sudan, Mozambique, Ethiopia, El Salvador and Nepal. He holds a Master's Degree in Humanitarian Programme Management from Liverpool School of Tropical Medicine (UK) & Bioforce Institute (France). Since 2014 he has been part of Oxfam America's Humanitarian Department, supporting field staff, partners and local Governments in disaster preparedness, contingency planning, humanitarian responses and capacity-building related to food security and livelihoods.





### Civilian-Military Coordination During Humanitarian Disasters

United States and international militaries are called upon to assist the humanitarian community in responding to major sudden onset disasters when there is an acknowledged gap between the disaster needs that the relief community is being asked to satisfy and the resources available to meet them. While coordination between humanitarian and military actors has improved over the past decade, there is still a need for more effective coordination and collaboration to provide more efficacious responses. This panel will explore a broad range of strategies, concepts, education/training programs, and technological changes that can help improve coordination during civilian-military humanitarian responses.

**Moderator: Tony Fox**  
**Professor**  
**U.S. Naval War College (NWC)**

Professor Fox serves as a civilian faculty at the U.S. Naval War College (NWC) and teaches courses on strategic and operational planning. He specializes in military planning, intelligence operations, international law, and humanitarian assistance/disaster relief. Professor Fox serves on the NWC Civilian-Military Humanitarian Response Program, which was established in 2015 to explore academic and research collaboration areas that can improve civilian military coordination during humanitarian responses to natural disasters and complex emergencies.

**Vincenzo Bollettino**  
**Research Associate and Director of Resilient Communities Program**  
**Harvard Humanitarian Initiative**

Dr. Bollettino is a Research Associate and former Executive Director of the Harvard Humanitarian Initiative. He has over twenty years of professional and academic experience in international politics, humanitarian action, human security and peacebuilding. He has managed several large training and policy development initiatives related to international humanitarian law, responsibility to protect, and peace building operations and has designed several reporting systems and program evaluations for field security measures in complex emergencies. Dr. Bollettino has authored several publications related to disaster management and humanitarian assistance, and has consulted with numerous international nongovernmental organization and UN agencies. His most recent research focuses on civil-military engagement in response to natural disasters.



**Rodrigo Arancibia**  
**Commander, Chilean Navy**  
**International Fellow, U.S. Naval War College**

Commander Arancibia is currently serving as an International Fellow at the U.S. Naval War College, where he teaches operational planning and co-founded the Civilian-Military Humanitarian Response Program. He graduated from the Chilean Naval Academy in 1993. As a submarine specialist, he has served on Type 209 Submarines and was part of the test crew and first crew of the Scorpene class submarine "Carrera." Commander Arancibia has participated in the humanitarian relief planning efforts for the Chilean earthquakes and tsunamis that occurred in 2014 and 2015. He also is a Chilean Naval War College professor, specializing in operational planning for humanitarian operations.



**Doug Wallace**  
**Deputy Director**  
**Center for Excellence in Disaster Management and Humanitarian Assistance**  
**U.S. Pacific Command**  
**Joint Base Pearl Harbor-Hickam, Hawaii**

Doug Wallace serves as the deputy director of the Center for Excellence in Disaster Management and Humanitarian Assistance (CFE-DM). He is the principal assistant to the director for managing CFE-DM programs. Wallace joined the Center in January 2007. He is a retired U.S. Army colonel with more than 24 years of service, most of it in civil-military operations positions or related education and training programs. His last assignment was as the civil-military operations chief, U.S. Pacific Command. Wallace holds a bachelor's degree in English from California State University and a master's degree in strategic studies from the U.S. Army War College.





**World Humanitarian Summit Innovation Outcomes: Agenda for Action**

The World Humanitarian Summit (WHS) will be held in May 2016 in Istanbul, Turkey with the objective to “set a forward-looking agenda for humanitarian action to collectively address future humanitarian challenges.”

This Invited Panel will focus on the discussions that take place at the WHS in Istanbul, with perspectives from across all sectors (public, private, ngo). Panelists will describe what they saw and heard at WHS, outlining relevant action items that emerge from WHS, and explain what they mean for innovation in the humanitarian system.

**Moderator: Phuong Pham**

**Assistant Professor, Harvard Medical School and Harvard T.H. Chan School of Public Health  
Director of Evaluation and Implementation Science, Harvard Humanitarian Initiative**

Phuong Pham, Ph.D., MPH, is an Assistant Professor at the Harvard Medical School and Harvard T.H. Chan School of Public Health and Director of Evaluation and Implementation Science at the Harvard Humanitarian Initiative (HHI). She has over 15 years of experience in designing and implementing epidemiologic and evaluation research, technology solutions, and educational programs in on-going and post-conflict countries such as northern Uganda, Democratic Republic of the Congo, Rwanda, Central African Republic, Iraq, Cambodia, Colombia and other areas affected by mass violence and humanitarian crisis. She co-founded Peacebuildingdata.org (a portal of peacebuilding, human rights, and justice indicators) and KoboToolbox (a suite of software for digital data collection and visualization). Dr. Pham joined HHI after holding the positions of Director of Research at the University of California – Berkeley’s Human Rights Center and Adjunct Associate Professor at Tulane University’s Payson Center for International Development.



**Andrew Billo**

**Humanitarian Affairs Officer  
Policy Development and Studies Branch  
Policy Analysis and Innovation Section  
UN Office for the Coordination of Humanitarian Affairs (UN OCHA)**

Andrew Billo is a Humanitarian Affairs Officer in the United Nations Office for the Coordination of Humanitarian Affairs (OCHA) where he leads on innovation. In this role, he leads the setup and implementation of the Global Alliance for Humanitarian Innovation (GAHI), in addition to coordinating innovative approaches to humanitarian action with a wide range of partners from business, academia, the UN, NGOs, and Government. Andrew began his career working in Vietnam with the International Organization for Migration (IOM). He went on to work for IOM in Jordan, Egypt, and Cambodia over a span of seven years. In addition, Andrew was an Assistant Director for Policy at the Asia Society, where he wrote and co-edited the book *Territorial Disputes in the South China Sea: Navigating Rough Waters*, published by Palgrave Macmillan in December 2014.



**Giulio Coppi**  
**Institute of International Humanitarian Affairs**  
**Fordham University**

Giulio Coppi oversees the Humanitarian Innovation program of the Institute of International Humanitarian Affairs at Fordham University in New York, with a special focus on Open Source technology and community-based approaches. Giulio joins the IIHA with more than 8 years of humanitarian professional experience managing operations in South America, West and Central Africa, South and Central Asia. Giulio is also the founder and administrator of the platform High Tech Humanitarians (HTH), of which IIHA is an official partner, and IIHA's focal point to the Global Alliance for Humanitarian Innovation. HTH is a web based initiative dedicated to the gathering and improvement of open source humanitarian tools, to allow universal access to life-changing technology and to mark the beginning of a continuous bottom-up innovation process.



**Kathleen Hamill**  
**Visiting Scholar**  
**Harvard T.H. Chan School of Public Health**

Kathleen Hamill is a human rights lawyer and a Visiting Scholar at the FXB Center for Health and Human Rights at the Harvard School of Public Health. As an Adjunct Assistant Professor, she has taught human rights and international law at The Fletcher School, Tufts University. She has worked as a researcher, advocate, and consultant in several regions of the world, including South America, Asia, Europe, Africa and the Middle East where she was based from 2006-12. Hamill recently conducted child protection assessments among Syrian refugees in Lebanon and Jordan in order to inform FXB's policy work to protect the rights and wellbeing of children and families impacted by the Syria crisis. Hamill holds a J.D. from Boston College Law School, a Master of Arts in Law and Diplomacy from The Fletcher School, and a B.A. from Brown University.



**Sara Spalding**  
**Senior Director**  
**New England Research & Development Center**  
**Microsoft Corporation**

Sara is the Principal Engineering Manager for the Partner Catalyst Team at Microsoft. Sara and her team work closely with open source communities, customers, and partners to help them be successful on Microsoft platforms. Prior to that, Sara was the site director of Microsoft's New England Research & Development Center, where she led the team responsible for building the new campus, the company's local tech and community outreach, and the Garage Intern accelerator program. Sara joined Microsoft in 1991, and has worked on wide range of products and technologies, including Windows, Internet Explorer, the .NET Framework and MSDN, in a range of roles including Technical Evangelist, Program Manager and Product Unit Manager. She also held roles leading Developer Relations at Macromedia and Adobe. Sara has a BS in Computer Science and Math from the University of Puget Sound. She lives outside of Boston with her husband and two children.



**IEEE Humanitarian Activities Committee Special Workshop at HumTech2016**

**Workshop description can be found on pages 10 - 11.**

**Laura Edelson**

**Chair, IEEE Humanitarian Activities Committee**

Laura Edelson holds a Bachelor's Degree in Computer Science from Pace University. As a software engineer in the financial and data analysis sectors, she has worked for NYFIX Inc, FactSet Research Systems, and at Palantir Technologies. An active volunteer with the IEEE, she has served as President of the Society on Social Implications of Technology for 2013 and 2014, and currently chairs the IEEE's Humanitarian Activities Committee. She will join NYU as a PhD student in Computer Science with a focus on machine learning and cybersecurity in the Fall. In her free time, Laura enjoys climbing, skiing, and hiking. She currently resides in New York City.

**Jackie Stenson**

**CEO and Co-Founder, Essmart**

Jackie Stenson is passionate about technology dissemination. An engineer by training, Jackie worked for technology-for-development initiatives in 11 African countries and India, until she realized that the real challenge is getting these products to their intended end users. She shifted her focus to technology dissemination strategies in low-income settings, specifically in East Africa and India. Her work and research helped lay the groundwork for Essmart, which she co-founded with Diana Jue. Essmart is a distribution company for life-improving technologies based in southern India that connects local retail shops to a catalogue of essential goods by providing marketing, distribution, and after-sales service.



Jackie has a BS in mechanical engineering from Harvard and an MPhil in Engineering for Sustainable Development from the University of Cambridge. She has been featured on the Forbes 30 Under 30 list, as an Echoing Green Fellow, and as a Cartier Women's Initiative Awards Laureate for her work with Essmart.

**Sampathkumar Veeraraghavan**

**CEO and Director at Brahman Research Lab**

Mr. Sampathkumar Veeraraghavan, an internationally recognized technologist is best known for his pioneering leadership and technological innovations in developing large-scale computing systems, advanced software technologies and systems engineering solutions to solve complex real-world computing challenges across multidisciplinary domains such as healthcare, disabilities, education, poverty-alleviation, assistive-technologies and security. Mr. Veeraraghavan is the founder and director of the technology based humanitarian program "The Brahman" (meaning knowledge) which aims to address pressing global and local humanitarian challenges in developing nations through advanced technological solutions. For over a decade, he delivered technology-based sustainable programs that brought together the engineering community, Non-Government Organizations, Governmental agencies, engineers, students and disability advocacy-groups to improve the living conditions of children with disabilities, impoverished women and students in developing nations. He received his M.S. degree in Electrical Engineering from Tufts University, Massachusetts, USA (2010) and B.E. degree in Computer Science and Engineering from



Anna University, Tamil Nadu, India (2005). Currently, he is a senior software engineer in the SPARC Platform Software group at the Oracle Corporation, Massachusetts where he is engaged in the research and development of Oracle's advanced enterprise servers portfolio.

Veeraraghavan's exemplary scholarly contributions and leadership accredited him with numerous global honors. As an active IEEE & IEEE HKN volunteer, he enjoys volunteering and serves in global engineering forums to promote the advancement of engineering and technology. Currently, he is the IEEE Member & Geographic Activities Governor-At-Large (2015-2017) on the global IEEE HKN board of governors. He serves as the chair for 2016 IEEE Special interest group on Humanitarian technology (SIGHT)'s projects committee where he leads the SIGHT proposal development and evaluation life cycle process globally. He has extensively contributed to numerous IEEE technology based humanitarian efforts globally and global IEEE committees such as IEEE HKN, IEEE History committee, IEEE SIGHT, IEEE EMCC, IEEE Public Visibility initiatives, IEEE educational activities, IEEE Young professionals and IEEE Engineering Projects in Community Service (EPICS) efforts.

**Vineeth Vijayaraghavan**  
**Founder and Editor, Panchabuta - Renewable Energy and Cleantech in India**  
**Director, Solarillion Foundation**

Vineeth Vijayaraghavan is the founding editor of Panchabuta, one of India's leading Renewable Energy and Cleantech Industry focused information and intelligence provider. As the editor, Vineeth covers the sector with the intent to bring to the local and global audience, news, insightful analysis and commentary in this space. As an independent online resource, Panchabuta also focuses and contributes to policy making in the cleantech and renewable energy space in India by providing valuable inputs to various organizations and stakeholders in the ecosystem.



Vineeth is also the Director (Research and Outreach) at Solarillion Foundation, a non profit research and outreach foundation working on research, outreach and implementation of sustainable energy and engineering solutions for emerging markets. In this capacity he has worked to develop stakeholder participation and strengthen the ecosystem for social enterprises – which are expected to provide next generation technology led low cost scalable solutions to more than 800 million rural Indian's at affordable market prices and serve as a vital connect between traditional NGOs, Government and corporations.

Vineeth, has represented national and international forums in the capacity of clean energy industry expert and has been quoted in the national and international media. He was nominated from India for the BRIC Clean Energy and Exchange program in the US in October 2011 and is an alumnus of the ACYPL (American Council for Young Political Leaders) program. A thought leader in the space, he has been speaking and moderating industry and stakeholder panel discussions on subjects ranging from renewable energy financing, projects and its viability in the Indian context and often assisting stake holders with critical inputs in shaping policies relating to renewable energy, specifically solar, wind and bio energy in India.

He is also actively involved in sustainable initiatives, energy security and next generation energy efficiency and management solutions including smart grid, rural micro grid and distributed generation solutions. He is passionate about technology solutions that can assist the more than 400 million Indian's with limited to no access to energy.

Prior to founding Panchabuta, he was a consultant to project developers in the field of thermal energy for projects in South Tamil Nadu. He has also been associated with captive wind farm projects and energy plantation initiatives.

Vineeth holds a Master of Science degree in Electrical Engineering from The Ohio State University, Columbus, Ohio and a bachelor's degree in Engineering in Electronics and Communications from the University of Madras.



### HA/DR in Infrastructure-less Environments

We are overly reliant on the availability of satellite, cellular and cloud infrastructure for conducting our operations. In many HA/DR operations, however, access to such infrastructure is simply not available, nonetheless the operation still must proceed in a safe and smooth manner. This panel focuses on the critical abilities that our first-responders need to operate in such limited environments and technical capabilities that can be exploited to support them.

**Moderator: Gurminder Singh**  
**Professor of Computer Science**  
**Director of the Center for the Study of Mobile Devices and Communications**  
**Naval Postgraduate School**

Dr. Gurminder Singh is a Professor of Computer Science and Director of the Center for the Study of Mobile Devices and Communications at the Naval Postgraduate School (NPS), CA. His primary area of focus is wireless and handheld device technology. He is currently involved in research in Mobile Devices, Mobile Application Architectures, and Mobile Device-Enabled Sensor Networks. Prior to NPS, he was the President and CEO of NewsTakes, Inc., a company specializing in repurposing of multimedia content for delivery to wireless networks and devices. He has been involved in this area for the last 10 years. Prior to NewsTakes, Dr. Singh was Director at the Kent Ridge Digital Lab (now I2R) where his responsibilities included strategic directions for research, management of research staff, and commercialization of intellectual property.

Dr. Singh has helped mentor and spin-off several start-ups in wireless, internet and multimedia in recent years. He has been on the management and advisory boards of start-up companies, and has advised companies and VCs on business plans, intellectual property issues, and management teams.

Dr. Singh has been involved with ACM and IEEE for many years in organizing conferences, editing special issues of journals, and publishing in their journals. He has published extensively and edited special issues of the Communications of ACM, ACM Transactions on CHI, IEEE Multimedia and ACM Multimedia Systems etc. Prof. Singh founded the ACM Virtual Reality Software and Technology (VRST) Conference in 1994 and co-chaired VRST 2005. He received his Ph.D. in Computing Science from the University of Alberta, Canada.

**Major Alexander “Kronk” Beachy**  
**United States Marine Corps**

Maj Beachy is a heavy-lift helicopter pilot (CH-53E), but is currently serving as the Director, Operating Forces Support Group, Marine Corps Tactical Systems Support Activity, where he leads a group of communications, computer, command and control, and intelligence (C4I) analysts. His team supports the C4I systems of the Marine Corps, Department of Defense, and joint and coalition forces throughout the world.



As a Marine, he has been involved in many Humanitarian Assistance/Disaster Relief (HA/DR) operations. He led the first of many HA/DR missions for the 31st Marine Expeditionary Unit during Operation Tomodachi. These missions helped the citizens of mainland Japan after the tsunami in 2011.

Maj Beachy graduated with distinction from the Naval Postgraduate School with a Master of Science in Computer Science. He graduated from Purdue University with a Bachelor of Arts in English.

**Christopher Kluckhuhn**  
**Founder/CEO Avwatch**

As a Coast Guard rescue pilot Chris piloted one of the first helicopters to respond to the World Trade Center attacks on September 11, 2001. He returned from that mission driven to improve Coast Guard Maritime Domain Awareness and Port, Waterways, and Coastal Security aerial patrols. As a junior Lieutenant and pilot in the field, Chris led the development of a real time situational awareness system for Coast Guard aircraft. His efforts led to congressional funding to link every CG aircraft with an Iridium datalink. During Katrina Chris demonstrated the benefit of using cellular air cards on helicopters as a simple high speed datalink solution that complimented satellite datalinks. For his efforts Chris was awarded the Coast Guard's National Innovation Award, named a Visionary Leader by Government Computer News, and was selected to attend the highly competitive Center for Homeland Defense and Security at the Naval Postgraduate School (NPS). While at NPS Chris learned about Mobile Ad Hoc Networking Technology (MANET) and realized the technology was critical to meeting the operational requirements for the disasters and missions he had spent his career responding to.



After graduating from NPS Chris transferred to the Coast Guard Reserves where he now serves as an Emergency Preparedness Liaison Officer, and founded Avwatch where he has focused on rapidly advancing disaster situational awareness and airborne networking technology on manned and unmanned system. The technologies Avwatch helped develop and field to communicate and improve situational awareness have been used to support major national disaster responses like Deepwater Horizon and Super Storm Sandy as well as Super Bowl 50, the Boston Marathon, and countless other real world operations. The technology was selected by DARPA to give to Prescott, AZ firefighters who lost 19 of their 20 member Hotshot team in part due to a lack of situational awareness. Popular Science awarded that technology a "Best of What's New" award and the US Forest Service is currently fielding the solution for federal wild fire response. Avwatch currently helps manage one of the FAA's Unmanned Aerial Systems test sites and continues to push the leading edge of situational awareness and communications technologies there.



### Improved Packaging Technology in the Food Aid Supply Chain

Food for Peace, implemented by the United States Agency for International Development (USAID) and the United States Department of Agriculture (USDA), shipped over one million tons of food aid in 2014 to 35 countries around the world, reaching approximately 46 million beneficiaries. Food aid is currently shipped in woven polypropylene bags or multiwall paper bags, depending on the commodity, which are vulnerable to insect infestation and mold damage. New bag technologies, such as hermetic and growth regulator treated bags, offer the potential to improve the quality of food aid commodities transported and stored while eliminating or minimizing the level of fumigation currently required. By reducing food loss and the cost of fumigation, these technologies could prove very cost effective in providing more aid.

This panel will introduce some of these improved packaging technologies and discuss their potential to improve the food aid supply chain, along with other food security applications. The panel will also highlight an experiment, conducted by the MIT Comprehensive Initiative on Technology Evaluation (CITE) in collaboration with USAID, in order to evaluate the cost and efficacy of using such packaging materials in the food aid supply chain.

**Moderator: Jarrod Goentzel**  
**Director**  
**MIT Humanitarian Response Lab**

Jarrod Goentzel is founder and director of the MIT Humanitarian Response Lab in the Center for Transportation & Logistics and is a project lead for the MIT Comprehensive Initiative on Technology Evaluation sponsored by USAID. His research focuses on meeting human needs in resource-constrained settings through better supply chain management, information systems, and decision support technology. Dr. Goentzel balances theoretical and applied work through active engagement with the private sector, government agencies, humanitarian, international development, and community organizations on several continents.



**Jim Bagwell**  
**President**  
**ProvisionGard**

Jim Bagwell is President of ProvisionGard Technology LLC based in Greensboro, North Carolina. He is the founder of ProvisionGard which started operating in 2009. Prior to this, Jim worked for Procter and Gamble for 12 years in manufacturing and engineering positions, was VP of Sales and Marketing for the Actinic Coating company specializing in UV/EB/Water Based coating technologies and after being acquired by Ashland Chemical, he was their Business Development Manager focusing on the ProvisionGard Technology. Jim has recently helped author the K-State produced Stored Product Protection Manual chapter on Insect Resistant Packaging. He is a graduate of Tennessee Technological University in Industrial Engineering and was awarded the TTU Distinguished Alumni Award by the Industrial Engineering Department.



**Greg Olson**  
**Program Operations Division Director**  
**USAID Office of Food For Peace**

Greg Olson is the Program Operations Division Director in the USAID Office of Food For Peace (FFP). Greg and his staff are responsible for managing the food aid procurement process, FFP's prepositioning program, coordinating with USAID's Office of Transportation, USDA/FSA and cooperating sponsors on logistical issues and performing technical budget reviews. Prior to joining FFP, Greg worked with the World Food Programme in Washington DC and as human rights researcher in South Africa. He holds a Master's in International Public Administration from the Middlebury Institute of International Studies at Monterey and a Bachelor's in International Relations from the University of California, Davis.

**Phil Villers**  
**President**  
**GrainPro**

Philippe Villers is the President and Founder of Families USA Foundation, and Founder of Computervision Corp., Automatix, Inc., and Cognition, Inc. He has served as President of GrainPro since June 1996. Mr. Villers is also on the board of directors of various foundations, for-profit and non-profit organizations including Families USA Foundation and United Villages. Mr. Villers earned a Masters Degree in Mechanical Engineering from MIT.



**Georeferenced Settlement Mapping and Population Estimates Based on Remote Sensing and Microcensus Data**

In 2013-2014, detailed geo-referenced maps were created for 10 states in Northern Nigeria to support microplanning and vaccinator tracking for the Global Polio Eradication Initiative. The resulting maps played a key role in ensuring accountability of vaccination teams and identifying chronically-missed settlements, leading to the eventual elimination of polio from Nigeria in September 2015. Many additional uses have since been found for this rich, geospatial dataset including serving as a base layer for specialized datasets, facilitating measurement and evaluation efforts, and providing an ideal matrix for the development of a bottom-up population model based on settlement feature extraction and local microcensus data. This Session will discuss this major breakthrough in the field of population estimation and demography, which is the result of collaboration between the Geographic Information Science and Technology (GIST) Group at Oak Ridge National Laboratories, Flowminder (University of Southampton), eHealth Africa, and the Bill & Melinda Gates Foundation.

**Moderator: Jeanette Weaver**

**Research Scientist, Geographic Information and Science Technology Group  
Oak Ridge National Laboratory**

Jeanette Weaver joined the Geographic Information and Science Technology Group (GIST) in January 2011 and is currently a Research Scientist on the Population Distribution and Dynamics Team. Within the Team, she currently serves as project lead and point of contact for Settlement Mapping efforts. Jeanette helps direct Settlement Mapping research and development in analysis and exploitation of commercial high resolution imagery to evaluate processing methods for feature extraction, resulting in the extraction of human settlement information. She also currently works on projects such as LandScan Global, and LandScan HD where she focuses on conflict induced population movements and involuntary resettlement patterns. Prior to joining the GIST group, Jeanette worked as a Geographer at Marine Corps Intelligence Activity (MCIA) where she conducted research for coastal geomorphology analysis. She worked closely with the Naval Research Lab to analyze/exploit Hyperspectral /Multispectral imagery, researching near-shore bathymetry and shore soil composition extraction methods. She attended Marshall University where she attained her BA in International Affairs and an MA in Geography with a Graduate GIS Certificate. She also holds a Graduate Certificate in Advanced Geospatial Intelligence from the Air Force Institute of Technology.



**João Pedro Azevedo**

**Lead Economist  
World Bank**

João Pedro Azevedo is a Lead Economist at the World Bank in Washington. He currently works for the Poverty and Equity Global Practice in the European and Central Asia region, focusing on Central Asia and Turkey and leading the region's Statistics Team. João Pedro also leads the Global Solution Group on Welfare Measurement and Statistical Capacity for Results from the Poverty and Equity Global Practice. João Pedro has focused much of his work on helping developing countries improve their systems for evidence-based decision making. He worked in Colombia, Brazil and the Dominican Republic for five years, and led important regional public efforts such as the Latin American & Caribbean Stats Team and the LAC Monitoring and Evaluation Network. João Pedro brings solid and varied experience in applied econometrics to the fields of poverty and inequality. Before joining the Bank, João Pedro served as the superintendent of monitoring and evaluation at the Secretary of Finance for the State of Rio de Janeiro, as well as a research fellow at the Institute of Applied Economic Research from the Brazilian Ministry of Planning. He is a former chairman of the Latin American & Caribbean Network on Inequality and Poverty and holds a PhD in Economics.



**Thomas Bird**  
**Research Scientist**  
**Flowminder**

Tomas Bird is based at the University of Southampton on the WorldPop project ([www.worldpop.org](http://www.worldpop.org)) and with the Flowminder Foundation ([www.Flowminder.org](http://www.Flowminder.org)). He currently works on methods for predicting the size and composition of human populations using household survey data and geospatial data. His academic trail has lead from a BSc in marine biology (University of British Columbia, Canada) to an MSc in biological oceanography (University of Victoria, Canada). This was followed by a PhD in ecological statistics (University of Melbourne, Australia), in which he developed Bayesian models for integrating multiple sources of capture-recapture data.



**Noelle Huskins**  
**Program Officer**  
**Bill and Melinda Gates Foundation**

Noelle Huskins is a Program Officer with the Bill & Melinda Gates Foundation. She has been with BMGF for 6+ years spanning everything from early stage research to delivery in health systems, and is currently on the Global Health- Neglected Tropical Diseases (NTD) team where she focuses on Human African Trypanosomiasis (HAT), Guinea Worm, and VL in India. Within HAT she leads the data and mapping work used for disease modeling and microplanning activities in the DRC. Prior to this role she was on the Integrated Delivery –Interventions, Consumers, & Markets team supporting commercialization and delivery strategies for new global health interventions in therapeutics, diagnostics, and vector control. She has also spent two years with the regional offices working on developing a new strategy for the ICO and as a liaison for the India Country Office and on Discovery & Translational Sciences providing program management for the global innovation funding program, Grand Challenges Explorations. Before the Foundation she worked on social entrepreneurship, ICT for development and microfinance in India, and human-trafficking policy in the Philippines. She holds a BA from Boston College, an MPA from the University of Washington, and an MBA at the University of California, Berkeley.



**Eric Weber**  
**Research Scientist**  
**Oak Ridge National Laboratory**

Eric Weber is a research scientist at Oak Ridge National Laboratory in the Geographic Information Science and Technology (GIST) group. His current focus is on using models of population density combined with remote sensing information and other geospatial data to map human populations with very high spatial precision and a systematic accounting of uncertainty, especially in regions where accurate and current geospatial data is limited. In his 5+ years with the GIST group, he has developed software and implemented modeling strategies for a variety of challenging population distribution and dynamics problems, including modeling special event population distributions, estimating daytime and nighttime population distributions, and creating and maintaining detailed land use data through the fusion of data from a variety of sources. Prior to joining ORNL, Eric held various positions in the geospatial field, including work in production cartography at the National Geographic Society and at the University of Kansas, as well as management and analysis of hydrographic data at the Nebraska Department of Natural Resources. He holds an MA in geography from the University of Kansas and a BA in geography from the University of Nebraska.



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Cover Image: Oxfam has been trucking clean water in rural areas of southern Ethiopia, where poor rains left water sources dry.  
Image Credit: Oxfam East Africa  
<http://www.flickr.com/photos/oxfameastafrica/5933226731>

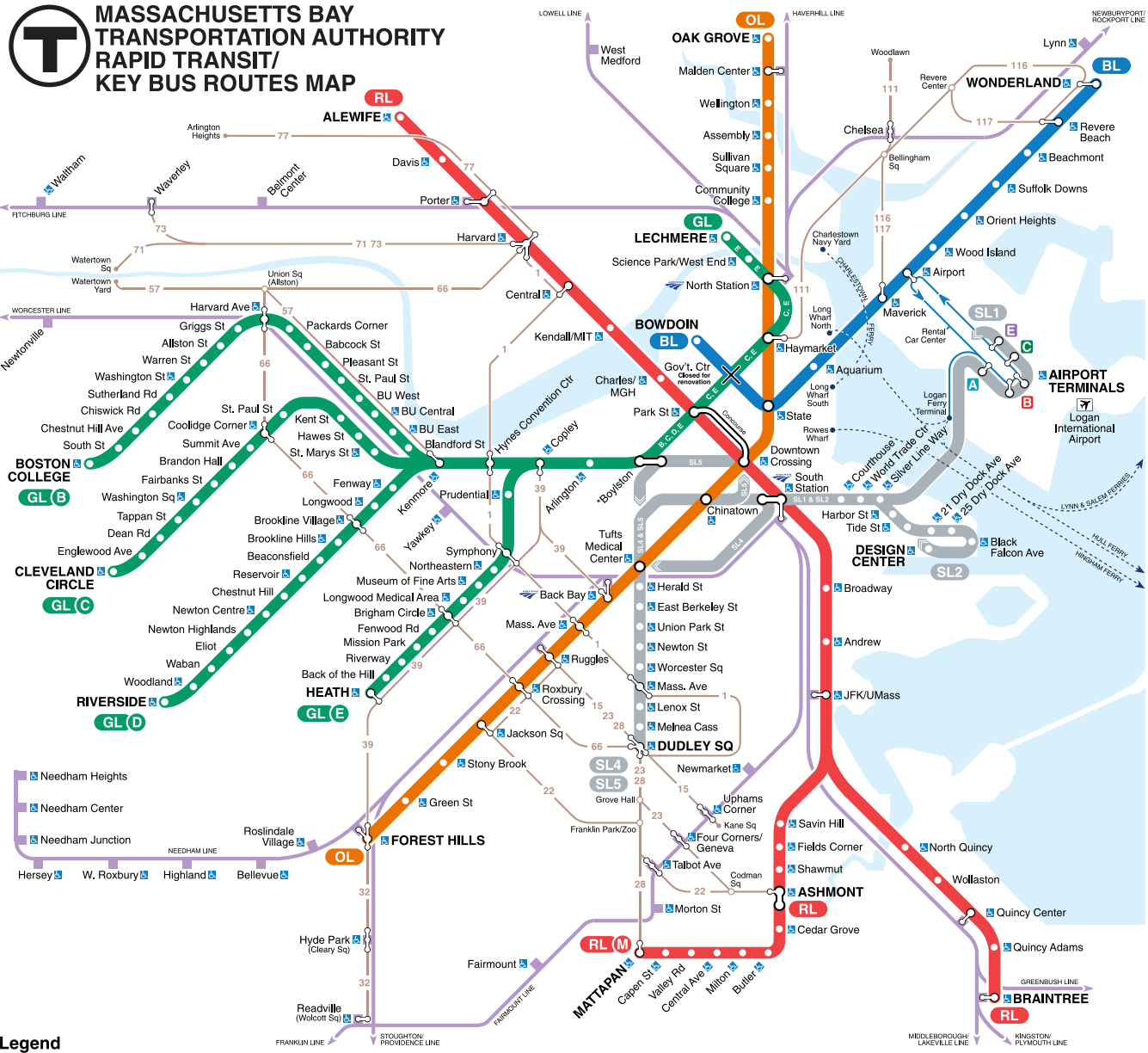




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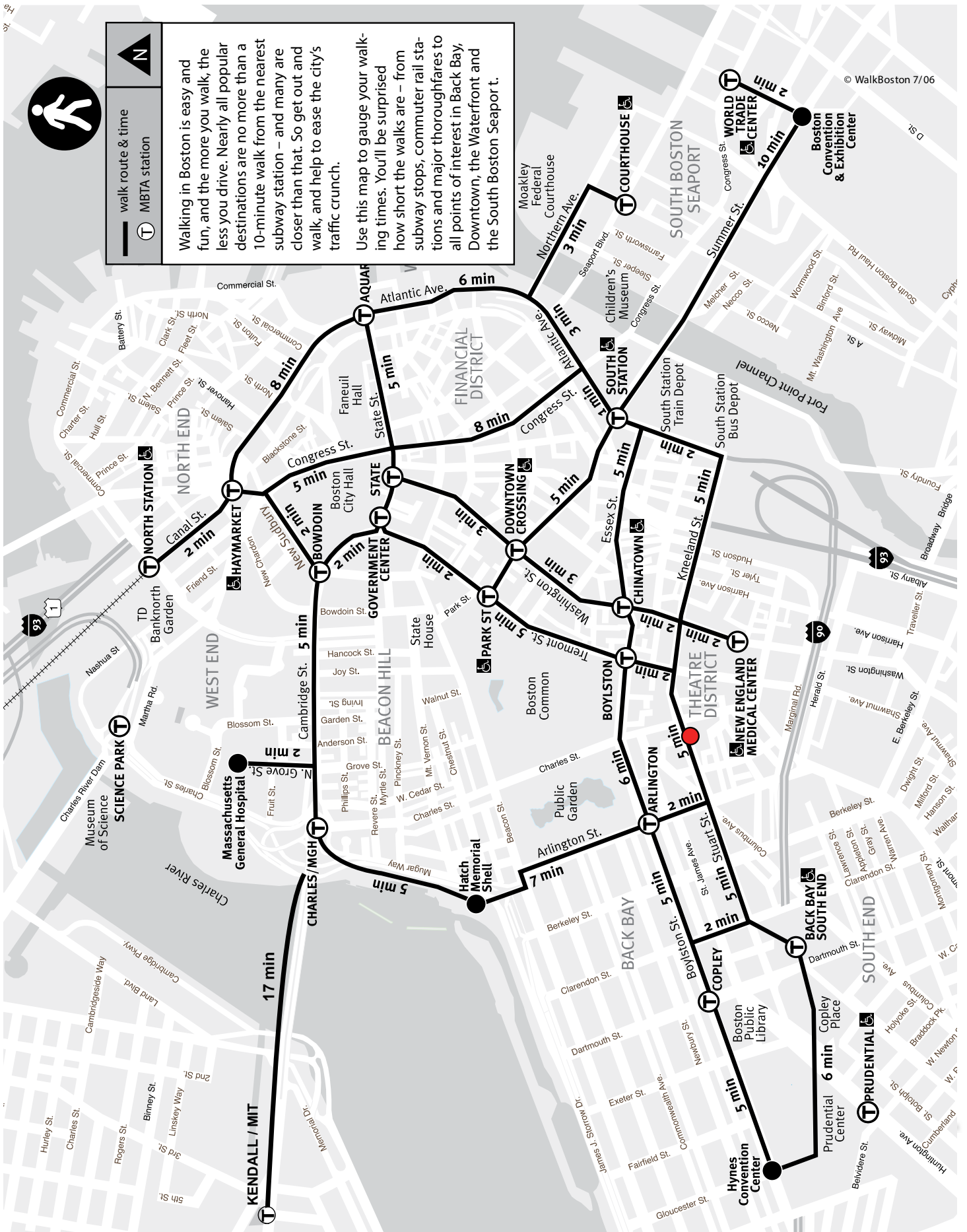
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The **van** | **car** | **motorcycle** | **boat** you're traveling in...

*Breaks down during a:*

**rainstorm** | **dust storm** | **%!@#storm**

*You're beset by:*

**mosquitos** | **chickens** | **doubt**

*While you eat the last of your:*

**energy bar** | **picked-over trail mix** | **bananas**

*You feel:*

**tired** | **sick** | **hungry** | **angry** | **despondent**

*But you're still committed to your:*

**survey** | **evaluation** | **M&E plan** | **site visit**

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**Monday, 6 June 2016**

7:00 pm – 9:00 pm Check-In and Cocktail Hour

Rooftop@Revere

Tuesday, 7 June 2016		Wednesday, 8 June 2016		Thursday, 9 June 2016	
Time	Speaker	Time	Speaker	Time	Speaker
8:00 AM	Registration Opens	8:00 AM	Registration Opens	8:00 AM	Registration Opens
8:30 AM	Opening Remarks	8:30 AM	Civilian-Military Coordination During Humanitarian Disasters	8:30 AM	N. Raymond
8:35 AM	G. Olafsson	IEEE HAC Special Workshop	World Humanitarian Summit Innovation Outcomes: Agenda for Action	9:00 AM	S. Hunt
9:25 AM	Oxfam Invited Panel: Use of Technology with Local Partners for Emergency Preparedness and Response			9:20 AM	P. Giencke
10:25 AM	Break			9:40 AM	A. Kearns
10:45 AM	P. Meier			10:00 AM	Break
11:25 AM	C. Howard	10:45 AM	Break	10:30 AM	Improved Packaging Technology in the Food Aid Supply Chain
11:45 AM	D. Ott	11:00 AM	L. Jones	11:30 AM	Georeferenced Settlement Mapping
		11:20 AM	R. Curzon		
		11:40 AM	K. McMahan		
		12:00 PM	D. Theobald		
12:30 PM	Working Lunch Session <i>Beyond the jargon: Data security and data quality simplified</i> Hosted by SurveyCTO	12:30 PM	Lunch	12:30 PM	Lunch <i>Best Paper and Best Poster Awards</i>
1:30 PM	A. Remenschneider	1:30 PM	HA/DR in Infrastructure-less Environments	2:00 PM	A2. Humanitarian Assistance / Disaster Relief
2:00 PM	B1. Health and Disease	2:20 PM	S. Ma		
	D1. Emerging	2:40 PM	R. Chapel	3:30 PM	Break
3:30 PM	Break	3:00 PM - 6:00 PM	Poster, Exhibit and Networking Session	3:45 PM	F2. Open Track: Water, Energy, Agriculture, Policy, Security, Education,
4:00 PM	E1. International Development, Poverty Alleviation and Food Security				
	A1. Humanitarian Assistance / Disaster Relief				
5:30 PM	Adjourn	6:00 PM	Adjourn	5:15 PM	Closing Remarks
6:00 PM	Evening Reception			5:30 PM	Adjourn
9:00 PM					





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